

WRIA 27/28 Watershed Management Plan Implementation Actions and Recommendations – FINAL

Category: Water Supply

Priority ⁽¹⁾	Sub-priority	Actions and Subactions	Implementers ⁽³⁾	Financial/ Economic Costs ⁽²⁾	Potential Funding Sources
High		Action #944: Public Water Systems develop new or expanded supplies. Requires engineering studies; approval of water system plan; water rights processing; other permitting; SEPA compliance; construction; operations & maintenance. Standard procedures exist for all of these (See Section 3.3.1).	<i>Lead:</i> Public Water System <i>Others:</i> DOH, Ecology	Medium	<i>Main:</i> Water rates and hookup charges in affected service area <i>Additional:</i> Grants or low-interest loans from existing state & federal programs
		Subaction #944A: Revise and update water system plans consistent with the adopted WRIA 27/28 Plan (See Section 3.3.1).	Cities, Counties, Department of Health, Ecology, etc.		
		Subaction #944B: Implement Section 3.3.1 when identifying new or expanded water supplies.	Municipalities, Counties, purveyors, DOH, Ecology, etc.		
		Subaction #944C: Reserve a block of water for future public water supply that would not be subject to the closures and/or instream flows establish by rules for WRIAs 27 and 28. (Tasks would include rule writing and adoption, and coordination with the Planning Unit)- Pg. 3-13	Ecology, Planning Unit		
	High	Subaction #944D: Develop a regional ground water source at Vancouver Lake in a timely manner. (Tasks would include engineering studies, coordination with clean-up efforts, water rights processing, SEPA, facilitation by agencies, construction, operations and maintenance, etc) Pg. 3-19	CPU (others: City of Vancouver, Port of Vancouver, Ecology, DOH, etc)		
	High	Subaction #944E: Develop a regional ground water source at Vancouver Lake in a timely manner. (Tasks would include engineering studies, coordination with clean-up efforts, water rights processing, SEPA, facilitation by agencies, construction, operations and maintenance, etc) Pg. 3-18	Vancouver (others: CPU, Port of Vancouver, Ecology, DOH, etc)		
	High	Subaction#944F : Investigate and develop a regional ground water source in the vicinity of Steigerwald Wildlife Refuge, or purchase from Vancouver (if other opportunities prove infeasible). (Tasks would include engineering studies, water rights processing, SEPA, construction, operations and maintenance, etc) Pg. 3-20, Pg. 3-22	City of Washougal, City of Camas (others: Ecology, City of Vancouver)		

Priority ⁽¹⁾	Sub-priority	Activity	Implementers ⁽³⁾	Financial/Economic Costs ⁽²⁾	Potential Funding Sources
		Subaction #944G: As needed based upon increased demand, expand the City of Woodland's Ranney well system. (Tasks would include water rights processing, engineering studies, SEPA, construction and maintenance, etc) Pg. 3-23	City of Woodland (others: Ecology, DOH)		
		Subaction #944H: As needed based upon increased demand, expand the City of Washougal's well system. (Tasks would include compliance with Section 3.3.1, water rights processing, engineering studies, SEPA, construction and maintenance, development of necessary mitigation plans, etc) Pg. 3-22	City of Washougal (others: Ecology, DOH)		
		Subaction #944I: As needed based upon increased demand, expand the City of Kalama's Ranney well system. (Tasks would include compliance with Section 3.3.1, assessment of instream flow impacts, water rights processing, engineering studies, SEPA, construction and maintenance, development of necessary mitigation plans, etc) Pg. 3-23	City of Kalama (others: Ecology, Fish and Wildlife, DOH)		
		Subaction #944J: Implement the Salmon Creek Water Resource Plan. Pg. 3-19	Clark Public Utilities (others: Ecology, DOH)		
High		Action #945 (#932): Planning studies to explore alternative sources of supply to replace an existing source (selected communities) (See Section 3.3.2).	Lead: Public Water System	Low	Main: Water rates in affected service area
	High	Subaction #945A: Conduct planning studies and investigations necessary to support development of a regional ground water source at Vancouver Lake, in a timely manner. (Tasks would include engineering studies, permitting, facilitation by agencies, etc) Pg. 3-19	CPU (others: City of Vancouver, Port of Vancouver, Ecology, DOH, etc)		
	High	Subaction #945B: Conduct planning studies and investigations necessary to support development of a regional ground water source at Vancouver Lake, in a timely manner. (Tasks would include engineering studies, permitting, facilitation by agencies, etc) Pg. 3-18	Vancouver (others: CPU, Port of Vancouver, Ecology, DOH, etc)		
		Subaction #945C: Conduct planning studies necessary to support and develop a regional ground water source in the vicinity of the Steigerwald Wildlife Refuge, or evaluate purchase from Vancouver (if other opportunities prove infeasible). (Tasks would include engineering studies, permitting, facilitation by agencies, etc) Pg. 3-20, Pg. 3-22 Related Subaction (see below) #945D: The City of Camas should consider alternative sources of supply to reduce or cease use of surface water diversions on Boulder and Jones Creeks. Such alternatives include installation of new wells, purchases from City of Vancouver and development of non-potable source of supply. It is anticipated that this would require examination of cost, potential rate impacts, reliability	City of Camas, City of Washougal (others: Ecology, City of Vancouver)		

