Costing of the Hood Canal Coordinating Council's Summer Chum Salmon Recovery Plan

August, 2004

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Introduction

The Hood Canal Coordinating Council (HCCC) has developed an extensive list of projects needed for summer chum salmon recovery in the Hood Canal evolutionarily significant unit (ESU). These projects are intended to address the recovery of ESA-listed summer chum salmon. This project list was developed using the most up-to-date assessment of summer chum habitat needs, without consideration of cost or potential funding. HCCC contracted with Evergreen Funding Consultants (EFC) to provide an initial cost estimate for this Hood Canal summer chum salmon recovery plan.

EFC has developed a model to estimate the capital costs for salmon recovery plans in Puget Sound (*A Primer on Habitat Project Costs*, Evergreen Funding Consultants, 2003). This model estimates costs for broad categories of projects (estuarine restoration, floodplain restoration, land acquisition, etc.). Costs within each category are estimated based on the factors that contribute the most towards the final price of a project.

EFC customized this model for the Hood Canal summer chum salmon recovery plan, developing new categories and checking cost accuracy within the categories. The methods used to calculate the cost of the HCCC's summer chum salmon recovery plan are described in Appendix A.

EFC has also developed a model to estimate non-capital costs for salmon recovery plans, which was used to determine those costs for the Hood Canal summer chum salmon recovery plan.

This report describes EFC's findings regarding both capital and non-capital costs. The methods used are described in Appendix A; tables with details on the costs are in Appendices B through E.

EFC also researched options for funding salmon recovery in Hood Canal. The grant opportunities are listed in Appendix F and analysis methods used are described in Appendix A.

Findings

Capital Costs

HCCC staff provided EFC with a list of 107 projects in six conservation units within Hood Canal. EFC assigned these projects to a number of categories as described in Appendix A: Methods. Projects within each category were costed using assumptions for an average project developed by EFC staff and agreed upon by HCCC staff. The capital cost estimates for the summer chum salmon recovery plan are summarized in Table 1.

Of the 107 projects listed, 29 were not costed for the reasons given in Appendix A.

The total estimated cost of the remaining 78 projects is $100,770,695.

Group	*Group Description*	*Number Projects*	*Cost*
Estuarine/Nearshore			
Group E2	Undeveloped estuary site - moderate excavation/moderate transportation distance	11	$364,000
Group E3	Undeveloped estuary site - substantial excavation/moderate transportation distance	10	$1,006,360
Group E4	Somewhat developed estuary site - minimal excavation/moderate transportation distance	2	$20,000
Group E5	Somewhat developed estuary site - moderate excavation/moderate transportation distance	2	$120,000
Group E6	Somewhat developed site - substantial excavation/moderate transportation distance	7	$3,135,000
Group E9	Highly developed estuary site	4	$21,455,500
Group E0	Complex estuary projects that must be costed individually	17	$65,265,263
Group N5	Minor reconstruction, moderate excavation	1	$574,350
	subtotal	***54***	***$91,940,473***
Floodplain			
Group F5	Complex floodplain reconnection	6	$1,109,000
	subtotal	***6***	***$1,109,000***
Riverine			
Group R4	Simple riparian enhancement	2	$1,441,250
Group W5	Wood placement on medium waterways	1	$48,000
Group R0	Riverine projects to be costed individually	2	$6,250
	subtotal	***5***	***$1,495,500***
Acquisition			
Group A2	Low Development Potential Acquisition	2	$836,592
Group A4	Medium Development Potential with Stream Front	2	$39,000
Group A5	Medium Development Potential with River Front	2	$570,450
Group A6	Medium Development Potential Acquisition with Canal Front	6	$3,978,000
Group A8	Conservation Easements - Medium Development Potential	1	$801,680
	subtotal	***13***	***$6,225,722***
	TOTAL	**78**	**$100,770,695**

Table 1: Summary of capital cost estimates for Hood Canal summer chum salmon recovery plan.

The capital cost estimate should be used as a preliminary and partial cost estimate. This number is based on the estimated cost of the project list that was made available by the HCCC in the summer of 2004. This list will likely change as design plans evolve and projects are added or subtracted from the list. Several projects that have not been costed are in very preliminary stages and may add significant costs to the overall estimate.

The Hood Canal summer chum salmon ESU represents a significant portion of the Puget Sound. The costs of salmon recovery in this region will be high, but when implemented, the plan will address recovery concerns over a large geographic area. This cost estimate will give the HCCC, as well as local planners and agencies, a ballpark number to work with as the planning process for salmon recovery continues.

The cost estimate for the summer chum salmon recovery plan was developed using the *Primer on Habitat Project Costs* (EFC, 2003) adapted for Hood Canal. Assumptions about average project conditions were made so as to cost projects in groups, rather than individually, as shown in Table 1. The reliability of the group subtotals depends to a large extent on the validity of the assumptions used to assign projects to groups. It is possible that non-average characteristics do exist for these projects but were not noted in project descriptions, or will not be identified until further into the design process.

The *Primer* recognizes that costs for estuarine restoration projects are highly variable and are difficult to model. EFC researched estuarine projects throughout the west coast to check the model cost estimates and found that costs, while variable, fell within the adapted model's cost ranges.

Costs for road removal projects are a sizeable portion of the overall costs ($57,987,030 or $57%). EFC has not modeled such costs, both because there are not enough examples from which to derive a reliable model and because such projects are highly variable in cost and would be difficult to model. The Highway 101 feasibility study and the ongoing restoration at Jimmycomelately Creek were used to develop cost estimates for these road projects. It should be noted, however, that these cost estimates are less reliable than the other estimates presented.

Non-Capital Costs

A total of sixteen non-capital items were costed covering a ten-year period. Ten items addressed the substantive plan and six addressed Watershed Partnerships and basic capacity. These costs are summarized in Table 2 and detailed in Appendix E: Non-capital costs. Some costs are only projected for 2-5 years while others are sustained over the full 10-year period.

Total Annual Cost- Peak Cost	$368,625	Unmet Peak Cost	$175,313
Total Average Annual Cost (over 10 years)	$314,175	Unmet Average Annual Cost (over 10 years)	$146,423
Total Ten Year Cost	**$3,141,750**	**Unmet Ten Year Cost**	**$1,464,225**

Table 2: Summary of non-capital costs for Hood Canal salmon recovery plan.

In addressing non-capital costs, EFC considered both the work currently being done in the Hood Canal summer chum salmon ESU and the extra work that is likely to be required to fully implement the salmon recovery plan. This extra work is described as an "unmet cost" (in both staff and cash) in Table 2 (and Appendix E). Essentially, this is the amount that EFC estimates cannot be covered by existing resources of both staff and cash. This extra cost, over and above current expenses, will need to be funded with new sources.

As with the capital cost estimate, the non-capital cost estimate is designed for use in preliminary planning exercises and should not be used in place of actual budgets. EFC, in consultation with HCCC staff, made assumptions about staffing levels and costs, program complexity, and existing funding levels to derive the cost estimate. With full access to budgets and plans for the multiple agencies involved in the recovery plan, a more precise estimate would be achievable. All assumptions are explained in Appendix E and can be adjusted as necessary.

Funding Sources

EFC researched a broad range of government grants that are potential sources of funding for salmon recovery work in the Hood Canal summer chum salmon ESU. These are listed in Appendix F: Funding Sources.

HCCC has raised money for several important habitat restoration projects in their recovery plan, from grant sources such as the Salmon Recovery Funding Board (SRFB), the Interagency Committee (IAC) and the Washington State Clean Water Fund. Other sources of money for land protection and restoration, such as the Conservation Reserve Program for riparian restoration and various programs for forest land protection, are also well used.

It is unlikely that current sources of funds will be sufficient to pay for the full extent of salmon recovery plans in the Hood Canal summer chum salmon ESU. As other lead entities across the region and state complete their plans and funding strategies, the competition for scarce resources will only increase. It is also unlikely that new local sources of funding for salmon recovery will be made available in the immediate future.

While continuing to tap into existing grant sources, HCCC should look at other sources, especially for public infrastructure, such as the Public Works Board Trust Fund loan program. In addition, HCCC should consider forming a coalition with other lead entities in the Puget Sound region to leverage large amounts of funding from federal sources.

Recommendations/Next Steps

The capital and non-capital cost estimates presented here should be regularly updated as HCCC continues to build and refine its project list. The tables in the appendices to this report are designed to allow for additions and adjustments over time.

This capital cost estimate only addresses summer chum salmon recovery.

Additional work is needed to increase the reliability of the estimates for the SR 101 projects. This would require discussions with staff at the Washington Department of Transportation and research on similar projects around the country to calibrate the model. Further calibration is also advisable for other high cost items, such as the removal of substantial developments to restore estuarine lands.

As budgets are developed for individual projects, these real costs should be substituted for the estimates in the table.

Appendix A: Methods

Capital Project Costing

HCCC provided EFC staff with a list of capital projects in six conservation units within the Hood Canal summer chum salmon ESU. HCCC staff made an initial categorization of these projects by type, based on the *Primer on Habitat Project Costs* (EFC, 2003) and provided brief project descriptions with some information on the size of the project footprint. EFC staff used these project descriptions to recategorize some projects, especially those involving multiple actions, such as land acquisition coupled with restoration. The final list is comprised of 107 individual capital projects.

The costing model described in EFC's *Primer on Habitat Project Costs (Primer)* was developed using costs from an extensive sample of restoration projects in Puget Sound. The model categorizes projects based on type of restoration, such as estuarine, riparian planting, riparian fencing and streambank improvements. Within each of these categories, the most important cost factors were determined and used to develop an initial cost range. This cost range can be narrowed by considering secondary factors.

This methodology assumes that "average" project conditions exist and allow assignment of projects to a category or subcategory. Within each subcategory the unit cost is determined by the model and the project cost is then determined by its size. While these assumptions hold true for large scale cost determination (at the watershed level, for example), they are likely to fall apart on the project design scale when individual site idiosyncrasies will have a large impact on project cost.

EFC adapted the *Primer* model to allow for rapid cost assessment of the HCCC's extensive project list. Three broad categories of restoration projects were established, based on the location of the project within the watershed:

- estuarine—restoration projects within tidally influenced areas;
- floodplain—restoration projects within a river floodplain, upstream from tidal influence;
- riverine—restoration projects along a river bank that do not involve work within the floodplain.

A fourth category was established for:

- acquisition of land or conservation easements.

The restoration categories were then subdivided based on the primary and secondary cost factors for each, as described in the *Primer,* and knowledge of local conditions provided by HCCC staff. The categories, subcategories and cost factors are tabulated in Appendix B.

For example, the *Primer* lists prior land use of the restoration site as the primary cost factor for an estuarine restoration project. So, the estuarine category was subdivided into three subcategories based on prior land use: undeveloped site (no structures or utilities on site); somewhat developed site (small

structures/utilities such as a railroad grade); and heavily developed site (intact structures and/or utilities on site).

The secondary cost factors for estuarine restoration projects listed in the primer are the extent of earthmoving and the distance fill has to be transported. The three estuarine subcategories were then further subdivided based on the amount of fill to be removed, described as minimal (50-500 cu yds), moderate (500-50,000 cu yds) and substantial (50,000-400,000 cu yds). For the Hood Canal summer chum salmon ESU, the transport distance was assumed to be moderate (7-21 miles) for all projects.

Within these subcategories, costs can be fine-tuned based on the extent of on-site soil contamination and the degree of planting/invasive control required. These were determined from project descriptions, background research and discussions with HCCC staff.

The HCCC project list was divided into 15 groups, with from 1 to 11 individual projects per group (see Appendix C: List of Groups). EFC used project descriptions provided by HCCC staff as well as background research to assign projects to groups. Background research included analysis of SRFB grant proposals and reports, aerial photograph searches, and other web-based research (see Appendix G).

A total of 19 projects were not assigned to groups, either because they were too complex to be costed using the *Primer* model, or were too different from the other projects to be assigned to a group. The methods used to cost these projects are outlined in the table in Appendix D: Capital Costs. They included interviews with experts, reference to similar projects funded through the Salmon Recovery Funding Board (with cost information available on the web) and the Highway 101 feasibility study. Some projects with complex elements were assigned to a group for partial costing—this is noted in the table in Appendix D.

A further 29 projects were not costed for one of three reasons: they were already funded; they required an extensive assessment and feasibility study before restoration actions can be determined and costed; they are very complex projects that are unlikely to be implemented.

This report and its appendices have been prepared with an eye toward the future use of the costing models as HCCC continues to define the recovery plan. Using the Costing Tables for Capital Projects (Appendix B), HCCC staff can re-categorize projects as new information becomes available. The costing methods are illustrated in these tables in order to give HCCC the tools to continually adjust the project list and the estimated cost of the capital projects in the recovery plan. EFC is available for continued assistance in this process.

Non-Capital Costing

Non-capital costs were estimated using EFC's cost model for non-capital costs of Puget Sound salmon recovery plans. This model was adjusted to better fit the characteristics of the Hood Canal region. Tasks were added or subtracted from the model as necessary. FTE estimates were adjusted depending on the groups responsible for a given task. Based on EFC's understanding of the Hood Canal

region and conversations with HCCC staff, assumptions were made about the factors most influencing cost. Based on these factors, an estimate of FTE per task was made for the Hood Canal summer chum salmon recovery plan. An assumption was also made about how much of the estimated need currently exists in staff budgets and how much represents additional staff time and associated costs. Total estimates over 10 years were then calculated. This information can be found in Appendix E: Non-Capital Costs.

Funding Sources

EFC researched grant programs administered by state and federal government agencies. This information is presented in Appendix F: Funding Sources.

The grant programs cover all aspects of the Hood Canal Summer Chum Salmon Recovery Plan as outlined in the project lists, including planning activities, managing storm and wastewater, realigning roads and replacing bridges, and protecting and restoring important resource lands.

An assessment was made as to the relevance of each grant program as a source of funding for elements of the Hood Canal Summer Chum Salmon Recovery Plan. Results are presented as low, medium or high, based on current information about the grant program and how well it seems to fit with the plan (not just with the mission of HCCC). An assessment of the likelihood of success was also made, based on the competitiveness of the program. The information used for these assessments was taken from EFC's current knowledge of these programs and/or readily available information (usually web-based). A more in-depth analysis would require discussions with grant program officers, as the focus of any grant program is likely to change over time.

Appendix B: Cost Tables

Floodplain Groups Breakdown by Major Cost Factors		*Major Cost Factor: Type of Project*		
		Simple Reconnection: *some excavation material disposal (250-5,000 cu yards)*	**Complex Reconnection:** *moderate excavation, material disposal (5,000-50,000 cu yards)*	**Channel Reconstruction:** *substantial excavation, material disposal (50,000-450,000 cu yards)*
Major Cost Factor: River Energy	**Low:** *low volume, rapidly flowing*	**$10,000/acre** **$30,000/acre** **F1** Conservation Crew Labor Low restoration effort Skilled Labor High restoration effort	**$40,000/acre** **$70,000/acre** **F2** Low Permitting Costs Low Restoration Effort High Permitting Costs High Restoration Effort	**$60,000/acre** **$90,000/acre** **F3** Low Permitting Costs Low Restoration Effort High Permitting Costs High Restoration Effort
	Medium: *mainsteam with low gradient, pools and riffles*	**$40,000/acre** **$60,000/acre** **F4** Conservation Crew Labor Low restoration effort Skilled Labor High restoration effort	**$70,000/acre** **$100,000/acre** **F5** Low Permitting Costs Low Restoration Effort High Permitting Costs High Restoration Effort	**$100,000/acre** **$200,000/acre** **F6** Low Permitting Costs Low Restoration Effort High Permitting Costs High Restoration Effort
	High: *large volume, minimal gradient, moving*	**$60,000/acre** **$80,000/acre** **F7** Conservation Crew Labor Low restoration effort Skilled Labor High restoration effort	**$130,000/acre** **$200,000/acre** **F8** Low Permitting Costs Low Restoration Effort High Permitting Costs High Restoration Effort	**$200,000/acre** **$300,000/acre** **F9** Low Permitting Costs Low Restoration Effort High Permitting Costs High Restoration Effort

Estuary Groups Breakdown by Major Cost Factors		*Major Cost Factor: Extent of Earthmoving*		
		Minimal: *50-500 cu yards and 7-20 miles transport*	**Moderate:** *500-50,000 cu yards and 7-20 miles transport*	**Substantial:** *50,000-400,000 cu yards and 7-20 miles transport*
Major Cost Factor: Prior Site Land Use	**Undeveloped:** *no structures/ utilities on site*	**$30,000/acre – $50,000/acre** **E1** Low Contamination Low planting effort High Contamination High planting effort	**$40,000/acre – $60,000/acre** **E2** Low Contamination Low planting effort High Contamination High planting effort	**$50,000/acre – $70,000/acre** **E3** Low Contamination Low planting effort High Contamination High planting effort
	Somewhat developed: *some infrastructure to remove (railroad, small structure)*	**$100,000/acre – $180,000/acre** **E4** Low Contamination Low planting effort High Contamination High planting effort	**$150,000/acre – $450,000/acre** **E5** Low Contamination Low planting effort High Contamination High planting effort	**$300,000/acre – $800,000/acre** **E6** Low Contamination Low planting effort High Contamination High planting effort
	Highly developed: *removal of intact utilities and/or structures*	**$500,000/acre – $1,000,000/acre** **E7** Low Contamination Low planting effort High Contamination High planting effort	**$900,000/acre – $1,200,000/acre** **E8** Low Contamination Low planting effort High Contamination High planting effort	**$800,000/acre – $2,500,000/acre** **E9** Low Contamination Low planting effort High Contamination High planting effort

*transport distance is assumed to be 7-20 miles in all cases.

