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IN-DEPTH PERSPECTIVE

DETAILED IMPLEMENTATION PLAN
Klickitat River Basin (WRIA 30)

Prepared by: WRIA 30 Water Resource Planning and Advisory Committee

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List of Acronyms and Abbreviations

°C	Degrees Celsius
°F	Degrees Farenheit
Account	Columbia River Basin Water Supply Development Account
Afy	Acre-feet (of water) per year
AKART	All known, available, and reasonable methods of prevention, control, and treatment
ASR	Aquifer storage and recovery
BMP	Best management practice
BOCC	Board of County Commissioners (Klickitat County)
cfs	Cubic feet per second
CGRA	Columbia Gorge Regional Airport
CIG	Conservation Innovation Grant
CKCD	Central Klickitat Conservation District
CRC	Citizens Review Committee (Klickitat County)
CRO	Central Regional Office (Ecology)
CRP	Conservation Reserve Program
CSP	Conservation Security Program
CSRIA	Columbia-Snake River Irrigators Association
CTED	Washington Department of Community Trade and Economic Development
DIP	Detailed Implementation Plan
DNR	Washington State Department of Natural Resources
DPS	Distinct population segment
DOH	Washington State Department of Health
DS	Determination of significance
Ecology	Washington State Department of Ecology
EIM	Environmental information management system (Ecology's)
EIS	Environmental impact statement
EPA	United States Environmental Protection Agency
EQIP	Environmental Quality Incentive Program
ERU	Equivalent residential unit
ESA	Endangered Species Act
ESHB	Engrossed Substitute House Bill
E2SSHB	Second Engrossed Second Substitute House Bill
ESU	Evolutionarily significant unit
FRPP	Farm and Ranchland Protection Program

GIS	Geographic information system
gpm	Gallons per minute
GRP	Grassland Reserve Program
ICRT	Interior Columbia Basin Technical Recovery Team
LLC	Limited liability company
KCEH	Klickitat County Environmental Health Department
mg/L	Milligrams of solute per liter of solution (a unit of concentration)
MPG	Major population group
NEPA	National environmental policy act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Point Discharge Elimination System
NRCS	Natural Resource Conservation District
NPCC	Northwest Power and Conservation Council
NWPPC	Northwest Power Planning Council
PAG	Policy Advisory Group
PUD	Public Utility District
QA/QC	Quality assurance/quality control
QAPP	Quality assurance project plan
RCW	Revised Code of Washington
SEPA	State Environmental Policy Act
SNOTEL	Snowpack telemetry
SWRP	Small Watershed Rehabilitation Program
TDG	Total dissolved gas
TMDL	Total maximum daily load
USDA	United States Department of Agriculture
USGS	United States Geological Survey
VRA	Voluntary regional agreement
WAC	Washington administrative code
WCC	Washington Conservation Commission
WDFW	Washington Department of Fish and Wildlife
WHIP	Wildlife Habitat Incentives Program
WIC	Women, Infant, Children Nutrition program (Klickitat County's)
WPN	Watershed Professionals Network
WRIA	Water resource inventory area
WRP	Wetlands Reserve Program
WRPAC	WRIA 30 Water Resource Planning and Advisory Committee

1 Introduction

The Detailed Implementation Plan (DIP) represents a key milestone of the watershed planning process for WRIA 30. The DIP initiates Phase 4 implementation of the planning process under chapter 90.82 RCW by providing a framework for scheduling and executing specific actions to achieve the prioritized objectives described in the WRIA 30 Watershed Management Plan (Watershed Professionals Network and Aspect Consulting, 2005). The Watershed Management Plan was approved by the WRIA 30 Planning Unit in May 2005, and then, following a public hearing, was formally adopted by Klickitat County in August 2006, in accordance with RCW 90.82.130. Yakima County opted out of the WRIA 30 watershed planning process; therefore, Klickitat County was the only county required to approve or reject the Watershed Management Plan.

The key water resources issues and associated strategies to address each issue, as identified in the Watershed Management Plan, are the basis for development of the DIP.

Development of the DIP was a collaborative effort of the WRIA 30 Water Resource Planning and Advisory Committee (WRPAC) – known as the WRIA 30 Planning Unit prior to start of Phase 4 implementation – with assistance from Aspect Consulting and Watershed Professionals Network (WPN). The work is funded by the Washington Department of Ecology (Ecology) Watershed Planning Grant No. G0700122.

1.1 Purpose

The DIP provides the framework for how to implement the recommended strategies to achieve the water quantity, water quality, and aquatic habitat objectives identified in the WRIA 30 Watershed Management Plan. It further prioritizes actions presented in the Watershed Management Plan, identifies the entities that have agreed to implement the prioritized actions, and defines schedule milestones based on those priorities as well as possible funding mechanisms. Submittal of a DIP to Ecology is a condition of receiving grants for the second and all subsequent years of Phase 4 implementation.

1.2 Watershed Setting

WRIA 30 is located in Klickitat and Yakima Counties in south central Washington. WRIA 30 is subdivided into six hydrologic subbasins: the Upper Klickitat, Middle Klickitat, Lower Klickitat, Little Klickitat, Swale Creek, and Columbia Tributaries Subbasins (Figure 1). Most of the subbasins incorporate one or more major tributaries as well as some of the smaller side tributaries that drain to the Klickitat River; however, the subbasin designated as "Columbia Tributaries" encompasses the portion of the Columbia River that is within WRIA 30 and several very small tributaries that drain directly to the Columbia River. Most of the Upper Klickitat Subbasin and the eastern half of the Middle Klickitat Subbasin are within the Yakama Nation Reservation. The Reservation and tribal trust lands are not within the geographic area that is subject to the Watershed Management Plan or the DIP.

1.2.1 Surface Water

The primary rivers in the WRIA are the Klickitat River and the Columbia River within WRIA 30. The headwaters of the Klickitat River originate from Mount Adams, located in the northwestern portion of the watershed. The largest tributary to the lower Klickitat River is the Little Klickitat River, which drains the Simcoe Mountains located to the east of the mainstem Klickitat River.