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		considerations, and evaluation of other feasibility criteria. Pg. 4-55			
	High	Subaction #945E: Investigate opportunities for a regional ground water source near the Lower North Fork Lewis/East Fork Lewis confluence. Pg. 3-15	CPU (others: LaCenter, Battle Ground, Ridgefield, etc,?)		
		Subaction #945F : Due to the potential for withdrawal from the City’s existing wells to impact stream flows in the East Fork Lewis River and Salmon Creek, Battle Ground should undertake a review of alternative sources of supply (including purchase from CPU and use of reclaimed water), similar to that discussed in Section 3.3.1. The City’s plans for a new well should also be subject to Section 3.3.1. Pg. 3-21 Related Subaction (see below) #945G : The City of Battle Ground should consider wholesale purchases of water from CPU to eliminate water-supply impacts on stream flow. This is preferred over water conservation, because of greater benefits to flow. It is anticipated that this would require examination of cost, potential rate impacts, reliability considerations, and other feasibility criteria. Pg. 4-41	City of Battle Ground (others: Ecology, Health Department)		
		Subaction (#945H): Evaluate purchase of water from CPU to aid in meeting future demands, utilizing the recently installed fire flow intertie. Pg. 3-21 Related Subaction (see below) (#945I): The City of Ridgefield should consider wholesale purchases of water from CPU to eliminate water-supply impacts on stream flow. This is preferred over water conservation, because of greater benefits to flow. It is anticipated that this would require examination of cost, potential rate impacts, reliability considerations, and other feasibility criteria. Pg. 4-41	City Ridgefield (others: Ecology, DOH)		
High		Action #946: Replace an existing source of supply with a different source to reduce impacts on stream flow. Requires engineering studies; water rights processing; other permitting; inter-local agreements or contracts; construction; operations & maintenance (See Section 3.3.2).	<i>Lead:</i> Public Water System <i>Others:</i> DOH, Ecology, adjacent water system(s) to serve as wholesaler	Medium to High	<i>Main:</i> Leg. appropriation <i>Additional:</i> Water rates in affected service area

Priority ⁽¹⁾	Sub-priority	Activity	Implementers ⁽³⁾	Financial/Economic Costs ⁽²⁾	Potential Funding Sources
		Subaction #946A: Pending positive outcome of studies and planning, replace existing water sources with a regional ground water source in the vicinity of Steigerwald Wildlife Refuge, or purchase from Vancouver (if other opportunities prove infeasible). (Tasks would include engineering studies, water rights processing, SEPA, construction, operations and maintenance, etc) Pg. 3-20, Pg. 3-22	City of Camas, City of Washougal (others: Ecology, City of Vancouver)		
	High	Subaction #946B: Pending positive outcome of studies and planning, replace existing water sources with a regional ground water source at Vancouver Lake, in a timely manner. Consider sale of water from this supply source to other purveyors for use in meeting future demands. (Tasks would include engineering studies, coordination with clean-up efforts, water rights processing, SEPA, facilitation by agencies, construction, operations and maintenance, etc) Pg. 3-19	CPU (others: City of Vancouver, Port of Vancouver, Ecology, DOH, etc)		
	High	Subaction #946C: Pending positive outcome of studies and planning, replace existing water sources with a regional ground water source at Vancouver Lake, in a timely manner. Consider sale of water from this supply source to other purveyors for use in meeting future demands (Tasks would include engineering studies, coordination with clean-up efforts, water rights processing, SEPA, facilitation by agencies, construction, operations and maintenance, etc) Pg. 3-18	Vancouver (others: CPU, City of Vancouver, Port of Vancouver, Ecology, DOH, etc)		
	High	Subaction #946D: Pending positive outcome of studies and planning, replace existing water sources with a regional ground water source near the Lower North Fork Lewis/East Fork Lewis confluence. Consider sale of water from this supply source to other purveyors for use in meeting future demands (Tasks would include engineering studies, water rights processing, SEPA, construction, operations and maintenance, etc) Pg. 3-19	CPU (others: City of Vancouver, Port of Vancouver, Ecology, DOH, etc)		
	High	Subaction #946E: If alternative water sources are not secured (per Section 3.3.1), develop additional wells in the Pioneer area to serve as a public water supply, consistent with the off-setting and habitat mitigating measures outlined in Section 3.3.1. (Tasks would include engineering studies, impacts assessment and mitigation plan development, water rights processing, SEPA, construction, operations and maintenance, etc) Pg. 3-19	CPU (others: City of Battle Ground, Ridgefield, LaCenter, Ecology, etc)		
		Subaction #946F: Replace Jones and Boulder Creek water sources alternative sources of supply, following the procedure outlines in Section 3.3.1. If new water rights are secured, retire existing sources or use them only during periods of high flow. Pg. 3-20	City of Camas (others: Ecology, WDFW)		

