Appendix 1-B:
Recommendations of Others

Equity in Stewardship Strategies for Protecting Critical Areas in Clallam County,
Lead Agency: Clallam County
Author: M.R. Stearns
Date: October, 2000

RECOMMENDATION	REACH	TYPE	RESPONSIBLE JURSIDICTION	ACTION TAKEN
The County should establish an acquisition fund, both for property that has been subjected to significant flood damage and properties that the County acquires from foreclosure or donation, assuming these properties lie within areas deemed "most significant" for acquisition under Recommendation #1 (above)	ALL		CC	
The County should develop a public outreach program for the existing Clallam County Current Use Taxation (CUT) and Public Benefit Rating System (PBRS) program. As part of the public outreach program, the County should also review the existing filing fee structure.	ALL		CC	
The County should review the Clallam County Zoning Code (C.C.C.) Title 33, and revise as necessary the existing Transfer of Development Rights (TDR) program and Purchase of Development Rights (PDR) programs.	ALL		CC	
The County should review the Clallam County Zoning Code (C.C.C.) Title 33, and revise as necessary, the Planned Unit and Cluster Developments Chapter 33.23.	ALL		CC	
The County should determine the feasibility of "trading" County-owned lands for critical areas that are deemed important.	ALL		CC	
The County should review its current Real Estate Excise Tax (REET) levy program to determine the use of funds. Any additional levies should be legally enacted as authorized by statute.	ALL		CC	
The County should consider developing a country-wide conservation futures program, to be legally enacted pursuant to RCW 84.34.200.	ALL		CC	
The County should consider partnerships with organizations for the purchase and long-term management of conservation easements or fee-simple ownership county-wide.	ALL		CC	
The County should continue joint partnerships with neighboring jurisdictions for the implementation of projects addressing critical areas' protection county-wide.)	ALL		CC	

Salmon and Steelhead Habitat Limiting Factors – WRIA 18
Lead Agency: Washington State Conservation Commission, Final Report
Author: Donald Haring
1999

RECOMMENDATION	REACH	TYPE	RESPONSIBLE JURSIDICTION	ACTION TAKEN
Stabilize Highland Irrigation Ditch to ensure stability during high flow events to avoid potential for fine sediment contribution to Bell Creek.	Bell	**WQ**		
Restore the lower, channelized reach of Bell Creek (downstream of Schmuck Road) and property integrate with the estuary. Restoration must include removal of dikes, meadering of the channel, excavation of pools and additional LWD.	Bell	**WQ**		
Assess LWD status in Bell Creek and tributaries; develop and implement a short-term LWD strategy to provide LWD presence and habitat diversity until full riparian function is restored.	Bell	**H**		
Restore functional riparian zones through the watershed, and identify and correct areas affected by unrestricted animal access.	Bell	**H**		
Complete comprehensive barrier inventory for Bell Creek, prioritize, and implement correction measures.	Bell	**H**		
Review proposal to release treated Class A water into Bell Creek and ensure any release does not adversely affect channel conditions or salmonid habitat.	Bell	**H**		
WDFW should actively enforce screening requirements on the irrigation diversion upstream of Carrie Blake Park.	Bell	**H**		
HB 2514 Planning Unit should review instream flow concerns and investigate alternatives for ensuring instream flow.	Bell	**IF**		
Pursue removal of the tidegate and restoration of saltmarsh habitat in the estuary, including returning Gierin Creek to its former meadering location, which essentially bisected the marsh.	Gierin	**H**		
Develop and implement a short-term LWD strategy to provide LWD presence and habitat diversity until full riparian function is restored.	Gierin	**H**		

Restore functional riparian zones throughout watershed, particularly upstream of Holland Road, and identify and correct areas affected by unrestricted animal access.	Gierin	**H**		
Develop and implement a strategy for restoring estuarine processes and fish passage in Casselery Creek.	Casselle ry Creek	**H**		
Complete comprehensive barrier inventory for Cassalery Creek (particularly upstream of Woodcock Road), prioritize, and implement correction measures.	Casselle ry Creek	**H**		
Develop and implement a short term LWD strategy to provide LWD presence and habitat diveristy until full riparian function is restored.	Casselle ry Creek	**H**		
Restore functional riparian zones throughout the watershed, and identify and correct areas affected by unrestricted animal access.	Casselle ry Creek	**H**		
Department of Ecology should conduct a comprehensive assessment of water diversions from Cassalery Creek, determine consistency with water rights, and enforce against unauthorized water withdrawals.	Casselle ry Creek	**H**	**DOE**	
The need to establish and ensure instream flows in Cassalery Creek should be referred to the HB 2514 Planning Unit.	Casselle ry Creek	**IF**	**PU**	
Department of Ecology should regularly monitor for chlorine presence downstream of Sunland Sewage Treatment Plant; remediate if necessary	Casselle ry Creek	**WQ**	**DOE**	
Modify the tidegate to allow significantly greater tidal flux into the Cooper Creek estuary.	Cooper Creek	**H**		
Modify or remove the water level control structure in the estuary to allow unimpeded fish passage.	Cooper Creek	**H**		
Restore the stream to a meandering configuration, utilizing historic natural channel, where practicable.	Cooper Creek	**H**		
Develop and implement a short term LWD strategy to provide LWD presence and habitat diversity until full riparian function is restored.	Cooper Creek	**H**		

Restore functional coniferous riparian zones	Cooper Creek	**H**		
Restore functions of historic wetlands associated with lower Meadowbrook Creek.	Meadow brook Creek	**H**		
Identify and correct areas affected by unrestricted animal access	Meadow brook Creek	**H**		
Increase the span of the Sequim Dungeness Way bridge to improve floodplain function.	Meadow brook Creek	**H**		
Develop and implement a short term LWD strategy to provide LWD presence and habitat diversity until full riparian function is restored	Meadow brook Creek	**H**		
Restore functional riparian zones throughout watershed	Meadow brook Creek	**H**		
County should adopt and implement a stormwater strategy for this rapidly developing watershed, including tributaries, that will remediate current stormwater effects and minimize additional future effects.	Matriotti Creek	**ALL**	**CC**	
Restore functional channel conditions between Runnion Road and Old Olympic Highway	Matriotti Creek			
Identify and correct areas by unrestricted animal access	Matriotti Creek	**H**		
Cease the release of fine sediment-laden stormwater from irrigation delivery systems to Matriotti Creek	Matriotti Creek	**H**		
Complete comprehensive barrier inventory for Matriotti Creek, prioritize, and implement correction measures.	Matriotti Creek	H		
Develop and implement a short term LWD strategy to provide LWD presence and habitat diversity until full riparian function is restored	Matriotti Creek	H		

Restore functional riparian zones throughout the watershed	Matriotti Creek	H		
Refer restoration of tributary flows to Matriotti Creek (between Hooker and Atterberry roads) to the HB 2514 Planning Unit for resolution	Matriotti Creek		LEG/PU	
Develop and implement a short term LWD strategy to provide LWD presence and habitat diversity until full riparian function is restored	Hurd	**H**		
Restore functional riparian zones throughout the watershed, particularly on WDFW-owned hatchery property	Hurd	**H**		
Monitor fish passage conditions at and downstream of the low irrigation dam; maintain function of the Bear Creek alluvial fan.	Bear	**H**		
Identify and correct areas affected by unrestricted animal access, fence and revegetate to reestablish functional riparian zones throughout the watershed.	Bear	**H**		
The Agnew Irrigation Company should cease the release of fine sediment laden stormwater flows to Bear Creek	Bear	**H**	**AID**	
Develop and implement a short term LWD strategy to provide LWD presence and habitat diversity until full riparian function is restored	Bear	**H**		
At a minimum, restore fish passage past the water intake dam, with dam removal as the preferred option to restore biological processes.	Canyon	**H**		
Evaluate restoration potential of historic lower portion of Canyon Creek, through the terrace immediately adjacent to the Dungeness River; implement as practicable	Canyon	**H**		
Evaluate potential to stabilize active slide upstream of dam.	Canyon	**H**		
Restore natural sediment transport downstream of dam.	Canyon	**H**		

Introduce LWD to the channel downstream of the dam to retain river gravels, provide habitat diversity, and restore spawning habitat.	Canyon	H		
Protect intact riparian zones upstream of the dam, restore functional riparian zones downstream of the dam.	Canyon	H		
Reduce the forest road density in the Caraco Creek watershed.	Caraco Creek			
Maintain remaining forest roads in a manner that minimizes potential of mass wasting and fine sediment erosion.	Caraco Creek	WQ		
Maintain riparian condition in Gray Wolf canyon	Gray Wolf River	H		
Evaluate the forest road network in the watershed and implement actions necessary to prevent entry of fines and mass wasting events to the Gray Wolf River.	Gray Wolf River	H		
Maintain forest roads in a manner that minimizes potential of mass wasting and fine sediment erosion.	Gold Creek			
Identify and map deep seated failures and areas prone to shallow-rapid landslides; prevent land use activities (roads and harvest) that will exacerbate sediment contribution from these areas.	Gold Creek	WQ		
Restore natural channel characteristics in gabion-controlled section of lower basin.	Gold Creek	H		
Maintain >60% of watershed in a condition that provides hydrologic maturity (>age 25) (Wild Salmonid Policy)	Gold Creek	H		
Restore forest road density to <2.4 mi/mi^2, which is the threshold density of concern identified in the Federal Watershed Analysis; confine roads to areas not sensitive to mass failures.	Gold Creek			
Restore stability of slide prone areas; ensure road cross-drainage is maintained; consider abandonment of roads located on active and potential slide areas; provide sediment retention BMP's on active slides where practicable.	Silver Creek			

Avoid future road construction on slide prone areas.	Silver Creek			
Evaluate cause of channel instability and develop and implement a corrective plan.	McDonald Creek	H		
Reforest timber harvested areas in the rain-on-snow zone; ensure that future timber harvest is done in a manner that maintains hydrlogic maturity in the upper watershed.	McDonald Creek	H		
Restore LWD presence and function from the mouth upstream to the mouth of Pederson Creek (RM 4.9); addition of LWD in upper watershed to provide channel and bank stability may also be beneficial.	McDonald Creek	H		
Monitor/restore landslides on USFS lands.	McDonald Creek	H		
Identify options to reduce/eliminate the influence of Dungeness River water, conveyed through the irrigation system, on homing ability of Dungeness and McDonald origin salmonids.	McDonald Creek	H		
Reduce the flow energy increase that resulted from removal of the culverts at Old Olympic Highway.	Siebert Creek	H		
Develop and implement a short term LWD strategy in lower Siebert Creek to restore LWD presence and pools, particularly from the mouth to Highway 101.	Siebert Creek	H		
Abandon/relocate the forest road on East Fork.	Siebert Creek			
Restore stability of slide prone areas; ensure road cross-drainage is maintained; consider abandonment of roads located on active slide areas; provide sediment retention BMP's on active slides where practicable.	Siebert Creek			
Limit conversion of upper watershed to non-forest cover	Bagley Creek	H		
Evaluate fish passage through log jams in lower Bagley Creek and implement remedial modifications, where warranted (Mike McHenry)	Bagley Creek	H		

Provide unrestricted fish passage through the Highway 101 culvert and correct the additional two fish passage barriers upstream	Bagley Creek	H		
Prevent animal access to channel upstream of Highway 101 and restore functional riparian zones through this area.	Bagley Creek	H		
Replace the lowermost culvert on Bagley Creek Road, to prevent backwatering during peak flow events and bank erosion and sediment deposition upstream of the culvert	Bagley Creek	H		
Restore LWD presence throughout the channel. Develop and implement a short term LWD strategy to provide LWD presence and habitat diversity util full riparian function is restored.	Bagley Creek	H		
Adopt and implement instream flow requirements.	Bagley Creek	IF		
Restore floodplain function downstream of RM 1.7, including the removal/pull back of dikes, elimination of floodplain constrictions, and restoration of natural banks.	Morse Creek			
Restore LWD presence throughout the channel downstream of the natural falls at RM 4.9; develop and implement a short term LWD strategy to provide LWD presence and habitat diversity until full riparian function is restored; ensure that LWD is passed downstream of the railroad trestle.	Morse Creek	H		
Reestablish estuarine characteristics and function similar to historic conditions.	Morse Creek	H		
Restore riparian function by encouraging conifer regeneration in deciduous stands that historically had a conifer component.	Morse Creek	H		
Restore longshore littoral drift from marine bluffs to the west of Morse Creek	Morse Creek	H		
Improve passage conditions, initially at Highway 101 and at RM 0.1, and subsequently at other location	Lees Creek	H		
Restore riparian presence and function, develop and implement a short term LWD recovery strategy, and fence livestock away from the channel on agricultural areas on both the East and West forks	Lees Creek			

Identify and removal/correct floodplain constrictions	Lees Creek			
Evaluate flow and water quality impacts of runoff from the mill landfills, Highway 101, and agricultural areas of concern; remediate identified problems	Lees Creek			
Educate landowners in the watershed on the importance of providing functional salmon habitat, particularly in regard to LWD, riparian vegetation, and preventing animal habitat access to the channel	Lees Creek			
Restoration of natural floodplain function in the lower channelized portions of Ennis Creek	Ennis Creek	H		
Restoration of the Ennis Creek intertidal estuary	Ennis Creek	H		
Secure passage through Highway 101 by maintaining fishway/replace culvert with bridge	Ennis Creek			
Collect and treat stormwater from Highway 101 and other impermeable surfaces	Ennis			
Restore damaged riparian areas and LWD presence and function throughout the channel	Ennis			
County/City should monitor water quality in the vicinity of the golf course	Ennis			
Correction of passage problems	Peabody Creek	H		
Collection and treatment of stormwater	Peabody Creek			
Removal of instream fill on ONP lands	Peabody Creek	H		