Nearshore Group Breakdown by Major Cost Factors		*Major Cost Factor: Project Complexity*		
		Enhancement: *addition of sediment, no major removal, minimal grading work*	**Minor Reconstruction:** *addition of sediment, removal of minor bulkhead*	**Major Reconstruction:** *regrade shoreline, removal of major bulkheads and fill, addition of large wood, boulders, rootwads, plants*
Major Cost Factor: Transport	**Easy:** *0-7 miles transport*	**$100/lineal foot – $150/lineal foot** **N1** Large Project Size Low Permitting/ Design costs Small Project Size High Permitting/ Design costs	**$125/lineal foot – $250/lineal foot** **N2** Large Project Size Low Permitting/ Design costs Small Project Size High Permitting/ Design costs	**$200/lineal foot – $600/lineal foot** **N3** Large Project Size Low Permitting/ Design costs Small Project Size High Permitting/ Design costs
	Moderate: *7-20 miles transport*	**$150/lineal foot – $250/lineal foot** **N4** Large Project Size Low Permitting/ Design costs Small Project Size High Permitting/ Design costs	**$200/lineal foot – $500/lineal foot** **N5** Large Project Size Low Permitting/ Design costs Small Project Size High Permitting/ Design costs	**$300/lineal foot – $1,000/lineal foot** **N6** Large Project Size Low Permitting/ Design costs Small Project Size High Permitting/ Design costs
	Substantial: *20+ miles transport*	**$200/lineal foot – $600/lineal foot** **N7** Large Project Size Low Permitting/ Design costs Small Project Size High Permitting/ Design costs	**$300/lineal foot – $1,000/lineal foot** **N8** Large Project Size Low Permitting/ Design costs Small Project Size High Permitting/ Design costs	**$1,000/lineal foot – $1,250/lineal foot** **N9** Large Project Size Low Permitting/ Design costs Small Project Size High Permitting/ Design costs

*transport distance is assumed to be 7-20 miles in all cases.

*Estuarine project units: Acreage refers to the project footprint, NOT the acreage restored.

*Nearshore project units: Lineal feet refers to the lineal length of shoreline to be restored. A width of up to 25 feet is assumed.

Riverine Groups Breakdown by Major Cost Factors

Riparian Enhancement		*Major Cost Factor: Project Complexity*		
		Simple: *bare root, low weed block use, flat site, minimal clearing/grubbing*	**Moderate:** *medium size plants (2 gallon), medium weed block use (mulch), some slope to the site, some clearing/grubbing by hand*	**Complex:** *mature plants (5 gallon), landscape fabric, mulch, extensive clearing and grubbing, mowing and spraying*
Major Cost Factor: Site Accessibility	**Easily Accessible:** *accessible by vehicle*	**$5,000/acre** **R1** **$10,000/acre** <2 maintenance days/year volunteer labor >4 maintenance days/year Skilled labor	**$10,000/acre** **R2** **$20,000/acre** <2 maintenance days/year volunteer labor >4 maintenance days/year Skilled labor	**$20,000/acre** **R3** **$30,000/acre** <2 maintenance days/year volunteer labor >4 maintenance days/year Skilled labor
	Average Accessibility: *partially accessible by vehicle*	**$10,000/acre** **R4** **$20,000/acre** <2 maintenance days/year volunteer labor >4 maintenance days/year Skilled labor	**$20,000/acre** **R5** **$30,000/acre** <2 maintenance days/year volunteer labor >4 maintenance days/year Skilled labor	**$30,000/acre** **R6** **$50,000/acre** <2 maintenance days/year volunteer labor >4 maintenance days/year Skilled labor
	Difficult Access: *no vehicle access, hand carry tools/ plants*	**$20,000/acre** **R7** **$30,000/acre** <2 maintenance days/year volunteer labor >4 maintenance days/year Skilled labor	**$30,000/acre** **R8** **$50,000/acre** <2 maintenance days/year volunteer labor >4 maintenance days/year Skilled labor	**$50,000/acre** **R9** **$70,000/acre** <2 maintenance days/year volunteer labor >4 maintenance days/year Skilled labor

Wood Placement		Major Cost Factor: Material Size		
		Small: *logs 0-12" diameter*	**Medium:** *logs 13-24" diameter*	**Large:** *logs 25-36" diameter*
Major Cost Factor: Stream Size	**Small:** *1-100 cfs*	**$20,000/stream mile** ← **W1** → **$35,000/stream mile** Low Risk Low Wood Density / High Risk High Wood Density	**$35,000/stream mile** ← **W2** → **$50,000/stream mile** Low Risk Low Wood Density / High Risk High Wood Density	**$50,000/stream mile** ← **W3** → **$60,000/stream mile** Low Risk Low Wood Density / High Risk High Wood Density
	Medium:** *100-2,000 cfs*	**$40,000/stream mile** ← **W4sm** → **$50,000/stream mile** **$15,000/structure** ← **W4st** → **$30,000/structure** Low Risk Low Wood Density / High Risk High Wood Density	**$50,000/stream mile** ← **W5sm** → **$60,000/stream mile** **$30,000/structure** ← **W5st** → **$45,000/structure** Low Risk Low Wood Density / High Risk High Wood Density	**$60,000/stream mile** ← **W6sm** → **$70,000/stream mile** **$45,000/structure** ← **W6st** → **$60,000/structure** Low Risk Low Wood Density / High Risk High Wood Density
	High: *2,000+ cfs*	**$20,000/structure** ← **W7** → **$40,000/structure** Low Risk Low Wood Density / High Risk High Wood Density	**$40,000/structure** ← **W8** → **$70,000/structure** Low Risk Low Wood Density / High Risk High Wood Density	**$70,000/structure** ← **W9** → **$80,000/structure** Low Risk Low Wood Density / High Risk High Wood Density

* If access is difficult, requiring a helicopter, or if transportation distance is over 20 miles, multiply the cost by 2. If access is very easy, divide the cost by .5.

** On medium sized waterways, it is common to use either single log placement or log structure techniques. Costs are given using both units.

Risk= level of risk to downstream development if wood moves
Average Wood Density= 100-300 logs/stream mile or 50-80 logs/structure

Streambank Improvement		*Major Cost Factor: Extent of Earthmoving*		
		Minimal: *minor regrading*	**Moderate:** *regrading, some riprap removal*	**Substantial:** *reconstruction of the slope, major riprap removal*
Major Cost Factor: Stream Size	**Small:** *1-100 cfs*	**$30/lineal foot $60/lineal foot** **S1** Low material use Low Permitting Costs / High material use High Permitting Costs	**$60/lineal foot foot** **S2** **$100/lineal** Low material use Low Permitting Costs / High material use High Permitting Costs	**$100/lineal foot foot** **S3** **$200/lineal** Low material use Low Permitting Costs / High material use High Permitting Costs
	Medium: *100-2,000 cfs*	**$60/lineal foot foot** **S4** **$150/lineal** Low material use Low Permitting Costs / High material use High Permitting Costs	**$150/lineal foot foot** **S5** **$250/lineal** Low material use Low Permitting Costs / High material use High Permitting Costs	**$250/lineal foot foot** **S6** **$500/lineal** Low material use Low Permitting Costs / High material use High Permitting Costs
	High: *2,000+ cfs*	**$150/lineal foot foot** **S7** **$400/lineal** Low material use Low Permitting Costs / High material use High Permitting Costs	**$400/lineal foot foot** **S8** **$700/lineal** Low material use Low Permitting Costs / High material use High Permitting Costs	**$700/lineal foot foot** **S9** **$1,000/lineal** Low material use Low Permitting Costs / High material use High Permitting Costs

Low material use = bare root planting, minimal use of logs to stabilize bank

Medium material use = 2 gallon trees and shrubs, rocks, some logs and rootwads

High material use= large plants, coir fabric, large rootwads and logs

Acquisition Groups Breakdown by Major Cost Factors

		Major Cost Factor: Proximity to Urban Area		
		Far: *41+ miles*	**Medium:** *21-40 miles*	**Near:** *0-20 miles*
Major Cost Factor: Development Potential	**Low:** *agriculture or forest zone*	$700/acre **A1** $2,400/acre Large parcel — Small parcel	$1,800/acre **A2** $3,600/acre Large parcel — Small parcel	$2,400/acre **A3** $4,800/acre Large parcel — Small parcel
		Major Cost Factor: Amenity Value		
		Low: *stream front*	**Medium:** *river front*	**High:** *canal front*
	Medium: *rural residential zone*	$5,000/acre **A4** $35,000/acre $2,500/acre **A7*** $17,500/acre Easy Access, Far from urban areas, High % sensitive areas — Difficult Access, Close to urban areas, Low % sensitive areas	$24,000/acre **A5** $60,000/acre $12,000/acre **A8*** $30,000/acre Easy Access, Far from urban areas, High % sensitive areas — Difficult Access, Close to urban areas, Low % sensitive areas	$60,000/acre **A6** $300,000/acre $30,000/acre **A9*** $150,000/acre Easy Access, Far from urban areas, High % sensitive areas — Difficult Access, Close to urban areas, Low % sensitive areas
	High: *suburban zone*	$60,000/acre $120,000/acre **A10** $30,000/acre $60,000/acre **A13*** Easy Access, Far from urban areas, High % sensitive areas — Difficult Access, Close to urban areas, Low % sensitive areas	$120,000/acre **A11** $240,000/acre $60,000/acre **A14*** $120,000/acre Easy Access, Far from urban areas, High % sensitive areas — Difficult Access, Close to urban areas, Low % sensitive areas	$300,000/acre **A12** $600,000/acre $150,000/acre **A15*** $300,000/acre Easy Access, Far from urban areas, High % sensitive areas — Difficult Access, Close to urban areas, Low % sensitive areas
	Very High: *urban zone*	$300,000/acre **A16** $600,000/acre $150,000/acre **A18*** $300,000/acre Easy Access, Far from urban areas, High % sensitive areas — Difficult Access, Close to urban areas, Low % sensitive areas	$600,000/acre **A17** $1,200,000/acre $300,000/acre **A19*** $600,000/acre Easy Access, Far from urban areas, High % sensitive areas — Difficult Access, Close to urban areas, Low % sensitive areas	**unpredictable**

*Conservation easement to purchase 50% of development rights

* Large parcel size = over 100 acres; * Small parcel size = under 20 acres

* Far from urban areas (Tacome/Seattle/Everett) = over 40 miles; * Close to urban areas (Tacoma/Seattle/Everett) = 0-20 miles

* High % sensitive areas = over 80%; * Low % sensitive areas = under 50%

STEP 1: HCCC restoration projects are first broken down into 4 areas: Riverine, Estuarine/Nearshore, Floodplain, and Acquisition. Each area is broken down into groups- those that are represented in the HCCC plan are shaded. As projects are added or changed, new characterizations may be needed.

STEP 2: The tables in this document diagram how to cost projects in any given area. First, you must determine which type the project belongs in: Estuarine/Nearshore, Riverine, Acquisition, or Floodplain. Then, you must determine which Group within the type the project fits in. The type is divided into groups based on the most influential cost factors, in the Estuarine case for example, development of the site, and the amount of earthmoving. These two factors that most influence cost (on a per unit basis) are broken down by number designations.

STEP 3: Once you have determined the right group (Group E2 for example), you have to find the appropriate cost within that group. The cost range given for Group E2 is $40,000-$60,000 per acre. Use the secondary cost factors listed in the E2 box in the table to narrow the cost to a number within this range. The two secondary factors influence cost, but to a lesser extent than the most influential cost factors above. In this case, the secondary factors are contamination and planting effort. If there is high contamination and a high level of replanting on the site, these would indicate a cost at the $60,000 end of the range. If there is low contamination and a low effort in replanting the site, you would choose a $40,000 cost per acre. If one factor is high and the other low, choose $50,000 per acre as your estimated cost.

Appendix C: Groups

Group List: Assumptions used to cost Average Projects in Groups
Estuary Restoration (in areas of tidal influence)
Group E1: Undeveloped site - minimal excavation/average transportation distance
assumptions for an average project undeveloped site: earthen dikes, no structures or utilities minimal earth moving (50-500 cu yds) & moderate transport of materials (7-20 miles) cost range: $30,000 - $50,000 minimal contamination + minimal planting & invasive control cost: $30,000 per acre
Group E2: Undeveloped site - moderate excavation/average transportation distance
assumptions for an average project: undeveloped site: earthen dikes, no structures or utilities moderate earth moving (500-50,0000 cu yds) & transport of materials (7-20 miles) cost range: $40,000 - $60,000 minimal contamination + minimal planting & invasive control cost: $40,000 per acre
Group E3: Undeveloped site - substantial excavation/average transportation distance
assumptions for an average project undeveloped site: earthen dikes, no structures or utilities substantial earth moving (50,000-400,0000 cu yds) & moderate transport of materials (7-20 miles) cost range: $50,000 - $70,000 minimal contamination + minimal planting & invasive control cost: $50,000 per acre
Group E4: Somewhat developed site - minimal excavation/average transportation distance
assumptions for an average project somewhat developed: some minor structures (railroad bed, abandoned utilities) minimal earth moving (50-500 cu yds) & moderate transport of materials (7-20 miles) cost range: $100,000 - $180,000 minimal contamination + minimal planting & invasive control cost: $100,000 per acre
Group E5: Somewhat developed site - moderate excavation/average transportation distance
assumptions for an average project somewhat developed: some minor structures (railroad bed, abandoned utilities) moderate earth moving (500-50,0000 cu yds) & transport of materials (7-20 miles) cost range: $150,000 - $450,000 moderate contamination + moderate planting & invasive control cost: $300,000 per acre
Group E6: Somewhat developed site - considerable excavation/ moderate transportation distance
assumptions for an average project somewhat developed: some minor structures (railroad bed, abandoned utilities) substantial earth moving (50,000-400,0000 cu yds) & transport of materials (7-20 miles) cost range: $300,000 - $800,000 moderate contamination + moderate planting & invasive control cost: $550,000 per acre

Group E7: Highly developed site - minimal excavation/moderate transportation distance

assumptions for an average project
highly developed: structures and utilities in place (relocation cost is not costed)
minimal earth moving (50-500 cu yds) & moderate transport of materials (7-20 miles)
cost range: $500,000 - $1,000,000
high contamination + moderate planting & invasive control
cost: $875,000 per acre

Group E8: Highly developed site - moderate excavation/average transportation distance

assumptions for an average project
highly developed: structures and utilities in place (relocation cost is not costed)
moderate earth moving (500-50,0000 cu yds) & transport of materials (7-20 miles)
cost range: $900,000 - $1,200,000
high contamination + moderate planting & invasive control
cost: $1,125,000 per acre

Group E9:Highly developed site - substantial excavation/moderate transportation distance

assumptions for an average project:
highly developed: structures and utilities in place (relocation cost is not costed)
extensive earth moving (50,000-400,000 cu yds) & moderate transport of materials (7-20 miles)
cost range: $800,000 - $2,500,000 per acre
high contamination + moderate to high planting & invasive control
cost: $2.075 million per acre

Group E0: Complex projects that must be costed individually

assumptions:
road/bridge work or substantial contamination issues or residential developments in place

Nearshore Restoration: work involving a marine shoreline, influenced by tide and current

Group N1: Enhancement; short distance

assumptions for an average project:
enhancement: addition of sediment, no major removal, minimal grading work
easy/near transportation distance (0-7 miles)
cost range: $100-150/lineal foot
average project size (300 - 600 lineal feet)
average design & permitting cost (not a high energy shoreline)
cost: $125/lineal foot