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		<p>Subaction #946G: For cases in which <i>existing</i> municipal supplies (as contrasted with planned <i>future</i> supplies) have the potential to negatively impact flows in critical stream reaches, the Planning Unit recommends that selected communities voluntarily consider enhancing their conservation efforts and undertake a review of alternative sources of supply, similar to that described in Section 3.3.1. It is recommended that, where feasible, these water suppliers cease or limit the use of certain existing supplies and develop alternative sources of supply that are less likely to impact flows in critical stream reaches. It is also recommended that implementation of such alternatives be eligible for funding from regional, state, or federal funding programs (see Section 3.6). Pg. 3-14</p> <p>Water suppliers in this situation should also consider availability of regional supplies (Section 3.3.3). It is important to note that existing municipal water rights are not subject to relinquishment if use of the rights ceases or is limited. Pg. 3-14</p>	To Be Determined		
		<p>Subaction #946H: In those cases where new supplies are required for small Group A systems, it is recommended that a review of alternative sources of supply be conducted (see Section 3.3.1), with an emphasis placed upon evaluating the purchase of water from an existing major water purveyor (see Section 3.3.3). If new sources are required and a reserved block of water is not available, then the net impact to surface flows should be off-set by acquiring existing upstream water rights. Pg 3-27</p>	To Be Determined		
		<p>Subaction #946I: Coordinate with the Watershed Stewards Program to identify any actions it may take to aid in the Gee Creek restoration effort. If low flows are identified as an issue needing to be addressed, the City should undertake a review of alternative sources of supply, similar to that discussed in Section 3.3.1. The City's existing plans for new wells should be considered in this exercise, if the new wells are anticipated to have less of an effect upon stream flows than current sources. (Note: relates to stream flow actions below) Pg. 3-24</p>	City of Ridgefield (others?)		
Medium		<p>Action #947: Develop map of region's aquifers with emphasis on surface water hydraulic continuity (See Section 3.3.1).</p>	<p><i>Lead:</i> Ecology <i>Other:</i> Public water systems</p>	Medium	<i>Main:</i> Grants, water purveyor revenues
	High	<p>Develop a map that depicts the locations of deep aquifers that are not in hydraulic continuity with streams and are suitable for water supply development. (Tasks would include engineering studies, plan development, etc). (Note: Relates to "Planning Studies" actions above) Pg. 3-12</p>	<p><i>Planning Unit, USGS (others:?)</i></p>		
Medium			<i>Lead:</i> Public Water	Low to	<i>Main:</i> public water system

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		Action #948: Enhanced conservation exceeding state requirements in selected communities (See Section 3.3.1).	System <i>Other:</i> Ecology, Conservation Districts	medium	<i>Additional:</i> Grants from DOH or Ecology
		Subaction #948A: Enhance current conservation efforts, with the goal of reducing the production required of existing wells. Pg 3-21	City of Battle Ground		
		Subaction #948B: Enhance current conservation efforts, with the goal of reducing the production required of existing wells, to protect flows in Gee Creek. Pg 3-22	City of Ridgefield (others: Ecology)		
		Subaction #948C: Enhance existing conservation program to reduce water diversions from Jones and Boulder Creeks. However, if source substitution is pursued instead, this may be unnecessary. Pg. 4-54	City of Camas		
		Subaction #948D: Enhance existing water conservation programs to protect stream flows. This may be unnecessary, however, if source substitution is pursued instead (see below). Pg. 4-41	City of Battle Ground, City of Ridgefield, Town of Yacolt		

Priority ⁽¹⁾	Sub-priority	Activity	Implementers ⁽³⁾	Financial/Economic Costs ⁽²⁾	Potential Funding Sources
Medium		Action #949: Industrial supplies: Expand conservation & reuse; develop non-potable sources; connect to municipal systems (See Section 3.5.3).	<i>Lead:</i> Private industry (large plants) <i>Others:</i> Ecology & DOH (technical assistance; water rights processing if applicable)	Low to High (Varies by facility)	<i>Main:</i> Private industry <i>Additional:</i> Leg. Appropriations
		Subaction #949A: Where feasible, industries requiring additional sources of supply in the future should connect to existing municipal water supplies. Where not feasible due to technical issues, logistics, or cost, then it is recommended that the industry evaluate alternative sources as described in Section 3.3.1. Pg. 3-31	To Be Determined		
		Subaction #949B: New urban or suburban developments or industrial facilities that require new or expanded water supplies shall seek to obtain water from existing municipal or other water suppliers rather than developing separate sources of supply. (Note: this would not apply to agricultural uses). If an existing municipal supplier or other water supplier is not available, then the new development or industrial facility should explore water supply sources that are not in hydraulic continuity with surface water or explore the feasibility of developing tidal and/or Columbia River sources. If none of these options are available, Ecology may consider issuing water rights that entirely off-set the net impact to stream flow. Pg. 3-16	To Be Determined		
		Subaction #949C: Re-evaluate development of a non-potable Columbia River supply, considering the substantial amount of water used for industrial purposes in the City. The Planning Unit commits to aiding the City in identifying and obtaining funding sources for implementation of such a project, most likely through programs administered by Ecology and DOH (see Recommendation in Section 8.3). Pg. 3-20	City of Camas, Planning Unit (Ecology, DOH)		
		Subaction #949D: Provide technical assistance and financial support to Georgia Pacific in developing water conservation measures that would reduce dependency on surface water from Lacamas Creek and ground water from the lower Washougal River vicinity. Any ground water savings realized through conservation could be available to help meet the City's growth needs. Pg. 3-20	City of Camas, Georgia Pacific (others: Ecology, ?)		