LWD/Riparian improvements projects	Peabody Creek			
Improve passage conditions and eliminate large reach of culverts	Valley Creek	H		
Restore the lower ¾ mile of stream by re-meandering, restoring LWD, and recreating pools to the maximum extent possible	Valley Creek	H		
Reestablish floodplain process by reducing or eliminating floodplain constrictions, particularly downstream of Highway 101	Valley Creek	H		
Remediate stormwater management in the watershed to collect, treat, and discharge stormwater in a manner that avoids adverse impacts to Valley Creek and other surface waters	Valley Creek			
Restore riparian vegetation communities and instream large wood	Valley Creek	H		
Remediate stormwater management in the watershed to collect, treat and discharge stormwater in a manner that avoids adverse impacts to Tumwater Creek and other surface waters; particular attention should be given to eliminating stormwater discharges that are creating major sediment contribution off Black Diamond Road, and taking measures to stabilize erosion from the gully	Tumwater Creek			
Restore functional estuary processes	Tumwater Creek	H		
Remove channel constrictions in the lower channel and restore functional floodplain processes	Tumwater Creek	H		
Develop and implement a short term LWD strategy to provide LWD presence and habitat diversity until full riparian function is restored	Tumwater Creek	H		
Restore functional riparian zones throughout the watershed	Tumwater Creek	H		

Remediate stormwater impacts to the channel; ensure that stormwater impacts resulting from future construction in the watershed are fully addressed at the time of construction	Dry Creek			
Prevent further head-cutting in relocated reaches of Dry Creek	Dry Creek	H		
Develop and implement a short term LWD strategy to provide LWD presence and habitat diveristy until full riparian function is restored	Dry Creek	H		
Restore functional riparian zones throughout the watershed	Dry Creek	H		
Systematic restructuring of the lower and middle river with large wood	Elwha	H		
Removal of selected dikes and other channel constrictions	Elwha			
Riparian restoration	Elwha	H		
Acquisition/conservation easement access and set back of structures constructed within the channel migration zone	Elwha	H		

Floods in the Lower Sequim Bay Tributary
Lead Agency: Jamestown S'Klallam Tribe
Author: Orsborn, Orsborn
1999

RECOMMENDATION	REACH	TYPE	RESPONSIBLE JURISDICTION	ACTION TAKEN
Install gravel traps in both branches of No-Name West Creek upstream of Correa Lane and downstream of the east side of the gravel parking lot; these could be installed temporarily before the next flood season, and then upgraded when improvements are made in the internal drainage system.	SEQUIM BAY	WQ,H,IF		
Strongly consider the formation of flood control or drainage district under state law; you need only 10 landowners initially to petition the county, you can raise money through assessments and be eligible for construction and preservation grants; contact the WDOE; you may be able to use the restoration of the Sequim Bay estuary, and its protection against future developmental impacts (ESA) as your focus.	SEQUIM BAY			
Coordinate with WDOT on enlarging the Dean Creek Culvert, as well as coordinating with them and NCRS on moving Jimmy Come Lately Creek to its old west channels (is Jimmy Come Lately Creek going to join No-Name West and use one common new bridge under Highway 101?).	SEQUIM BAY			
Engage a consulting firm, that is well-versed in internal drainage problems, to survey the lower part of the drainages, run a hydraulic analysis of the existing drainage system, discuss anticipated types and areas of land-use development and prepare a plan for handling excess water in the lower Sequim Bay tributaries; this should be a plan which will provide an adequate basic drainage-storage system, plus carry the additional runoff from future development.	SEQUIM BAY			

Clallam County Comprehensive Plan
Port Angeles Regional Plan
Lead Agency: Clallam County
1995

RECOMMENDATION	REACH	TYPE	RESPONSIBLE JURSIDICTION	Action Taken
Site, design and maintain marinas and marine facilities to protect against adverse effects on shellfish resources, wetlands, submerged aquatic vegetation, or other important riparian and aquatic habitat areas. The design of marinas and marine facilities should consider the migration, survival, and harvestability of food fish and shellfish.		H	CC,PA, P/PA	
Where feasible, redevelopment or expansion of existing marina facilities that have minimal environmental impacts is preferred over new marina development in important habitat areas.		H	CC,PA, P/PA	
Design boat hull maintenance areas to minimize contaminated runoff. Include source control BMPs that collect pollutants and keep them out of runoff. Boat hull maintenance areas shall be specified with high signs listing required BMPs and hull maintenance should not be allowed to occur outside these areas.		WQ	CC,PA,P/PA	
Locate and design fueling stations so that spills can be contained in a limited area. Fueling stations and other marine facilities shall have spill containment information and equipment in a clearly marked, easily accessible location. A spill contingency plan must include spill emergency procedures, such as health and safety, notification, and spill containment and control procedures. Marine facilities personnel must be properly trained in spill containment and control procedures. (County, City of Port Angeles, Port of Port Angeles)		WQ	CC, P/P, PA	
Install pumpout, dump station, and restroom faculties where needed to reduce the release of sewage to surface waters, especially where liveaboards comprise a significant portion of the marine users. These facilities should allow ease of access and have signage to promote use by the boating public. All sewage pumpout facilities should be regularly inspected and maintained in operational condition. (County, City of Port Angeles, Port of Port Angeles)		WQ	CC, P/P, PA	
Provide opportunities and facilities for proper disposal of solid and hazardous wastes. (County, City of Port Angeles, Port of Port Angeles) a) Designate locations for maintenance and cleaning, and employ Best Management Practices to minimize wastes associated with maintenance/cleaning activities.		WQ	CC, P/P, PA	

b) Provide appropriate storage, storage, transfer, containment, and disposal facilities for liquid material, such as oil, harmful solvents, antifreeze, and paints. Provide opportunities for recycling of these materials.				
New development shall utilize existing community water systems where available and feasible, rather than establishing new community water systems in areas already served by existing systems. (County,City of Port Angeles, Port of Port Angeles)			CC, P/P, PA	
Stormwater Management: Control stormwater runoff and treat associated pollutants generated from new development, redevelopment, and new and relocated roads highways, and bridges. (County, city of Port Angeles, Port of Port Angeles) a) For new development, maintain post development peak runoff rate and average volume at levels of that protect aquatic resources and capital improvements. b) Both structural and non-structural methods should be employed to mitigate the adverse impacts of storm water. c) Management practices should be designed for site-specified conditions to achieve the desired maximum effectiveness. d) Regional stormwater management is advocated as a means of correcting existing problems, but not necessarily as a means of addressing new projects. e) Minimize stormwater impacts to natural conveyance systems. f) Biofiltration Best Management Practices shall be a required component of all stormwater management systems where feasible. g) Where feasible, utilize appropriate biofiltration pollution control mechanisms to treat road and highway runoff prior to discharging to surface and ground waters of the watershed. Minimize stormwater impacts during road highway projects and seek mitigation which would increase stormwater storage.		WQ	CC, P/P, PA	
Riparian areas, and wetlands should be protected and restored as part of regional stormwater management.(Clallam County, City of Port Angeles) a) Use vegetation and soft practices, such as reed berms or willow revetments, rather than hard structural improvements, such as rip-rap of concrete revetments to stabilize stream channels and reduce or eliminate the effects of stormwater. b) Maintain, and increase where feasible, the natural storage capabilities of the watershed's wetlands. Investigate the potential for increased stormwater storage thorough artificial wetland development at suitable sites. c) Utilize constructed wetlands to treat and contain surface water runoff pollutants and decrease loading to surface water. Constructed wetlands or sediment retention basins should be located to have a minimal impact on the surrounding areas. While wetland areas constructed for stormwater treatment do not replicate all of the ecological functions of natural wetlands, they should be designed with		WQ,H	CC, P/P, PA	

enhancements which increase their aesthetic value as a landscape amenity whenever possible.				
Develop a schedule for implementing stormwater controls and capital facilities identified in Stormwater Management Plans (Clallam County, City of Port Angeles, 1986, 1994), and other necessary improvements to existing stormwater control structures. a) Identify and establish priorities and funding for regional structural solutions, retrofit needs and opportunities, and non-structural alternatives.			CC, P/P, PA	
Pollution prevention mechanisms, including education, source control and treatment, should be implemented by all jurisdictions as part of comprehensive stormwater management plans. Jurisdictions should cooperate in watershed-wide stormwater management planning and implementation. (Clallam County, City of Port Angeles, WA Department of Transportation)			CC, PA, WDOT	
Alternative designs and maintenance strategies should be developed of impervious parking lots, which promote sweeping, use of vegetated areas/grassed swales, and other methods to contain and control pollutants. (Clallam County, City of Port Angeles) a) All new storm drains shall be identified with a “Dump No Waste, Drains to…[stream, groundwater, etc.]”Message. b) Conduct a volunteer project to stencil existing storm drains with a “Dump No Waste” educational message.		WQ	CC, PA	
Publish design standards in a readily understandable format for permit applicants and responsible parties. Provide clear requirements to expedite planning, review, and approval of stormwater control methods. (Clallam County, City of Port Angeles)		WQ	CC, PA	
Jurisdictions should undertake periodic monitoring and maintenance to ensure proper operation and maintenance of stormwater facilities of facilities they own and/or operate. (Clallam County, City of Port Angeles, WA Department of Transportation.			CC, PA, WDOT	
Adopt and implement planning and design standards for stormwater facilities that require the minimum amount of maintenance for proper, long-term functioning. Ensure continued performance through appropriate maintenance operations. Repair damage after storms, and periodically inspect practices. (Clallam County, City of Port Angeles)			CC, PA	
Publish specific obligations and responsibilities of the stormwater facility owner/operator including procedures for identifying owners/operators with long term responsibility for the facility. Whenever possible, facilities should be operated and maintained by a public entity or professional services contractor. Once installed, facilities should receive thorough maintenance at regular intervals, by individuals			CC, PA	

trained in proper inspection and maintenance of such facilities (Clallam County, City of PA)				
Develop a procedure for addressing maintenance default by negligent owner/operators. A provision shall be made for public assumption of stormwater control facilities (Clallam County, City of PA)			CC, PA	
Establish a stormwater review and inspection program which includes staff training and education. (Clallam County, City of PA)		WQ	CC, PA	
Develop training and education programs and materials for public officials, contractors, and others involved with the design, installation, operation, inspection, and maintenance of runoff facilities (Clallam County, City of PA)		WQ	CC, PA	
Educate the public about the importance of stormwater management facilities. Explain the purpose and details of stormwater projects and programs, the benefits they provide, and the need for regular maintenance of facilities. Signage at these facilitiesi is an effective way to provide this information, in addition to field trips, workshops, and other educational activities. (Clallam County, City of PA)		WQ	CC, PA	
Periodically review and evaluate stormwater management programs to ensure continued effectiveness and efficiency. Evaluate locally applied stormwater BMP's to determine their general effectiveness in reducing the quantity and quality impacts of runoff (Clallam County, City of PA)		WQ	CC, PA	
Develop local facilities to treat and dispose of biosolids.		WQ		
So that septic sludge could be treatable through a local Sewage Treatment Plants, land application, or other facility, educate waste generators to keep hazardous wastes out of municipal, community, and individual sewage disposal system. (Clallam County, PUD #1)		WQ	CC, PUD #1	
Collect, recycle, market and distribute products manufactured from waste such as natural wood debris, debris from the construction industry, and secondly sources of similar material such as yard waste. (Clallam Co.)		WQ	CC	
Support development and implementation of a solid waste recycling and utilization project as a public-private partnership between local government and industry.		WQ		
Pursue a mandatory recycling program in an effort to reduce waste and illegal dumping. Provide incentives ass a variable can rate		WQ,H	CC	
Additional transfer stations offering both waste disposal and recycling should be local conveniently in rural areas. New and existing transfer stations should operate during hours convenient to the public		WQ	CC	
Identify common illegal dumping sites. Take measures to reduce the occurrence and negative impacts of dumping, such as posting signs, increasing enforcement, and organizing cleanups. Offering landfill fee waivers or "amnesty days" for organized		WQ	CC,PA	

community cleanups. (Clallam Co, City of PA)				
Continue household hazardous waste collection events, and expand to include commercial and agricultural waste collection. Develop used oil, used antifreeze and hazardous chemical recycling programs and site collection centers in convenient locations (Clallam Co, City of PA)		WQ	CC,PA	
Foster public dialogue to explore and define the elements of sustainable			WSUCE	
Employ educational institutions to gather information about new technologies and sustainable enterprises. Identify model communities, programs, businesses, and approaches to watershed and sustainability. Present this information to business, industry, homeowners, schools			WSUCE	
Maintain and expand an inventory of sustainable industries and innovative technologies which could be transferred to the Port Angeles Watershed. Make this inventory available through public libraries, and public and private offices			CCEDC,NOLS	
Initiate a dialogue with neighborhood and community groups to exchange information about what is environmentally and economically acceptable			CCEDC	
Continue to develop high quality educational institutions that are attractive to industries. Improve local secondary schools to provide academic and vocational training consistent with market needs. Seek to establish research facilities, satellite campuses, and higher education academic institutions			PASD, PC, WWU	
Build the resources o fthe public and school libraries through contributions of published materials that describe sustainable enterprises and communities on a concrete (rather than theoretical), project-oriented level. Utilize WU's Peninsula College Envrionmental Studies program as a repository and general distribution center for this information.			NOLS, PC, WWU	
Develop local facilities for recycling and manufacturing of recycled products. Search out and retain markets for recyclable materials. Provide additional sites for short term storage of recyclable materials awaiting efficient means of transport. Pursue incentives to reduce waste storage, through: evaluating the cost effectiveness of landfill disposal vs. transporatation cost; subsidizing transportation of collected materials if economically beneficial; establish a waste-to-energy facility; or other methods			CC, CCEDC	
Facilitate materials exchange, through physical or electronic bulletin boards, community "flea markets" or a dedicated reuse/recucling facility			CC	
Initiate an awards program to recognize excellence and use of sustainability and non-toxic principles in residential and commercial development and in facility operation and maintenance			CCEDC	
Evaluate and,where feasible, reform regulations to provide economic and other			CC, PA	