Group N2: Minor reconstruction; short distance

assumptions for an average project
Minor Reconstruction: addition of sediment and plants, removal of minor bulkhead
short transportation distance (0-7 miles)
cost range: $125-250/lineal foot
average project size (300 - 600 lineal feet)
average design & permitting cost (not a high energy shoreline)
cost: $187.50/lineal foot

Group N3: Major reconstruction; short distance

assumptions for an average project
Major Reconstruction: regrade shoreline, removal of major bulkheads and fill, addition of large wood, boulders, rootwads, plants
short transportation distance (0-7 miles)
cost range: $200-600/lineal foot
average project size (300 - 600 lineal feet)
average design & permitting cost (not a high energy shoreline)
cost: $400/lineal foot

Group N4: Enhancement; average distance
assumptions for an average project: enhancement: addition of sediment, no major removal, minimal grading work medium transportation distance (7-20 miles) cost range: $150-250/lineal foot average project size (300 - 600 lineal feet) average design & permitting cost (not a high energy shoreline) cost: $200/lineal foot
Group N5: Minor reconstruction; average distance
assumptions for an average project Minor Reconstruction: addition of sediment and plants, removal of minor bulkhead average transportation distance (7-20 miles) cost range: $200-500/lineal foot average project size (300 - 600 lineal feet) average design & permitting cost (not a high energy shoreline) cost: $350/lineal foot
Group N6: Major reconstruction; average distance
assumptions for an average project Major Reconstruction: regrade shoreline, removal of major bulkheads and fill, addition of large wood, boulders, rootwads, plants average transportation distance (7-20 miles) cost range: $300-1,000/lineal foot average project size (300 - 600 lineal feet) average design & permitting cost (not a high energy shoreline) cost: $650/lineal foot
Group N7: Enhancement; long distance/difficult transport
assumptions for an average project: enhancement: addition of sediment, no major removal, minimal grading work far transportation distance (20+ miles), may need barge cost range: $200-600/lineal foot average project size (300 - 600 lineal feet) average design & permitting cost (not a high energy shoreline) cost: $400/lineal foot
Group N8: Minor reconstruction; long distance/difficult transport
assumptions for an average project Minor Reconstruction: addition of sediment and plants, removal of minor bulkhead far transportation distance (20+ miles), may need barge cost range: $300-1,000/lineal foot average project size (300 - 600 lineal feet) average design & permitting cost (not a high energy shoreline) cost: $650/lineal foot
Group N9: Major reconstruction; long distance/difficult transport
assumptions for an average project Major Reconstruction: regrade shoreline, removal of major bulkheads and fill, addition of large wood, boulders, rootwads, plants far transportation distance (20+ miles), may need barge cost range: $1,00-1,250/lineal foot average project size (300 - 600 lineal feet) average design & permitting cost (not a high energy shoreline) cost: $1,125/lineal foot

Floodplain Restoration: work involving both river channel and floodplain
Group F1: Simple reconnection; low stream energy
Assumptions for an average project: isolated reconnections to floodplain through dike breaches minimal earthmoving i.e. small dike breach & material disposal (50-5,000 cu yds) low river energy i.e. low volume, rapidly flowing, small tributary cost range: $10,000 - $30,000 per acre medium permitting costs & medium level of planting/wood placement (less then 100 pieces/stream mile under 36" diameter, no large jams) cost: $20,000 per acre
Group F2: Complex reconnection; low stream energy
Assumptions for an average project: reconnection to floodplain through removal of major barrier (full dike removal) moderate earthmoving i.e. dike removal & material disposal (500-50,000 cu yds) low river energy i.e. low volume, rapidly flowing, small tributary cost range: $40,000 - $70,000 per acre high permitting costs & high level of planting/wood placement (100-300 pieces/stream mile under 36" diameter, no large jams) cost: $70,000 per acre
Group F3: Channel reconstruction; low stream energy
Assumptions for an average project: active re-meandering of a channel through new channel construction substantial earthmoving & material disposal (50,000-400,000 cu yds) low river energy i.e. low volume, rapidly flowing, small tributary cost range: $60,000 - $90,000 per acre high permitting costs & high level of planting/wood placement (100-300 pieces/stream mile under 36" diameter, no large jams) cost: $90,000 per acre
Group F4: Simple reconnection; medium stream energy
Assumptions for an average project: isolated reconnections to floodplain through dike breaches minimal earthmoving i.e. small dike breach & material disposal (50-5,000 cu yds) medium river energy i.e. mainsteam with low gradient, pools and riffles cost range: $40,000 - $60,000 per acre medium permitting costs & medium level of planting/wood placement (less then 100 pieces/stream mile under 36" diameter, no large jams) cost: $50,000 per acre
Group F5: Complex reconnection; medium stream energy
Assumptions for an average project: reconnection to floodplain through removal of major barrier (full dike removal) moderate earthmoving i.e. some excavation & material disposal (500-50,000 cu yds) medium river energy i.e. mainsteam with low gradient, pools and riffles cost range: $70,000 - $100,000 per acre high permitting costs & high level of planting/wood placement (100-300 pieces/stream mile under 36" diameter, no large jams) cost: $100,000 per acre
Group F6: Channel reconstruction; medium stream energy
Assumptions for an average project: active re-meandering of a channel through new channel construction substantial earthmoving & material disposal (50,000-400,000 cu yds) medium river energy i.e. mainsteam with low gradient, pools and riffles cost range: $100,000 - $200,000 per acre high permitting costs & high level of planting/wood placement (100-300 pieces/stream mile under 36" diameter, no large jams) cost: $200,000 per acre

Group F7: Simple reconnection; high stream energy
Assumptions for an average project: isolated reconnections to floodplain through dike breaches minimal earthmoving i.e. small dike breach & material disposal (50-5,000 cu yds) high river energy i.e. large volume, minimal gradient, moving cost range: $60,000 - $80,000 per acre medium permitting costs & medium level of planting/wood placement (less then 100 pieces/stream mile under 36" diameter, no large jams) cost: $70,000 per acre
Group F8: Complex reconnection; high stream energy
Assumptions for an average project: reconnection to floodplain through removal of major barrier (full dike removal) moderate earthmoving i.e. dike removal & material disposal (500-50,000 cu yds) high river energy i.e. large volume, minimal gradient, moving cost range: $130,000 - $200,000 per acre medium permitting costs & medium level of planting/wood placement (less then 100 pieces/stream mile under 36" diameter, no large jams) cost: $200,000 per acre
Group F9: Channel reconstruction; high stream energy
Assumptions for an average project: active re-meandering of a channel through new channel construction substantial earthmoving & material disposal (50,000-400,000 cu yds) high river energy i.e. large volume, minimal gradient, moving cost range: $200,000 - $300,000 per acre high permitting costs & high level of planting/wood placement (100-300 pieces/stream mile under 36" diameter, no large jams) cost: $300,000 per acre
Group F0: Complex projects that must be costed individually
assumptions: structures/roads in flood plain involving relocation
Riverine: work involving only the river channel and/or bank (no reconnection to floodplain)
Group R1: Simple riparian enhancement; easily accessible site
assumptions for an average project: assume 50-foot buffer site accessible by vehicle simple project: bare root, low weed block use, flat site, minimal clearing/grubbing cost range: $5,000 - $10,000 per acre average labor costs (Conservation Corps), average maintenance (2-4 days per year) cost: $7,500 per acre
Group R2: Somewhat complex riparian enhancement; easily accessible site
assumptions for an average project: assume 50-foot buffer site accessible by vehicle somewhat complex project: medium size plants (2 gallon), medium weed block use (mulch), some slope to the site, some clearing/grubbing by hand cost range: $10,000 - $20,000 per acre average labor costs (Conservation Corps), average maintenance (2-4 days per year) cost: $15,000 per acre

Group R3: Complex riparian enhancement; easily accessible site
assumptions for an average project: assume 50-foot buffer site accessible by vehicle complex project: mature plants (5 gallon), landscape fabric, mulch, extensive clearing and grubbing, mowing and spraying cost range: $20,000 - $30,000 per acre high labor costs (skilled labor), high maintenance costs (over 4 days per year) cost: $30,000 per acre
Group R4: Simple riparian enhancement; somewhat accessible site
assumptions for an average project: assume 50-foot buffer site partially accessible by vehicle simple project: bare root, low weed block use, flat site, minimal clearing/grubbing cost range: $10,000 - $20,000 per acre average labor costs (Conservation Corps), average maintenance (2-4 days per year) cost: $15,000 per acre
Group R5: Somewhat complex riparian enhancement; somewhat accessible site
assumptions for an average project: assume 50-foot buffer site partially accessible by vehicle somewhat complex project: medium size plants (2 gallon), medium weed block use (mulch), some slope to the site, some clearing/grubbing by hand cost range: $20,000 - $30,000 per acre average labor costs (Conservation Corps), average maintenance (2-4 days per year) cost: $25,000 per acre
Group R6: Complex riparian enhancement; moderately accessible site
assumptions for an average project: assume 50-foot buffer site partially accessible by vehicle complex project: mature plants (5 gallon), landscape fabric, mulch, extensive clearing and grubbing, mowing and spraying cost range: $30,000 - $50,000 per acre high labor costs (skilled labor), high maintenance costs (over 4 days per year) cost: $50,000 per acre
Group R7: Simple riparian enhancement; difficult access to site
assumptions for an average project: assume 50-foot buffer site not accessible by vehicle; hand carry supplies and water simple project: bare root, low weed block use, flat site, minimal clearing/grubbing cost range: $20,000 - $30,000 per acre average labor costs (Conservation Corps), average maintenance (2-4 days per year) cost: $25,000 per acre
Group R8: Somewhat complex riparian enhancement; difficult access to site
assumptions for an average project: assume 50-foot buffer site not accessible by vehicle; hand carry supplies and water somewhat complex project: medium size plants (2 gallon), medium weed block use (mulch), some slope to the site, some clearing/grubbing by hand cost range: $30,000 - $50,000 per acre average labor costs (Conservation Corps), average maintenance (2-4 days per year) cost: $40,000 per acre

Group R9: Complex riparian enhancement; difficult access to site

assumptions for an average project:
assume 50-foot buffer
site not accessible by vehicle; hand carry supplies and water
complex project: mature plants (5 gallon), landscape fabric, mulch, extensive clearing and grubbing, mowing and spraying
cost range: $50,000 - $70,000 per acre
high labor costs (skilled labor), high maintenance costs (over 4 days per year)
cost: $70,000 per acre

Group W1: Wood placement (small logs) in small waterway

assumptions for an average project:
small log size (under 12" diameter)
small stream size (1-100cfs)
wood placement is primary action (not part of a larger floodplain restoration)
minimal grading and earthmoving (to anchor logs)
average access and transport distance (7-20 miles by truck)
cost range: $20,000-$35,000 per stream mile
medium risk (some downstream development requiring anchored logs)
average wood density (100-300 logs per stream mile)
cost: $27,500 per stream mile

Group W2: Wood placement (medium logs) in small waterway

assumptions for an average project:
medium log size (13-24" diameter)
small stream size (1-100cfs)
wood placement is primary action (not part of a larger floodplain restoration)
minimal grading and earthmoving (to anchor logs)
average access and transport distance (7-20 miles by truck)
cost range: $35,000-$50,000 per stream mile
medium risk (some downstream development requiring anchored logs)
average wood density (100-300 logs per stream mile)
cost: $42,500 per stream mile

Group W3: Wood placement (large logs) in small waterway

assumptions for an average project:
large log size (24-36" diameter)
small stream size (1-100cfs)
wood placement is primary action (not part of a larger floodplain restoration)
minimal grading and earthmoving (to anchor logs)
average access and transport distance (7-20 miles by truck)
cost range: $50,000-$60,000 per stream mile
medium risk (some downstream development requiring anchored logs)
average wood density (100-300 logs per stream mile)
cost: $55,000 per stream mile

Group W4: Wood placement (small logs) in medium waterway
assumptions for an average project: small log size (under 12" diameter) medium stream size (100-2,000cfs) wood placement is primary action (not part of a larger floodplain restoration) minimal grading and earthmoving (to anchor logs) average access and transport distance (7-20 miles by truck) cost range: $40,000-$50,000 per stream mile (W4sm) or $15,000-$30,000 per structure (W4st) medium risk (some downstream development requiring anchored logs) average wood density (100-300 logs per stream mile or 50-80 logs per structure) cost: $45,000 per stream mile or $22,500 per structure
Group W5: Wood placement (medium logs) in medium waterway
assumptions for an average project: medium log size (13-24" diameter) medium stream size (100-2,000cfs) wood placement is primary action (not part of a larger floodplain restoration) minimal grading and earthmoving (to anchor logs) average access and transport distance (7-20 miles by truck) cost range: $50,000-$60,000 per stream mile (W4sm) or $30,000-$45,000 per structure (W4st) medium risk (some downstream development requiring anchored logs) average wood density (100-300 logs per stream mile or 50-80 logs per structure) cost: $55,000 per stream mile or $37,500 per structure
Group W6: Wood placement (large logs) in medium waterway
assumptions for an average project: large log size (25-36" diameter) medium stream size (100-2,000cfs) wood placement is primary action (not part of a larger floodplain restoration) minimal grading and earthmoving (to anchor logs) average access and transport distance (7-20 miles by truck) cost range: $60,000-$70,000 per stream mile (W4sm) or $45,000-$60,000 per structure (W4st) medium risk (some downstream development requiring anchored logs) average wood density (100-300 logs per stream mile or 50-80 logs per structure) cost: $65,000 per stream mile or $52,500 per structure
Group W7: Wood placement (small logs) in large waterway
assumptions for an average project: small log size (under 12" diameter) large stream size (2,000+ cfs) wood placement is primary action (not part of a larger floodplain restoration) minimal grading and earthmoving (to anchor logs) average access and transport distance (7-20 miles by truck) cost range: $20,000-$40,000 per structure medium risk (some downstream development requiring anchored logs) average wood density (50-80 logs per structure) cost: $35,000 per structure

Group W8: Wood placement (medium logs) in large waterway

assumptions for an average project:
medium log size (13-24" diameter)
large stream size (2,000+ cfs)
wood placement is primary action (not part of a larger floodplain restoration)
minimal grading and earthmoving (to anchor logs)
average access and transport distance (7-20 miles by truck)
cost range: $40,000-$70,000 per structure (W4st)
medium risk (some downstream development requiring anchored logs)
average wood density (50-80 logs per structure)
cost: $55,000 per structure

Group W9: Wood placement (large logs) in large waterway

assumptions for an average project:
large log size (25-36" diameter)
large stream size (2,000+ cfs)
wood placement is primary action (not part of a larger floodplain restoration)
minimal grading and earthmoving (to anchor logs)
average access and transport distance (7-20 miles by truck)
cost range: $70,000-$80,000 per structure (W4st)
medium risk (some downstream development requiring anchored logs)
average wood density (50-80 logs per structure)
cost: $75,000 per structure

Group S1: Streambank improvements on small waterways with minimal earthmoving

assumptions for an average project:
minimal earthmoving: some minor regrading of streambank
small stream size (1-100 cfs)
no reconnection to the floodplain
cost range: $30-$60 lineal foot
medium material use = 2 gallon trees and shrubs, rocks, some logs and rootwads
average permitting costs
cost: $45 per lineal foot

Group S2: Streambank improvements on small waterways with moderate earthmoving

assumptions for an average project:
moderate earthmoving: regrading, some riprap removal
small stream size (1-100 cfs)
no reconnection to the floodplain
cost range: $60-$100 lineal foot
medium material use = 2 gallon trees and shrubs, rocks, some logs and rootwads
average permitting costs
cost: $80 per lineal foot

Group S3: Streambank improvements on small waterways with substantial earthmoving

assumptions for an average project:
substantial earthmoving: reconstruction of the slope, major riprap removal
small stream size (1-100 cfs)
no reconnection to the floodplain
cost range: $100-$200 lineal foot
medium material use = 2 gallon trees and shrubs, rocks, some logs and rootwads
high permitting costs
cost: $175 per lineal foot