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		Subaction #949E: Identify and carry out actions to reduce the impact of Georgia-Pacific's water use on Lacamas Creek. These actions may include a combination of source-substitution; water conservation; and/or water reclamation and reuse within the paper mill. The State of Washington should offer technical assistance for this purpose. In addition, the State of Washington should identify funding mechanisms that could, in part, contribute to reduction of water usage at the mill. Pg. 4-51	City of Camas, Georgia Pacific (others: Ecology, ?)		
		Subaction #949F: Develop technical assistance and funding opportunities focused specifically upon the needs of self-supplied industries, to aid in reducing current water demands. Pg. 3-31	Ecology, DOH		
		Subaction #949G: Evaluate development of Columbia River non-potable supplies, similar to that considered by the City of Camas. The Planning Unit commits to aiding industries in identifying and obtaining funding sources for implementation of such a project, most likely through programs administered by Ecology and DOH (see Recommendation in Section 8.3). Pg. 3-31	Self-supplied Industrial Water Users (others: Ecology, DOH)		
Low		Action #950 (#933): Consider the effects of individual domestic wells when modifying or adopting comprehensive plans, zoning designations, or other land use regulations. (See Section 3.5.2).	<i>Lead:</i> Counties, cities	Low	<i>Main:</i> counties, cities general fund, permitting fees, or grants
Low		Action #951 (#934): Agricultural supplies: switch from surface to ground water. Discourage new uses of surface water (use ground water instead) (See Section 3.5.4).	<i>Lead:</i> Landowner <i>Others:</i> Ecology, Conservation Districts	Low to medium	<i>Main:</i> Landowner <i>Additional:</i> Leg. Appropriations, USDA, NRCS
	High	Subaction #951A: Request change of existing surface water rights to ground water rights not in hydraulic continuity with surface waters. Pg. 3-33	Agricultural Water Users (others: Ecology)		
		Subaction #951B: Transfer ground water rights from one user to another to meet future agricultural water demands. Pg. 3-33	Agricultural Water Users (others: Ecology)		
		Subaction #951C: Expedite processing of agricultural ground water right transfers between agricultural water users. Pg. 3-33	Ecology		
		Subaction #951D: Process water right requests pertaining to future agricultural ground water demand, subject to consistency with the Planning Unit's water supply policy (Section 3.3.1) and successful completion of Ecology's water right application review process. Pg. 3-33	Ecology		
Low		Action #952 (#935): Within authorities and as staffing and funding	<i>Lead:</i> Water purveyors	Medium	<i>Main:</i> Grants, water purveyor revenues

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		allow, develop water-level monitoring program for aquifers (See Section 4.2).	<i>Others:</i> USGS, counties		
Category: Stream Flow Management					
High		Action #953: Maintain existing stream gauges. Install new gauges at selected locations. Select exact sites; permit and construct gauges; O&M; data management (See Section 4.2).	<i>Lead:</i> Ecology <i>Other:</i> USGS, LCFRB, Counties	Medium	<i>Main:</i> Leg. appropriations (Ecology budget); Congr. appropriations (USGS budget); <i>Additional:</i> Counties; Public Water Systems
		Subaction #953A: Maintain existing stream gauges over the long-term and install additional permanent stream gauges. Pg. 4-11, Pg. 4-46, Pg. 4-58	Ecology, USGS, Counties (others: ?)		
		Subaction #953B: Install stream gauges on the East Fork Lewis and Washougal Rivers. Pg. 4-46, Pg. 4-58	Ecology, USGS, Counties (others: ?)		
High		Action #954: Adopt restrictions on issuance of new water rights in State Rule (See Section 4.4.1).	<i>Lead:</i> Ecology <i>Other:</i> LCFRB	Low	<i>Main:</i> Ecology (staff time) <i>Additional:</i> LCFRB (staff time)
		Subaction #954A: Adopt State Rules (WACs) under the Instream Resources Protection Program to restrict issuance of new water rights in WRIAs 27 and 28. In all affected streams reaches, establish a closure, but with certain exceptions as noted in the Plan. Pg. 4-19	Ecology (others: LCFRB, Planning Unit, ?)		
		Subaction #954B: Based upon the results of the analysis described in Section 3.5.2, and considering the relatively small amount of water withdrawals comprised by this category of water use, establish a reservation of water in rule language that provides for domestic well use, even within closed basins, subject to the considerations and limitations outlined in the plan (e.g., Sections 3.5.2 and 4.3.2). Pg. 3-28	Ecology (others: LCFRB, Planning Unit, ?)		
High		Action #955: Selected actions involving water supply and intended to protect stream flow. See water supply items listed above.	<i>See Section 3.6</i>	<i>See Section 3.6</i>	<i>See Section 3.6</i>
		Subaction #955A: Develop a new wastewater treatment plant that uses Class-A Reclaimed water to augment streamflows, provided water quality in receiving waters is also maintained or improved. Pg. 3-22	City of Battle Ground (others: Ecology, DOH, ?)		
		Subaction #955B: Determine mitigation credits for stream flow augmentation resulting from the City of Battle Grounds new wastewater treatment plant. Mitigation credits should reflect net stream-flow benefits in relation to withdrawal impact areas. Pg. 3-22	Ecology, Fish and Wildlife, City of Battle Ground (others: ?)		

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		Subaction #955C: Implement the 1992 Salmon Creek MOU and management plan, and review the policies discussed in Sections 4.5 and 4.6 to assess whether additional stream flow management strategies are warranted in the Salmon Creek Subbasin. Pg. 4-48	Ecology, Clark County, and Clark Public Utilities		
High		Action #956: Establish target flow monitoring and management program (See Section 4.3).	<i>Lead:</i> LCFRB and Planning Unit or successor organization <i>Other:</i> Ecology, DFW		<i>Main:</i> Phase 4 implementation funds <i>Additional:</i> TBD
		Subaction #956A: Develop a water-level monitoring program for aquifers in the region. Pg. 4-12	Ecology, Planning Unit (others?)		
		Subaction #956B: Establish target flows for the main stem of the East Fork Lewis River and Washougal River. Target flows should address both low flows and peak flows. The suite of flow-management techniques discussed for these streams should be designed with the goal of protecting these flows from degradation; and if possible improving the flow regime. (Tasks would include gauge installation, establishment of target flows, monitoring, etc) (See the following sections for more detailed specifications on recommended actions) Pgs. 4-43 through 4-57 and 4-56 through 4-58	Ecology, Planning Unit (others? USGS?)		
High		Action #957: Initial surveys in selected subbasins to identify unauthorized uses and take enforcement actions. Follow-up in other basins if warranted (See Section 4.4.6).	<i>Lead:</i> Ecology <i>Other:</i> N/A	Low to medium	<i>Main:</i> Leg. appropriations (Ecology budget & staffing) <i>Additional:</i> N/A
		Subaction #957A: Conduct or support initial surveys in selected subbasins to determine whether unauthorized water uses are occurring on streams deemed critical to salmon recovery within WRIAs 27 and 28. If these surveys identify extensive unauthorized uses, they should be expanded to additional subbasins and carried out on a regular, periodic basis (e.g. once every five years). Pg. 4-27	Ecology (others?)		
		Subaction #957B: Where unauthorized uses are identified based upon initial surveys, take enforcement actions to eliminate these uses. An alternative or additional approach would be the establishment of a watermaster that has regulatory authority to regulate illegal water diversions. Pg. 4-27	Ecology (others?)		
High		Action #958 (#936): Consider and address effects of forest practices on stream flow. Monitor effectiveness of F&F Rules and NW Forest Plan. Report to public periodically (See Section 4.5.1).	<i>Lead:</i> DNR, USFS, Ecology, WDFW <i>Other:</i> Private forest landowners	Low to medium	<i>Main:</i> Leg. appropriations (DNR budget); Congr. appropriations (USFS budget), Timber producers <i>Additional:</i> N/A