Klickitat River flow is primarily fed by a combination of snowmelt and glacial meltwater during the summer months, with resulting peak flows typically in late May and early June. The Little Klickitat River flows from the Simcoe Mountains and is largely fed by snowmelt supplemented by base flow from groundwater discharge from the Simcoe Volcanics aquifer system. Peak flows in the Little Klickitat River tend to occur in late February through April, which is earlier than in the mainstem Klickitat River.

Instream flow minimums have not been established for WRIA 30 waterbodies other than the Columbia River. The Columbia River is subject to Chapter 173-563 of the Washington Administrative Code (WAC), promulgated in 1980, which defines minimum instream flows for the Columbia River throughout the year at seven mainstem locations including the John Day, The Dalles, and the Bonneville dam locations (upstream, within, and downstream of the WRIA 30 segment of the Columbia, respectively).

Segments of nine waterbodies within WRIA 30 are included on Ecology's 2004 list of impaired water bodies (Categories 4 or 5). With the exception of segments of Swale Creek and the Columbia River, all of the listings are in the Little Klickitat Subbasin. The waterbodies are listed as impaired due to temperature, instream flow, or invasive species; the latter two are termed non-pollutants (Category 4C).

- The Category 5 listings (impaired, requiring a total maximum daily load [TMDL] or water quality improvement plan) include temperature in segments of the Columbia River and Swale Creek. US EPA is working with Ecology and other parties in the region to develop a temperature TMDL for the Columbia River.
- Category 4A listings (impaired, with a TMDL in place) include temperature in segments of East Prong and West Prong of the Little Klickitat River, and Butler Creek, as well as total dissolved gas and dioxin in segments of the Columbia River.
- Category 4C listings (aquatic habitat impaired by a non-pollutant) include instream flow in segments of Blockhouse, Bowman, Mill, and Swale Creeks, as well as invasive exotic species in Horsethief Lake and the Columbia River.

1.2.2 Groundwater

Groundwater within WRIA 30 occurs both within the basalt bedrock units and in the surficial alluvium (overburden). The basalt aquifer systems of significance in WRIA 30 include (from oldest to youngest) the Grande Ronde, Wanapum, and Simcoe Volcanics Basalts. Groundwater in the basalts occurs primarily at the interflow zones between individual volcanic flows where the rock formations are porous and permeable.

The continuity and distribution of water-bearing zones within the basalt bedrock are affected by geologic structures (folds and faults), which can disrupt the continuity of the

permeable interflow zones. Erosional canyons can also limit lateral continuity of shallower groundwater-bearing zones.

There are varying degrees of hydraulic continuity between groundwater and surface water in WRIA 30. For example, groundwater discharge from the Simcoe Volcanics is the predominant source of baseflow in the Little Klickitat River system throughout the dry season. Conversely, the Wanapum Basalt aquifer system appears to provide relatively little baseflow to the river (Aspect Consulting, 2003a and 2003b).

Available data indicate that most groundwater and monitored water supplies meet drinking water standards. However, some wells in the shallow aquifers in areas of the Swale Creek and lower-mid Little Klickitat subbasins contain elevated nitrate levels. Wells with elevated nitrate concentrations are generally correlated with elevated chloride concentrations, suggesting a septic source for much of the nitrate.

1.2.3 Aquatic Habitat

There are currently three stocks of chinook salmon (spring, tule, upriver bright), coho salmon, two stocks of steelhead (summer, winter), bull trout, rainbow/redband trout, and mountain white fish in WRIA 30, as well as several non-salmonid fish species including lamprey. Naturally spawned steelhead and bull trout are listed under the Endangered Species Act as threatened.

One of the major limitations on anadromous fish production is the presence of a number of natural migration barriers in the watershed, including impassable or marginally passable water falls and impassably high gradients close to some tributary mouths. In addition to the naturally occurring barriers, some culverts have been identified as barriers to fish passage in WRIA 30.

Low summer flows and associated high water temperatures also affect the quantity and quality of aquatic habitat in many of the tributaries.

2 Update Since Watershed Management Plan Preparation

This chapter provides a brief update of changes that have occurred since preparation of the WRIA 30 Watershed Management Plan in 2005. These include completion of SEPA review of the Watershed Management Plan; new information relevant to watershed water quantity, water quality, and aquatic habitat - including early implementation actions to fill data gaps; and changes in regulatory programs or policies.

2.1 SEPA Review of Watershed Management Plan

Klickitat County and Ecology, as co-lead agencies, completed SEPA review of the WRIA 30 Watershed Management Plan in March 2006. The SEPA co-lead agencies issued a determination of significance (DS) and adopted the statewide final environmental impact statement (EIS) for Watershed Planning (Ecology, 2003). The statewide programmatic Watershed Planning EIS evaluates the impacts of and identifies mitigation measures for various types of recommended actions that may be included in Watershed Management Plans prepared in accordance with Chapter 90.82 RCW. Recommended actions in a Watershed Management Plan that are consistent with alternatives in the statewide Watershed Planning EIS do not require supplemental information for SEPA compliance, nor do they require enumeration of alternatives and potential impacts in the standard SEPA format. Individual projects to implement the Watershed Management Plan may require further SEPA review.

An addendum to the SEPA determination includes a document (Watershed Professionals Network, 2006), which assesses the extent to which probable adverse environmental impacts associated with actions proposed under the WRIA 30 Watershed Management Plan are addressed in the state's programmatic EIS for Watershed Planning. All but two of the actions in the Watershed Management plan were addressed on the non-project level in the statewide EIS. The two actions are requests for action and associated with no environmental impacts.

All actions specified in the WRIA 30 Watershed Management Plan are adequately addressed in the statewide EIS, are addressed in other SEPA evaluations, or were determined to have no environmental impacts.