Group S4: Streambank improvements on medium waterways with minimal earthmoving
assumptions for an average project: minimal earthmoving: some minor regrading of streambank medium stream size (100-2,000 cfs) no reconnection to the floodplain cost range: $60-$150 lineal foot medium material use = 2 gallon trees and shrubs, rocks, some logs and rootwads average permitting costs cost: $95 per lineal foot
Group S5: Streambank improvements on medium waterways with moderate earthmoving
assumptions for an average project: moderate earthmoving: regrading, some riprap removal medium stream size (100-2,000 cfs) no reconnection to the floodplain cost range: $150-$250 lineal foot medium material use = 2 gallon trees and shrubs, rocks, some logs and rootwads average permitting costs cost: $200 per lineal foot
Group S6: Streambank improvements on medium waterways with substantial earthmoving
assumptions for an average project: substantial earthmoving: reconstruction of the slope, major riprap removal medium stream size (100-2,000 cfs) no reconnection to the floodplain cost range: $250-$500 lineal foot medium material use = 2 gallon trees and shrubs, rocks, some logs and rootwads high permitting costs cost: $437.50 per lineal foot
Group S7: Streambank improvements on large waterways with minimal earthmoving
assumptions for an average project: minimal earthmoving: some minor regrading of streambank large stream size (2,000+ cfs) no reconnection to the floodplain cost range: $150-$400 lineal foot medium material use = 2 gallon trees and shrubs, rocks, some logs and rootwads average permitting costs cost: $275 per lineal foot
Group S8: Streambank improvements on large waterways with moderate earthmoving
assumptions for an average project: moderate earthmoving: regrading, some riprap removal large stream size (2,000+ cfs) no reconnection to the floodplain cost range: $400-$700 lineal foot medium material use = 2 gallon trees and shrubs, rocks, some logs and rootwads average permitting costs cost: $550 per lineal foot

Group S9: Streambank improvements on large waterways with substantial earthmoving
assumptions for an average project: substantial earthmoving: reconstruction of the slope, major riprap removal large stream size (2,000+ cfs) no reconnection to the floodplain cost range: $700-$1,000 lineal foot medium material use = 2 gallon trees and shrubs, rocks, some logs and rootwads high permitting costs cost: $925\ per lineal foot
Acquisition and Conservation Easements (no structures)
Group A1: Low development potential, far from an urban area
assumptions for an average project forest or agriculture zoning far from a major metropolitan area (Seattle/Tacoma/Everett): 40+ miles cost range: $700-2,400 per acre moderate parcel size (20-100 acres) cost: $1,400 per acre (excluding timber value)
Group A2: Low development potential, moderate distance from an urban area
assumptions for an average project forest or agriculture zoning moderate distance from a major metropolitan area (Seattle/Tacoma/Everett): 20-40 miles cost range: $1,800-3,600 per acre moderate parcel size (20-100 acres) cost: $2,700 per acre (excluding timber value)
Group A3: Low development potential, close to an urban area
assumptions for an average project forest or agriculture zoning close to a major metropolitan area (Seattle/Tacoma/Everett): 0-20 miles cost range: $2,400-4,800 per acre moderate parcel size (20-100 acres) cost: $3,600 per acre (excluding timber value)
Group A4: Medium development potential, low amenity value
assumptions for an average project rural residential zoning low amenity value (stream front) cost range: $5,000-$35,000 per acre average access moderate distance from a major metropolitan area (Seattle/Tacoma/Everett): 20-40 miles moderate % sensitive areas (50-80% undevelopable) cost: $20,000 per acre
Group A5: Medium development potential, medium amenity value
assumptions for an average project rural residential zoning medium amenity value (river front) cost range: $24,000-$60,000 per acre average access moderate distance from a major metropolitan area (Seattle/Tacoma/Everett): 20-40 miles moderate % sensitive areas (50-80% undevelopable) cost: $42,000 per acre

Group A6: Medium development potential, high amenity value
assumptions for an average project rural residential zoning high amenity value (canal front) cost range: $60,000-$300,000 per acre average access moderate distance from a major metropolitan area (Seattle/Tacoma/Everett): 20-40 miles moderate % sensitive areas (50-80% undevelopable) cost: $180,000 per acre
Group A7: Easement on medium development potential parcel, low amenity value
assumptions for an average project purchase of 50% of development rights rural residential zoning low amenity value (stream front) cost range: $2,500-$17,500 per acre average access moderate distance from a major metropolitan area (Seattle/Tacoma/Everett): 20-40 miles moderate % sensitive areas (50-80% undevelopable) cost: $10,000 per acre
Group A8: Easement on medium development potential parcel, medium amenity value
assumptions for an average project purchase of 50% of development rights rural residential zoning medium amenity value (river front) cost range: $12,000-$30,000 per acre average access moderate distance from a major metropolitan area (Seattle/Tacoma/Everett): 20-40 miles moderate % sensitive areas (50-80% undevelopable) cost: $21,000 per acre
Group A9: Easement on medium development potential parcel, high amenity value
assumptions for an average project purchase of 50% of development rights rural residential zoning high amenity value (canal front) cost range: $30,000-$150,000 per acre average access moderate distance from a major metropolitan area (Seattle/Tacoma/Everett): 20-40 miles moderate % sensitive areas (50-80% undevelopable) cost: $90,000 per acre
Group A10: High development potential, low amenity value
assumptions for an average project suburban zoning low amenity value (stream front) cost range: $60,000-$120,000 per acre average access moderate distance from a major metropolitan area (Seattle/Tacoma/Everett): 20-40 miles moderate % sensitive areas (50-80% undevelopable) cost: $90,000 per acre

Group A11: High development potential, medium amenity value
assumptions for an average project suburban zoning medium amenity value (river front) cost range: $120,000-$240,000 per acre average access moderate distance from a major metropolitan area (Seattle/Tacoma/Everett): 20-40 miles moderate % sensitive areas (50-80% undevelopable) cost: $180,000 per acre
Group A12: High development potential, high amenity value
assumptions for an average project suburban zoning high amenity value (canal front) cost range: $300,000-$600,000 per acre average access moderate distance from a major metropolitan area (Seattle/Tacoma/Everett): 20-40 miles moderate % sensitive areas (50-80% undevelopable) cost: $450,000 per acre
Group A13: Easement on high development potential parcel, low amenity value
assumptions for an average project purchase of 50% of development rights suburban zoning low amenity value (stream front) cost range: $30,000-$60,000 per acre average access moderate distance from a major metropolitan area (Seattle/Tacoma/Everett): 20-40 miles moderate % sensitive areas (50-80% undevelopable) cost: $45,000 per acre
Group A14: Easement on high development potential parcel, medium amenity value
assumptions for an average project purchase of 50% of development rights suburban zoning medium amenity value (river front) cost range: $60,000-$120,000 per acre average access moderate distance from a major metropolitan area (Seattle/Tacoma/Everett): 20-40 miles moderate % sensitive areas (50-80% undevelopable) cost: $90,000 per acre
Group A15: Easement on medium development potential parcel, high amenity value
assumptions for an average project purchase of 50% of development rights suburban zoning high amenity value (canal front) cost range: $150,000-$300,000 per acre average access moderate distance from a major metropolitan area (Seattle/Tacoma/Everett): 20-40 miles moderate % sensitive areas (50-80% undevelopable) cost: $225,000 per acre

Group A16: Very high development potential, low amenity value
assumptions for an average project urban zoning low amenity value (stream front) cost range: $300,000-$600,000 per acre average access moderate distance from a major metropolitan area (Seattle/Tacoma/Everett): 20-40 miles moderate % sensitive areas (50-80% undevelopable) cost: $450,000 per acre
Group A17: Very high development potential, medium amenity value
assumptions for an average project urban zoning medium amenity value (river front) cost range: $600,000-$1,200,000 per acre average access moderate distance from a major metropolitan area (Seattle/Tacoma/Everett): 20-40 miles moderate % sensitive areas (50-80% undevelopable) cost: $900,000 per acre
Group A18: Easement on very high development potential parcel, low amenity value
assumptions for an average project purchase of 50% of development rights urban zoning medium amenity value (river front) cost range: $150,000-$300,000 per acre average access moderate distance from a major metropolitan area (Seattle/Tacoma/Everett): 20-40 miles moderate % sensitive areas (50-80% undevelopable) cost: $225,000 per acre
Group A19: Easement on very high development potential parcel, medium amenity value
assumptions for an average project purchase of 50% of development rights urban zoning high amenity value (canal front) cost range: $300,000-$600,000 per acre average access moderate distance from a major metropolitan area (Seattle/Tacoma/Everett): 20-40 miles moderate % sensitive areas (50-80% undevelopable) cost: $450,000 per acre
Group 2: Medium Development Potential with River Front (7 projects, 1 partly funded)
assumptions for an average project ($36,000 per acre): rural residential zoning no functional buildings river view (not ocean view) average access (road) over 30 miles from major metropolitan areas (Tacoma/Seattle) development potential affected by sensitive areas (20-50% compromised development potential)

Group 3: Medium Development Potential with Ocean Front (8 projects, 1 funded)
assumptions for an average project ($100,000 per acre): rural residential zoning no functional buildings ocean view average access (road) over 30 miles from major metropolitan areas (Tacoma/Seattle) development potential affected by sensitive areas (20-50% compromised development potential)
Group A0: Complex projects to be costed individually
functional buildings ocean view

Appendix D: Capital Costs

Associated Projects Key

If projects are interdependent, they are given a letter code in addition to the CU#.

a= acquisition
b= estuarine
c= riverine

Example: LIL 17b is an estuary project associated with acquisition project LIL 17a.

If projects were originally listed as a single capital item, but have been split for costing purposes, a number code is given: i, ii, iii.

Example: SJFi, SJFii, and SJFiii were originally listed as one capital item.

Conservation Unit Key [CU# corresponds to original number code provided by HCCC staff.]

SJF= Strait of Juan de Fuca Conservation Unit
QU= Quilcene Conservation Unit
HDD= Hama Hama/Duckabush/Dosewallips Conse
LIL= Lilliwaup Conservation Unit
WK= West Kitsap Conservation Unit
UN= Union Conservation Unit

Total Cost
$100,770,695
78 Projects Costed

Estuary and Nearshore Restoration

CU #	Watershed	Project/Action	Original Units	Cubic Yds	Comments	Costing Units: Acres	Cost
Group E2: Undeveloped estuary site - moderate excavation/medium transportation distance (11 projects)							
Assumptions for an average project moderate earth moving (500-50,0000 cu yds) & transport of materials (7-20 miles) some fill remains on site and some is transported off site average dike is 10 feet wide and 4 feet high cost range: $40,000 - $60,000 minimal contamination + minimal planting & invasive control cost: $40,000 per acre							
QU 4	Big Quilcene	remove dikes south of the Big Quilcene River - restore salt marsh habitat private property (associated with acquisition project QU 18)	-1 mile	7,814		1.2	$48,000
QU 5	Little Quilcene	remove left bank dike along Little Quilcene River and nearshore county property right bank in private ownership	-2K feet	2,960	separate project from Q2	0.5	$20,000
QU 6b	Little Quilcene	set back right bank dike along Little Quilcene River nearshore - restore salt marsh habitat	-1.5 mile	11,722		1.8	$72,000
HDD 1b	Dosewallips	remove dikes in Dosewallips estuary state park levees (associated with riverine project HDD 1c)	~1km	4,856		0.8	$32,000
HDD 6	Duckabush	remove dike north side of estuary along Robinson Road	.5 miles	3,907		0.1	$4,000
WK 9	Dewatto	remove abandoned dikes on the salt marsh at the head of Dewatto Bay landowner (Manke) has already given permission	1000 feet	1,480		0.2	$8,000
UN 5	Union	remove dikes and tide gates at the Klingel Wetlands and fill dike borrow pits project underway with NRCS and Great Peninsula Conservancy feasibility assessment in process	3000 feet	5,920	project underway	0.7	$28,000
UN 11	Union	remove the private road east of Snooze Junction to restore tidal access to salt marsh west of the road	1000 feet	1,480	assuming un-paved road	0.2	$8,000
WK 2	Big Beef	restore tidal processes and lost salt marsh habitat at the mouth of Johnson Creek work with landowner to remove ponds and landfil	1 acre		no structures/infrastructure on site	1.0	$40,000
LIL 12	Skokomish	pull pilings and fill from within the delta of old Potlatch Lagoon to restore intertidal wetland restore intertidal habitat complex	2 acres		no contamination no barge needed pilings to be removed with surrounding sediment 2 acres is area to be restored: likely less than 2 acres will be excavated	2.0	$80,000
LIL 17b	Lilliwaup	daylight creek to falls on right bank of Lilliwaup estuary west of SR101 bridge work with landowners for permission this project is associated with acquisition LIL 17a	0.6 acres		no structures/infrastructure on site	0.6	$24,000
					subtotal	*9.1*	*$364,000*

Group E3: Undeveloped estuary site - substantial excavation/medium transportation distance (10 projects)							
Assumptions for an average project: substantial earth moving (50,000-400,0000 cu yds) & transport of materials (7-20 miles) cost range: $50,000-$70,000 minimal contamination + minimal planting & invasive control cost: $50,000 per acre							
QU 10	Quilcene Bay	remove fill from along the east side of Quilcene Bay area slated for residential development (associated with acquisition project QU 19)	4 acres			4.0	$200,000
HDD 14	Hama Hama	remove bulkhead and fill in unused parking lot north of shellfish facility - restore salt marsh habitat	10K sq m		1/3 project costed in highly developed section	2.5	$125,000
LIL 4	Skokomish	remove bulkheads and fill restore 6 acres of salt marsh along the east side of the delta work with TPU and private landowner	500 m levee plus fill removal		500 m levee removal assume 2 acres fill removal (Richard Brocksmith estimate)	2.4	$118,860
LIL 9b	Skokomish	daylight lower Minerva Creek restore estuary function fill removal (after acquisition) this is associated with acquisition LIL 9a	0.6 acres			0.6	$30,000
LIL 10	Skokomish	remove fill restore historic salt marsh and tidal channels at Potlatch State Park work with State Parks to remove fill so restoring sediments will encourage salt marsh regeneration (sediment source has been impacted)	1.6 acres		No structures/infrastructure on site	1.6	$80,000
UN 2	Union	restore salt marsh and wetland habitats at the farm on the east bank of the mouth of the Union River working with private landowners is critical, as they are not currently interested long-term focus	1200 m setback, 370 m removal		Cost estimate is for levee setback on farm (1200 m old levee plus 1200 m new levee) and levee removal on School Trust land (370 m). (Full restoration would require acquisition of the farm which is unlikely and not costed).	2.1	$105,000
UN 4	Union	remove fill at Belfair State Park and restore lost salt marsh habitat 12 acres salt marsh lost to development, with about 3.5 easily recoverable	3.5 acres		no structures/infrastructure on site	3.5	$175,000
UN 7	Union	remove levees, young alders, and aggraded delta cone on Little Mission Creek to allow more natural sediment routing in estuary local groups and state agencies working with Parks to implement early actions	1000 feet levee and about 1 acre fill/delta cone		assume no barge required	1.2	$60,000
UN 10b	Union	remove fill at Snooze Junction and restore lost salt marsh habitat work with private landowner to implement restoration associated with acquisition project UN 10a	2.0 acres, acquisition			2.0	$100,000
WK 11	Dewatto	restore tidal processes and salt marsh habitat at the unnamed stream about one mile north of the mouth of Dewatto Bay. working with private landowners is critical to removing landfil	0.25 acres		assume no structures to remove	0.3	$12,500
					subtotal	*19.9*	*$1,006,360*

Group E4: Somewhat developed estuary site - minimal excavation/medium transportation distance (2 projects)							
Assumptions for an average project: minimal earth moving (50-500 cu yds) & transport of materials (7-20 miles) cost range: $100,000 - $180,000 per acre minimal contamination + minimal planting & invasive control cost: $100,000 per acre							
WK 6	Seabeck	remove railroad fill to restore estuary and nearshore	500 feet	740		0.1	$10,000
SJF 2	Salmon/Snow	remove railroad grade - open up a salt marsh to tidal action private land Olympic Discovery trail access independent pocket estuary	~2 ac improved/restored RR grade 4'deep 8' wide 100 m	388	trail access adds complexity	0.1	$10,000
					subtotal	*0.2*	*$20,000*
Group E5: Somewhat developed estuary site - moderate excavation/medium transportation distance (2 projects)							
Assumptions for an average project: moderate earth moving (500-50,0000 cu yds) & transport of materials (7-20 miles) cost range: $150,000 - $450,000 per acre moderate contamination + moderate planting & invasive control cost: $300,000 per acre							
UN 8	Tahuya	remove log structures in old log yard on western end of Tahuya bridge private landowner (Manke) has given permission to do project shoreline restoration proceeding with HCSEG and Manke	300 feet		no active shoreline restoration Small structures	0.1	$30,000
UN 13b	Union	remove fill, pool, and infrastructure to the east of the Klingel Wetlands to restore lost salt marsh habitat possible mitigation project for Northshore road stabilization (Mason County) since fill could also be used for beach nourishment associated with acquisition UN 13a	About 13 acres fill	3,365	no structures to remove	0.3	$90,000
					subtotal	0.4	*$120,000*
Group E6: Somewhat developed site - substantial excavation/ medium transportation distance (7 projects)							
Assumptions for an average project: substantial earth moving (50,000-400,0000 cu yds) & transport of materials (7-20 miles) cost range: $300,000 - $800,000 per acre moderate contamination + moderate planting & invasive control cost: $550,000 per acre							
HDD 3	Dosewallips	remove barge at mouth of Walker Creek	2K sq meters (.5 ac)		barge buried in sediment	0.5	$275,000
WK 5	Big Anderson	remove old railroad grade and pilings from the head of Anderson Cove. restore salt marsh habitats	1000 feet	1,480		0.2	$110,000
WK 10	Dewatto	remove fill and restore lost mudflat habitat at the Oyster House and artificial boat basin on the south shore of Dewatto Bay. landowner (Manke) has already given permission for at least some of this work	2.1 acres		Oyster House in place; if left in place, may need flood protections; if moved, cost of removal	2.1	$1,155,000
LIL 7	Skokomish	relocate access road to shellfish beds that extends into intertidal zone at the Skokomish Delta possibly implemented with LIL 2	250 m		Cost estimate is for road/fill removal	0.2	$110,000
LIL 8	Skokomish	remove fill to historic shoreline midway through parking lot at Cushman boat launch and revegetate with native species public outreach required for implementation	2 acres		Cost estimate for fill removal only. May be more expensive due to hydroelectric facility nearby.	2.0	$1,100,000