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		Subaction #958A: Consider effects of forest management practices on stream flow and other fish habitat factors, in making forest management decisions. The Planning Unit anticipates that existing programs under the State’s Forests and Fish regulations DNR’s Habitat Conservation Plan, and the federal government’s Northwest Forest Plan will provide the regulatory framework needed in this regard. Pg. 4-29	<i>Lead:</i> DNR, USFS, Ecology, WDFW <i>(Other:</i> Private forest landowners)		
		Subaction #958B: Analyze and document the effects of planned timber harvesting on stream flow. Pg. 4-29	<i>Lead:</i> DNR, USFS, Ecology, WDFW <i>(Other:</i> Private forest landowners)		
		Subaction #958C: Monitor the effectiveness of these programs and periodically provide public documentation of their effectiveness in protecting fish habitat, including flow conditions, in WRIAs 27 and 28. Hold public meetings to discuss the effects of forest activities. Pg. 4-29	<i>Lead:</i> DNR, USFS, Ecology, WDFW <i>(Other:</i> Private forest landowners)		
		Subaction #958D: Integrate monitoring of forest practices programs into the LCFRB Research, Monitoring and Evaluation (RME) program. Pg. 4-29	LCFRB		
High		Action #959: Within authorities, protect floodplains from modifications that would impair hydrologic functions or habitat (See Section 4.5.3).	<i>Lead:</i> Counties, cities, State agencies with land management responsibilities <i>Other:</i> DFW	Low	<i>Main:</i> County permitting fees or general fund revenues, grants <i>Additional:</i> State agency budgets
		Within authorities, local jurisdictions and state agencies with land-management responsibilities should protect existing floodplains from modifications that would impair their hydrologic functions and habitat value. Pg. 4-32			
Medium		Action #960: Review effects of stormwater discharges on stream flow and habitat. Where needed to protect key habitat, implement programs that exceed minimum requirements (See Section 4.5.2).	<i>Lead:</i> Counties, Cities <i>Other:</i> Ecology	Low to Medium	<i>Main:</i> County, City general funds; Stormwater assessment and fees, grants <i>Additional:</i> N/A
	High	Subaction #960A: Carry out legally mandated responsibilities with regard to stormwater management. Pg. 4-30	Clark County, Cowlitz County, and the Cities of Vancouver, Camas, Washougal, and Battle Ground		

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	High	Subaction #960B: Review stormwater management ordinances to determine whether they are adequately protective of fish habitat in local streams that may be affected by future development. Where enhanced stormwater management needs are identified, revisions to local ordinances should be considered in light of the guidance and BMPs provided in Ecology’s Manual. The focus should be on upgrading development practices and mitigation requirements in areas where stream flow and fish habitat may be compromised as development occurs. Costs, expected magnitude of benefits, and feasibility considerations should be included in this review. Pg. 4-30	North Bonneville, Yacolt, Ridgefield, LaCenter, Woodland, and Kalama (others? – plan states “all remaining cities in Cowlitz, Clark and Skamania County)		
	High	Subaction #960C: Voluntarily consider developing a stormwater management ordinance. Pg. 4-30	Skamania County		
Medium		Action #961: Purchase or lease of water rights from willing sellers, for State Trust program (See Section 4.4.5).	<i>Lead:</i> Ecology <i>Other:</i> N/A	Low to medium	<i>Main:</i> Leg. appropriations (Ecology budget) <i>Additional:</i> N/A
		Subaction #961A: Use the existing State Trust program, and funding provided by the State Legislature, to identify and acquire water rights from water users willing to sell or donate their water rights in WRIs 27 and 28, where transfers to the State Trust would provide a significant benefit to fish habitat. Pg. 4-27	Ecology, Washington Water Trust		
		Subaction #961B: If source substitution is pursued and if water rights are no longer needed for primary or backup supply, consider transferring water rights to the State Trust. Pg. 4-42	Battle Ground, Ridgefield, Yacolt and Camas		
		Subaction #961C: If the City of Camas reduces or eliminates diversions from Jones and Boulder Creeks, and if these water rights are no longer needed for primary or backup supply, they could potentially be transferred to the State Trust. Pg. 4-55	City of Camas		
Medium		Action #962 (#937): Within authorities, identify floodplain restoration projects and implement where feasible (See Section 4.5.3).	<i>Lead:</i> Counties, cities, State agencies with land management responsibilities <i>Other:</i> DFW	Medium to High	<i>Main:</i> State or federal grants; Leg. Appropriations <i>Additional:</i> N/A
		Subaction #962A: Identify floodplain restoration projects, subject to local input, cost-benefit analysis, and availability of funding. Where these factors are favorable, and where substantial benefits to flow or other habitat factors are identified, these projects should be pursued for implementation. Pg. 4-32	Counties, cities, State agencies with land management responsibilities (others?)		