2.2 New Data Including Early Implementation Efforts

2.2.1 Land Use and Population Growth

Land use changes have occurred in the watershed since 2005. Areas with increasing development and thus potential population growth include active and planned residential growth within the areas around Goldendale and High Prairie, and planned industrial development within the Dallesport area. While population growth throughout the WRIA

has been low over the past couple decades, a recent surge in development in the above-described areas indicates that the rate of growth in the WRIA is increasing.

2.2.2 Water Quantity

The following early implementation actions have been completed or proposed to begin addressing priority water quantity issues identified in the WRIA 30 Watershed Management Plan.

2.2.2.1 Preliminary Water Management Framework

The WRIA 30 Watershed Management Plan outlines a range of potential approaches to assist toward meeting the stated objective to "supply water in sufficient quantity to satisfy the stream flow needs of fish and to ensure that adequate water supplies are available for sustained growth of agriculture, industry, and residential populations". The Watershed Management Plan promotes implementing measures at the watershed level that protect and facilitate managing existing water rights consistent with Watershed Management Plan goals. Water banking is one recommended action identified in the Watershed Management Plan.

To that end, Ecology provided funds to WRIA 30 under grant G0700207 to evaluate existing water banking and other water management strategies, and develop a conceptual framework for implementation of such strategies at the watershed level. Aspect Consulting (2007b) prepared a preliminary management framework document (version 1.0) that included the following elements:

- Pertinent background information on existing water banking programs (i.e., what they are and how they function) for adaptation to specific needs and circumstances within WRIA 30;
- Outline of a range of appropriate water banking concepts, including jurisdictional issues, regulatory process, and transfer mechanism appropriate to WRIA 30;
- Limitations/constraints of implementing a water bank within the existing regulatory framework, including potential legislative and/or rule-making process to overcome these constraints; and
- Recommendations for implementation of a water management program consistent with WRIA 30 goals.

The report outlined several water management strategies that are potentially applicable to WRIA 30. The management concepts vary in scope and required level of administrative "participation" and oversight. For those concepts offering limited services—such as providing an information clearinghouse to help facilitate water right transfers—the report identified few if any barriers to implementation. However, for an actively managed program offering a broad range of services—such as a water bank within the watershed—the report identified several barriers that need to be addressed. The report also presented a recommended framework for establishing a water exchange program to facilitate water transactions (sales, leases), which includes a "water banking" concept that aims to protect water rights pending their exchange and promote the use of existing water rights within WRIA 30.

The version 1.0 report was prepared under a tight timeframe which limited the review process by the WRPAC. The report is intended to serve as a scoping document to further guide the WRPAC in development of a water management program during the implementation phase of the WRIA 30 planning process.

2.2.2.2 Hydrologic Study to Support Water Availability Assessment

The Swale Creek and Little Klickitat subbasins are areas of WRIA 30 with potential for substantial future growth such that additional water supplies will be needed to meet future demands. Uncertainty exists regarding the quantity of water available for appropriation of new water rights in these two priority subbasins. The WRIA 30 Watershed Management Plan identified data gaps that need to be filled to help determine water available for appropriation, including:

- Refine estimates of actual water use; and
- Delineate specific aquifer zones within the subbasins.

Ecology provided funds to WRIA 30 under Grant No. G0700207 to conduct an assessment to address data gaps related to appropriation of new water rights in the Swale Creek and Little Klickitat subbasins. During scoping of the assessment with the WRPAC and Ecology, it was decided that the greatest value from the assessment could be gained by focusing on the Swale Creek subbasin. The study was therefore focused to meet the following objectives:

1. Refinement of the hydrogeologic conceptual model for the Swale Creek subbasin, including the most definitive interpretation of the hydrostratigraphy and groundwater flow system to date;
2. Establishment of a groundwater level monitoring network for the Swale Creek subbasin and immediately surrounding areas (including a portion of the Little Klickitat subbasin and the High Prairie area); and
3. Refinement of the water balances for Swale Creek and Little Klickitat subbasins that assist in determination of water availability on the subbasin scale.

Conclusions and recommendations from the study (Aspect Consulting, 2007a) include:

- A well monitoring network was established that provides the opportunity to track future seasonal and/or long-term changes in the groundwater flow system of the Swale Creek subbasin.
- The limited groundwater contribution to baseflow in Swale Canyon throughout the year is a natural condition.
- Groundwater pumping in Swale Valley appears to have little effect on flows in Swale Canyon.
- A new dedicated shallow monitoring well in the alluvium aquifer east of the Warwick Fault is recommended to improve understanding of the relationship between seasonal groundwater level decline in the alluvium and flow in Swale Creek.
- There is hydraulic continuity between groundwater in northeastern portion of the Swale Creek subbasin and the Little Klickitat River.

- Groundwater in the Swale Creek subbasin is not in hydraulic continuity with the Columbia River.
- The total annual use of water is a small fraction of the total water in each subbasin, so that additional water may be available for appropriation in each subbasin. For example, the estimated total consumptive use of groundwater is about 5% and 21% of the annual groundwater recharge in Little Klickitat and Swale Creek subbasins, respectively. However, evaluation of the potential for impairment to senior water users and surface water bodies is necessary on a case-by-case basis for each pending water right application.

2.2.2.3 Stream Gauging in Swale Creek and Little Klickitat Subbasins

Klickitat County and CKCD, on behalf of the WRPAC, have received grant funding to establish a streamflow gauging network in the Little Klickitat and Swale Creek subbasins.

The scope includes installation of a total of five stream gauges, two additional stream gauges on the Little Klickitat River, to augment the three existing gauges, and three stream gauges on Swale Creek. The streamflow gauging will provide basic data to fill critical data gaps in addressing water quantity, quality, and aquatic habitat issues in these drainages, and will inform decisions regarding implementation of measures to improve watershed conditions.

2.2.2.4 SNOTEL Station and Swale Valley Monitoring Well

Klickitat County and CKCD, on behalf of the WRPAC, have received grant funding to install a snowpack telemetry (SNOTEL) monitoring station in the headwaters of the Little Klickitat River, and to install a groundwater monitoring well in the shallow alluvium of Swale Creek Valley just east of Warwick.