incentives to attract environmentally compatible enterprises to the Port Angeles Watershed. Encourage businesses to make commitments to environmental enhancement of the watershed				
Acquire information and conduct studies to establish the limits of a healthy watershed in Port Angeles. Identify benchmarks of health, which should not be exceeded, including those related to water quality, resource extraction, and vegetation, fish and wildlife abundance and diversity. Identify conservation measures and technological methods which could be used to extend those limits while retaining a reserve capacity to account for unpreditable needs or losses.			WWU, SKT, WDFW, PC	
Utilize a process similar to the Dungeness Quilcene pilot project to allocate water resources among user groups before there is a crisis			CC, PA, EST, P/PA, PUD, WUA	
Analyze the economic impacts of protecting shorelines, streams, wetlands, and other water-related resources. Include the costs and benefits of protection policies, as well as the potential future costs resulting from degradation or irreversible loss of resources			CC	
Conduct long term monitoring of parameters of watershed health. Summarize the "State of the Watershed" annually in a report written for citizens and policy makers, and include a water quality summary in the EDC's "Investor's Guide"			CC, PA, WWU, CCEDC	
Natural Envionmental-General: Review existing regulations relating to critical areas, sewage disposal, and land division for adequacy and effectiveness of ground and surface water protection measures			CC, PA	
Address cumulative impacts to water quality, water quantity and beneficial uses, across all jurisdictions, when developing and implementing land use policies and plans . Conservation of water resources and prevention of pollution are the preferred manaement objectives			CC, PA, PUD, WDNR, WDOT, ONP	
Coordinate stream, salmon, and shellfish restoration and conservation projects for schools, volunteer organizations, landowners, and community groups. Assist real estate professionals, developers, business and industry represntatives, conservation groups, and private landowners to implmeent restoration and conservation programs.			CCD, WSUCE, WDRW, EST, CC, PA	
Coordinate an interagency team to train volunteer groups to protect an enhance wetlands, riparian areas, and other watershed resources			WSUCE	
Provide information and education to the public and decision makers on the rationale behind existing resource protection measures and ordinances			CC, PA	
PA Harbor: Manage Port Angeles Harbor for the multiple beneficial uses for which it is designated under state and federal water quality standards, including recreation and aesthetics, fish and shellfish habitat, wildlife, commerce and navigation (City of				

PA, EST, Port of Port Angeles, WA DFW)				
Coordinate a cooperative, multi-jurisdictional effort to identify existing pollution problems in the harbor, and needs and opportunities for restoration of marine resources. Undertake remediation of pollution in Port Angeles Harbor as soon as funding can be secured. Contain or remove contaminated sediments using Best Available Technology (City of PA, EST, WA DOE)				
Wetlands: Amend wetland policies to include protection of identified water quality and hydrologic functions of wetlands – such as water retention/detention and pollutant removal – in addition to their habitat functions and values. (CC).				
Develop a non-regulatory strategy for preserving wetland through purchase, conservation easements, and other mechanisms. Identify significant riparian corridors and wetlands for possible purchase or acquisition or conservation easements. Prioritize the areas based upon specific criteria, or by public nomination. Seek funding and methods to permanently preserve and protect wetlands identified as significant. Conduct other wetland enhancements. (CC, City of PA, NOLT).				
Wildlife: Establish and/or support urban wildlife programs to create and enhance pockets of habitat within the city and outlying areas. (City of PA, WA DFW, CC)				
Create new corridors and maintain existing corridors of contiguous habitat for wildlife, in conjunction with streams and existing tracts of unbroken habitat (CC, City of PA, WA DFW)				
Public/Private Open Space: Public actions should maintain and protect riparian shoreline areas while providing public access where appropriate (CC, City of PA, WA DNR)				
Identify recreational access needs for streams and shorelines, and acquire easements where possible. (CC, City of PA,, NOLT)				
Encourage and assist riparian property owners to dedicate conservation easements and other protective measures for corridor protection. Provide open space tax status and other incentives for portions of properties located within the riparian corridors. (CC, City of PA, NOLT)				
Pursue opportunities to obtain DNR managed lands along riparian corridors for open space lands by purchase or other adequate compensation to the Trust for which it is managed (CC, City of PA, EST, NOLT, WA DNR)				
Shellfish: Consider cumulative impacts to shellfish habitat and harvestabilty when shoreline master program, comprehensive plan amendments, and land use changes are reviewed. (CC, City of PA, EST)				
Fin Fish: Maintain healthy wild native fish runs. Future replacment or enhancement of fish populations should utilize locally adapted stocks when available. (WA DFW,				

EST)				
Acquifers: Conduct studies within the City and Urban Growth Area to characterize possible contamination problems, and determine routes, types, and sources of contamination which may be affecting marine resources (City of PA, CC)				
Streams and Riparian Corridors: (General) For all streams, develop comprehensive, site specific stream management plans which include stream surveys, assessment and monitoring, and recommendations for restoration or improvement. Stream evaluattions should be performed in consultation with knoledgeable local residents. Plans should be linked to agency comprehensive plans, incorporate landowner needs and responsibilities, and provide for technical assistance to landowners. (EST, WA DFW, CCD)				
Monitor all streams for bacteria and chemical parameters. Immediately identify and remediate suspected sources of contamination. (CC, City of PA, EST)				
Imporve fish passage where needed, and create fish spawning and rearing habitat where appropriate. (WA DFW, WST, CCD)				
Protect and enhance riparian areas with vegetation to reduce stormwater impacts and to maintain optimum water temperature. (CCD, EST, CC, City of PA)				
Retain or immediately re-establish vegetated buffers within all stream corridors. (CC, City of PA)				
Use direct mailings and personal contacts to provide information and technical assistance to property owners and residents along floodplains, shorelines, and riparian areas. Include information about Best Management Practices, low-impact shoreline management, management of erosive soils to protect water quality, and protection of riparian and other values (CC, City of PA, CCD).				
Measure all surface water withdrawals at the source to determine actual withdrawals, to ensure compliance with permitted water right allocation. (WA DOE).				
Define necessary instream flows for fish on all streams. Establish limitations on surface water withdrawals to maintain optimum instream flow for fish at critical times. Encourage water conservation during low flow months (WA DFW, EST, City of PA, PUD #1 of CC, Water Associations).				
Public Involvement and Education: Provide funding and support for a water resources field agent who will provide assistance in planning, conducting, and evaluating educational programs by working with local governments, property owners and the public. The field agent should conduct regular educational presentations to civic groups and organizations in the community on water resource issues and watershed plan implementation. (WSU Coop Extension, UWSeaGrant, CC, City of PA)				

Conduct educational programs to meet applicable stewardship objectives and which are geared toward specific neighborhoods, organizations, and user groups. Programs should provide informaiton, discussion, and activities and should address water quality and quantity issues and problems particular to these groups. Subjects covered may include on-site sewage disposal system opeation and maintenance; riparian management; waste reduction, recycling, and disposal; water conservation. (WSU Coopeartive Extension, CC, City of PA, EST, Port of PA)				
Continue Clallam Conservation District's ongoing program of water quality education for small farm and commercial farm operators. Reach out to small farm operators to identify needs and concerns, provide information about good stewardship, and provide technical assistance for conservation planning and Best Management Practices (CCD, WSU Cooperative Extension)				
Conduct outreach and awareness programs to reach a broad spectrum of the population, including previously underserved groups. Integrate environmental education and activities into other social and economic programs. Environmental education objectives should include giving marginalized groups employment skills, control over their environment, access to power, and cultural identity. (PASD, WSU – Cooperative Ext., CC, City of PA, EST, WA DFW, CCD).				
Conduct classroom workshops on clean water practices, planning for clean water, and salmon and watershed awareness. Integrate water quality and quantity studies into existing reading, social studies, and mathematics curricula.				
Provide opportunities for students to earn classroom credit for participation in water quality communtiy service projects, including short term internships, attendance at public hearings, and serving on watershed management committees and other advisory boards. (PASD, PC, CC, City of PA, EST, CCD)				
Acquire and distribute self-contained educational programs such as scripted slide shows and videos; self guided tours; and water quality self-assessment, to libraries, organizations, schools and individuals. (WSU Coop. Ext., CC, City of PA)				
Develop or purchase educational displays for use in public spaces, government offices, community events. (WSU-Coop Ext., CC, City of PA, WA DFW)				
Information: Create and distribute a personal water quality decision making guide, which includes issues related to individual attitudes and behavior, describes the options and opportunities the individual has to correct and prevent non-point source pollution, and the effects of those choices, and provides the individual with avenues to further protect water quality in ther home, business and community. (WSU – Coop. Ext., CC, City of PA).				
Publicize the procedures for obtaining an Hydraulic Project Approval permit from				

Washington Department of Fishand Wildlife for any activity within stream channels, and other state and local permits governing critical areas. (WA DFW)				
Use tourism advertising, publicity, and promotions to communicate environmental stewardship messages to local and regional audiences. Actively work with news media, tourism bureaus, and Chamber of Commerce to include education and information about water resource protection in their promotions. (North Olympic Peninsula Visitor and Convention Bureau, Chamber of Commerce, CC, City of PA, CCD, EST)				
Develop art, literature, and historical presentations at schools and museums which demonstrate the cultural importance of the beneficial uses of water. Create items of popular culture (such as cards, calendars, posters, T-shirts) which portray aspects o fthe Port Angeles watershed and its community as source of community identity (WSU Coop. Ext., EST, CC, City of PA)				
Activities: Identify stream, wetland, shoreline sites in the watershed which could be used for educational programs and develop site-specific materials for these places. Conduct field trips to these sites to demonstrate beneficial use and non-point pollution issues and sollutions. WSU-Coop. Ext., CCD, CC, City of PA, WA DFW)				
Conduct field trips and watershed tours for organizations, agency staff and boards, and the general public demonstrating non-point problems, beneficial uses, model farms and homes, and various best management practices as they apply to everyday situations in the watershed. (WSU Coop. Ext., CCD, CC, City of PA)				
Work with teachers, citizens groups, agencies, and landowners to coordinate water quality and habitat enhancement on local streams. Utilize local volunteers to conduct an on-going water quality monitoring program as an educational and public involvement tool. (CCD, WSU-Coop Ext., EST, CC, City of PA, WA DFW)				
Encourage neighborhood groups toundertake “Adopt a …(water resource)” projects. Sponsor “Adopt A Stream”, “Adopt a Beach”, and “Adopt a Wetland” workshops in Clallam County to provide training to volunteer groups. (WSU Coop. Ext., WA DFW)				
Bring together adversarial groups in partnership to plan, conduct and evaluate restoration and enhancment projects on streams, shorelines, and wetlands. Use these group projects to identify common goals and negotiate common benefits in resource protection. (WSU Coop. Ext., CCD, WA DFW)				
Conduct training sessions for county, state, and agency staff, contractors, and equipment operators whose activities may impact or influece water qualtiy. (CC, City of PA)				
Conduct a stormwater demostration project which includes a field workshop for local contractors, developers, and the public. Projects should be designed to accompany				

stormwater management manuals developed by county, city and state. (CC, City of PA)				
Conduct on-site sewage dispoal workshops to educate people about on-site sewage dispoal, including standard and alternative technology, costs, and maintenance. Train people to operate, observe, inspect, and maintain their systems. (CC, WSU Coop. Ext.)				
Educate the public and decision makers about the benefits of preserving open spaces and natural environments, and opportunities for acquisition and dedication of open spaces. (CC, City of PA, NOLT, CCD)				
Offer recognition and tangible reward to individuals, groups, businesses, and agencies who demostrate leadership and make a commitment to protecting water quality or quantity. The annual "Citizen of the Year" award should include a separate category for environmental stewardship. (WSU-Coop Ext.)				
Actively develop the community celebrations, exercises, and conferences which foster visioning, goal setting and consensus building; and which build trust, respect, and cooperation between leaders, staff, citizens and groups. (WSU Coop. Ext.)				
Public Involvement: Publicize policy actions, meeting dates and times, and contact numbers for public officials, through an easily identified and readable column in the newspapers.				
Conduct annual "neighborhood meetings" with neighborhood councils, advisoroy boards, the Board of County Commissioners, City Council, Conservation District Board of Supervisors, and other agency representatives to discuss and respond to watershed and neighborhood-specific issues. Neighborhood meetings can serve as an avenue for mutual education between government officials, and the public on issues concerning the regions built environment, neighborhood sites with historic or cultural significance, neighborhood design issues, view protection, control fo sprawl and other quality of life issues. (CC, City of PA, CCD)				
Utilize dispute resolution services to conduct training on goal setting and consensus building for neighborhood groups, citiens and government staff. Use dispute resolution services and programs to resolve conflicts and mediate solutions before resorting to litigation. (CC, City of PA, EST)				
Forest Practices and Watershed Managment				
Urban Watershed Management: Where feasible, identify failing residential on-site sewage dispoal systems within the City limits, and provide sewer service consistent with the City's Urban Services Ordinance. (City of PA)				
Develop and implement a commerical source control program (e.g. "Business for Clean Water") which offers pollution prevention assessments, reduction strategies,				