LIL 11	Skokomish	reconstruct hatchery trapping facility to allow better estuary function and tidal channel connectivity at Enetai if addressing SR101 and upstream, then 1.4 acres of intertidal habitat complex	0.3 acres		Fill removal costed. Reconstruction of hatchery not costed	0.3	$165,000
UN 15	Tahuya	remove the helicopter landing pad on the left bank of the Tahuya River downstream from Northshore Road private landowner (Manke) is not interested	0.4 acres			0.4	$220,000
					subtotal	*5.7*	*$3,135,000*
Group E9: Highly developed estuary site (4 projects)							
Assumptions for an average project: extensive earth moving (50,000-400,000 cu yds) medium transport of materials (7-20 miles) cost range: $800,000 - $2,500,000 per acre high contamination + moderate to high planting & invasive control cost: $2.075 million per acre							
SJF 3	Salmon/Snow	remove railroad grade & road fill between ponds - open up tidal flow remove 3 overwater structures (old sawmill) intertidal habitat property owned by WDFW	3 acres restored 4' deep 10' wide 100 m	485	Cost estimate is for fill removal. Does not include relocation of structures	0.1	$207,500
HDD 11b	Hama Hama	remove fill & relocate structures north side of Wacketickeh estuary similar to HDD 9 associated with acquisition HDD 11a	~2.5 acres restored ~8,000 sqm fill	344,320	Cost estimate does not include relocation of SR101 causeway.	2.0	$4,150,000
HDD 14	Hama Hama	remove bulkhead and fill in unused parking lot north of shellfish facility - restore salt marsh habitat	5K sq m		2/3 project costed in undeveloped section (total project size 15K sq m)	1.24	$2,573,000
UN 9	Tahuya	remove intertidal fill in the vicinity of Caldervin Creek and restore lost mudflat and salt marsh habitats full residential development in place would have to buyout at least one dozen residences unlikely to happen due to existing residences	7 acres		project unlikely - development in place	7.0	$14,525,000
					subtotal	*10.3*	*$21,455,500*
Group E0: Complex estuary projects that must be costed individually (17 projects)							
assumptions: do not fit average project types above may involve road/bridge work or substantial contamination issues or residential developments in place							
Highway 101 Projects (6 projects)							
HDD 2	Dosewallips	replace SR 101 culvert at north of Wolcott Slough with a bridge provide tidal channel connection with bridgeway over access road to east of SR101 replace undersized culvert with bridge over slough to the south remove levees & dikes connect upper tidal channel west of SR 101 with larger lagoon with a bridge on the access road remove Hwy 101 causeway	151K sq meters of affected habitat; (maybe 40 acres)		Highway 101 feasibility study initial cost estimate for this project is $250,000.		$1,071,080

HDD 4	Duckabush	elevate SR101 across estuarine delta - restore tidal connectivity reestablish native vegetation			Highway 101 feasibility study initial cost estimate for this project is $17,368,000 for total causeway removal (higher cost used of two alternative costs given in the study)		$17,368,000
HDD 10	Hama Hama	replace SR101 causeway/bridge with an elevated structure across the entire delta			Highway 101 feasibility study initial cost estimate for this project is $19,708,000 for total causeway removal (higher cost used of two alternative costs given in the study)		$19,708,000
LIL 1	Lilliwaup	extend SR101 bridge span remove shoulders/fill			Highway 101 feasibility study initial cost estimate for this project is $5,945,550 for total causeway removal.		$5,945,550
HDD 9b	Hama Hama	relocate SR101 to the west restore Jorsted Creek estuary not in Hwy 101 feasibility study (associated with acquisition project HDD 9a)	~.35 miles causeway		Use Highway 101 feasibility study information as surrogate Duckabush main estuary project (Alternative 2) removes similar length of causeway (1700ft) and replaces with bridge. Assume 50% smaller bridge needed in smaller estuary (adjust main estuary cost down by 40%). Assume costs for road relocation add 20%, for a total adjusted cost at 20% below Duckabush Alternative 2 costs. Visual estimate of length of causeway from aerial photograph		$13,894,400
LIL 13	Lilliwaup	restore sediment supply from feeder bluff WSDOT solution is to move SR101 away from shoreline **same as Lil 1 above?**	~.35 miles causeway		relocation EFC working on relocation estimate. Scott Brewer estimated .25 to .5 miles of causeway		
Other Road Projects (5 projects)							
LIL 6	Skokomish	remove TPU maintenance/access roads within the delta (was LIL 5, but combined) relocate TPU transmission towers to follow SR 106 abandon access roads within salt marsh costed on individual basis, est. a few million dollars	~1 mile		needs assessment cost estimate is for access road removal only (unable to estimate acreage footprint of transmission tower removal) Scott Brewer estimates 1 mile road removal Costed using USFS road removal estimates ($10,000-15,000 per mile) for stable soils, moderate access and gentle slope. Assume road is not paved.		$12,500
WK 8	Big Anderson	remove the county road along the north shore of Anderson Cove (traffic could be rerouted to the road immediately to the north) revegetate the riparian zone with native plants.	1400 feet		Costed using road decommissioning model from SRFB project at LeBar Creek Rd ($36,363 per mile). 25% cost increase per mile added to allow for larger sized road ($45,454 per mile).	0.27	$12,273

Other Complex Projects (8 projects)							
QU 11	Quilcene Bay	remove abandoned creosoted railroad pilings along west side of Quilcene Bay south o Quilcene water quality & predator issue DNR land also other pilings upstream	2300 ft		Assume pilings every 10 feet based on aerial photograph Kojo Forjour of WSDOT provided cost estimates for this project based on ferry dock pilings (24-28 inch diameter and 40 foot length) and a cost of $75-100/square feet for removal and $5/cu yd for disposal). Assume smaller pilings based on aerial photograph of 30 foot length and 24 inch diameter 60 square feet per piling and 230 pilings 188.4 cubic feet per piling	13,800 square feet removal plus 43,332 cubic feet for disposal	$1,596,660
HDD 15	Hama Hama	remove creosote pilings to north of Jorsted Creek water quality issue	~300 piles		see costing model for item QU 11. Assume 60 square feet per piling Assume 188.4 cubic feet per piling	18,000 square feet removal plus 56520 cubic yards disposal	$2,082,600
SJF 1	Salmon/Snow	remove railroad grade, fill, and levees along estuary - restore salt marsh and tide flats, increase tidal/freshwater interface creosote armoring maybe as much as 4'-15' in some places water line & easement - move water line or replace with well	50 ac impr/rest 1 mile of RR causeway		Cost based on removal of railroad grade fill (Group E4) plus estimate for easement/water line from SRFB example (Big Beef Creek Project- $100,000 to dig new well plus $20,000 for new yard piping)	1.2	$240,000
QU 7	Big Quilcene	remove artificially aggraded delta cone at mouth of Big Quilcene River	15 acres		Cost estimate based on removal of 15 acres uncontaminated fill by barge. (Group E3 + cost increase for barge) The entire delta is 15 acres- likely that less than 15 acres would be excavated. Hydraulic study required Project may not be required if QU 1b is done	15.0	$1,200,000
QU 8	Little Quilcene	remove artificially aggraded delta cone on Little Quilcene River	10 acres		Cost estimate based on removal of 10 acres uncontaminated fill by barge (Group E3 + cost increase for barge) The entire delta is 10 acres- likely that less than 10 acres would be excavated. Hydraulic study required Project may not be required if QU 2 is done	10.0	$800,000
LIL 3	Skokomish	remove Nalley Island dikes/ levees, roads, borrow ditches and tide gates partially funded by SRFB ($254K, but need to significantly increase) cold start	~ 1 mile	7,814.4	partially funded by SRFB at $161,000 per acre including transport of equipment via helicopter or bridge Cost estimate pro-rated from SRFB cost	1.2	$193,200
LIL 2	Skokomish	remove left bank dikes/ levees, roads, borrow ditches, and tide gates. Install raised walkway to maintain access $1 million for 126 acres plus walkway partially funded by SRFB through Tribe ($200k) supported by Army Corps and Tacoma Power implementation late 2004			partly funded cost estimate from Scott Brewer		$1,000,000

LIL 16b	Lilliwaup	remove trout pond diking set back structures and roads and expand access road bridge work with landowners for permission this project is associated with acquisition LIL 16a	3.3 acres		Cost estimate is for dike removal only (Group E5 model) Assume 3.3 acres pond has a perimeter dike of .29 miles.	0.35	$105,000
UN 1	Union, Little Mission	remove the dike and tide gates at Belfair State Park perform feasibility study with State Park develop plan to have no net loss of public access local groups and state agencies working with Parks to implement early actions	.5 mile		Cost estimate is based on dike removal only (Group E5 model). Public access needs will likely add complexity and cost	0.6	$36,000
					subtotal		$65,265,263
Group N5: Minor reconstruction, moderate excavation (1 project)							
Assumptions for an average project: minor reconstruction - removing small bulkhead structures, adding sediments average transportation distance (7-20 miles) cost range: $200 - $500 per lineal foot average project size (300 - 600 lineal feet) average design & permitting cost (not a high energy shoreline) cost: $350 per lineal foot							
LIL 14	Lilliwaup	remove bulkhead, fill, structures and groins at Lilliwaup Point to restore nearshore processes and juvenile migration corridor work with private landowners to implement softshore protections	0.5 km = 1,641 lft		assume no structures to remove	1,641 lineal feet	$574,350
					subtotal	1,641	*$574,350*

Floodplain Restoration: work involving both river channel and floodplain

CU #	Watershed	Project/Action	Original Units	Cubic Yds	Comments	Costing Units: Acres	Cost
Group F5: Complex floodplain reconnection (6 projects)							
Assumptions for an average project: moderate earthmoving i.e. some excavation & material disposal (500-50,000 cu yds) medium river energy i.e. mainstem rivers with small riffles, low gradient cost range: $70,000 - $100,000 per acre high permitting costs & high level of planting/wood placement (100-300 pieces/stream mile under 36" diameter, no large jams) cost: $100,000 per acre							
QU 14	Little Quilcene	remove levees and rip rap in lower mainstem	~5 miles total	39,072	floodplain reconnection	6.07	$607,000.00
HDD 1c	Dosewallips	remove dikes along mainstem Dosewallips River and estuary state park levees (associated with estuarine project HDD 1b)	~1km	4,845		0.75	$75,000.00
HDD 18	Duckabush	remove levees and rip rap in lower river to restore sinuosity (associated with acquisition project HDD 18a)	1300m		no channel reconstruction	0.98	$98,000.00
HDD 19	Hama Hama	remove levees and rip rap in lower river to restore sinuosity see HDD 8b - is this the same project?	2km	9,690	no channel reconstruction	1.51	$151,000.00
QU 13	Big Quilcene	restore sinuosity in the Big Quilcene River in the historical tidally influenced area (associated with estuarine project QU 1b)	1 mile in mainstem	7,814		1.21	$121,000.00
HDD 17	Dosewallips	remove levees & rip rap in lower river to restore sinuosity Brinnon levee, Lazy C bank armoring, Elkhorn campground, Steelhead camp, Rocky Brook confluence see Ted Labbe's assessment	750m Lazy C	3,641	structures to be considered in setback and LWD placement 700 m Brinnon levee work not included in cost	0.57	$57,000.00
					subtotal	*11.09*	*$1,109,000.00*

Riverine: work involving only the river channel and/or bank

CU #	Watershed	Project/Action	Original Units		Comments	Costing Units: Acres or Miles	Cost
Group R4: Riparian Enhancement (2 projects)							
Assumptions for an average project: 50-foot buffer on both sides of the stream average accessibility simple complexity (minimal clearing and grubbing, bare root plantings, low weed block use) cost range: $20,000 - $30,000 per acre Conservation Corps crew, average permitting costs, maintenance 2-4 days per year cost: $25,000 per acre							
SJF 11	Salmon/Snow	very small, mature alder plant/maintain riparian areas to restore diversity public and private properties	3.5 miles on Snow 1 mile on Salmon			54.65	$1,366,250
UN 12	Union	restore forested riparian buffers at Belfair State Park will be implemented when results of feasibility study implemented	3 acres		Associated with other Belfair State Park projects	3.00	$75,000
					subtotal	57.65	*$1,441,250*

Group W5: Wood placement on medium waterways (1 project)							
Assumptions for an average project: wood placement is primary action (not included in a larger floodplain restoration) medium stream size (100-2,000cfs), medium sized logs (13-24" diameter), average access and transport distance (7-20 miles by truck) cost range: $50,000 - $70,000 per mile minimal grading and earthmoving (to anchor logs) 200 pieces per mile cost: $60,000 per mile							
LIL 18	Lilliwaup	restore channel complexity with LWD projects 0.8 miles of anadromous needs specific details including site(s)	0.8 miles			0.80	$48,000
					subtotal		$48,000
Group R0: Riverine projects to be costed individually (2 projects)							
assumptions: roads or structures							
SJF 16	Salmon/Snow	decommission USFS roads needs further assessment(?), A & TM 4,000m implemented 480 m designated in Snow 3,500 m designated in Salmon			Cost estimate based on Scott Haggerty, US Forest Service, estimate for road decommission in Salmon-Snow (based on moderate access, gentle slope, moderately stable soils). Estimate $10,000-15,000 per mile.	0.25	$3,125
WK 4	Big Beef	remove UW service road and associated fill work with UW to implement	.25 mile		Cost estimate by Scott Haggerty used here. Assume similar access and slope.	0.25	$3,125
					subtotal:	0.50	6,250.00

Acquisition and Conservation Easements

CU	Watershed	Project/Action	Original Units		Questions/Comments	Costing Units: Acres	Cost
Group A2: Low Development Potential Acquisition (2 projects - multiple parcels)							
Assumptions for an average project: forest or agriculture zoning, medium distance from urban area (21-40 miles) cost range: $1,800 - $3,600 per acre moderate parcel size (20-100 acres) cost: $2,400 per acre (excluding timber value)							
SJF 8a	Salmon/Snow	buy-out house and land agriculture private landowners for about 1/2 mile either side of levees (riprap) agriculture and private landowner issues do assessment of Snow Cr all the way through below the valley/canyon high density of roads Pope and USFS Associated with restoration SJF-8b (also SJF6,7)	~4 miles		Estimate does not represent actual parcels, but percentage of land to be protected. Assumption of area is a 50-foot buffer on two sides of the 4 mile stretch between RM 3.5 and the canyon. An estimate of 50% of this acreage is costed.	48.58	$116,592
HDD 26	Dosewallips	acquire lands and/or land use regulations powerlines reach looking at Rocky Brook and areas downstream of USFS lands need assessment to pinpoint specific areas discuss with Dave Christensen	~300 acres		land use regulations - covered in noncapital acreage/parcel size	300.00	$720,000
					subtotal	348.58	$836,592.00