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		Subaction #962B: Coordinate with the Watershed Stewards Program to identify any actions it may take to aid in the Gee Creek restoration effort. Pg. 3-24	City of Ridgefield		
Medium		Action #964 (#939): Large water users and hydropower facilities: short-term drought response curtailment programs, to protect stream flows (See Section 4.4.7).	<i>Lead:</i> Selected public water systems; hydropower operators <i>Other:</i> N/A	Low to medium	<i>Main:</i> Large water users and hydropower facilities <i>Additional:</i> N/A
		Subaction #964A: Where major surface water diversions or ground water withdrawals have a direct effect on stream flows on a time scale of weeks or less, the water user should consider adopting voluntary procedures to alter operations in the event of a State-declared drought emergency affecting WRIs 27 and/or 28. The water user should adopt policies and procedures in advance, to allow for quickly altering operations to minimize or eliminate the depletion of stream flow to the extent feasible in the event such a drought occurs. Pg. 4-14, Pg. 4-25	Selected public water systems – To Be Determined		
		Subaction #964B: Identify small surface water users that could implement this type of management strategy to improve low flow conditions (see above). Pg. 4-25	Planning Unit, Ecology (others?)		
		Subaction #964C: Develop a curtailment plan to reduce diversions from Jones and Boulder Creeks in the event of a state-declared drought emergency. (This approach would not be needed, if an alternative source is developed to replace these diversions.) Pg. 4-54	City of Camas		
Medium		Action #968: Evaluate the need to take additional actions addressing shallow aquifer interactions (See Section 4.5.5).	<i>Lead:</i> Planning Unit or successor organization <i>Other:</i> N/A	Low	<i>Main:</i> Phase 4 implementation funds <i>Additional:</i> TBD
		Evaluate the need to take additional actions to prevent disruption of shallow aquifer recharge, subsurface flow patterns, and aquifer discharge that support the stream flow regime in low flow periods. Pg. 4-33			
Medium		Action #969: Develop clear guidance for mitigation (See Section 3.3.1).	<i>Lead:</i> Ecology <i>Other:</i> N/A (others?, WDFW, Planning Unit)	Low	<i>Main:</i> Leg. Appropriations (Ecology budget) <i>Additional:</i> N/A
		Develop clear guidance for mitigation for use by water rights applicants. An existing Ecology document listing examples of mitigation can be used as a starting point. Pg. 4-62			
Low		Action #965 (#940): When modifying or adopting comprehensive plans, zoning designations, or other land use regulations, consider	<i>Lead:</i> Counties, Cities <i>Other:</i> sewer agencies if	Low	<i>Main:</i> Counties, Cities general funds, permitting fees, grants

Priority ⁽¹⁾	Sub-priority	Activity	Implementers ⁽³⁾	Financial/Economic Costs ⁽²⁾	Potential Funding Sources
		the water balance implications of allowing extension of sewer service to communities formerly served by septic systems (See Section 4.5.2).	different from Counties, Cities.		<i>Additional: N/A</i>
		When modifying or adopting comprehensive plans, zoning designations, or other land use regulations, jurisdictions should consider the water balance implications of allowing extension of sewer service to developing areas. The Planning Unit recognizes that provision of sewer service can provide substantial water quality benefits. However, where sewer service is extended to replace septic systems, and residents continue to rely on water wells, stream flows may be reduced. This effect should be anticipated and mitigated where applicable. This is particularly important in areas with relatively dense development near small streams. Pg. 4-31			
Low		<u>Action #966 (#941):</u> Water conservation by farmers practicing irrigated agriculture. Technical assistance by Conservation District in each county (See Section 4.4.2).	<i>Lead:</i> Agricultural producer <i>Other:</i> Conservation Districts	Medium	<i>Main:</i> Agricultural producer <i>Additional:</i> Leg. Appropriations (Cons. Commission & CD budgets).
		<u>Subaction #966A:</u> Where there would be significant benefits to stream flows, practice water conservation actions. Pg. 4-24	Agricultural Producer		
		<u>Subaction #966B:</u> Provide technical assistance to farmers to identify water conservation opportunities and funding sources. Pg. 4-24	Conservation District		
Low		<u>Action #967:</u> Source substitution for selected areas served by domestic wells: relatively higher densities and likelihood of stream impacts; dependent on feasibility and cost (See Section 4.4.4).	<i>Lead:</i> Counties, cities, local governments, Ecology, and/or others as appropriate. <i>Other:</i> Public water systems, landowners	Medium to high	<i>Main:</i> Assessments on affected properties (local improvement districts), grants <i>Additional:</i> Federal and State salmon recovery funding; Leg. appropriations
		Communities using water sources (surface or ground water) that significantly reduce base flows in any stream that provides important fish habitat within WRIAs 27 and 28 should consider alternative sources of supply that eliminate or minimize these effects. It is anticipated that this would require examination of cost, potential rate impacts, reliability considerations, and evaluation of other feasibility criteria. In limited cases, this policy may apply to rural areas where residents rely on domestic wells (exempt wells). When modifying or adopting comprehensive plans, zoning designations, or other land use regulations, Clark and Cowlitz counties, cities, local governments, Ecology, and/or others as appropriate should assess this possibility			