and training materials for the workplace. The program should provide incentives and rewards for businesses which implement new practices to improve pollution prevention associated with their operation (City of PA)				
Manage stream corridors in the urban areas as greenways.				
Valley Creek: Conduct general habitat improvements, such as revegetation, restoration of channel configuration, and placement of instream structures. Continue rehabilitation of estuarine habitat. Replace or improve culverts to correct fish passage problems. (WA DFW, Port of PA, City of PA, CC, EST)				
Peabody Creek: Target this stream for activities which will improve the ecosystem functions of its lower stretches and complement the good quality found upstream. (City of PA, CC, EST)				
Use the stream to enhance watershed awareness among urban residents and tourists. Develop enhancement projects which, while not necessarily improving salmon production, could serve multiple objectives related to water quality education, resident and wildlife habitat, stormwater management, and recreation and aesthetics. (WA DFW, EST, City of PA)				
Imporve fish access to upstream habitat by eliminating blockage under 5th Street and Park Avenue. Create off0channel rearing at Peabody and 5th to improve habitat potential (WA DFW, EST, City of PA)				
Undertake projects and conduct activities to improve the salmon productivity of this stream (WA DFW, EST, City of PA)				
Ennis Creek: Revegetate riparian corridors and buffers in residential areas. (City of PA, CCD)				
Lees Creek: Conduct periodic cleanups of the stream corridor. Utilize neighborhod volunteers, and publicize their efforts. Identify dumping sites, and post with a sign indicating the presence of the stream and that the clean up was conducted by neighborhood residents. (WSU-Coop. Ext., CC, City of PA)				
Create a focal point in the lower, urban reach of the stream – with a bench area, waste disposal, vegetation, signage – to draw attention to the site as a community resource and a source of neighborhood pride. (City of PA, CC)				
Create the blockage to fish passage at the culverts at the mouth and under Hwy. 101. Install a fish ladder or new culvert to enable fish to reach above the highway, even in low flow months. Re-establish vegetation (WA DFW, WA DOT, CC)				
Ennis Creek: revegetate riparian corridors and buffers in residential area. (City of PA, CCD)				
Lee's Creek: Conduct periodic cleanups of the stream corridor. Utilize neighborhood				

volunteers, and publicize their efforts. Identify dumping sites, and post with a sign indicating the presence of the stream and that the clean up was conducted by neighborhood residents. (WSU Coop. Ext., CC. City o fPA)				
Create a focal point in the lower, urban reach of the stream -- with a bench area, waste disposal, vegetation, signage – to draw attention to the site as a community resource and a source of neighborhood pride. (City of PA, CC)				
Correct the blockage to fish passage at the culverts at the mouth and under Highway 101. Install a fish ladder or new culvert to enable fish to reach above the highway, even in low flow months. Reestablish vegetation. (WA DFW, WA DOT, CC)				
Provide information, technical assistance, and funding through Consolidated farm Services Agency, to restrict livestock access. (CCD)				
Morse Creek: Assign high priority to Morse creek for restoration efforts due to potential for salmon habitat. Build support for restoration activities among agencies, organizations and residents. (WA DFW, EST, CC)				
Focus education and technical assistance on the lower two miles of this creek. Discourage residents from “cleaning” the riparian corridor. Provide landowners with information about shoreline management, riparian corridors, flood management, and other pertinent issues. Provide technical assistane to insure that existing habitat is protected. Revegetate with stabilizing plants, create established view corridors to minimize expansion of clearing for views. Puruse development of off-channel fish habitat (CCD, WSU Coop. Ext., EST, CC, WA DFW,)				
Because fish populations in this stream are particularly vulnerable to habiat degradation, establish limitations on surface water withdrawals to maintain optimum instream flow for fish. Encourage water conservaton during low flow months. (WA DFW, WA DOE, CC, City of PA, PUD #1 of Clallam Co.)				
Encourage the Four Seasons Homeowners Association to “adopt” the creek, by assuming some respojnsibility for observation and monitoring of creek conditions, restoration projects, and pollution prevention. Publicize their position efforts. (WSU Coop Ext., CC)				
Critical Areas: Monitor the fill crossing of bagley Creek in R5W T30 S34 for the effectiveness of erosion control measures. (WA DFW, CC)				
Improve fish access by removing blockages and replacing culverts where needed. (WA DFW, CC)				
Siebert Creek: Persuade a landowner or landowners with greater than 10% ownership of the subwatershed to sponsor a watershed analysis of the Siebert Creek sub-watershed. The analysis should utilize methodology consistent with the DNR’s watershed analysis for cumulative effects. (CCD, WA DNR)				

Remove obstacles to fish passage in Siebert Creek by replacing culverts at Old Olympic Highway when the new bridge crossing is constructed, eliminating the concrete fish ladder at Old Olympic Highway, and correcting similar problems wherever they are identified (WA DFW, CC)				
Continue maintenance and corrective actions at Siebert Creek slides and ensure continued stabilization of sediment spoils. (WA DNR)				
Integrate the watershed policies and recommendations into respective resource and and use planning instruments where appropriate.				
Watershed Implementation Policies: Ensure consistency between County and city regulations related to water resource protection and conservation where appropriate. (CC, City of PA)				
Develop a coordinated permit application which encompasses all the required information for all agencies with jurisdiction. Such a permit has been developed by the State and is being tested in other counties. After testing, Clallam County should work to provide a single permit based on this model. (CC, City of PA, WA DFW)				
Continue local support of water resource management unit/program/team to over see and coordinate efforts. (CC, City of PA, WA DFW, EST)				
Share staff, information, expertise, and funding between governments, and between agencies and organizations, to efficiently distribute available resources, and to develop understanding of each other's mandates, issues and priorities. (CC, City of PA, EST, CCD)				
Establish a Watershed Council to function as an advisory board to the lead agency for plan implementation. (CC, City of PA, EST, WSU-Coop. Ext., CCD)				

North Olympic Peinsula Lead Entity Limiting Factor & Action Recommendation Priorities by Geographical Unit or Sub-Unit
Lead Agency:
2001

RECOMMENDATION	REACH	TYPE	RESPONSIBLE JURSIDICTION	ACTION TAKEN
Stabilize the Highland Irrigation Ditch to ensure stability during high flow events to avoid potential for fine sediment contribution to Bell Creek.				
Restore the lower, channelized reach of Bell Creek (downstream of Schmuck Road) and properly integrate with the estuary. Restoration must include removal of dikes, meandering of the channel, excavation of pools, and additions of Large Woody Debris. (LWD)				
Assess LWD status in Bell Creek and tributaries; develop and implement a short-term LWD strategy to provide LWD presence and habitat diversity until full riparian function is restored.				
Restore functional riparian zones throughout the watershed, and identify and correct areas affected by unrestricted animal access.				
Complete comprehensive barrier inventory for Bell Creek, prioritize, and implement correction measures.				
Review proposals to release treated Class-A water into Bell Creek and ensure any release does not adversely affect channel conditions or salmonoid habitat.				
WDFW should actively enforce screening requirement on the irrigation diversion upstream of Carrie Blake.				
HB 2514 Planning Unit should review instream flow concerns and investigate alternatives for ensuring instream flow.				
Gierin Creek: Pursue removal of the tidegate and restoration of saltmarsh habitat in the estuary, including returning Gierin Creek to its former meandering location, which essentially bisected the marsh.	Gierin Creek			
Develop and implement a short-term LWD strategy to provide LWD presence and habitat diversity until full riparian function is restored.	Gierin Creek			
Restore functional riparian zones throughout watershed, particularly upstream of Holland Road, and identify and correct areas affected by unrestricted animal access.	Gierin Creek			
Develop and implement a strategy for restoring estuarine processes and fish passage in Cassalery Creek.	Cassalery Creek			

Complete comprehensive barrier inventory for Cassalery Creek (particularly upstream of Woodcock Road), prioritize, and implement correction measures.	Cassalery Creek			
Develop and implement a short term LWD strategy to provide LWD presence and habitat diversity until full riparian function is restored.	Cassalery Creek			
Restore functional riparian zones throughout the watershed, and identify and correct areas affected by unrestricted animal access.	Cassalery Creek			
Ecology should conduct a comprehensive assessment of water diversions from Cassalery Creek, determine consistency with water rights, and enforce against unauthorized water withdrawals.	Cassalery Creek			
The need to establish and ensure instream flows in Cassalery Creek should be referred to the HB 2514 Planning Unit.	Cassalery Creek			
Ecology should regularly monitor for chlorine presence downstream of Sunland Sewage Treatment Plant; remediate if necessary.	Cassalery Creek			
Modify the tidegate to allow significantly greater tidal flux into the Cooper Creek estuary.	Cooper Creek			
Modify or remove the water level control structure in the estuary to allow unimpeded fish passage.	Cooper Creek			
Restore the stream to a meandering configuration, utilizing historic natural channel, where practicable.	Cooper Creek			
Develop and implement a short term LWD strategy to provide LWD presence and habitat diversity until full riparian function is restored.	Cooper Creek			
Restore functional coniferous riparian zones.	Cooper Creek			
Provide necessary maintenance/restoration on forest roads in the upper watershed (and tributaries) to minimize potential of sediment delivery downstream. Numerous roads have remaining areas that are at very high risk of failure, and should receive immediate attention, and consideration for abandonment. Reduce forest road densities to <2.4 mi.mi2, which is the identified road density threshold of concern identified in the Federal Watershed Analysis.	Dungeness River			
Re-establish functional channel and floodplain in the lower 2.6 miles through dike management and construction abatement (Dungeness River Restoration Workgroup 1997)	Dungeness River			
Abate man-made constructions upstream of the Corps dike (everything upstream of RM 2.6) (Dungeness River Restoration Workgroup 1997).	Dungeness River			
Restore functional riparian zones throughout watershed, and identify and	Dung-			

correct areas affected by unrestricted animal access. Restore suitable riparian vegetation and riparian adjacent upland vegetation (DRRW 1997)	eness River			
County should adopt and implement a stormwater strategy for this rapidly developing watershed, including tributaries that will remediate current stormwater effects and minimize additional future effects.	Dung- eness River			
Develop and implement a short term LWD strategy to provide LWD presence and habitat diversity until full riparian function is restored.				
Manage sediment to stabilize the channel and reduce the risk of flooding (DRRW 1997).				
Construct and/or protect side channels (DRRW 1997)				
Conserve instream flows (DRRW 1997). Review instream flow needs for the various salmonid species, as evaluated by the IFIM study, to determine critical periods and flows (JKT 1992).				
Implement the recommendations of the Dungeness Quilcene Plan, including the adoption of instream flows for the Dungeness River and development and implementation of a plan to restore flow. Identify and recommend in-stream flow needs to the HB 2514 Planning Unit for implementation.				
Improve efficiency of irritation distribution network and commit conserved water to instream flow through incorporation into the Trust Water Rights process. Develop water use plan to reduce dependence on shallow groundwater withdrawals.(JKT 1992)				
Develop and implement a strategy to restore estuarine functions and habitat.				
Dungeness Tributaries/Meadowbrook Creek: Restore functions of historic wetlands associated with lower Meadowbrook Creek.				
Identify and correct areas affected by unrestricted animal access.				
Increase the span of the Sequim-Dungeness Way bridge to improve floodplain function.				
Develop and implement a short-term LWD strategy to provide LWD presence and habitat diversity until full riparian function is restored.				
Restore functional riparian zones throughout the watershed.				
Matriotti Creek: County should adopt and implement a stormwater strategy for this rapidly developing watershed, including tributaries, that will remediate current stormwater effects and minimize additional future effects.				
Restore functional channel conditions between Run-on Road and Old Olympic Highway.				
Identify and correct areas affected by unrestricted animal access.				
Cease the release of fine sediment-laden stormwater from irrigation delivery				

systems to Matriotti Creek.				
Complete comprehensive barrier inventory for Matriotti Creek, prioritize, and implement correct measures.				
Develop and implement a short term LWD strategy to provide LWD presence and habitat diversity until full riparian function is restored.				
Restore functional riparian zones throughout the watershed.				
Refer restoration of tributary flows to Matriotti Creek (between Hooker and Atterberry Roads) to HB 2514 Planning Unit for resolution.				
Hurd Creek: Develop and implement a short-term LWD and habitat diveristy until full riparian function is restored.				
Restore functional riparian zones throughout watershed, particularly on WDFW-owned hatchery property.				
Bear Creek: Monitor fish passage conditions at and downstream of the low irrigation dam; maintain function of the Bear Creek alluvial fan.				
Identify and correct areas affected by unresticted animal access, fence and revegetate to reestablish functional riparian zones throughout the watershed.				
The Agenew Irrigation Company should cease the release of fine sediment-laden stormwater flows to Bear Creek.				
Develop and implement a short term LWD strategy to provide LWD presence and habitat diveristy until full riparian function is restored.				
Canyon Creek: At a minimum, restore fish passage past the water intake dam, with dam removal as the preferred option to restore biological processes.				
Evaluate restoration potential of historic lower portion of Canyon Creek, through the terrace immediately adjacent to the Dungeness River; implement as practicable.				
Evaluate potential to stabilize active slide upstream of dam.				
Restore natural sediment transport downstream of dam.				
Introduce LWD to the channel downstream of the dam to retain river gravels, provide habitat diversity, and restore spawning habitat.				
Protect intact riparian zones upstream of the dam, restore functional riparian zones downstream of the dam.				
Caraco Creek: Reduce the forest road density in the Caraco Creek watershed.				
Maintain remaining forest roads in a manner that minimizes potential of mass wasting of fine sediment erosion.				
Gray Wolf River: Maintain riparian condition in Gray Wolf canyon.				
Evaluate the forest road network in the watershed and implement actions				

necessary to prevent entry of fines and mass wasting events to the Gray Wolf River.				
Gold Creek: Maintain forest roads in a manner that minimizes potential of mass wasting and fine sediment erosion.	Gold Creek			
Identify and map deep-seated failures and areas prone to shallow-rapid landslides; prevent land use activities (roads and harvests) that will exacerbate sediment contribution from these areas.	Gold Creek			
Restore natural channel characteristics in gabion-controlled section of lower basin.	Gold Creek			
Maintain >60% of watershed in a condition that provides hydrologic maturity (>25) (Wild Salmonoid Policy).	Gold Creek			
Restore forest road density to <2.4 mi./mi. 2, which is the threshold density of concern identified in the Federal Watershed Analysis; confine roads to areas not sensitive to mass failures.	Gold Creek			
Restore stability of slide prone areas; ensure road cross-drainage is maintained; consider abandonment of roads located on active and potential slide areas; provide sediment detention BMPs on active slides where practical.	Silver Creek			
Avoid future road construction on slide prone areas.	Silver Creek			
Evaluate causes of channel instability and develop and implement a corrective plan.	McDonald Creek			
Reforest timber harvested areas in the rain-on-snow zone; ensure that future timber harvest is done in a manner that maintains hydrological maturity in the upper watershed.	McDonald Creek			
Restore LWD presence and function form the mouth upstream to the mouth of Pederson Creek (RM 4.9); addition of LWD in upper watershed to provide channel and bank stability may also be beneficial.	McDonald Creek			
Monitor/ restore landslides on USFS lands.	McDonald Creek			
Identify options to reduce/eliminates the influence of Dungeness River water, conveyed through the irrigation system, on homing ability of Dungeness and McDonald origin salmonoids.	McDonald Creek			
Reduce the flow energy increase that resulted from removal of the culverts at Old Olympic Highway.	Siebert Creek:			
Develop and implement a short-term LWD strategy in lower Siebert Creek to restore LWD presence and pools, particularly from the mouth to Highway 101.	Siebert Creek:			
Abandon/relocate the forest road on East Fork.	Siebert			