The SNOTEL station will improve understanding of critical components of the Little Klickitat subbasin water balance, which is driven by snow accumulation and melt in the Simcoe Mountains. Currently the only snowpack measurements in the Little Klickitat subbasin are made from a manually read staff gage at the City of Goldendale's Simcoe Springs supply source. Installing a SNOTEL station is a key recommendation of the WRIA 30 Watershed Management Plan. The scope includes site selection, purchasing and installing a SNOTEL monitoring station, which will consist of a snow pillow, precipitation gage, snow depth sensor, and air temperature and solar radiation measurement devices. Project partners include the City of Goldendale, which will provide a site for the SNOTEL station and maintain access, and the NRCS which will install the station, and Klickitat County.

Installation of a monitoring well in the shallow alluvium of Swale Creek Valley is a recommendation from the Swale Creek subbasin hydrologic study for better understanding the relationship between alluvial groundwater levels in the Swale Valley and streamflows in Swale Creek canyon downstream of it (Section 2.2.2.2). The well will be installed near Warwick, on the upgradient (east) side of the Warwick fault, and will become a part of the Swale Creek subbasin groundwater monitoring network established in June 2007. The well will be surveyed and equipped with an automated data logger to allow continuous water level measurement.

2.2.2.5 Water Demand and Supply

The 2007 hydrologic study for the Little Klickitat and Swale Creek subbasins provides updated estimates of current water use as a component of the subbasin-scale water balances (Aspect Consulting, 2007a). The study incorporated most current estimates of current municipal water demand by the City of Goldendale and Klickitat Public Utility District (PUD) water systems.

A significant recent change to municipal water supply in WRIA 30 is transfer of Goldendale Aluminum's industrial water right (surface water right authorizing diversion from the Columbia River) to Klickitat PUD. The PUD plans to put to beneficial use the municipal right over a 20-year development schedule.

Also of recent note for municipal water supply in WRIA 30 is the City of Goldendale's ongoing feasibility study for applying aquifer storage and recovery (ASR) to augment its municipal water supply. The study is funded under an Ecology water storage preconstruction grant. The City's primary objective for an ASR program would be to provide an additional water source to supply a portion of its projected future summer peak demand. Stored water in the aquifer that is unrecovered would replenish that aquifer system, potentially also providing instream flow benefits through natural discharge to local surface waters. As such, the ASR feasibility study helps address priority water quantity issues for the Little Klickitat River subbasin that are identified in the WRIA 30 Watershed Management Plan. The feasibility study helps address the uncertainties for the City regarding the technical feasibility and economic practicality of implementing an ASR program. The study addresses technical, operational, environmental, legal, and economic considerations associated with applying ASR. The feasibility study report will be organized to provide information required in an application to Ecology for an ASR permit as specified in Chapter 173-157 WAC, if the City chooses to proceed with ASR pilot testing and implementation.

2.2.3 Water Quality

The following grant applications have been submitted, seeking funding to implement data collection to fill data gaps and other actions to begin addressing priority water quality issues identified in the WRIA 30 Watershed Management Plan.

2.2.3.1 Riparian Vegetation and Shade Studies, Little Klickitat and Swale Creek Subbasins

Klickitat County and CKCD, on behalf of the WRIA 30 WRPAC, have obtained grant funding to gather shade data along the Little Klickitat River and Swale Creek.

The TMDL for water temperature in the Little Klickitat River Basin sets targets for effective shade. A baseline of stream-side shade conditions is needed to track progress against the TMDL's detailed implementation plan (Ecology 2005a) and is identified as a priority in the WRIA 30 Watershed Management Plan. The lower reach of Swale Creek is on Washington State's list of impaired water bodies (303(d)) as category 5 for water temperature. Under the water quality rules a TMDL is required for category 5 waterbodies; however, a TMDL has not been developed yet for Swale Creek. The WRIA 30 Watershed Management Plan identifies developing a water quality improvement plan for that subbasin as a priority, and baseline information regarding existing shade levels is

an important component of such a plan. The baseline information will also help in prioritization of future projects intended to improve and or protect water temperature.

The preferred approach is to gather shade data along Swale Creek and the Little Klickitat River. Aerial photography will be used to develop a geographic information system (GIS) coverage of stream-adjacent vegetation and to track changes over time (a maximum of 3 sets of photos will be used representing three different years). Field measurement of shade will be made and correlated to the level of canopy cover based on the GIS coverage. Stream aspect will also be documented at each measurement location. The correlation of shade measurement versus GIS-estimated canopy cover will then be extrapolated to stream reaches where actual shade measurement data are lacking. Once the shade data are available, candidate areas for planting streamside vegetation or implementing riparian vegetation protection measures will be identified. Restoration/protection projects could be initiated in the next few years and continue into the future; however, the actual restoration work is not included in the grant proposal.

The project will provide baseline information for monitoring progress against TMDL goals, will assist with the development of a water quality improvement plan for Swale Creek, and will assist with the identification of priority projects as part of a water quality improvement plan. Evaluation of changes in stream-side vegetation over time is also a determinant in selecting optimal restoration projects. The project should assist in decreasing stream temperatures in selected areas over time.

2.2.3.2 Water Quality Improvement Actions and Monitoring, Little Klickitat and Swale Creek Subbasins

The CKCD has received grant funding under the fiscal year 2008 Centennial Clean Water Fund to implement water quality improvement actions in the Little Klickitat and Swale Creek subbasins.

The scope will implement TMDL actions including riparian planting, livestock management, bank stabilization, and public education, as well as assessments to identify and target temperature remedial actions in the Little Klickitat basin. Under the project, a series of non-point source management actions will be implemented in the Little Klickitat River basin.

The scope includes a series of eight Best Management Practices (BMPs) to be used to limit bank erosion in riparian areas in the subbasin. The scope includes establishing up to five new automated water quality monitoring stations upstream and downstream of the Goldendale city limits to help determine how the projects undertaken by the City of Goldendale and CKCD affect water quality in the Little Klickitat River.