Priority ⁽¹⁾	Sub-priority	Activity	Implementers ⁽³⁾	Financial/Economic Costs ⁽²⁾	Potential Funding Sources
		through a water-balance analysis, in selected rural areas where extensive new development is expected to occur or where there is substantial existing development served by exempt wells. The intent is to explore solutions for small creeks where a large number of existing domestic wells may deplete stream flows. Under the right circumstances, if a different source could be used to replace individual wells, effects on stream flow could potentially be reduced or eliminated. Local community views should be included in this process. Pg. 4-26			
Medium		Action #963 (#938): Wetlands inventories and ordinances: assess and protect hydrologic functions, consider strengthening mitigation ratios (See Section 4.5.4).	<i>Lead:</i> Counties and Planning Unit <i>Other:</i> N/A		<i>Main:</i> County development fees or general fund revenues (note staffing impact), grants <i>Additional:</i> N/A
		Subaction #963A: In conjunction with the Planning Unit, Counties should explore funding opportunities for conducting a county-wide wetland assessment that includes evaluation of hydrological functions. Pg. 4-33	Counties, Planning Unit		
		Subaction #963B: Require evaluation of hydrological function as part of any site-specific wetland assessments conducted under their critical areas, wetland or other land use ordinances. Pg. 4-33	Counties		
		Subaction #963C: Modify wetlands ordinances as needed to include hydrologic functions in the wetland protection hierarchy. Pg. 4-33	Counties		
		Subaction #963D: Review and consider strengthening mitigation ratios, for selected wetland areas that offer significant hydrologic functions or other fish habitat benefits. Pg. 4-33	Counties		
Category: Surface Water Quality					
Medium		Action #970: Develop water body cleanup plans (TMDLs) for subbasins, in prioritized sequence as indicated in Watershed Management Plan. Carry out necessary modeling, reporting, public involvement, and waste load allocations (See Section 5.3.2).	<i>Lead:</i> Ecology <i>Other:</i> Local governments, Conservation Districts, other interested parties	High	<i>Main:</i> Leg. appropriations (Ecology budget) <i>Additional:</i> N/A
		The Planning Unit recommends that Ecology develop TMDLs according to the priority list shown in Table 5-3. At such time as the 2002/2004 303(d) list is approved by Ecology and EPA, these priorities should be revisited. Pg. 5-11			
Medium		Action #971: Within authorities, develop full-scale assessment strategy for non-point sources (See Section 5.5).	<i>Lead:</i> counties <i>Other:</i> Ecology, conservation districts, USFS, DNR	Low	Phase 4 implementation Grant

Priority ⁽¹⁾	Sub-priority	Activity	Implementers ⁽³⁾	Financial/Economic Costs ⁽²⁾	Potential Funding Sources
		Subaction #971A: Develop a detailed assessment strategy for WRIAs 27 and 28 to identify sources of water quality impairment (specific sites or areas). (See Pg. 5-18 for specific tasks). Pg. 5-17, Pg. 5-18	Counties, Ecology, Conservation Districts (others?)		
		Subaction #971B: Following completion of the strategy, seek funds to carry out this assessment and take corrective actions where needed. Pg. 5-17, Pg. 5-18	Counties, Ecology, Conservation Districts (others?)		
Medium		Action #972: Within authorities, carry out source assessment of non-point sources (See Section 5.5).	Same as above	Medium	TBD, (combination of State, federal, and local sources)
Medium		Action #973: Actions to correct sources of impairment (See Section 5.5) (specifics to be determined, pending outcome of assessment above). Pg. 5-17	<i>Lead:</i> Party causing impairment <i>Other:</i> Ecology, conservation districts	Medium to High	TBD (combination of State, federal, local and private sources)
Low		Action #974: Within authorities and as staffing and funding allow, expand water quality monitoring activities to improve understanding of status and trends. Install monitoring equipment; collect and analyze samples; manage and analyze data; report results (see Section 5.4.2).	Shared efforts by State, local, federal agencies Ecology will take lead in promoting cooperative arrangements among agencies	High	Combination of State, local, federal funding sources (to be developed further in Implementation Phase)
		Subaction #974A: Secure funds to implement the Water Quality Analysis Plan (WQAP) outlined in Section 5.4.2 (Barber, 2004 Technical Memorandum). Pg. 5-14	To Be Determined		
		Subaction #974B: Implement program Implement the WQAP outlined in Section 5.4.2 (Barber, 2004 Technical Memorandum). Pg. 5-14	To Be Determined		
		Subaction #974C: Monitor water temperature in various streams and rivers. Section 5.4.2	To Be Determined		
		Subaction #974D: Document the effects of forest practices on water quality in annual monitoring reports. Section 5.4.2	To Be Determined		
Category: Ground Water Quality					
High		Action #975: Within authorities, improve public awareness of ground water quality issues. Information outlets. Mass-media campaign. Schools program. Public opinion surveys (See Section 6.5.1).	<i>Lead:</i> County health departments <i>Others:</i> Cities, DOH.	Medium	<i>Main:</i> grants Substantial staffing needs
		The Planning Unit recommends that steps be taken to improve public understanding and awareness of issues related to drinking water quality (6-13)			