	Creek:			
Restore stability of slide prone areas; ensure road cross-drainage is maintained; consider abandonment of roads located on active slide areas; provide sediment retention BMPs on active slides where practicable.	Siebert Creek:			
Limit conversion of upper watershed to non-forest cover.	Bagley Creek:			
Evaluate fish passage through logjams in lower Bagley Creek and implement remedial modifications, where warranted (Mike McHenry)	Bagley Creek:			
Provide unrestricted fish passage through the Highway 101 an d restore culvert and correct the additional two fish passage barrier up stream	Bagley Creek:			
Prevent animal access to channel upstream of Highway 101 and restore functional riparian zones through this area	Bagley Creek:			
Replace the lowermost culvert on Bagley Creek Rd. to prevent backwatering during peak flow events and bank erosion and sediment deposition upstream of the culvert	Bagley Creek:			
Restore LDW presence throughout the channel. Develop and implement a short-term LDW strategy to provide LDW presence and habitat diversity until full riparian function is restored.	Bagley Creek:			
Adopt and implement instream flow requirements	Bagley Creek:			
Restore floodplain function downstream of RM 1.7, including the removal /pull back of dikes, elimination of floodplain constructions, and restoration of natural banks	Bagley Creek:			
Restore LDW presence throughout the channel downstream of the natural falls at RM 4.9; develop and implement a short-term LDW strategy to provide LDW presence and habitat diversity until full riparian function is restored; ensure the LDW is passed downstream of the railroad trestle	Bagley Creek:			
Reestablish estuarine characteristics and functional similar to historic conditions	Bagley Creek:			
Restore riparian function by encouraging conifer regeneration in deciduous stands that historically had a conifer component.	Bagley Creek:			
County/City should monitor water quality in the vicinity of the golf course.	Bagley Creek:			
Although Peabody Creek historically supported coho and possibly chum salmon, the number and magnitude of limiting factors result in little restoration	Peabod y Creek			

potential for the stream as it currently exists. Restoration would require extensive culvert removal, extensive stormwater retrofit, and property acquisition in heavily urbanized portions of Port Angeles. Restoration should be considered for continued support of cutthroat, water quality, and other salmonids but may rank low for salmon and steelhead in comparison to restoration benefits in other streams in WRIA 18.				
Correction of passage problems	Peabody Creek			
Collection and treatment of stormwater	Peabody Creek			
Removal of instream fill on ONP lands	Peabody Creek			
LWD/Riparian improvement projects	Peabody Creek			
Improve passage conditions and eliminate large reaches of culverts.	Valley Creek			
Restore the lower ¾ mile of stream by re-meandering, restoring LWD, and recreating pools to the maximum extent possible.	Valley Creek			
Reestablish floodplain process by reducing or eliminating floodplain constrictions, particularly downstream of Highway 101.	Valley Creek			
RemediaTE stormwater management in the watershed to collects, treat, and discharge stormwater in a manner that avoids adverse impacts to Valley Creek and other surface water.	Valley Creek			
Restore riparian vegetation communities and instream large wood.	Valley Creek			
Restore drift processes and recruitment of marine sediments to the west of Morse Creek.	Valley Creek			
: Improve passage conditions, initially at Highway 101 and at RM 0.1, and subsequently at other locations.	Lees Creek			
Restore riparian presence and function, develop and implement a short-term LWD recovery strategy, and fence livestock away from the channel in agricultural areas on both the East and West forks.	Lees Creek			
Identify and remove/correct floodplain constrictions.	Lees Creek			
Evaluate flow and water quality impacts of runoff from the mill landfills, Highway 101, and agricultural areas of concern; remediate identified problems.	Lees Creek			
Educate landowners in the watershed on the importance of providing functional	Lees			

habitat, particularly in regard to LWD, riparian vegetation, and preventing animal access to the channel.	Creek			
: Restoration of natural floodplain function in the lower channelized portions of Ennis Creek.	Ennis Creek			
Restoration of the Ennis Creek intertidal estuary.	Ennis Creek			
Secure passage through Highway 101 by maintaining fishway/replace culvert with bridge.	Ennis Creek			
Collect and treat stormwater from Highway 101 and other impermeable surfaces.	Ennis Creek			
Restore damaged riparian areas and LWD presence and function throughout the channel.	Ennis Creek			
Remediate stormwater management in the watershed to collect, treat, an discharge stormwater in a manner that avoids adverse impacts to Tumwater Creek and other surface waters; particular attention should be given to eliminate stormwater discharges that are creating major sediment contributions off Black Diamond Road, and taking measures to stabilize	Tumwater Creek			
Restore functional estuary processes.	Tumwater Creek			
Remove channel constrictions in the lower channel and restore functional floodplain processes.	Tumwater Creek			
Develop and implement a short term LWD strategy to provide LWD presence and habitat diveristy until full riparian function is restored.	Tumwater Creek			
Restore functional riaprian zones throughout the watershed.	Tumwater Creek			
: Investigate the effects of the pipeline crossing on sediment transport.	Dry Creek			
Remediate stormwater impacts to the channel; ensure that stormwater impacts resulting from further construction in the watershed are fully addressed at the time of construction.	Dry Creek			
Prevent further head-cutting in relocated reaches of Dry Creek.	Dry Creek			
Develop and implement a short term LWD strategy to provide LWD presence and habitat diversity until full riparian function is restored.	Dry Creek			
Restore functional riparian zones throughout the watershed.	Dry Creek			
: Implement the Elwha River Restoration Act.	Elwha			

	River			
❖ Perform signficant restoration actions that help prepare the lower Elwha River for dam removal. ❖ Identify solutions to selected dikes and other channel construction problems. ❖ Riparian restoration ❖ Acquisition/conservation easement for access and set back of structures constructed within the channel migration zone. ❖ Systematic restructuring of the lower and middle river with large woody debris. ❖ Other similar projects that are deemed appropriate.				
WRIA 18 Nearshore & Subtidal Marine Areas: Restore drift processes and recruitment of sediments from the Elwha River and between the Elwha River and the west-end of Ediz Hook.				
Restore drift processes and recruitment of marine sediments to the west of Morse Creek.				
Minimize the growth of Ulva (spp) by eliminating point and non-point source nutrient delivery to shallow embankments with limited tidal flushing.				
Evaluate the effects of shoreline armoring on shoreline sediment transport and nearshore sediment composition, and implement corrective actions, where appropriate.				
Modify log-booming practices in Port Angeles Harbor to eliminate the accumulation of wood debris on the bottom of the harbor and restore subtidal substrate conditions that are affecting dissolved oxygen in the waters of the harbor and benthic production in areas affected by accumulations of wood waste.				
Restore unrestricted tidal flow and flushing to the north end of Washington Harbor.				
Study the removal or reconfiguration of the Rayonier pier to provide unrestricted nearshore salmonid migration and longshore sediment transport.		H		
Fix the slumping and seepage problems in the gravel pit branch of No-Name West (Floods in Lower Sequim Bay Tributaries)				
Install gravel traps in both branches of No-Name West Creek upstream of Correa Lane and downstream of the east side of the gravel parking lot; these could be installed temporarily before the next flood season, and then upgraded				

when improvements are made in the internal draining system.				
Strongly consider the formation of a flood control or drainage district under state law; you need only 10 landowners initially to petition the county, you can raise money through assessments and be eligible for construction and preservation grants; contact the WDOE; you may be able to use the restoration of the Sequim Bay estuary, and its protection against future developmental impacts (ESA) as your focus. (Floods in Lower Sequim Bay Tributaries)				
Coordinate with WDOT on enlarging the Dean Creek Culvert, as well as coordinating with them and NRS on moving Jimmy Come Lately Creek to its old west channels (is Jimmy Come Lately Creek going to join No-Name West and use one common new bridge under Hwy 101?) (Floods in Lower Sequim Bay Tributaries)				
Engage a consulting firm, that is well-versed in internal drainage problems, to survey the lower part of the drainages, run a hydraulic analysis of the existing drainage system, discuss anticipated types and areas of land-use development and prepare a plan for handling excess water in the lower Sequim Bay tributaries; this should be a plan which will provide which will provide an adequate basic drainage-storage system, plus carry the additional runoff from future development. (Floods in Lower Sequim Bay Tributaries)				

Recommended Restoration Projects for the Dungeness River (By Reach of the River)
Lead Agency:
Prepared by: Dungeness River Restoration Work Group
1997

RECOMMENDATION	REACH	TYPE	RESPONSIBLE JURISDICTION	ACTION TAKEN
Setback the section of the Corps dike extending from the Schoolhouse Bridge to the Dike's northern end to re-establish floodway processes and improve flood protection for the community of Dungeness. This section of dike would not be shortened or made discontinuous. Several houses located close to the dike could be adversely affected by this action.	RM - RM			
All diking and non-flood compatible structures west of the Dungeness River downstream of the Schoolhouse Bridge should be removed subject to property owners discussion noted above. The current configuration does not allow the river to meet the criteria for sediment storage and channel stability.				
Lengthen the Schoolhouse Bridge to span the floodway.				
Reconfigure the Corps dike upstream of the Schoolhouse Bridge to re-establish a functional floodplain and provide increased flood protection for the community of Dungeness and Sequim-Dungeness Way.				
Set-back approximately 2500 feet of the northern end of the Beebe dike to a location immediately river-ward of Beebe Creek and Matriotti Creek.				
Setback the southern-most 1800 feet of Ward Road to the outside of the historical meander belt and provide a buffer betweeen Ward Road and the meander belt.				
Lenghthen the Old Olympic Highway bridge to span the river's meander belt.(four specific projects are identified—may want to include)				
Sediment Management				
Large woody-debris placement; to create numerous stabile log james throughout this sub-reach as well as throughout the entire 10.8 miles.				
RE: RM 4.0 – 6.6 (Old Olympic Highway to 101) Stabilizaton of spawning habitat, the creation of high quality pool and high flow regugia features by increasing instream and riparin habitat diveristy, the protection and creation of side channel habitat and the reduction of constrictions. Stream energy and erosion should be managed through log jam	Old Olympic Highway to 101			

construction, and in some cases debris retention structure construction specifically located to halt or prevent bank erosion.				
Riparian planting				
Large Woody Debris/Log Jam Placement.				
Side channel habitat creation and protection				
Redesign support structures of railroad bridge and approach trestle				
Gravel Removal at the County Travel Traps. Continue to remove gravel at the County gravel traps. Determine if this is sufficient for controlling sediment load before it affects the downstream reaches, of it additional sides such as the depositional zone above the Highway 101 Bridge would be necessary.	Hwy. 101 to Power line Crossing			
Large Woody Debris- Log Jam Placement(include a – f)		H		
Side channel habitat creation and protection				
Setback Haller dike.	(Powerline crossing to canyon creek			
Off-channel habitat creation on the DNR property				
Large woody debris/Log Jam Placement		H		
Determine existing sources of sediment input slope failures and raod washouts) associated with past forest land management within the basin.	Upper River			
Conduct an analysis of erosion and mass wasting potential for the upper watershed that gives a hazard rating revealing areas most likely to contribute sediment if disturbed by management activities.				
Complete a road stability inventory to identify problem areas.				
Evaluate stream crossing (culvert) capacity.				
Identify sidecast instability problem areas.				
Conduct an orphaned road survey				
Problem areas that are identified by the surveys outlined above should be translated into specific actions which have the greatest potential to reduce delivery of sediment and gravel into the river.				
A monitoring place should also be established to measure the annual amount of material in put from such sources to judge the effectiveness of erosion control and restoration efforts.				
The Work Group recommends that the USFS concentrate initial resotration efforts in the Gold Creek sub-basin. This is where upriver pink salmon historically spawned and this basin contributes a disproportionate amount of sediment througout the lower Dungeness watershed.			USFS	

Restore spawning gravel quality and quantity in the lower portion of Gold Creek.	Gold Creek			
Reduce sediment inpujt from upper Gold Creek by increasing channel roughness and reducing stream energy.				
Trap spawnable size materials on USFS reaches.				