Group A4: Medium Development Potential with Stream Front (2 projects)							
Assumptions for an average project: rural residential zoning, stream view cost range: $5,000 - $35,000 per acre average access (road), no functional buildings, over 30 miles from major metropolitan areas (Tacoma/Seattle) development potential affected by sensitive areas (20-50% compromised development potential) cost: $10,000 per acre							
LIL 16a	Lilliwaup	work with landowners for property purchase this project is associated with estuary LIL 16b to remove trout pond diking	3.3 acres			3.30	$33,000
LIL 17a	Lilliwaup	work with landowners for property purchase this project is associated with estuary LIL 17b to daylight creel	0.6 acres			0.60	$6,000
					subtotal	3.90	$39,000
Group A5: Medium Development Potential with River Front (2 projects)							
Assumptions for an average project: rural residential zoning, river view (not ocean view) cost range: $24,000 - $60,000 per acre average access (road), no functional buildings, over 30 miles from major metropolitan areas (Tacoma/Seattle) development potential affected by sensitive areas (20-50% compromised development potential) cost: $36,000 per acre							
SJF 13ii	Salmon/Snow	fee-simple purchase of mainstem floodplain parcels most funding is there for Salmon; Snow Cr is a cold start; close to 3.5 RM; zoning may be mixed rural/ag			$498,500 in place for fee simple/less than fee acquisition of 150 acres on 4-8 parcels in the Salmon and Snow watersheds. Cost for combination easement/acquisition is $3,323/acre. Total acreage target is 300 acres. Cost estimate pro-rated from existing funding levels.	300.00	$498,450
UN 10a	Union	work with private landowner to implement property purchase associated with estuary project UN 10b	2.0 acres, plus acquisition				$72,000
					subtotal		*$570,450*

Group A6: Medium Development Potential Acquisition with Canal Front (6 projects)							
Assumptions for an average project: rural residential zoning, canal view cost range: $60,000 - $300,000 per acre average access (road), no functional buildings, over 30 miles from major metropolitan areas (Tacoma/Seattle) development potential affected by sensitive areas (20-50% compromised development potential) cost: $100,000 per acre							
QU 18	Big Quilcene	purchase properties south of the Big Quilcene River increases amount of salt marsh associated with nearshore project QU-4	~25 acres			25.00	$2,500,000
QU 19	Quilcene Bay	acquire area slated for development along the east side of Quilcene Bay associated with estuary project QU-10	4 acres			4.00	$400,000
HDD 11a	Hama Hama	remove fill & relocate structures north side of Wacketickeh estuary similar to HDD 9 associated with acquisition HDD 11a	~2.5 acres		assume separate acreage from parking lots and shellfish industry buildings, accounted for in HDD 9a.	2.5	$250,000
HDD 9a	Hama Hama	acquire historic estuarine properties	3.7 acres		assume parking lot and shellfish site	3.70	$370,000
HDD 18a	Duckabush	land acquisition associated with estuary project HDD 18b	1300m		acquisition is dike area	0.98	$98,000
LIL 9a	Skokomish	purchase property at lower Minerva Creek site this is associated with estuary project LIL 9t	.6 acres			0.60	$60,000
UN 13a	Union	purchase parcels east of the Klingel Wetlands two landowners, currently working with both to proceed with purchase and restoration associated with estuary project UN 13b	3 acres of shoreline, 13 acres fill			3.00	$300,000
					subtotal	39.78	*$3,978,000*
Group A8: Conservation Easements - Medium Development Potential (1 projects, multiple parcels)						**Acres**	**Cost**
Assumptions for an average project: rural residential zoning, river view (not ocean view) cost range: $30,000 - $60,000 per acre average access (road), no functional buildings, over 30 miles from major metropolitan areas (Tacoma/Seattle) development potential affected by sensitive areas (20-50% comprised development potential) 50% of development rights purchased cost : $44,000 per acre							
						50' buffer	
QU 6a	Little Quilcene	purchase conservation easement along the nearshore associated with the Little Quilcene River private ownership and is not interested	-1.5 mile		assume 50 foot buffer on both sides of the stream	18.22	$801,680.00
					subtotal	18.2	$801,680.00

Not Costed							
CU	**Watershed**	**Project/Action**	**Original Units**		**Comments**	**Costing Units: Acres**	**Cost**
Funded (10 projects)							
Group E6: Somewhat developed estuarine site - substantial excavation/medium transport distance							
UN 14	Union	remove the small concrete pool, boat ramp, fill, and bulkhead at Lynch Cove Community Park to restore lost salt marsh funded by WDFW to be implemented 2004 by Hood Canal Community Nearshore Restoration Program	0.2 acres		funded	0.2	$110,000
Group E: Complex estuarine project involving road/bridge work							
SJF 4a	Jimmycomelately	reconfigure Hwy 101 causeway reconfigure estuary may require land acquisition work in progress - funded(?) consult with Jamestown S'Klallam Tribe, Clallam Co, WSDOT etc (associated with riverine project SJF 4c)			partially funded & underway		
HDD 16	Donovan Creek	replace culvert at mouth of Donovan Creek with bridge - restore estuary function already costed			costed culvert replacement		$1,300,000
LIL 11	Skokomish	reconstruct hatchery trapping facility to allow better estuary function and tidal channel connectivity at Enetai if addressing SR101 and upstream, then 1.4 acres of intertidal habitat complex	0.3 acres		Reconstruction of hatchery not costed. Fill removal costed using Group E9 model	0.3	$165,000
Group F5: Complex floodplain reconnection							
HDD 12	Dosewallips	remove dike between Wolcott Slough & Dosewallips state park land			funded	no units	funded
QU 3	Big Quilcene	remove dikes WDFW property	.5 miles	3,907	total cost of $170,000 provided by Richard Brocksmith Project is funded through SRFB and matching funds		$170,000 (full funding)
Group A5: Medium Development Potential Acquisition with River Front							
SJF 13iii	Salmon/Snow	fee-simple purchase or conservation easement of sediment source abatement in parcels downstream of federal lands sediment source abatement needs to be addressed; most funding is there for Salmon; Snow Cr is a cold start; close to 3.5 RM is this a restorative action or an acquisition or both?			partly funded any restorative actions to control sediment?		
Group A6: Medium Development Potential Acquisition with Canal Front							
SJF 13i	Salmon/Snow	fee-simple purchase of remaining estuary parcels all the money is in place			funded		
Group A8: Conservation Easement Medium-High Development Potential							
SJF 15ii	Chimacum	fee-simple purchase or conservation easement sediment source abatement in parcels downstream of federal lands needs some more $$$ to tiny parcels in the UGA; is this a restorative action, acquisition, or both?			purchase complete (Scott Brewer)		

Group A11: High Development Potential Acquisition with River Front							
SJF 15i	Chimacum	fee-simple purchase or conservation easement mainstem floodplain parcels needs some more $$$ to tiny parcels in the UGA			purchase complete (Scott Brewer)		
Needs Further Analysis (13 projects)							
Group E3: Undeveloped estuary site- substantial excavation/medium transportation distance							
QU 2	Little Quilcene	restore sinuosity Little Quilcene tidally influenced area levee removal, LWD placement, other channel complexity actions	-4-5 miles		Project will need an assessment and will be multifaceted in design and approach.	6.1	
QU 1b	Big Quilcene	restore sinuosity in Big Quilcene tidally influenced area levee removal, LWD placement, other channel complexity actions (associated with riverine project QU 1c)	-4-5 miles		Project will need an assessment and will be multifaceted in design and approach.	6.1	
HDD 8b	Hama Hama	remove the dike along north side of the estuary & other minor dikes - restore tidal channels and estuary function further assessment needed private land, shellfish industry (associated with riverine project HDD 8c)	890K sq meters restored		Further analysis needed to determine design due to existing shellfish industry activities. Partial or alternative solution may be needed.		
SJF 8c	Salmon/Snow	remove riprap, road crossings and ditches-restore sinuosity and natural channel configuration private agricultural land buyout house and land high road density needs further study (associated with acquisition project SJF 8a)	~3.5 RM to canyon on Salmon Creek		Further study required before specific actions are designed at this site road crossings acquisition will be required 3.5 miles in Salmon and .5 miles in Snow to be reconfigured. 4 miles channel reconfiguration costed as average Group F3 project with 10 foot width assumption.	4.85	$363,750 (partial cost)
Group E0: Complex estuarine projects							
UN 6	Tahuya	evaluate the bridge span at the Northshore Road crossing of the Tahuya River for impaired tidal circulation if necessary construct a longer span to improve tidal flow long term focus to monitor impacts of road on estuary and work with County and PSNERP similar to Lilliwaup/Hwy 101			will involve bridge design- needs further assessment		
WK 1	Big Beef	restore natural tidal influence and sediment transport in the Big Beef Creek subestuary by addressing causeway and hatchery weir. County Road (300 meter raised causeway if removing 4 to 5 residences, or 250 meter with houses remaining) and UW weir needs details/specifics on how this will work			several independent, historic salt marshes at this location have been paved, filled, etc. Completion of this restoration would involve several parcels to be both on sale and purchased, plus extensive landfill removal and excavation. Historic site was likely very high value habitat.		

Group R4: Simple Riparian Enhancement							
SJF 12	Salmon/Snow	continue livestock exclusion fencing where appropriate may not be needed			Further study required to determine actual need		
HDD 24	Duckabush	restore native vegetation in mainstem needs assessment for several rivers			needs assessment for project sites		
HDD 25	Hama Hama	protect/restore riparian planting/silviculture projects regulatory? see HDD #24			needs assessment for project sites		
LIL 19	Lilliwaup	riparian restoration with plantings needs specific details including site(s)	unknown		needs assessment for project sites		
Group S2: Streambank improvements on small waterways							
SJF 9	Chimacum	projects to provide channel complexity and protection several parcels in UGA full TFW of lower Chimacum discuss with Dave Christensen			needs further study to determine specific actions		
Group R0: complex riverine projects							
QU 17	Big Quilcene	fish passage at the USFWS hatchery weir trap & haul passage facilities another 2RM habitat access tribal coho fishery reconsider need for hatchery after summer chum supplementation complete			needs further study to determine specific actions		
Group A5: Medium Development Potential with River Front							
QU 20ii	Little Quilcene	fee-simple purchase or conservation easement priority areas include mainstem floodplain assessment of those properties that have potential for restoration			needs further study to determine specific actions		
Group A6: Medium Development Potential with Canal Front							
QU 12	Tarboo Bay/Dabob Bay	protect remaining high priority estuary and nearshore parcels assessment needed to determine parcels to acquire acquisition and regulatory			needs further study to determine specific actions		
QU 20i	Little Quilcene	fee-simple purchase or conservation easement priority areas include estuary assessment of those properties that have potential for restoration			assessment - noncapital not ready to cost acquisition?		

Unlikely due to existing development and complicating factors (3 projects)							
Group E0: Complex estuary project involving road/bridge work							
QU 9b	Quilcene Bay	remove landfill & bulkhead - restore historic saltmarsh & intertidal habitat between Boa Haven Marina and Indian George Creek unlikely - residential development (associated with acquisition project QU 9a)	2 acres		Restoration dependent on acquisition acquisition unlikely		
LIL 15	Lilliwaup	remove fill and development seaward of southern bridge abutment of SR101 to reestablish salt marsh habitat low opportunity due to residential developmen	1 acre		Restoration dependent on acquisition acquisition unlikely		
WK 7	Big Anderson	restore historic salt marsh and lagoon habitats at the community of Holly. lack of complexity along shoreline makes restoring intertidal habitat complexes a high importance working with private landowners is critica	.75 miles		bulkhead removal only? Is .75 correct? 3 acres restored Only small modifications are likely at this site		
Group A0: Complex acquisitions (1 project)							
QU 9a	Quilcene Bay	acquire residential parcels between Boat Haven Marina and Indian George Creek. full residential development in place unlikely to happen associated with estuary QU-9b	2 acres		Highly important parcel for restoration Restoration dependent on acquisition Acquisition unlikely		

Group	*Group Description*	*Number Projects*	*Cost*
Estuarine/Nearshore			
Group E2	Undeveloped estuary site - moderate excavation/moderate transportation distance	11	$364,000
Group E3	Undeveloped estuary site - substantial excavation/moderate transportation distance	10	$1,006,360
Group E4	Somewhat developed estuary site - minimal excavation/moderate transportation distance	2	$20,000
Group E5	Somewhat developed estuary site - moderate excavation/moderate transportation distance	2	$120,000
Group E6	Somewhat developed site - substantial excavation/moderate transportation distance	7	$3,135,000
Group E9	Highly developed estuary site	4	$21,455,500
Group E0	Complex estuary projects that must be costed individually	17	$65,265,263
Group N5	Minor reconstruction, moderate excavation	1	$574,350
	subtotal	***54***	***$91,940,473***
Floodplain			
Group F5	Complex floodplain reconnection	6	$1,109,000
	subtotal	***6***	***$1,109,000***
Riverine			
Group R4	Simple riparian enhancement	2	$1,441,250
Group W5	Wood placement on medium waterways	1	$48,000
Group R0	Riverine projects to be costed individually	2	$6,250
	subtotal	***5***	***$1,495,500***
Acquisition			
Group A2	Low Development Potential Acquisition	2	$836,592
Group A4	Medium Development Potential with Stream Front	2	$39,000
Group A5	Medium Development Potential with River Front	2	$570,450
Group A6	Medium Development Potential Acquisition with Canal Front	6	$3,978,000
Group A8	Conservation Easements - Medium Development Potential	1	$801,680
	subtotal	***13***	***$6,225,722***
	******TOTAL***	**78**	**$100,770,695**

*** 29 projects in recovery plan not costed**

*****This is a draft number and will be adjusted in the final report**

Appendix E: Non-Capital Costs

Activity	Cost Category	Range of FTE / year: Low End FTE	Range of FTE / year: High End FTE	Factors Influencing Costs	Assumptions	HCCC FTE Estimate per year	Responsible Party	Pay scale for Responsible Party FTE/year	Annual Cost Estimate	# of years	Notes
Actions to Address Substantive Plan											
Monitoring of results of plan implementation	Staffing	0.2	3.0[a]	1. Land use & hydrologic complexity 2. Number of actions requiring monitoring	1. mixed land use, average hydrology complexity 2. med-low number of actions requiring monitoring	1.00	Regional Recovery Boards: HCCC for summer chum and SS for Chinook	$90,000	$90,000	10	Assumes a centralized or highly coc monitoring program; low end is impl monitoring only, high end includes e and validation monitoring
	Equipment, materials, lab costs			Same as above	Same as above				$9,000	10	Indexed at 10% of staffing
Sponsorship of community education and public relations events and materials.	Staffing	0.2	1.0[b]	1. Controversies related to the watershed plan 2. Community expectations 3. Watershed/ESU (human) population	1. moderate number of controversies 2. low expectations 3. Med-low population	0.50	Coop Extension/ Conservation District/ Sea Grant	$80,000	$40,000	10	May be feasible and cost-effective t local NGO's
	Materials and supplies								$4,000	10	Indexed at 10% of staffing
	Consultants				assume no budget for PR consultant	0.00				10	Assumes use of PR consultant to a
Support of stewardship activities by landowners and others through outreach and education.	Staffing	0.2	1.5	1. Number of farmers, foresters, and other rural landowners to engage 2. Community interest in voluntary	1. Med number of foresters and rural landowners, some farmers 2. moderate community interest	1.00	Conservation Districts/ WSU Extension/ UW Seagrant	$80,000	$80,000	10	Costs of incentive programs are inc capital categories
Providing one-on-one technical assistance to landowners, including support for implementing changes in practices, accessing conservation incentives, and complying with regulations.	Staffing	0	3[c]	1. Complexity of recommendations 2. Benefit of engaging farmers, foresters, and other rural landowners in chapter/plan implementation	1. moderate complexity 2. strong benefit to engaging private landowners	3.00	Conservation Districts/ WSU Extension/ UW Seagrant	$80,000	$240,000	10	May be combinable with two preced in a stewardship/education program
Prioritization of habitat and other projects for grant processes	Staffing	0.35	1.4	1. Number of projects evaluated 1. Number of grant programs addressed 2. Number of jurisdictions applying	1. Low level of projects evaluated 2. Med-low # grant programs addressed 3. Med number city/county jurisdictions	1.00	Lead Entities	$80,000	$80,000	10	Low end is a simple SRFB process entity)
Development and adoption of plan-driven regulations.	Staffing	0	0.6	1. Number and complexity of regulatory recommendations	1. Low number of regulations and low complexity	0.35	Cities/Counties	$100,000	$35,000	3	Low end assumes no new regulatio in the watershed plan; need is for in and periodic updates; cost is per ye relevant years. PAY SCALE: $75,0
Negotiation of management and funding agreements.	Staffing	0	0.6	1. Number of interjurisdictional management and funding agreements required	1. not much interlocal responsibility	0.25	HCCC/SS	$90,000	$22,500	3	Need is for initial adoption and perio cost is per year for three relevant ye
Research and policy analysis to fine-tune recommendations.	Staffing	0	0.8	1. Number of significant unresolved scientific or policy issues	1. Low number of unresolved science and policy issues	0.25	HCCC/SS	$90,000	$22,500	10	May be borne by participating agen independently
Development of new practices for road maintenance, road expansion, erosion and stormwater control, and other public works activities.	Staffing	0.2	0.5	1. Degree of change from existing practices 2. Number of staff and projects involved	1. Few changes to practices 2. Low number staff and projects	0.25	Cities/Counties	$100,000	$25,000	2	Need is for initial adoption and one is per year for two relevant years
Instream flow analysis and agreements.	Staffing	0.3	3[d]	1. Number of rivers evaluated 2. Number of flow-limited rivers	1. Med number of rivers evaluated 2. Med number of flow limited rivers	1.50	WRIA planning units	$80,000	$120,000	2	
	Equipment, stream gauges			Same as above	Same as above				$12,000	10	Indexed at 10% of staffing
SUBTOTAL, Substantive Plan Recommendations						ANNUAL TOTAL COST- PEAK COST			$780,000		ANNUAL UNMET COST- PE
						ANNUAL COST- AVERAGE (over 10 years)			$623,750		ANNUAL COST- AVERAGE (
						TEN YEAR TOTAL COST			$6,237,500		TEN YEAR UNMET COST
Actions to Maintain Watershed Partnerships and Basic Capacity											
Completion and periodic revisions to the watershed chapter or ESU plan	Staffing	0.2	0.5	1. Number of jurisdictions and organizations involved in implementation 2. Complexity of chapter/plan	1. Med number jurisdictions/ organizations 2. Med plan complexity	0.25	HCCC/SS	$90,000	$22,500	10	Assumes biannual updates in first t is per year for five relevant years