The data collected under these assessments will support development of a water quality (temperature) improvement plan for Swale Creek. Consistent with the WRIA 30 Watershed Management Plan, the water quality improvement plan will satisfy requirements to re-categorize Swale Creek from Category 5 to Category 4b (impaired but has a water quality improvement plan in place with ongoing implementation) or Category 1 (meets standards) if it is demonstrated through analysis that the existing water temperature is a natural condition and human activities are creating a temperature increase of less than 0.3 °C.

The CKCD has collected water temperature at numerous sites in Swale Creek and the Little Klickitat River. Temperatures at those sites appear to be similar to those recorded previously.

2.2.4 Aquatic Resources

2.2.4.1 Status of Stocks Historically Present in Basin

There has been no change in the status of populations listed under the federal Endangered Species Act. At present, the Mid-Columbia Steelhead and bull trout are listed as threatened.

Critical habitat was designated by National Marine Fisheries Service (NMFS) on September 2, 2005 (CFR 70 (170) 52630). Designated habitat includes all of the mainstem Klickitat River, the Little Klickitat River to a point upstream of Three Creeks, Swale Creek, Dead Canyon, Snyder Canyon, Dillacort Canyon, and several other tributaries.

2.2.4.2 Fish Habitat

Some additional information regarding fish habitat has become available. Sediment data for a variety of sampling locations in the mainstem Klickitat has been published (Zendt, 2006). Survival of steelhead embryos is optimized in substrates with less than 20 percent fines (Bjornn and Reiser, 1991). The available sediment data indicates that fine sediment levels are generally in a range considered good for spawning habitat, although some excursions into somewhat higher ranges have occurred in some years.

2.2.4.3 Fish Population Data Available

There continues to be no reliable estimate of run sizes for Klickitat River steelhead or chinook salmon. The adult trap at Lyle Falls will likely provide information regarding the total number of fish passing over Lyle Falls. Population size cannot be reliably estimated from that data at the present time since the efficiency of the trap (percent of upstream migrating fish that are caught in the trap) is unknown.

In the past, population sizes of steelhead were estimated from redd counts in the river. In 2004-2005, the number of fish caught in the Lyle trap was greater than the number estimated through redd counts. Since only a portion of the total escapement passes through the adult trap, actual escapement is certain to be substantially larger than the population size previously estimated; however, actual population size remains unknown.

Outmigration of juveniles has also been monitored by Yakama Nation Fisheries since 2003. During the period from May 1, 2005 to April 30, 2006, 1153 wild steelhead smolts were captured at the Lyle Falls sampling location (Zendt, 2006). Estimates of the efficiency of the trap in capturing steelhead smolts range from 2.0 to 5.9 percent and average 3.55 percent (+/- 2.32%) (Zendt, 2006). Using this information, the number of wild steelhead smolts leaving the WRIA during this period can be roughly estimated at 32,479 fish. The variability in the results of the trap efficiency tests is high; hence considerable error in the estimate is possible. Additionally, the trap sustained some damage and was not operating for short periods of time; hence, this estimate may underestimate the total number of smolts by approximately 2%.

The Yakama Nation is building a website which will provide access to data, including metadata explaining the available data. In the future, more accurate estimates of population size may become available.

2.2.4.4 Harvest Rates

Harvest of wild steelhead in non-Indian fisheries is prohibited; however some by-catch in commercial fisheries and some mortality of fish caught in sport fisheries and subsequently released is known to occur. The total mortality of wild steelhead in non-Indian fisheries has been estimated at less than 2 percent of the population since the species was first listed (NMFS, 2004). Harvest of wild mid-Columbia steelhead in tribal fisheries is estimated at 3.4 percent of the population (NMFS, 2004). Within the Klickitat basin, the annual harvest of wild steelhead in tribal fisheries has ranged from 0 to over 350 fish (WDFW, 2006). The portion of the tribal harvest that is of wild origin is unknown.

2.2.4.5 Recovery Goals

A recovery goal for wild steelhead in the Klickitat River basin has not been identified. A recovery goal will be developed based on an assessment of Viable Salmonid Population criteria ─ criteria that would indicate when populations or ESUs had a high probability of persistence into the future. The Interior Columbia Basin Technical Recovery Team (ICTRT) has recommended a minimum recovery goal of 1000 wild steelhead for WRIA 30 (ICTRT, 2007). This is based on an assessment indicating that the basin can support a moderate size population.

2.2.4.6 Actions Taken to Improve Fish Habitat

Actions previously described to reduce stream temperature also improve fish habitat. Several habitat restoration projects in WRIA 30 have been funded under Washington State's Salmon Habitat Recovery Funding Act (Table 2-1). Additional projects are authorized annually.

The Central Klickitat Conservation District (CKCD) has received grant funding under the fiscal year 2008 Centennial Clean Water Fund to implement water quality improvement actions in the Little Klickitat and Swale Creek subbasins. The actions will address sediment inputs, stream temperature, bank stability, stream flow, channel morphology, and riparian condition. These actions are designed to address water quality but will also benefit fish habitat. Additional details are provided in Section 2.2.3.

2.3 Changes in Programs, Policies, Regulations

2.3.1 Columbia River Basin Water Supply Act

In 2006, the state legislature enacted the Columbia River Basin Water Supply Act, Engrossed Second Substitute House Bill 2860 (codified at Chapter 90.90 RCW), which directs Ecology to "aggressively pursue the development of water supplies to benefit both instream and out-of-stream uses." The legislation established a Columbia River Basin Water Supply Development Program and a Columbia River Basin Water Supply Development Account.

In cooperation with the Washington State Association of Counties, Ecology sponsors a County Commissioners Policy Advisory Group (Commissioners PAG) to advice Ecology on implementation of Columbia River Basin Water Supply Act. The Commissioners PAG includes a watershed planning forum that enables watershed planning coordinators to participate in the dialogue on water resources issues with Ecology staff and county commissioners from across Eastern Washington. As an extension of this forum, the watershed planners and Ecology staff also meet regularly to focus on more watershed planning specific issues and share information. A Klickitat County Commissioner is a member of the Commissioners PAG and he and the WRIA 30 Lead Agency Coordinator attend these meetings regularly.