Note: Many of these recommendations were also put forward in the document Salmon and Steelhead Habitat Limiting Factors, WRIA 18, Washington State Conservation Commission Final Report, D. Haring, 1999

USGS Hydrogeologic Assessment of the Sequim Dungeness Area, Clallam County Lead Agency: : 1999				
RECOMMENDATION	**REACH**	**TYPE**	**RESPONSIBLE JURISDICTION**	**ACTION TAKEN**
Wells drilled into the lower hydrogeologic units or geophysical studies could provide the needed information to define hydrogeologic boundaries.	Dunge ness River			
Study flow directions and water-level gradients; groundwater flow directions in the middle aquifer were defined, but the density of data was not sufficient to accurately define water-level gradients.	Dunge ness River			
To obtain a measure of the accuracy of a deep-percolation mode, runoff in several basins could be measured for about two years to provide calibration data. Soil water could also be measured in a sufficient number of sides to define the magnitude, seasonal changes, and areal variability of water contents near the measured run-off basins.	Dunge ness River			
In addition to the water-budget approach of the deep-percolation mode, other methods such as environmental tracers could be employed to estimate recharge from precipitation	Dunge ness River			

Dungeness River Agricultural Water Users Association
Water Conservation Plan,
Structural Projects
Lead Agency:
Prepared by Montgomery Water Group
1999

RECOMMENDATION	REACH	TYPE	RESPONSIBLE JURISDICTION	ACTION TAKEN
Combine systems, or replace with groundwater where feasible and desirable.	Dungeness River		WUA	
Construct additional measuring weirs and control structures.	Dungeness River		WUA	
Combine Sequim-Prairie, Independent and Eureka Companies with the Dungeness District. The combination can be effected through a joint operating agreement or through incorporation of the irrigation companies into the Dungeness District. This new entity should serve all water users north of SR 101 except where the Highland District serves water users east of Sequim.	Dungeness River		WUA	
Combine Eureka Company with the Highland District. This entity should serve water users south of SR 101. The Independent Company water users located south of SR 101 should be served through this entity, except for the Dungeness Meadows development which can maintain their existing point of diversion.	Dungeness River		WUA	
Combine Clallam Company, Cline District and Dungeness Company with the Agnew District.	Dungeness River		WUA	
Prepare drought response plans for water short periods to prioritize or schedule water when Dungeness River flows are low.	Dungeness River		WUA	
Increase maintenance on existing open canals to reduce seepage losses and provide a safer canal.	Dungeness River		WUA	
Continue to expand water measurement program to include individual water users.	Dungeness River		WUA	
Start educational program to ensure WUA members understand the reason for water conservation and the techniques they can use to reduce water use.	Dungeness River		WUA	

Sequim Bay Watershed Plan
A Community Based Resource Management Plan
Lead Agency: Sequim Bay Watershed Management Committee
Prepared by: Puget Sound Water Cooperative River Basin Study Team
Preapred for:Sequim Bay Watershed Management Committee
1988

RECOMMENDATION	REACH	TYPE	RESPONSIBLE JURISDICTION	ACTION TAKEN
Develop educational materials specifically for Sequim Bay watershed as to what are non-point sources of pollution and what are technically sound control practices.	Sequim Bay	WL		
Use a best management practice (BMP) or a system of BMPs to control bacterial, organic and sediment pollutants on all farm units (commercial and small farms).	Sequim Bay	WL		
Work with operators of farm units to develop an action plan to control pollutants. (A conservation plan is an ideal way to implement this recommendation - Clallam Conservation District offers this service).	Sequim Bay	WL		
Employ greater residential setbacks from type 1, 2, and 3streams and marine waters in order to decrease pollution potential and increase the margin of safety.	Sequim Bay	WLW		
Develop and implement a continuing educational program to increase the awareness of proper septic system maintenance and BMPs for other household wastes.	Sequim Bay	WL		
Develop and implement a watershed-wide program that requires preventive maintenance for septic systems.	Sequim Bay	WL		
Develop a guide which identifies the soil potentials for septic systems. This guide would identify which on-site sewage disposal systems are appropriate given specific soil limitations.	Sequim Bay	WL		
Develop a water management plan that addresses water quality and quantity for each irrigation district which operates within the watershed.	Sequim Bay	WL		
Examine feasibility of changing rural zoning to encourage more efficient use of land and water i.e. planned unit developments that: provide	Sequim Bay	WL	CC	

community sewers and water (i.e. City of Sequim).				
Require community open spaces to maintain rural atmosphere, enhance fishery and wildlife habitats, and buffer streams and ditches from pollution sources.	Sequim Bay	WL	CC	
Watershed Develop and implement plans for forest roads that reduce erosion and sedimentation. These plans should include the installation of practices, which take roads out of service when not needed for management activities. Such practices include prohibiting vehicle travel, installing water bars, removing culverts, and seeding of exposed surfaces.				
Build forest roads used for winter hauling with sufficient ballast and adequately sized culverts				
Maintain permanent road surfaces and ditches to minimize the amount of sediment entering streams.				
Follow the TFW recommendations for streamside buffers. Adequate buffers should always be left on Types 1, 2 and 3 waters. Any additional buffers left on stream Types 4 & 5 will always be beneficial to water quality, fisheries and wildlife. Buffers should be left around all wetlands, the Department of Wildlife recommends leaving a minimum of 100 feet (DOW, memo, 1987). The Forest Service has established standards and guidelines for Riparian Zone Management in the draft Olympic National Forest Plan. The Dept. of Natural Resources is required to follow WAC 222-16-20.				
The urban area, primarily within the city limits of Sequim, occupies five percent (1,886 acres) of the watershed. The urban area is used for residential development and commercial activities. Very little industrial uses occur within the watershed.				
Have the County Commissioners pressure DNR to change the log storage use permit to an aquatic lease.				
Stream corridors. Require the regulations of the State of Washington Shoreline Master Program be followed on public lands managed by the Department of Natural Resources.				

Have the County Commissioners require Dunlop Towing (through Northwest Hardwoods) to come under the county shorelines program.		
Start a county program to: (1) monitor depth and the chemical analysis of the wood debris and (2) determine acceptable levels for log storage sites.		
Maintain and enhance water quality by eliminating further disturbance of stream corridors.		
Require corrective action of known sediment source areas in the Johnson Creek drainage		
Enhance Bell Creek fisheries and water quality through some rechannelization, placement of large organic debris in stream, revegetation of stream banks and fencing to limit animal access.		
Enhance Bell Creek fisheries and water quality through some rechannelization, placement of large organic debris in stream, revegetation of stream banks and fencing to limit animal access.		
Limit or restrict animal access to all streams and ditches.		
Limit or restrict animal access to all streams and ditches.		
Develop conservation plans that provide BMPs for livestock water and stream crossings		
Develop and implement a water quality monitoring plan for all streams and ditches that will identify additional sources of nonpoint pollution and measure water quality improvements as a nonpoint source control program is implemented.		
Treat irrigation ditches as streams and maintain buffer strips to reduce ditch bank erosion.		
Educate the public in the proper use and management of irrigation water with conservation of water being the main theme.		
Determine the sediment loading, TSS (total suspended solids),of Johnson Creek, monitor the success of corrective actions and determine		

if additional action is required.		
Investigate withdrawals of water from streams for personal use. Initiate education program concerning water rights, how to apply for water rights, why necessary and the alternatives such as digging a well.		

Assessment of Wetland Functions and Wetland Management Guidance for the Lower
Dungeness River Area and Sequim Bay Watershed
Lead Agency: Clallam County Department of Community Development
1995

RECOMMENDATION	REACH	TYPE	RESPONSIBLE JURISDICTION	ACTION TAKEN
In enclosed basins, consideration should be given to prevention of routing pollutants which may bioaccumulate to those wetlands.				
Facilities which have the potential to pollute groundwater should not be sited adjacent to wetlands that discharge to groundwater.				
Retain and enhance vegetation in wetlands that discharge to groundwater, especially those which are groundwater exposed to the surface.				
Expand programs that educate and provide assistance to landowners to control animal access to streams ; include wetlands hydrgeologically connected to aquifers or other water features, especially Sequim Bay.				
Fish and Widlife Management: Maintain connection between habitat units and wetlands.				
Maintain forested buffers.				
On smaller streams which are groundwater fed, concentrate fish habitat improvement/restoration downstream of wetlands.				
Investigate the application of the GIS based wetland watershed and landscape model for determining functions that wetlands provide for individual species and/or for prioritizing field work for collecting plant and animal species specific data related to wetlands.				
Further work is needed to anticipate and address future shortages of critical habitats or habitat components.				
Wetland Buffer Management: Areas adjacent to groundwater discharge wetlands should be managed to protect groundwater.				
Areas adjacent to wetlands which are enclosed basins should be managed to reduce flood hazard.				
Buffer averaging and other incentives should be encouraged to maximize retention of forested and scrub-scrub areas uplands adjacent to wetlands.				
Project results should be applied towards establishing minimum buffers for protection				

and enhancement of wetland hydrologic and habitat functions.				
Wetlands identified as having high or potential global habitat functions may require additional protection in terms of building setbacks, construction time periods, preservation of signficant habitat components (eg snags), etc. Since protection may be needed on only a portion of the wetland or adjacent uplands, protection should be site specific.				
Prioritization of wetland acquisition/restoration/enhancement sites: The results of the wetlands characterization and assessment should be used to model other scenarios for prioritization of wetland acquisition/restoration/enhancement sites. Modeling of different priorities (eg. Groundwater protection, fish and wildlife habitat, greenways/open space corridors, etc.) should be done concurrently with public involvement and education. (Appendix D provides a draft strategy for prioritization.)				
Mitigation Mitigation and the evaluation of the success of a mitigation project should include more than simply replacement of wetland acreage.				
Mitigation of unavailable impacts should occur based on the following locational preference order(i.) adjacent to the wetland impacted (ii)within the same subwatershed of major stream association, or aquifer in the case of groundwater discharge wetlands; and (iii) within the regional watershed, preferably adjacent to streams and wetlands that are likely source of water that is not dependent on irrigation water.				
Loss of wetland hydologic functions should be mitigated on-site, irregardless of whether wetland acreage and fish and wildlife habitat functions are replaced off site. This is especially important for wetlands asessed as high value for performing floodflow desynchronization, streamflow/channel maintenance, and water quality functions.				
Impacts or loss of regional groundwater discharge wetlands (i.e. wetland hydrology types 4,5, and 6) and the regions largest wetland habitats should be particularly avoided since full mitigation of the functions that these wetland habitats provide would be difficult, if not impossible.				
Mitigation banking should be considered for any wetland impacts related to the Sequim Bypass and Highway 101 widening projects. Other potential areas that mitigation banking may be appropriate is where high intensity development will occur around wetlands whose primary source of water is from a perched groundwater table, and for legally-created parcels that under current laws contain no upland building sites outside of wetlands and buffers.				
Stormwater Management: Maintain natural hydrology by using infiltration facilities for stormwater.				
Do not route stormwater directly to wetlands.				
If infiltration can be used, development adjacent to the wetland may not have hydrologic				

effects on the wetlands.				
Retention of portions of spring and summer storms should be required for development on shallow soils.				
If a watershed for a wetland can be drawn, export of water from that watershed should be avoided.				
Stormwater requirements for lost hydrologic functions should consider wetland hydrology types.				
Restoration of lost wetland hydrolgoic functions should be a major criteria in any regional efforts to restore watershed functions.				
Stormwater protection district and/or wetland watershed analysis should be required in the areas targeted for high intensity development (eg urban growth areas) and containing wetlands whose hydrology is controlled by local runoff.				
Unfinished agenda: Conduct public education and outreach on the results of the project, especially to wetland landowners and businesses involved in community development.				
Clallam County should develop wetland data sharing agreements with federal and state agencies with regulatory wetland jurisdiction and local tribes.				
Make wetland data easily accessible to county staff, decision making bodies, and the general public.				
Continue efforts to update wetland characterization and functional assessment data as part of implementation of the critical area ordinance and other county business.				
Clallam County should work together with federal and state agencies for establishing critieria for regulation of artifically-created wetlands.				
Local, state and federal management agencies should continue to work towards coordinating wetland regulatory and non-regulatory efforts to avoid duplication of efforts and delays in project review, and to ensure that management decisions incorporate the relationship of wetlands to the watershed and landscape systems.				
Unify the soil survey of the Puget Sound Basin and the Georgia Strait and publish descriptions of the hydric soil series in one volume. Determine to what extent such a volume could interact with existing documents such as the “Guide for wetland restoration in Western Washington”, even to the extent of establishing general “habitat types” (Daybenmire, 1972) for the different soil series.				
Additional research on alternative methods for stormwater management needs to be undertaken.				

Sequim Bay Watershed Management Plan
A Community Based Resource Management Plan
Lead Agency: Clallam County Department of Community Development
Prepared by the Sequim Bay Watershed Management Committee
1991

RECOMMENDATION	REACH	TYPE	RESPONSIBLE JURISDICTION	ACTION TAKEN
Increase public education and involvement to foster a widespread sense of stewardship among all residents of the Watershed.	ALL			
Continue the Bay Watchers volunteer program and expand it Countywide to provide more training to local residents on water quality issues.	ALL			
Work with youngsters	ALL			
Provide a County coordinator or staff to assure continued coordination and high visibility to public education projects.	ALL			
Increase the amount of information available to people on how they can protect water quality.	ALL			
Work with local media and press to ensure continued high visibility and community awareness of water quality issues.	ALL			
Implement an outreach program to existing community organizations and clubs to solicit their participation in water quality projects.	ALL			
Hold an annual water quality conference or community forum.	ALL			
Post visit road signs designating Watershed boundaries, fish crossings, and valuable habitat areas.	ALL			
Charge all implementing agencies with the responsibility to continue to seek new opportunities to present water quality information to the public.	ALL			
Recommend that State and County officials administer programs applicable to commercial and recreational shellfish beds alike.	ALL			
Keep things out of the water to eliminate contaminants from polluting the water including 1) bacteria, 2) sediments, 3) toxins, chemicals, and plastics; and 4) nutrients which may result in aging or “eutrophication” of the Bay.	Sequim Bay			
Maintain AA-Extraordinary designation for waters and comply with State water quality standards by reducing bacterial contamination				
Coordinate implementation of this Plan with local Conservation District and Coopeative Extension officials.				
Identify all parcels in the watershed which have the potential for degradign water quality and work with property owners to implement an approved conservation plan for each.				