Administrative support and coordination of the watershed forums/implementation committees	Staffing	0.2	0.6	1. Number of jurisdictions and organizations involved in implementation 2. Complexity of the chapter/plan	1.Med number jurisdictions/ organizations 2. Med plan complexity	0.30	HCCC/SS	$90,000	$27,000	10	This need for the "care and feeding' groups is over and above the substa described above
Enforcement of existing and new regulations associated with the watershed plan.	Staffing	0	1.0	1. Number of permitting actions 2. Complexity of regulatory elements	1. Moderate permitting needs 2. Med complexity of regulatory elements	0.30	Cities/Counties	$100,000	$30,000	10	Low end assumes no new regulatio in the watershed plan; high end cap increased costs associated with rev by the chapter/plan
Reporting on plan implementation to federal and state regulatory agencies	Staffing	0.1	0.2	1. Complexity of plan recommendations	1. Med complexity of regulations	0.20	HCCC/SS	$90,000	$18,000	10	Assumes annual reporting responsi condition of ESA approval PAY SCALE: $67,500/FTE/year
Communications among implementing agencies and organizations	Staffing	0	0.2	1. Number of implementing agencies and organizations	1. Med-Large number of implementing organizations	0.20	HCCC/SS	$90,000	$18,000	10	Communicating with the public is ca PR item above
Review and comment on other relevant plans and proposals including GMA and SMA	Staffing	0	0.5	1. Number of plan updates and major land use/public works/rezoning proposals occurring in the watershed	1. Low number of plan updates or major proposals	0.20	HCCC/SS	$90,000	$18,000	10	At the high end, assumes a very act monitoring and participating in planr permitting activities PAY SCALE: $60,000/FTE/year

SUBTOTAL, Watershed Partnerships and Capacity

ANNUAL TOTAL COST- PEAK COST	$133,500		ANNUAL UNMET COST- PE/
ANNUAL COST- AVERAGE (over 10 years)	$133,500		ANNUAL COST- AVERAGE (
TEN YEAR TOTAL COST	$1,335,000		TEN YEAR UNMET COST

Assumptions

Assume FTE for city/county/SS is $100,000 per position
Assume FTE at CD/CoopExt/LandTrust/HCCC/SeaGrant/LEs/watershed planning units is $80,000
Assume FTE for tasks shared by SS and HCCC are $90,000 per 1 FTE

Costs are for central staffing functions only; the cost of other participating agencies/organizations are not included

# of years = years of initial 10 year implementation period in which cost is incurred

GRAND TOTAL ANNUAL COST- PEAK COST	$913,500		GRAND TOTAL ANNUAL UN
GRAND TOTAL AVERAGE ANNUAL COST (over 10 years)	$757,250		GRAND TOTAL AVERAGE A 10 years)
GRAND TOTAL TEN YEAR COST	$7,572,500		GRAND TOTAL TEN YEAR U

FTE Ranges Adjusted from Regional
a: regional model high end FTE is 2.0
b: regional model high end FTE is .8
c: regional model high end FTE is .3
d: regional model high end FTE is 1.2

Activity	Annual Cost Estimate	# of years	Unmet Funding Need per year	UNMET COSTS PER YEAR yr 1	yr 2	yr 3	yr 4	yr 5	yr 6	yr 7	yr 8	yr 9	yr 10	Total	TOTAL (yr 1
Actions to Address Substantive Plan Recommendations															
Monitoring of results of plan implementation	$90,000	10	$90,000	$90,000	$90,000	$90,000	$90,000	$90,000	$90,000	$90,000	$90,000	$90,000	$90,000	$900,000	$90,0
	$9,000	10	$9,000	$9,000	$9,000	$9,000	$9,000	$9,000	$9,000	$9,000	$9,000	$9,000	$9,000	$90,000	$9,0
Sponsorship of community education and public relations events and materials.	$40,000	10	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000	$200,000	$40,0
	$4,000	10	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$20,000	$4,0
		10												$0	
Support of stewardship activities by landowners and others through outreach and education.	$80,000	10	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000	$200,000	$80,0
Providing one-on-one technical assistance to landowners, including support for implementing changes in practices, accessing conservation incentives, and complying with regulations.	$240,000	10	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$600,000	$240,0
Prioritization of habitat and other projects for grant processes	$80,000	10	$8,000	$8,000	$8,000	$8,000	$8,000	$8,000	$8,000	$8,000	$8,000	$8,000	$8,000	$80,000	$80,0
Development and adoption of plan-driven regulations.	$35,000	3	$8,750	$8,750	$8,750	$8,750								$26,250	$35,0
Negotiation of management and funding agreements.	$22,500	3	$22,500	$22,500	$22,500	$22,500								$67,500	$22,5
Research and policy analysis to fine-tune recommendations.	$22,500	10	$11,250	$11,250	$11,250	$11,250	$11,250	$11,250	$11,250	$11,250	$11,250	$11,250	$11,250	$112,500	$22,5
Development of new practices for road maintenance, road expansion, erosion and stormwater control, and other public works activities.	$25,000	2	$15,000	$15,000	$15,000									$30,000	$25,0
Instream flow analysis and agreements.	$120,000	2	$90,000	$90,000	$90,000									$180,000	$120,0
	$12,000	10	$9,000	$9,000	$9,000	$9,000	$9,000	$9,000	$9,000	$9,000	$9,000	$9,000	$9,000	$90,000	$12,0
SUBTOTAL, Substantive Plan Recommendations				***$365,500***	***$365,500***	***$260,500***	***$229,250***	***$229,250***	***$229,250***	***$229,250***	***$229,250***	***$229,250***	***$229,250***	***$2,596,250***	***$780,00***
				$259,625											**$623,75**
Actions to Maintain Watershed Partnerships and Basic Capacity															
Completion and periodic revisions to the watershed chapter or ESU plan	$22,500	10	$22,500	$22,500	$22,500	$22,500	$22,500	$22,500	$22,500	$22,500	$22,500	$22,500	$22,500	$225,000	$22,5
Administrative support and coordination of the watershed forums/implementation committees	$27,000	10	$18,900	$18,900	$18,900	$18,900	$18,900	$18,900	$18,900	$18,900	$18,900	$18,900	$18,900	$189,000	$27,0
Enforcement of existing and new regulations associated with the watershed plan.	$30,000	10	$22,500	$22,500	$22,500	$22,500	$22,500	$22,500	$22,500	$22,500	$22,500	$22,500	$22,500	$225,000	$30,0
Reporting on plan implementation to federal and state regulatory agencies	$18,000	10	$18,000	$18,000	$18,000	$18,000	$18,000	$18,000	$18,000	$18,000	$18,000	$18,000	$18,000	$180,000	$18,0
Communications among implementing agencies and organizations	$18,000	10	$18,000	$18,000	$18,000	$18,000	$18,000	$18,000	$18,000	$18,000	$18,000	$18,000	$18,000	$180,000	$18,0
Review and comment on other relevant plans and proposals including GMA and SMA	$18,000	10	$18,000	$18,000	$18,000	$18,000	$18,000	$18,000	$18,000	$18,000	$18,000	$18,000	$18,000	$180,000	$18,0
SUBTOTAL, Watershed Partnerships and Capacity				***$117,900***	***$117,900***	***$117,900***	***$117,900***	***$117,900***	***$117,900***	***$117,900***	***$117,900***	***$117,900***	***$117,900***	**$1,179,000**	**$133,50**
				$117,900											**$244,50**
			YR TOTALS	**$483,400**	**$483,400**	**$378,400**	**$347,150**	**$347,150**	**$347,150**	**$347,150**	**$347,150**	**$347,150**	**$347,150**	**$3,775,250**	**$913,50**
			YR Average	**$377,525**											**$757,25**

yr 4	yr 5	yr 6	yr 7	yr 8	yr 9	yr 10	Total
$90,000	$90,000	$90,000	$90,000	$90,000	$90,000	$90,000	$900,000
$9,000	$9,000	$9,000	$9,000	$9,000	$9,000	$9,000	$90,000
$40,000	$40,000	$40,000	$40,000	$40,000	$40,000	$40,000	$400,000
$4,000	$4,000	$4,000	$4,000	$4,000	$4,000	$4,000	$40,000
							$0
$80,000	$80,000	$80,000	$80,000	$80,000	$80,000	$80,000	$800,000
$240,000	$240,000	$240,000	$240,000	$240,000	$240,000	$240,000	######
$80,000	$80,000	$80,000	$80,000	$80,000	$80,000	$80,000	$800,000
							$105,000
							$67,500
$22,500	$22,500	$22,500	$22,500	$22,500	$22,500	$22,500	$225,000
							$50,000
							$240,000
$12,000	$12,000	$12,000	$12,000	$12,000	$12,000	$12,000	$120,000
$577,500	***$577,500***	***$577,500***	***$577,500***	***$577,500***	***$577,500***	***$577,500***	***$6,237,500***
$22,500	$22,500	$22,500	$22,500	$22,500	$22,500	$22,500	$225,000
$27,000	$27,000	$27,000	$27,000	$27,000	$27,000	$27,000	$270,000
$30,000	$30,000	$30,000	$30,000	$30,000	$30,000	$30,000	$300,000
$18,000	$18,000	$18,000	$18,000	$18,000	$18,000	$18,000	$180,000
$18,000	$18,000	$18,000	$18,000	$18,000	$18,000	$18,000	$180,000
$18,000	$18,000	$18,000	$18,000	$18,000	$18,000	$18,000	$180,000
$133,500	**$133,500**	**$133,500**	**$133,500**	**$133,500**	**$133,500**	**$133,500**	**$1,335,000**
$711,000	**$711,000**	**$711,000**	**$711,000**	**$711,000**	**$711,000**	**$711,000**	**$7,572,500**

STEP 1: Start with the original Non-capital cost model.
STEP 2: Check to see that all non-capital costs in the plan are covered and that no unnecessary tasks are included. Edit as necessary. (Column A)

STEP 3: Examine the factors influencing costs (Column F). Depending on the characteristics of the watershed you are costing, these factors will push the FTE estimate per task up or down in the range of time spent on the activity. [Example, for the Monitoring of Results Task, if the watershed is characterized by a limited number of monitoring activities and uniform land-use, the estimated time for this task on the FTE scale will be closer to the low end of the range, or .2 FTE annually.]
STEP 4: Describe assumptions about each factor influencing cost (Column G).
STEP 5: Decide on an FTE estimate based on FTE range (Columns C, D) and the cost factors (Columns F, G) and input into Column H.

STEP 6: Determine the responsible party for the given task, and enter in Column I.
STEP 7: Enter the pay scale for the responsible party in Column J. (Column K will automatically calculate the annual cost estimate).
STEP 8: If necessary, adjust the time period for the task from the template in Column L.
STEP 9: Estimate the amount of time/funds of the annual estimate is currently existing in annual budgets. Determine the remaining, unfunded need, and enter as a % of the annual estimate in Column N. Example: A task is estimated at 1 FTE per year at a pay scale of $100,000 per year. Currently, 40% of the total exists in the budget. The unmet need is 60%. Enter .6 in Column N. Column O will automatically calculate the unmet cost (in the example, $60,000).
STEP 11: Add up the total cost for the life of the plan (generally assumed to be 10 years), accounting for the number of years each task will be carried out and multiplying accordingly. Row 21 and Row 31, Row 38.

Appendix F: Funding Resources

Grant/Loan Programs	Relevance		Likelihood of success		Total Funds Available	Award Amounts	Match Requirements	Application Dates	Eligible Groups	Eligible Projects	Program Manager Contact Information
Stormwater & Wastewater Control											
WA Public Works Trust Fund											
Construction loans	high	good source of money to upgrade/replace stormwater & wastewater systems	high	most loans go to small jurisdictions application process not onerous	$222 mi in 2003 2005 biennium	limit of $10 million per jurisdiction per biennium	5-15%, linked to repayment interest rates	May of every year	local jurisdictions (must fulfill GMA planning requirements)	repair, replacement, rehabilitation, reconstruction or improvement of public works systems; eligible systems include bridges, sanitary sewers, domestic water supply, roads, storm sewers, solid waste/recycling; project must be completed within 48 months of loan award	Mason, Jefferson & Clallam Leslie Hafford 360-586-4128 Leslie.Hafford@pwb.wa.gov Kitsap Bruce Lund 360-586-4134 BruceL@cted.wa.gov
Pre-construction loans	high	good source of money for infrastructure planning	high	most loans go to small jurisdictions application process not onerous	$35 mi in 2003-2005 biennium	limit of $1 million per jurisdiction per biennium	5-15%, linked to repayment interest rates	ongoing	local jurisdictions (must fulfill GMA planning requirements)	preconstruction planning & engineering; eligible systems include bridges, sanitary sewers, domestic water supply, roads, storm sewers, solid waste/recycling; project must be completed within 48 months of loan award	
Planning loans	high	good source of money for infrastructure	high	most loans go to small jurisdictions application process not onerous	$3 mi in 2003-2005 biennium	limit of $100,000 per jurisdiction per biennium	no match, no interest	ongoing	local jurisdictions (must fulfill GMA planning requirements)	environmental studies & capital facilities planning; eligible systems include bridges, sanitary sewers, domestic water supply, roads, storm sewers, solid waste/recycling; project must be completed within 48 months of loan award	
WA Department of Ecology											
Centennial Clean Water Fund State Revolving Loan Fund Section 319 Nonpoint Source Grants	high	good fit with plan mission	medium	competitive fund complex application weighted towards water bodies with TMDLs in place	approx $11.2 mi in 2005	loans for up to 100% of eligible project costs grants for nonpoint source activities for up to 75% of project costs	interest rates based on municipal bonds market rate	November	local jurisdictions & tribes	protect & improve water quality	Jeff Nejedly 360-407-6566 jnej461@ecy.wa.gov Brian Howard 360-407-6510 brho461@ecy.wa.gov

Grant/Loan Programs	Relevance		Likelihood of success		Total Funds Available	Award Amounts	Match Requirements	Application Dates	Eligible Groups	Eligible Projects	Program Manager Contact Information
WA Dep. of Community, Trade & Economic Development											
Community Development Block Grant	low	possible source of funds for upgrading wastewater systems	medium	projects must benefit people with low or moderate incomes federal grants from HUD, complex application process	up to $1 million	$8 million in 2004		mid-November	non-entitlement cities & counties funds distributed through Community Action Agencies (CACs)	public facilities (including water, wastewater, storm sewer & streets), economic development, community facilities, new housing	Mason John Walsh 306-438-1100x30 cacadmin@olywa.net Kitsap Larry Eyer 360-478-2301x810 larrye@kcr.org
US EPA Office of Water											
Water Quality Cooperative Agreements	medium	good fit with plan and HCCC mission, but focused on applied science	medium	complex application process, federal funds; examples of projects funded: protocols to assess condition & performance of water and wastewater infrastructure; environmental management systems	$19,000,000 estimated for 2005	$10,000 - $500,000 $100,000 av		early spring established by Regional Administrator	States, Tribes, interstate agencies, and other public or nonprofit organizations that commit to specific activities advance the knowledge of wet weather pollution problems	implementing, and demonstrating innovative approaches relating to the causes, effects, extent, prevention, reduction, and elimination of water pollution includes watershed approaches for solutions to wet weather activities	Bevin Reid 206-553-1566 bevin@epa.gov
Targeted Watershed Grants	high	good fit with mission	low	funding for projects in watersheds nominated by Governor or Tribal leaders - 2 per state or tribe but Hood Canal should fit criteria for nomination	$25,000,000 estimated for 2005	$300,000 - $1 mi $710,000 av	25%		nonprofit groups, tribal governments, universities	support innovative, community-based watershed approaches aimed at preventing, reducing, or eliminating water pollution Watershed Initiative will provide resources in the form of grants, tools, training, and technical expertise and assistance	Bevin Reid 206-553-1566 bevin@epa.gov