Priority ⁽¹⁾	Sub-priority	Activity	Implementers ⁽³⁾	Financial/Economic Costs ⁽²⁾	Potential Funding Sources
		Subaction #975A: Provide outlets for ground water protection information... Pg. 6-13			
		Subaction #975B: Develop a mass media campaign for ground water protection... Pg. 6-13			
		Subaction #975C: Make available and/or coordinate with a ground water protection program for schools... Pg. 6-14			
		Subaction #975D: Conduct periodic public opinion surveys related to ground water protection efforts... Pg. 6-14			
High		Action #976: Within authorities, assess susceptibility of ground water supplies to contamination. Risk assessment. Evaluate data management and improve if necessary. Regional mapping (See Section 6.5.2).	Lead: County health departments Others: Cities, Ecology, DOH.	Low to Medium	Main: grants Substantial staffing needs
		The Planning Unit recommends that steps be taken to assess susceptibility of ground water supplies to contamination on a regional basis... Pg 6-13			
		Subaction #976A: Conduct Risk Assessment... Pg. 6-15			
		Subaction #976B: Evaluate existing data management system and improve system if necessary... Pg. 6-18			
		Subaction #976C: Produce regional maps showing results of the risk assessment... Pg. 6-18			
Medium		Action #977: Within authorities, improve local wellhead protection. Determine which Group A Systems have wellhead program. Apply technical assistance and enforcement to meet state requirements. Facilitate use of computer modeling. Encourage Group B systems to voluntarily establish wellhead programs (See Section 6.5.3).	Lead: DOH and County health departments Others: Public water systems	Medium to High	Main: Grants Substantial staffing needs
		The Planning Unit recommends that steps be taken to improve local wellhead protection programs... Pg 6-13			
		Subaction #977A: Determine which Group A public water systems have a Wellhead Protection Program and enforce Wellhead Protection Program requirements... Pg. 6-20			
		Subaction #977B: Facilitate use of a computer model for delineating select Group A PWS wellhead protection areas... Pg. 6-20			
		Subaction #977C: Encourage Group B PWSs to voluntarily establish a Wellhead Protection Program. Group B PWSs are not required to do any wellhead protection planning under current regulations... Pg. 6-20			
Low		Action #978: Within authorities, coordinate and promote management strategies to prevent impacts to ground water quality from land use activities (See Section 6.5.4).	Lead: County health departments Others: County planning departments, conservation districts, Ecology, Wash. Dept.	Medium to High	Main: Grants Substantial staffing needs

Priority ⁽¹⁾	Sub-priority	Activity	Implementers ⁽³⁾	Financial/Economic Costs ⁽²⁾	Potential Funding Sources
	High	Subaction #978A: Take steps to implement management strategies to minimize impacts of land use activities on ground water supplies. Pg. 6-13	of Agriculture, NRCS County health departments, county planning departments, conservation districts, Ecology, Wash. Dept. of Agriculture, NRCS		
	High	Subaction #978B: Coordinate and promote management strategies... Pg. 6-22	County health departments, county planning departments, conservation districts, Ecology, Wash. Dept. of Agriculture, NRCS		
Low		Action #979: Within authorities, clean up sources of ground water contamination. Evaluate need for greater involvement by local organizations. Evaluate need for independent cleanup actions outside Ecology programs (See Section 6.5.5).	<i>Lead:</i> County health departments <i>Others:</i> Ecology, Public Water Systems, Wash. Dept. of Agriculture	Medium to High	<i>Main:</i> Grants
		Subaction #979A: Evaluate the need for greater involvement by local organizations as stakeholders in clean up actions at Ecology regulated facilities and sites... Pg. 6-24			
		Subaction #979B: Evaluate the need for independent clean up actions. Some land use activities that have contributed to ground water contamination cannot be easily assigned to responsible parties... Pg. 6-24			
Category Adaptive Management					
	To Be Prioritized	Action: Develop Adaptive Management Program in accordance with Section 8.7.3. This program would address all actions specified in the DIP, and would be integrated with the Recovery Plan Monitoring, Research and Evaluation Program. Tables 8-3 and 8-4 specify the plan elements and associated priorities, performance metrics, and management responses and triggers. Pg. 8-16	LCFRB, Planning Unit, Ecology (Others)		
Category: Coordination and Oversight					
	To Be Prioritized	Action: In order to provide a venue for these activities, transition the WRIAs 27 and 28 Planning Unit from planning functions to coordination and oversight functions. The purpose is to foster an organized and collaborative approach, as many individual organizations carry out specific actions under their jurisdictions, and to secure	LCFRB, Planning Unit		

Priority ⁽¹⁾	Sub-priority	Activity	Implementers ⁽³⁾	Financial/Economic Costs ⁽²⁾	Potential Funding Sources
		<p>funding for implementation. Pg. 8-3</p> <p>Action: Continue to provide staff resources to support the Planning Unit in this activity. Funding for these purposes can be based on the State Phase 4 grants for the first five years of the implementation phase. Pg. 8-3</p>	LCFRB		
		<p>Action: Prepare an interlocal agreement to define coordination and oversight responsibilities. Such an agreement may also be beneficial in further defining other implementation commitments among the organizations involved, beyond the level of detail presented in this Plan. Pg. 8-3</p>	LCFRB, Planning Unit		

⁽¹⁾ Priority in context of all actions in Watershed Management Plan.

⁽²⁾ Preliminary, generalized estimates of financial or economic cost of the action. Expressed as total cost, whether up-front or over a period of time up to ten years.
 High: greater than \$500,000; Medium: \$50,000 to \$500,000; Low: less than \$50,000.

⁽³⁾ “Lead” implementer would take responsibility for organizing efforts under this action, including pursuing funding sources listed in the far right column.
 Abbreviations: SEPA = State Environmental Policy Act, DOH = Department of Health, Leg. = Legislative