Ecology also sponsors a Columbia River Policy Advisory Group with a membership that includes four representatives from the Commissioners PAG, as well as representatives from several tribes, state and federal agencies, and special interest associations. This group also advises Ecology on implementation of Columbia River Basin Water Supply Act. The four county commissioners on this policy advisory group represent both the interests of Eastern Washington counties and Eastern Washington watershed planning units. A Klickitat County Commissioner and the WRIA 30 Lead Agency Coordinator attend these meetings regularly.

Klickitat County, as Lead Agency for WRIA 30 watershed planning, will continue to address the implementation of the Columbia River Basin Water Supply Act to promote consistency with the Watershed Management Plan and the statute.

2.3.2 Water Supply Development Account

The Columbia River Basin Water Supply Act created the Columbia River Basin Water Supply Development Account (the Account) in the state treasury. Expenditures from the Account may be used to develop new storage facilities, improve existing storage facilities, implement conservation projects, or other actions resulting in new water supplies within the Columbia River basin for both instream and out-of-stream uses.

2.3.2.1 Allocation and Development of Water Supplies

Water supplies resulting from development of new storage facilities funded from the Account are to be allocated as follows:

- Two-thirds of the storage must be available for appropriation for out-of-stream uses; and
- One-third of the storage must be available to augment instream flows and will be managed by Ecology.

The two-thirds/one-third allocation of water resources between out-of-stream and instream uses does not apply to applications for changes or transfers of existing water rights in the Columbia River basin.

Net water savings from water conservation projects must be placed in the state trust in proportion to the state funding provided to implement the project.

2.3.2.2 Voluntary Regional Agreements

RCW 90.90.030 authorizes Ecology to enter into Voluntary Regional Agreements (VRAs) as a mechanism to provide new water for out-of-stream use, to streamline the water right application process, and to protect instream flows. VRAs must ensure that, for water rights issued from the "Columbia River mainstem"[1], there is no negative impact on Columbia River mainstem instream flows in the months of July and August as a result of the new appropriations issued under the agreement. VRAs shall ensure that efforts are made to harmonize the VRA with watershed plans adopted under chapter 90.82 RCW that are applicable to the area covered by the VRA. A 60-day consultation with county legislative authorities and watershed planning groups with jurisdiction over the area where the water rights included in the agreement are located, as well as with WDFW, federal agencies, and affected tribal governments is required prior to execution of a VRA. The consultation satisfies all applicable consultation requirements under state law related to issuance of new water rights under RCW 90.90.030. The VRA section in the statute expires on June 30, 2012, but VRAs entered into by Ecology before that date can extend indefinitely.

To date, the Columbia Snake River Irrigators Associations (CSRIA) has proposed the only VRA. It would make available new sources of water by implementing new municipal and irrigation conservation measures (best management practices, BMPs) and other measures. At the time of development of this DIP, the CSRIA VRA had not been finalized.

2.3.2.3 Water Supply Inventory and Supply/Demand Forecast

In response to RCW 90.90.040, Ecology produced the first Columbia River water supply inventory and long-term water supply and demand forecast (Golder Associates and Anchor Environmental, 2006). According to statute, the water supply inventory/demand forecast must include a list of potential water supply and storage projects in the Columbia River basin, including estimates of cost per acre-foot, benefit to fish and other instream needs, benefit to out-of-stream needs, and environmental impacts. The water supply inventory is to be updated annually, and the supply/demand forecast every 5 years. RCW 90.90.040(1) provides that Ecology shall work with interested watershed planning groups and other interested parties to develop the water supply inventory/demand forecast.

The 2006 water supply inventory/demand forecast identifies more than 5,000 potential agricultural conservation projects upstream of Bonneville Dam[2] with the potential to save almost 1 million acre-feet of water. The 2006 water supply inventory/demand forecast is based on the area above Bonneville Dam. Additionally, the 2006 water supply inventory/demand forecast gives consideration to a one-mile "Management Zone". However, chapter 90.90 RCW does not establish a management zone or authorize the establishment of a management zone. The WRIA 30 Watershed Management Plan covers

[1] RCW 90.90.030(12)(a) defines the "Columbia River mainstem" as "all water in the Columbia river within the ordinary high water mark of the main channel of the Columbia river between the border of the United States and Canada and the Bonneville dam, and all groundwater within one mile of the high water mark." That definition applies only to RCW 90.90.030 (voluntary regional agreements) and RCW 90.90.050 (Columbia River mainstem water resources information system) and may only be used for purposes of implementing these two sections of chapter 90.90 RCW.

[2] RCW 90.90.040 did not restrict the scope of the inventory to areas above Bonneville Dam.

WRIA 30 as established in Chapter 173-500 WAC. There is no management zone or other form of separate area established in Chapter 173-500 WAC for the Columbia River or the one-mile area adjacent to the Columbia River. The WRIA 30 Watershed Management Plan does not recognize a one-mile or any other size management area/zone along the Columbia River.

It is the WRPAC's opinion that the 2006 Water Supply/Demand Inventory and Forecast does not adequately account for water demands throughout WRIA 30 – particularly water demands at distances greater than one mile from the mainstem which should benefit from the effort to develop water supplies under the Columbia River Basin Water Supply Act. It is important for the WRIA 30 WRPAC to work with Ecology to develop and update the water supply inventory/demand forecast in order to promote consistency with the WRIA 30 Watershed Management Plan.