Grant/Loan Programs	Relevance		Likelihood of success		Total Funds Available	Award Amounts	Match Requirements	Application Dates	Eligible Groups	Eligible Projects	Program Manager Contact Information
US Department of Agriculture Rural Utilities Service											
Water & Waste Disposal Systems for Rural Communities	low	money intended for rural development	low	does include funding/loans for storm & wastewater treatment	Direct Loans FY 05 est. $1 billion Guaranteed Loans FY 05 est. $75 million Grants FY 05 est. $600 mi	Direct Loans $500 to $9,509,000 Grants $3,423 to $9,900,000	4.5% interest rate on loans	ongoing	local government agencies, town population less than 10,000	basic human amenities, alleviate health hazards & promote orderly growth of rural areas grants, direct loans, guaranteed/insured loans	NRCS Port Orchard 360-337-4433
Resource land protection & restoration											
WA Interagency Committee for Outdoor Recreation											
Aquatic Lands Enhancement Account	high	very good fit with mission	high	HCCC has been successful to date, but competition for grant money is increasing	$4 - $5 million	$1 million max for acquisition $500,000 max for development or restoration $1 million max for combination development/restoration	50%	spring 2006	state, local & tribal governments	purchase, improve and/or protect aquatic lands for enhancement of ecological functions & public access	Kitsap Leslie Ryan-Connelly 360-902-3080 leslier@iac.wa.gov
Land & Water Conservation Fund					approx $2 million	$500,000 max	50%	spring 2005	state, local & tribal governments	acquire, develop and renovate outdoor recreation facilities & areas	Mason, Jefferson, Clallam Kammie Bunes 360-902-3019 kammieb@iac.wa.gov
Salmon Recovery Funding Board					approx $20 million	no upper limit	15%	spring 2006(?)	applicants must go through local watershed prioritization state, local & tribal governments & private landowners	protect and/or restore salmon habitat feasibility assessments	
Family Forest Fish Passage	high	new program, good fit with mission; requires working with private landowners	?	new program		new program	varies	January, July	small forest landowners	financial assistance to repair or remove fish barriers reimbursement, not direct grants	Mike Ramsey (360) 902-2969 michaelr@iac.wa.gov

Grant/Loan Programs	Relevance		Likelihood of success		Total Funds Available	Award Amounts	Match Requirements	Application Dates	Eligible Groups	Eligible Projects	Program Manager Contact Information
WA Department of Natural Resources Small Forest Landowner Office											
Forestry Riparian Easement Program	medium	good fit with mission, requires working with private landowners				minimum of 50% of the fair market stumpage value for qualifying	landowner must cover cost of setting up & recording the	ongoing	forestry landowners one parcel of 20 acres, or multiple parcels of more than	50 year agreement for easement to forgo timber harvest in riparian areas as part of a Forest Practices Application for timber harvest	Richard Wood richard.wood@wadnr.gov
Road Maintenance & Abandonment	medium	new program, not established yet good fit with mission requires working with private landowners			program still in planning phase				small forest landowners	culvert repair/replacement on privately owned forest lands	Janet Pearce 360-902-1122 janet.pearce@wadnr.gov
Urban & Community Forestry Program	low	possible source of funding for riparian restoration in urban areas	medium	small program probably competitive	$31,961,000 estimated for 2005	established by regional office	50%	established by regional office	state agencies, nonprofit groups	establish, manage and protect trees, forests, green spaces and related resources in and adjacent to cities and towns US Forest Service Program	Sarah Griffith 360-902-1704 sarah.griffith@wadnr.gov
WA Department of Fish & Wildlife											
Landowner Incentive Program					$1.6 million in 2004	$50,000 max per landowner			private landowners	focus in 2005 on fish passage on small forest parcels, nearshore marine birds & the Skagit watershed	
Puget Sound Action Team											
Public Involvement & Education	high	good fit with mission	high	HCCC has been successful to date, but competition for grant money is increasing	$450,000 in 2003-2004	$13,000 to $45,000 av $30,000		spring 05 for 05-07 biennium	local governments, nonprofit groups	projects that fulfill the PSAT Water Quality Work Plan education, outreach, restoration, stormwater management	Harriet Beale Outreach/Implementation Manager 360-725-5442 hbeale@psat.wa.gov
US Fish & Wildlife Service											
North American Wetlands Conservation Fund	high	good fit with mission	medium	competitive, complex application procedure, requires partnerships & four year plan	up to $1 million	standard grants: $50,000 to $1 million, av $600,000 small grants: up to $50,000, av	50%	standard grants in March & July small grants in December	any private or public organization	acquire, restore, manage wetlands & other habitat for migratory birds & other fish & wildlife	Pacific Coast Joint Venture Carey Smith, Joint Venture Coordinator 9317 NE Highway 99, Ste D Vancouver, WA 98665

Grant/Loan Programs	Relevance		Likelihood of success		Total Funds Available	Award Amounts	Match Requirements	Application Dates	Eligible Groups	Eligible Projects	Program Manager Contact Information
Coastal Program/Puget Sound Program	high	good fit with mission	medium	competitive	approx $10 million	$5,000 to $50,000	no statutory formula		federal, interstate, state, local, & tribal governments, public nonprofit organizations, minority groups, individuals in 16 focus areas including Puget Sound	assessment, acquisition, restoration of coastal lands	Paula Levin, 911 NE 11th Avenue, Portland, OR 97232, (503) 231-2068 The Puget Sound Coastal Program 510 Desmond Drive SE, Ste 102 Lacey WA 98506-1273 306-753-9440
Partners for Fish & Wildlife	medium	focus on national/global issues	low	competitive, relatively small amounts	approx $30 million	$200 to $25,000 av $5,400	no statutory formula goal of 50%	none	private landowners, Native American Organizations, local government, educational institutions	financial & technical assistance to private landowners for voluntary restoration of fish & wildlife habitat on private lands projects must benefit Federal trust species, priority given to projects that: are identified as priority by Service ecosystem teams; reduce habitat fragmentation; conserve globally or nationally imperiled habitats; self-sustaining	
Private Stewardship Grant Program	high	good fit with mission	medium	competitive, focus on private lands	approx $10 million	$4,000 to $300,000 av $70,000	10%		individuals & groups	local, private & voluntary conservation efforts on private lands benefiting endangered, threatened, candidate & other at risk species	
Neotropical Migratory Bird Conservation	low	focus on bird habitat	low	bird conservation	approx $4 million	$2,000 to $242,000 av $84,000	75% (3:1)	established annually	state, local governments, tribes, nonprofit groups, individuals	conservation of migratory bird species	
Challenge Cost Share	medium	focus on recreation	medium	focus on recreation	approx $9 million	$300 - $25,000 av $7,800	50%	established annually	individuals & groups	restoration of natural resources on private or service-owned lands wildlife oriented recreation or education programs	

Grant/Loan Programs	Relevance		Likelihood of success		Total Funds Available	Award Amounts	Match Requirements	Application Dates	Eligible Groups	Eligible Projects	Program Manager Contact Information
US Department of Agriculture Forest Service											
Forest Legacy Program	low	to date, the majority of funded projects have been on the east coast projects	low	projects are selected by state agencies requires coordination with DNR	$100 million estimated for 2005	$600,000 - $2 million (2004)	at least 25%	determined annually	state agencies	grants to states to protect and conserve environmentally important forest areas that are threatened by conversion to nonforest uses, through conservation easements and other mechanisms	John Henshaw 707-562-8974 jhenshaw01@fs.fed.us
Forest Land Enhancement Program	low	funds allocated to states with a State Priority Plan	low	program established in 2002 Farm Bill, no funds appropriated after 2003 existing funds may be spent by the states	$20 million in 2003	up to $100,000	25%	determined by each state	state agencies, third party agreements	technical & educational assistance & cost share for sustainable management of nonindustrial private forest and other rural lands suitable for sustainable forest management	Pat McElroy, WA DNR 360-902-1603 pat.mcelroy@wadnr.gov
Forest Stewardship Program	medium	stewardship plans on privately owned forest land could improve riparian conditions	medium	requires working with private landowners	$40,069,200 estimated for 2005	$25,000 to $2 million av $450,000	determined by each state	determined by each state	state, tribes, nonprofits, municipalities	long-term active management of non-industrial private and other non-federal forest land to sustain the multiple values and uses that depend on such lands	Pat McElroy, WA DNR 360-902-1603 pat.mcelroy@wadnr.gov
USDA Natural Resources Conservation Services											
Watershed Protection & Flood Prevention	low	funding for flood protection	low	could apply for floodplain improvements, but this is not the focus of the program	$20 million estimated for 2005 grants	up to $2,164,000 per state	variable	ongoing	state, local governments, nonprofit agencies with authority to carry out, maintain, and operate watershed works of improvement	technical and financial assistance in carrying out works of improvement to protect, develop, and utilize the land and water resources in small watersheds	

Grant/Loan Programs	Relevance		Likelihood of success		Total Funds Available	Award Amounts	Match Requirements	Application Dates	Eligible Groups	Eligible Projects	Program Manager Contact Information
Environmental Quality Incentives Program	low/medium	good fit with mission	medium	relatively small grants, program is underfunded	$38 million estimated for 2005 grants	up to $10,000 per person per year; $50,000 over length of contract	10 - 25 % for cost sharing	ongoing	agricultural producers who face serious threats to soil, water, and related natural resources, or who need assistance with complying with Federal and State environment laws	technical, and financial assistance to eligible farmers and ranchers to address soil, water, and related natural resource concerns on their lands in an environmentally beneficial and cost-effective manner	NRCS Port Orchard 360-337-4433
Farmland Protection Program	medium	focus on conserving farmlands	medium	awards made to areas subject to development pressures	FY 05 estimated Financial Assistance $84,833,000 Technical	$2,700 to $1 million av $97,000	25 - 50%	ongoing	state, local, tribal, nonprofit agencies	purchase conservation easements to limit conversion to non-agricultural uses of farm and ranch lands that contain prime, unique, or important soils or historical and archaeological resources	
Wildlife Habitat Incentive Program	low	good fit with mission	medium	requires working with private landowners	$46,452,000 est. cost share 2005	technical assistance & cost share	up to 25%	ongoing	landowners	develop upland wildlife habitat, wetland wildlife habitat, threatened and endangered species habitat, fish habitat and other types of wildlife habitat cost-share agreement period is a minimum of 5 to 10 years	
Wetlands Reserve Program	high	good fit with mission	medium	program is underfunded & requires working with local landowners	$295 million estimated for 2005		up to 25%	ongoing	individual, partnership, estate, trust etc land must be owned for 12 months prior unless inherited	restore and protect farmed wetlands, prior converted wetlands, wetlands farmed under natural condition, certain riparian areas, and eligible buffer areas annual payments for easements, cost-share for restoration	
Conservation Security Program	high	good fit with mission		watersheds must be nominated to the program, watersheds are selected annually based on the amount of high priority resource lands in the watershed			cost-share for conservation practices	ongoing	landowners on working lands	conservation efforts on working lands in designated watersheds	

Grant/Loan Programs	Relevance		Likelihood of success		Total Funds Available	Award Amounts	Match Requirements	Application Dates	Eligible Groups	Eligible Projects	Program Manager Contact Information
Resource Conservation & Development						technical assistance		ongoing	state & local governments, nonprofit groups	plan, develop and carry out programs for resource conservation and development	
USDA Farm Service Agency											
Conservation Reserve Program	high	funds for riparian conservation on farmlands	medium	program is underfunded	$1,951,522,000 estimated for 2005	$30,000 to $50,000 av $4,000	none		individual, partnership, estate, trust etc land must be owned for 12 months prior unless inherited	converting highly erodible cropland or other environmentally sensitive land to a long-term resource conserving cover annual rental payments for 10-15 yrs	Mason George Jaquish 253-845-9272 george.jaquish@wa.usda.gov Jefferson Chris Gorton 425-334-3131 chris.gorton@wa.usda.gov
Conservation Reserve Enhancement Program	high	funds for riparian conservation on farmlands	medium	program is underfunded (up to 100,000 acres to be enrolled), rents may be prohibitively high in some areas			22%		individual, partnership, estate, trust etc land must be owned for 12 months prior unless inherited	rent & cost-share for specific conservation practices in specific geographic areas (joint Federal & State program) annual rental payments for 10-15 yrs	
NOAA Restoration Center											
Community Based Restoration Program	medium	focus on multiple species, concerned about over-emphasis on anadromous fish	medium	competitive, only 15 to 25 projects likely to be funded	est. $3 million	$30,000 to $200,000	50%	Sept 04	state, local, tribal governments, nonprofit groups, universities	conservation efforts, must include an outreach component	
Roads, bridges											
WA Department of Transportation											
Bridge Replacement Advisory Committee	medium	eligible projects	medium	complex funding procedure, would require working through WSDOT	estimated $30 million	up to $10 million	up to 20%	January & March	local governments public bridges over 20 ft long meeting federal eligibility requirements	replace, repair, rehabilitate or perform preventative maintenance	Greg Kolle 360-705-7379 kolleg@wsdot.wa.gov
Transportation Improvement Board	medium	eligible projects	medium	complex funding procedure, would require working through WSDOT	estimated $2 million	local match for federal bridge replacement projects & TEA-21 projects		ongoing	small cities with population less than 5,000	local match for federal bridge repair funds	Omar Mehyar 360-586-1149 omarm@tib.wa.gov

Grant/Loan Programs	Relevance		Likelihood of success		Total Funds Available	Award Amounts	Match Requirements	Application Dates	Eligible Groups	Eligible Projects	Program Manager Contact Information
US Department of Transportation											
Surface Transportation Program	medium	Hood Canal road projects fit criteria	medium	complex funding procedure, competitive, enabling legislation (TEA-21) in conference - no major changes proposed for this section, current extension expires 7/31/04	approx $33 billion				states	surface transportation projects on federal aid highways, bridges on public roads, environmental provisions formula funds to states based on total lane miles, miles traveled & tax payments	Dave Kaiser 3602-705-7381
Transportation Enhancements	medium	Hood Canal road projects fit criteria	medium	complex funding procedure, competitive, enabling legislation (TEA-21) in conference - no major changes proposed for this section, current extension expires 7/31/04	10% of surface transportation funds				states, local groups	projects related to transportation, includes environmental mitigation	
Planning											
WA Department of Ecology											
Coastal Zone Management Grants	medium	focus on jurisdictions needing to update SMP	medium	only 11 grants were awarded in 2004, possible source for small jurisdictions with few other options to fund staff time	$402,110 awarded in 2004-2005 round	up to $50,000 - $60,000	none required	January 2005	local jurisdictions & tribes in 15 coastal counties	grants were awarded for shoreline management planning in 2004-2005 round	Bev Heuther bhue461@ecy.wa.gov
Watershed Planning Grants										watershed planning under state legislation; instream flow rules; water storage assessment; water quality	
US EPA Office of Water											
Water Pollution Control - State & Interstate Program Support (106 Grants)	low	funds are allocated to the relevant state agency, would require coordination with WA DOE and/or tribes	low	formula funds: $125,000 per interstate agency for coordination among member states + remainder allotted by formula ratios	$222.4 mi estimated for 2005	$60,000 - $11.2 mi		established by Regional Administrator	state & interstate water pollution control agencies & tribes	prevent & control surface & groundwater point & nonpoint source pollution water quality planning and standards; monitoring and assessments; inspections and enforcement; permitting; training; advice and assistance to local agencies; and public information	

Grant/Loan Programs	Relevance		Likelihood of success		Total Funds Available	Award Amounts	Match Requirements	Application Dates	Eligible Groups	Eligible Projects	Program Manager Contact Information
Surveys, studies, investigations, demonstrations & training grants	low	projects with national application and/or a research component more likely to succeed example projects: development of wetland protection and restoration guides for local	low		$11 mi estimated for 2005			May 15	state, local governments, tribes, universities	water quality, watershed management, aquatic ecosystem restoration, fish contamination & consumption, nonpoint source management, wetlands protection, coastal & estuarine management, treatment technologies	

Appendix G: Source List

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