Implement a memorandum of understanding between the Clallam County DCD and CCD to identify procedures for referring water quality violations to the Department of Ecology.				
Provide more educational materials, workshops, and incentives for water protection and conservation in the Watershed.				
Consider rechanneling and restoring the lower two miles of Bell Creek to its original meandering channel and natural wetlands.				
Inventory, evaluate, and prioritize adequacy of current farm plans and water quality management plans in the Watershed.				
Support additional funding for farm technician and Extension agent staff.				
Implement recommendations in this plan through a phased approach.				
Coordinate an award or honor program for Clallam County farmers and landowners.				
Continue to provide technical assistance and cost sharing programs.				
Develop and distribute more usable information on septic systems.				
Mail notices each three years to landowners in the Watershed to remind them of the need for periodic maintenance and septic pumping.				
Ensure that all applicants for septic system permits or inspections are provided material on proper design, maintenance, and impacts on water quality				
Continue and expand Environmental Health Department education programs on the basic principles of operating septic waste systems, siting, design, installation and maintenance requirements.				
Support State legislation to provide public health officers access to private property to test and inspect septic systems where the environment or public health is at risk.				
Coordinate cooprative projects to provide homeowners with useful information related to their septic systems.				
Continue and expand the County's computerized analysis of failing septic systems.				
Survey and provide dye kits to septic tank users in the Watershed.				
Recommend that the County develop a program to educate and inform public and land developers that septic systems should be considered interim disposal devices insome areas of the county.				
Install a meter at the John Wayne Marina marine pump out station.				
Develop an ongoing cooperative boater education programs.				
Clarify County Shoreline rules and Port policy and provide signs and boater education that the current "no discharge" area declared by Federal law includes the entire Bay and three miles into the Straits.				
Provide written notice to each rental or overnight user providing notice of boater impacts on water quality, prohibition of discharges, and location of pump out stations and emergency clean up materials.				

Request the Port Authority to increase visibility of the signs and develop a routine preventative maintenance programs for the Port's pump out stations.				
Recommend that the State Department of Social and Health Services and Park and Recreation continue and expand their surveys, marine water and shellfish meat testing, and Boater Task Force studies.				
Support continued use of boater registration fees to support marine sanitation device enforcement and to increase the number and use of pump out facilities.				
Redesignate the marina at Sequim Bay State Park as a boater park.				
Recommend that Ecology conduct a site specific monitoring program of marine mammals in the area from Protection Island to Dungeness Spit to evaluate impacts on water quality and fisheries.				
Finalize engineering options for repair for the slide.				
Obtain funding either through state, local or irrigation district funds to restabilize the landslide.				
Develop a cooperative conservation program to avoid future slope oversaturation of soils and vegetation removal and resulting failures from irrigation facilities.				
Develop a sediment management program for forest activities in the watershed.				
Develop and implement a cooperative program for forest road management with forest owners.				
Recommend that DNR include in its permit process site specific riparian management zones on Type 4 streams and uplands wetlands.				
Request adequate enforcement of current forest practice regulations by the State and more active participation in permit review and condition process by the County.				
Provide a public education program about forest practices in the Watershed.				
Recommend repair and proper maintenance of the culvert and county road drainage.				
Modify County Comprehensive Plan and ordinances to provide stream buffers and vegetation.				
Coordinate workshops and educational information with Conservation District and Cooperative Extension staff on proper streamside management alternatives.				
Recommend that the County request that, and that DNR execute, an aquatic lease.				
Complete a study of the effects of the log yard activities on the benthic habitat.				
Assure immediate clean up of bands and debris in the water.				
Recommend that the County develop and implement a clearing and grading ordinance for sediment control and water quality, not just quantity, management.				
Recommend that Clallam County and the City of Sequim implement comprehensive stormwater plans for the Watershed.				
Recommend that County Public Works and Planning Departments develop education				

programs and materials for builders and land clearers regarding drainage and stormwater management.				
Provide an annual hazardous waste roundup for proper collection and disposal of hazardous wastes.				
Seek funding for an intensive program to test and protect County groundwater resources from chemical.				
Promote recycling efforts in the County. These efforts should include increased education and public information.				
Distribute educational programs and materials regarding safe use, disposal, health effects and environmental impacts of household and commercial chemicals.				
Request that State water quality agencies expand the State laboratory facilities to assure availability of affordable, accessible bacterial and toxicity tests.				
Recommend that the County Public Works and Road Department develop a specific containment and clean up plan for hazardous materials spills on all major transportation routs within t he Watershed.				
Coordinate Cooperative Extension, Conservation District and State Agency workshops, technical assistance and information on streamside vegetation and irrigation ditch management that reduce the amount of chemical use and herbicides which leach into surface and groundwater use.				
Develop as funding is available, a pre-test and post test program to monitor chemical spraying in the watershed including forest and highway application.				
Develop a notification program for landowners who wish to avoid chemical spraying.				
Amend County Shorelines Master Program to adopt best management guidelines for marinas.				
Develop a small oil spill clean up contingency program for the Bay in cooperation with the Port Authority and local boating groups.				
Amend County Shorelines Master Program to prohibit creosote treated pilings, especially over sensitive shellfish areas in the Bay.				
Recommend additional data collection and research by the County and Ecology on nutrient levels in the Watershed.				
Protect, maintain and enhance habitat and the biological diversity in the Watershed including fisheries, vegetation, wetlands and wildlife.				
Promote stream habitat projects including STREAMTEAM, ADOPT A STREAM and neighborhood or individual efforts to restore and improve natural habitat health and diversity.				
Request State Fisheries and Wildlife Departments to fund more habitat technical assistance on the Peninsula.				

Recommend that the County recognize the importance of wetlands and adopt policies and conduct its programs to ensure preservation of natural wetlands and encourage development of created wetlands for improved filtration.				
Comply with wetland inventory guidelines being developed by State legislature and Ecology to assure identification and protection of wetlands.				
Recommend that the County and City adopt ordinances and procedures to ensure that any wetland protected as a mitigation for one development will not later be developed.				
Monitor, evaluate and adapt the plan as necessary to respond to new data and water quality threats. Continue citizen oversight and public participation in the implementation of the Plan and resolution of potential disputes and interpretation of these recommendations through consensus.				
Recommend coordination by Clallam County as lead agency to ensure full implementation of this plan.				
Recommend long term, comprehensive funding of this Plan, at a level to ensure full implementation and achievement of goals.				
Seek state funding for 1990 – 92 implementation of the Sequim Watershed Plan with support of County matching funds.				
Recommend ongoing review and monitoring of water quality and effectiveness of the best management practices and recommended action steps in this Plan.				
Recommend that a Watershed Committee continue to be authorized to oversee implementation of this Plan.				
Recommend that all future revised actions or Watershed Committee decisions continue to be made through consensus.				
Recommend that all future revised actions or Watershed Committee decisions continue to be made through consensus.				
Recommend that the County coordinate an annual forum or workshop to evaluate implementation of the Plan and need for any mid-course adjustments.				
Conduct annual evaluation of plan implementation in conpliance with WAC 400-12-320 and 12-520(3)(d)				
Recommend that annual evaluations include meetings and consultation with County departments, County prosecuting attorney, County Extension Agent, Conserservation District, Port Authority, City and Public Utlity District.				

Dungeness River Area Watershed Management Plan
Lead Agency: DRMT/DCD
1993

Sequim-Dungeness Groundwater Protection Strategy **Lead Agency:** **Prepared by:** 1994				
RECOMMENDATION	**REACH**	**TYPE**	**RESPONSIBLE JURISDICTION**	**ACTION TAKEN**
Amend and enforce Critical (Aquifer Recharge) Areas		WL	CC	
Incorporate groundwater susceptibility and drinking water availability into land use planning		WL		
Conduct comprehensive hydrologic assessment		WL		
Encourage broader understanding of emergency response plans.		WL		
Require new construction in urban growth areas to connect to an existing water system.		WL		
Continue systematic monitoring.		WL		
Utilize existing sources of data.		WL		
Encourage residents to test their well water; conduct home water testing events.		WL		
Apply stormwater BMP's in CARA's		WL		
Encourage DOE to enforce same standards on other agencies as on citizens.		WL		
Continue the Water Quality Clean up Fund		WL		
Continue NPDES permits for surface mines in CARA's		WL		
Nitrates: Designate areas of special concern.		WL		
Define Geologically Sensitive Areas to be equivalent to Critical Aquifer Recharge Areas.		WL		
Incorporate recommendations into local sewage code.		WL		
Set policies and criteria for utilizing the County Nitrate Loading Model		WL		
Minimize or avoid additional nitrogen loading in areas of special concern which are also CARA's		WL		
Provide wastewater treatment planning in various areas.		WL		
Develop an inspection and maintenance program for on-site septic systems.		WL		
Expedite repair of substandard on-site septic systems in CARA's or areas of special concern.		WL		
Monitor for nitrates downgradient from CARA's with high residential densities.		WL		
Map locations on on-site septic systems; evaluate for cumulative effects.		WL		
Require inspection port.		WL		
Allow approved experimental systems in Clallam County.		WL		
Review literature on denitrification technology		WL		

Educate septic system users.		WL		
Require Operation and Maintenance agreement for restaurants on septic systems.		WL		
Maintain sewer lines to prevent leaks.		WL		
Examine zoning codes together with health regulations.		WL		
Educate landscapers using water quality data.		WL		
Research feasibility of non-chemical/non-commercial fertilizers.		WL		
Educate and determine actions if high nitrates are found downgradient from fertilizer applications;use data as tool.		WL		
Document historical land uses and analyze current data.		WL		
Study effects of drain tili eon water quality.		WL		
Require removal of drain tiles for land conversion to residential use.		WL		
Examine potential regulations for preventing contamination from fertilizer.		WL		
Educate landowners regarding yard chemicals.		WL		
Educate and investigate re: use of purchased fertilizer.		WL		
Pesticides: Research pesticide use and monitor groundwater.		WL		
Use BMP's when applying pesticdes in ditches.		WL		
Promote and assist with IPM.		WL		
Encourage IPM and use of BMP's for commercial users.		WL		
Conduct a pesticde collection event for commercial users.		WL		
Educate re: alternative to and proper use of pesticides.		WL		
Stormwater: Assist proper disposal of hazardous waste.		WL		
Finalize stormwater regulations.		WL		
Implement recommendations on stormwater from the Dungeness Watershed Management Plan		WL		
Educate re: proper disposal of wastes, keeping contaminants off the ground surface.		WL		
Evaluate spill response techniques.		WL		
Establish a moderate risk waste facility.		WL		
Encourage non-polluting modes of transportation.		WL		
Continue a Business for Clean Water program, target small quantity generators		WL		
Enforce penalties for intentional dumping and spills		WL		
Enforce water quality regulations on loggin companies		WL		
Support stream restoration and flood protection efforts		WL		
Underground storage tanks: Enforce the Critical Areas Ordinance for UST's in CARA's		WL		
Facilitate UST maintenance and/or removal for commercial owners.		WL		

Educate re: checking UST's for leaks, removal and liability for residential owners.		WL		
Facilitate UST maintenance and/or removal for residential owners		WL		
Encourage background check for UST's when property changes hands.		WL		
Seawater irrigation: Educate re: seawater intrusion in areas of known vulnerability		WL		
Include chloride and water level data with potable water requirements for sources near salt water.		WL		
Conduct regular home water testing for chloride in shoreline		WL		
Inventory and start a database for wells in vulnerable areas.		WL		
Research areas of likely good supply near vulnerable shorelines.		WL		
Well construction and abandonment: Establish well inspection program for silting, sealing, etc., new wells.		WL		
Educate re: proper well construction and liability.		WL		
Educate re: proper decommissioning and financial assistance.		WL		
Educate re: vulnerability of wells and groundwater.		WL		
Backlog of water rights applications: Consider DQ recommendations on determining water rights; work toward an interim strategy		WL		
Consider an agreement with DOE to expedite evaluation process.		WL		
Evaluate cumulative effects of permitted and exempt uses.		WL		
Continue to participate in resolving water resource issues		WL		
Assist small water systems: Facilitate wellhead protection programs.		WL		
Authorize County approval of Group B and small Group A public water systems.		WL		
Support waiver programs for small water systems.		WL		
Help small water systems obtain financing for training, improvements, etc.		WL		
Establish status as lead satellite management agency.		WL		
Consider developing a Coordinated Water Supply Plan.		WL		
Regulate with complete information on water quantity and quality: Establish liaisons with federal and state regulators for data sharing and continuity between processes.		WL		
Maintain land use maps showing regulated activities and water supply wells		WL		
Preserve water resources: Support water conservation and resource management efforts.		WL		
Minimize impervious surfaces in recharge areas.		WL		
Disseminate results of comprehensive hydrogeologic assessment		WL		
Promote special conditions for water supplies proposed in areas with water quantity problems.		WL		

Encourage re-use of treated wastewater.		WL		
Encourage development of guidelines for gray water re-use.		WL		
Reduce leakage in irrigation ditches		WL		
Educate re: irrigation conservation in general		WL		
Research water use by exempt wells		WL		
Research recharge rate.		WL		
Information management: Establish County as lead in data storage; GIS primary management tool.			CC	
Cooperate on data collection.			CC	
Public Involvement: Implement educational actions in this Strategy				
Continue to implement actions in Groundwater Education Plan.				
Implement the Dungeness Watershed Management Plan				
Involve citizens and school groups in data collection.				
Support WSU and Conservation District programs				
Advertise financial assistance for BMP's and other projects.				
Continue to train internal County staff on groundwater/drinking water concerns.				
Lack of permanent funding: Establish long term funding.				
Meet and review activities related to groundwater protection.				
Consider special designation of study area.				
Establish a mechanism for coordinating wellhead protection and water testing.				
Encourage state legislature to fund water permitting activities.				