2.3.2.4 Columbia River Mainstem Water Resources Information System

As provided in RCW 90.90.050(1): "In order to better understand current water use and instream flows in the Columbia River mainstem, the department of ecology shall establish and maintain a Columbia River mainstem water resources information system that provides the information necessary for effective mainstem water resource planning and management. For purposes of RCW 90.90.050, the definition of the Columbia River mainstem in RCW 90.90.030(12) applies and the definition is solely limited to the purpose of collecting data to meet the information requirements of RCW 90.90.050. As defined in RCW 90.90.030(12), the Columbia River mainstem "means all water in the Columbia River within the ordinary high water mark of the main channel of the Columbia River between the border of the United States and Canada and the Bonneville dam, and all ground water within one mile of the high water mark."

It is anticipated that the Columbia River Mainstem Water Resources Information System will make available important data and information for the implementation of, and potentially future amendments to, the WRIA 30 Watershed Management Plan. The WRIA 30 Implementing Governments will evaluate opportunities to assist with development of elements of the information system relevant to WRIA 30 in order to maximize data quality and utility for purposes of watershed planning, including Phase 4 plan implementation.

2.3.3 State Water Quality Standards

The state's surface water quality standards were revised in November 2006, subsequent to completion of the WRIA 30 Watershed Management Plan. In the November 2006 revision to Chapter 173-201A WAC, Ecology designated certain WRIA 30 waterbodies as requiring supplemental protection for salmon and trout spawning and incubation. The designation imposes a more stringent water temperature criterion (a 7-day average of daily maximum temperatures of 13°C or 55.8°F) during the salmon and trout spawning and incubation season, which is defined as different durations for different waterbodies in the WRIA.

2.3.4 Fish Recovery Plans

National Marine Fisheries Service (NMFS) is currently working on a Mid-Columbia Steelhead Recovery Plan. The plan will include a section which lays out general guides

on implementation and which addresses mainstem issues, hydroelectric projects effects, harvest, and ocean conditions. For purposes of recovery planning NMFS has divided the Mid-Columbia River steelhead distinct population segment (DPS) into several major population groups (MPGs). In Washington State, WRIAs 29b, 30, and 31 comprise the east slope Cascades MPG. A public review draft of the plan is expected in 2008.

The State of Washington adopted a State-wide Steelhead Management Plan in March, 2008 (WDFW, 2008).

2.3.5 Changes in Programs Managed Through Conservation Districts and/or NRCS

On July 27, 2007, the U.S. House of Representatives passed a Farm Bill that continues agricultural programs through fiscal year 2012 and covers other related provisions. The bill is currently under consideration in the Senate. The bill increases conservation programs and supports development of renewable energy sources. At present, the bill includes more than $56 billion to fund programs which protect natural resources through conservation programs. If passed by the Senate and signed into law, the bill would result in the following changes in the Farm Bill conservation programs:

- Extends funding for the Conservation Reserve Program (CRP)
- Renews and expands the Wetlands Reserve Program (WRP)
- Extends and increases funding for the Environmental Quality Incentives Program (EQIP), including promotion of forest management and energy conservation
- Continues and funds Conservation Innovation Grants (CIG), which help identify, test, and implement innovative environmental solutions
- Extends and increases funding for Farm and Ranchland Protection Program (FRPP)
- Renews and funds the Small Watershed Rehabilitation Program (SWRP), which provides technical and financial assistance for the watershed rehabilitation, including upgrading or removing dams
- Improves the structure of the Conservation Security Program (CSP), which provides financial incentives to encourage the continuation of farming practices that benefit soil, water, and air resources
- Extends the Wildlife Habitat Incentives Program (WHIP), which helps landowners develop and improve fish and wildlife habitat
- Continues and expands the Grassland Reserve Program (GRP), which helps landowners restore and protect grassland, rangeland, pastureland, shrubland, and certain other lands
- Establishes a Cooperative Conservation Program initiative, which provides opportunities for governments and local owners to develop cooperative conservation programs

2.4 Synergy with Other WRIA Planning Efforts

Implementation of the WRIA 30 Watershed Management Plan can involve actions that are common with those undertaken in adjacent WRIAs, namely WRIA 29b immediately to the west and WRIA 31 immediately to the east. Areas of common interest between these WRIAs could include but not be limited to:

- Supporting implementation of the state's Columbia River Basin Water Supply Act;
- Water quality and aquatic habitat in the mainstem Columbia River;
- Strategies for water management, including water banking, that may shared;
- Development of Voluntary Regional Agreements;
- ESA-listed aquatic species; and
- Water storage projects.

The WRIA 30 Implementing Governments and WRPAC will seek opportunities to coordinate with other WRIA planning units and implementing governments as appropriate to share knowledge and resources for Watershed Management Plan implementation.

Table 2-1 - Projects in WRIA 30 Funded through the Salmon Habitat Recovery Funding Act as of February 2008

070024-002-01

Project	Project Type	Sponsor
Swale Creek Riparian Restoration	Restoration	Klickitat County
Little Klickitat River Restoration	Restoration	Klickitat County
Klickitat River Meadows Restoration	Restoration	Yakama Nation Fisheries
Snyder Creek Fish Passage (Mill #1)	Fish Passage	Klickitat County
Little Klickitat Riparian Restoration	Restoration	Klickitat County
Lacey In-Stream Project	Restoration	Klickitat County
Rootwad Distribution and Storage	Restoration	Klickitat County
Project Maintenance	Non-Capital	Klickitat County
Swale Creek Ponds	Restoration	Klickitat County
Logging Camp Creek Fish Passage	Fish Passage	Klickitat County
Diamond Fork Creek Meadows Restoration	Restoration	Yakama Nation Fisheries
Surveyors Creek Passage Enhancement	Fish Passage	Yakama Nation Fisheries
Klickitat Mill Restoration #2	Fish Passage	Washington Dept of Fish and Wildlife
Swale Creek Restoration Assessment	Non-Capital	Yakama Nation Fisheries
Dillacort Canyon	Acquisition	Columbia Land Trust
Trout Creek Passage Improvement	Fish Passage	Yakama Nation Fisheries
Logging Camp Canyon – Phase 1	Acquisition	Columbia Land Trust
Klickitat River Fish Barriers Survey	Non-Capital	Northwest Service Academy
Assessment of the White Salmon Watershed	Non-Capital	Yakama Nation Fisheries
Lower Klickitat Riparian Re-Vegetation – Phase 1	Restoration	Mid-Columbia Fisheries Enhancement Group
Klickitat River (RM 18-32) Floodplain Conservation and Restoration	Restoration & Acquisition	Columbia Land Trust
Teepee Creek Fish Passage Restoration	Fish Passage	Yakama Nation Fisheries
Klickitat River (RM18-32) Floodplain Restoration – Phase 2	Restoration	Columbia Land Trust
Teepee Creek – IXL Meadows Restoration	Restoration	Yakama Nation Fisheries
Lower White Creek Habitat Restoration	Restoration	Yakama Nation Fisheries
Klickitat RM12 Habitat Restoration	Restoration	Mid-Columbia Fisheries Enhancement Group
Invasive Species Prevention – Phase 1	Non-Capital	Underwood Conservation District
Upper Klickitat River Enhancement – Phase 2	Restoration	Yakama Nation Fisheries
Simmons Creek Restoration	Restoration	Underwood Conservation District
Upper Klickitat River Enhancement – Phase 3	Restoration	Yakama Nation Fisheries