Dungeness River Comprehensive Flood Control Management Plan Lead Agency: Clallam County Public Works Department 1990				
RECOMMENDATION	**REACH**	**TYPE**	**RESPONSIBLE JURISDICTION**	**ACTION TAKEN**
Establish an special overlay zone in the Floodplain Management Code to: - Restrict the removal of natural log jams - Require that no structures be built that obstruct or divert Dungeness River water - Prohibit vegetation disturbance in the floodway (including filling activity) - Require that dikes and riprap be located landward of wetlands, as defined by Shoreline Management Plan - Prohibit dredging and mining (does not include scalping or realignment) - Allow flow realignment, but only if acceptable to entities represented on DRMT, and as a part of an action to protect or preserve lives, property or habitat			CC	
Revise the County's Zoning Code and Subdivision Ordinance to include standard criteria for conditioning development in or partially in the Shoreline Jurisdiction. Criteria should include: - Erosion control practices - Vegetation corridors, - Dedication of public or community owned trails and open space - Restrictions on clearing, grading, and fill within the floodplain overlay zone - Proximity to sensitive areas requiring protection			CC	
Amend the County's SMP to: - Allow the use of flow realignment only as a measure to restore a reach of the river and only as based on detailed engineering studies of upstream and downstream impact.			CC	
Support County efforts to adopt a clearing, filling and grading ordinance. The ordinance should include restrictions on vegetation removal in the flood plain to provide additional over bank area stab ility and erosion protection.			CC	
Initiate a community or subregional planning process for the Dungeness River area that: - Looks at the relationship of land use, environmental protection/flood management, drainage, recreation, transportation, and public service issues.			CC	

- Identifies properties along the river that warrants public ownership due to their unique habitat value or recreational qualities or because they are extremely threatened by the river's flooding patterns. Develop criteria for establishing priorities for public purchase. Investigate state/federal/non-profit funding programs and local bond options for generating funds to purchase priority projects. - Includes an educational program that provides information about existing programs and collects input on proposed actions and programs.				
Data Base: Riparian Zone Mapping: Identify the critical zone adjacent to the river which should be preserved to protect riparian habitat and to protect channel bank stability.			CC	
Wetland Mapping: Conduct an inventory of wetlands in the lower basin; wetlands provide many values and functions in the basin including flood storage. This data will be critical prior to implementation of structural solutions.			CC	
Priority Properties Mapping: Prepare a map and compile property ownership data for the 680 acres in the floodway and 1,600 acres in the flood plain for use in other planning, permitting and property acquisition efforts.			CC	
Public Education: Citizen's Hotline: Establish and publish a phone number at the County which is dedicated to recording and tracking of potential or existing flood hazard situations and erosion hazards.			CC	
Newspaper Articles: Newspaper articles and brochures could be prepared for publishing or distribution at regular intervals to address floodproffing structures, river bank maintenance, debris removal, what to do in a flood, who owns the Dungeness River, flood preparedness checklist, shoreline management.			CC	
Brochures: Developed and distribute brochures explaining land use options, and the private and public benefits of each, to promote creative development and incentive programs aimed at flood control.			CC	

Clean Water Strategy for Addressing Fecal Coliform in the Dungeness Bay and Watershed

Lead Agency:
Prepared by: Clean Water Group
2001

RECOMMENDATION	REACH	TYPE	RESPONSIBLE JURISDICTION	ACTION TAKEN
Pollution Source Removal or Mitigation				
Irrigation ditch piping to reduce input of pollutants to surface water		WQ		
Riparian restoration and fencing to stabilize stream banks and reduce the movement of pollutants		WQ		
Develop and implement dairy nutrient management plans		WQ		
Develop and implement farm plans specifying best mgnt. practices		WQ		
On-site septic system investigations		WQ		
Development of On-site O&M Program				
Ecology enforcement action				
Public Outreach				
Public Hearing for Water Clean-up Plan				
Neighborhood meetings				
Sequim 7th Grade Watershed Week				
Septic 101 Workshops				
Natural Landscaping Workshop				
Horse and Pony Care				
Salmon and Wildlife Workshop				
Quarterly newsletters mailed to watershed residents about Clean Water District, associated strategies and stewardship activities				
2002 Presentations to local community groups				
Festival/Fair Booths – shellfish, water quality, on-site maintenance, and riparian protections				
Source Assessment				
Total Maximum Daily Load Study (TMDL) for Matriotti, Meadowbrook and Dungeness River & Bay				
Marine water quality sampling				
Water quality sampling of irrigation ditches				
Circulation Study of Dungeness Bay				

On-site system database with GIS mapping, starting with problem areas identified with water quality data				
Information/data on wildlife populations and usage with the bay				
Additional sampling of specific stream reaches				
Analysis of fecal coliform inputs from stormwater conveyances				
Characterization of fecal coliform (or E.coli) bacteria, using genetic or chemical markers				

Toward Recovery: Clallam County Response to the Endangered Species Act Listing of and Proposed Listing of Salmonids Species in Puget Sound, the Strait of Juan de Fuca and the Pacific Coast

Lead Agency: Clallam County Dept. of Community Development

2000

RECOMMENDATION	REACH	TYPE	RESPONSIBLE JURISDICTION	ACTION TAKEN
Avoid stormwater discharge impacts to water quality and quantity or to the hydrograph of the watershed	ALL	WQ, WL,	CC	
Require adequate riparian buffers around all perennial and intermittent streams, lakes, or wetlands	ALL	H	CC	
Avoid stream crossings by roads wherever possible, and where one must be provided, minimize impacts through choice of mode, sizing and/or placement	ALL	H	CC	
Protect historic stream meander patterns and channel migration zones; avoid hardening of stream banks	ALL	H	CC	
Protect wetlands and wetland functions	ALL	H	CC	
Preserve the hydrologic capacity of any intermittent or permanent Stream to pass peak flows.	ALL	H	CC	
Landscape to reduce need for watering and application of herbicides, pesticides and fertilizer	ALL	H	CC	
Prevent erosion and sediment runoff during construction.	ALL	WQ	CC	
Assure that water supply demands for the new development can be met without impacting flow needed for threatened salmonids either directly or through groundwater withdrawals, and that any new water diversions are positioned and screened in a way that prevents injury or death of salmonids.	ALL	IF	CC	
Provide all necessary enforcement, funding, reporting and implementation mechanisms	ALL		CC	
The development complies with all other state and Federal (sic) environmental or natural resource laws and permits	ALL		CC	

Dungeness River and Matriotti Creek Fecal Coliform Bacteria Total Maximum Daily Load (TMDL) Washington Department of Ecology, 2002				
RECOMMENDATION	**REACH**	**TYPE**	**RESPONSIBLE JURISDICTION**	**ACTION TAKEN**
TMDL:The Dungeness River at RM 3.2 and downstream must have fecal coliform levels that meet Class A marine water quality criteria to protect the marine waters and their beneficial uses. This criterion is: A geometric mean value of 13 fc/100 mL and a 90th percentile not to exceed 32 fc/100 mL.	**Dung/Matriotti**			
To meet Class A marine water quality criteria in the Dungeness River, tributaries below RM 3.2 must meet the following fecal coliform target values: A geometric mean value of 60 fc/100mL and a 90th percentile not to exceed 170.	**Dung/Matriotti**			
Fecal coliform reductions are needed on the Dungeness River below RM 3.2 and the tributaries to meet these recommended targets. The most practical fecal coliform reduction option at this time that is protective of shellfish harvesting use in the bay is as follows: Matriotti Creek – 78% Hurd Creek – no reduction Irrigation Ditch at Dungeness RM 1.0 29% Dungeness River RM 0.3 – 0.1 – 2%	**Dung/Matriotti**			
To protect water quality in Meadowbrook and Cooper Creeks and Golden Sands Slough, as well as marine uses in Dungenesss Bay, fecal coliform levels in these tributaries to the bay must meet Class AA freshwater fecal coliform standards of: A geometric mean value of 50 fc/100 mL and a 90th percentile not to exceed 100fc/100mL.	**Dung/Matriotti**			
Fecal coliform reductions are needed on Meadowbrook and Cooper creeks, Golden Sands Slough, and irrigation ditches to meet the appropriate water quality standard (fresh or marine). Fecal coliform reductions necessary are as follows: Meadowbrook Creek and Slough – 59% Cooper Creek – 28% Golden Sands Slough – 82%	**Dung/Matriotti**			
Bacterial Source Attenuation and Monitoring: To assist in prioritizing actions to control fecal coliform pollution in the lower Dungeness basin, areas were ranked by average seasonal loading. Priority areas for source control actions and further investigation are as follows with highest priority actions first:	**Dung/Matriotti**			
Matriotti Creek between CM 0.7 – 0.3: Best management practices to control fecal coliform and sediment are needed in this area. Matriotti Creek is the highest ranked loading source during the irrigation season.	**Dung/Matriotti**			
Dungeness River between RM 0.3 and 0.1. This reach was the highest ranked loading source during the wet season and is in close proximity to the shellfish beds. In addition,	**Dung/Matriotti**			

the possibility of human sources of bacterial contamination of of special public health concern.				
Dungeness River between RM 3.2 – 0.8 and0.1. – 0.1. Both areas need further investigation of sources during the irrigation season. Possible sources between RM 3.2 0 - - 0.8 include other surface water inputs or land use practices along this reach. Possible sources between 0.1 – 0.0 should be investigated included but contamination could include tidally induced back flow of the river.	**Dung/Matriotti**			
Matriotti CM 3.2 – 1.9. Investigate possible sources in this stretch, including failing on-site systems, irrigation tailwater returns, or animal access.	**Dung/Matriotti**			
Mudd Creek, a tributary to Matriotti Creek. Investigate sources. Some source identification and corrections have occurred in this drainage including water quality monitoring of irrigation ditches, and elimination of an irrigation return with high bacteria levels. Other possible sources include failing on-site systems along Mudd Creek.	**Dung/Matriotti**			
Monitoring to determine the effectiveness of source control actions should continue.	**Dung/Matriotti**			
Meadowbrook Creek, Meadowbrook Slough, and Golden Sands Slough. Implement source control actions as mentioned in the body of the report.	**Dung/Matriotti**			
Lotzgesell Creek. Continue monitoring water quality to evaluate any improvements from BMP activities on this creek.	**Dung/Matriotti**			

Washington Department of Ecology
Water Cleanup Plan for Bacteria in the Lower Dungeness Watershed
Total Maximum Daily Load (TMDL)
Submittal Report
April 2002

RECOMMENDATION	REACH	TYPE	RESPONSIBLE JURISDICTION	ACTION TAKEN
Pollution Source Remediation:Sewage Disposal:	**Dungeness**			
Educate and inform the public	“”			
Develop a monitoring/inspection program	“”			
Continue efforts to develop a data tracking system	“”			
Identify pilot project areas (Dungeness was identified as highest priority)	“”			
Evaluate the program’s success	“”			
Develop appropriate policies and regulations	“”			
Identify stable funding sources	“”			
Build partnerships	“”			
Public Outreach:	“”			
Provide information on bacterial pollution and controlling it in Dungeness B ay and its related watershed, including the associated human-health risk from bacterial contamination	“”			
Provide a clear explanation to the public about the role and purpose of forming a Clean Water District	“”			
Provide information on other water quality problems within the Clean Water District	“”			
Inform watershed residents where information and services for remediation can be found locally; which state and local agencies are involved in water clean-up and their authority	“”			
Facilitate an understanding among watershed residents about the natural water cycle and their impact on it.	“”			
Encourage watershed residents to become or continue to be effective watershed stewards	“”			
Facilitate long term partnerships among government agencies and community organization.	“”			
Additional Source Assessment:				
Determine the success of remediation measures on water quality				
Conduct follow up monitoring in priority streams				
Inform the public of water quality conditions.				

Physical Processes, Human Impacts, and Restoration Issues of the Lower Dungeness River Prepared for: Jamestown S'Klallam Tribe Prepared By: U.S. Department of the Interior, BOR 2002				
RECOMMENDATION	**REACH**	**TYPE**	**RESPONSIBLE JURISDICTION**	**ACTION TAKEN**
Levee setback and removal: Policiy decisions should be mde regarding levee setback and removal plans.	**Dungeness**			
Kinkade Island Restoration: Policy decisions should be made regarding any restoration plans for Kinkade Island.	""			
Bank Protection:	""			
Bridge Modification: Bridge Modification should be investigated at the Woodcock Bridge, the Railroad Bridge, the Ward Road Bridge, and the Burlingame Bridge	""			
Other Fish Habitat Restoration: Other fish habitat restoration goals should be considered.	""			
Upper Watershed Restoration: An improved understanding is needed of the physical processes that afect the quantity, grain size, and timing of sediment supplied by the upper watershed to the lower river. A comprehensive investigation is all landslides in the upper watershed is needed to evaluate their role in the supply of sediment to the river and impacts to salmonid habitat in the river system.	""			