3 Framework for Implementation

This chapter outlines an overarching framework for implementation of the WRIA 30 Watershed Management Plan, including roles and responsibilities of the Implementing Governments and WRPAC, and coordination between them.

3.1 Legislative Authority and Requirements

Pursuant to 90.82.043 RCW and 90.82.048 RCW, a Detailed Implementation Plan (DIP) is to be developed within one year of accepting funding under RCW 90.82.040(2)(e) for implementing the recommendations of the Watershed Management Plan. Submittal of the DIP to Ecology is a required condition of receiving grants for the second and all subsequent years of the Phase 4 grant.

As per RCW 90.82.043, the DIP must include the following elements at a minimum:

- Strategies to provide for sufficient water for production agriculture; commercial, industrial, and residential uses; and instream flows;
- Timelines to achieve these strategies (subject to funding constraints);
- Interim milestones to measure progress;
- Coordination and oversight responsibilities;
- Needed interlocal agreements and administrative approvals; and
- Specific funding mechanisms.

In addition, RCW 90.82.048 RCW requires that the DIP address the planned future use of municipal inchoate water rights.

Furthermore, the WRPAC must consult with other entities conducting related planning in the watershed and identify and seek to eliminate any activities or policies that are duplicate or inconsistent. Fulfillment of each one of these required elements are described in the following sections.

3.2 Participants

The Initiating Governments for watershed planning in WRIA 30 are Klickitat County, Public Utility District (PUD) No. 1 of Klickitat County, and the City of Goldendale. Yakima County concurred with the initiation of watershed planning, but elected to "opt out" as provided in RCW 90.82.130. The Initiating Governments are responsible for initiating or terminating planning, determining the scope of planning, identifying a planning unit representative of a broad range of water resources interests, and determining the planning process. These responsibilities continue through Watershed Management Plan implementation.

The composition of the WRIA 30 Planning Unit was representative of a wide range of water resource interests. Following approval of the Watershed Management Plan, the

Planning Unit was renamed the Water Resource Planning and Advisory Committee (WRPAC) to reflect the planning and advisory responsibility of the committee.

In addition, the Watershed Management Plan provided for the establishment of the Implementing Governments. The Implementing Governments are Klickitat County, City of Goldendale, Klickitat PUD, CKCD, and Ecology (representing the state agencies).

The WRPAC is an advisory body to both the Initiating Governments and Implementing Governments. The WRPAC serves as a dedicated resource for providing input to the Initiating Governments and Implementing Governments regarding water resource and habitat issues, but shall have no authority that is not specifically granted by the Initiating Governments. Members of the WRPAC will continue to be appointed by the Klickitat County Board of County Commissioners (Klickitat BOCC). The appointment specifies whether the appointee represents a unit of government or is a regular member or ex officio member of the WRPAC.

The following water resource interests were invited by the Initiating Governments to participate on the WRPAC:

- Klickitat County
- City of Goldendale
- Klickitat County PUD #1
- Yakama Nation
- State Agencies
- Conservation District
- Klickitat County Health Department
- Klickitat Citizens Review Committee for Fish Recovery
- Large Industry
- Small Business
- Irrigation East
- Irrigation West
- Stakeholders of Klickitat County
- Livestock Growers
- Timber East
- Timber West
- Education
- Environmental
- Port of Klickitat
- Klickitat County Water Conservancy Board
- At-Large
- Federal Agencies

Some of these interests have chosen to not actively participate in implementation of the Watershed Management Plan, and some positions remain open.

3.2.1 Implementing Governments

State and local agencies will be responsible for implementing the actions provided in the Watershed Management Plan. One of the primary functions of this DIP is to identify which agency will be responsible for what actions and define the form with which the agencies shall document their commitment to fulfill the responsibilities they have accepted. With respect to obligations to perform actions, RCW 90.82.130 provides that planning unit consent is needed for state agencies and county governments to use any other form of commitment than rulemaking. The WRIA 30 Planning Unit consented that rulemaking is not needed. This consent is documented in the Watershed Management Plan, which provides a process for changing the requirements pertaining to rulemaking and obligations should the WRPAC determine in the future that rulemaking is needed. For entities (including state agencies and counties) that voluntarily accept obligations a range of options are available, including adoption of policies, procedures, or agreements related to the obligations.

The Implementing Governments are established under the WRIA 30 watershed management as a forum to facilitate implementation of the recommendations described in the Watershed Management Plan. The organizational structure generally lays out the operational relationships between the Implementing Government members, and between the Implementing Governments and the WRPAC.

It should be noted that the Initiating Governments (i.e., Klickitat County, City of Goldendale and Klickitat County PUD No. 1) are members of the Implementing Governments. However, the Initiating Governments have responsibilities assigned them in Chapter 90.82 RCW, which the Initiating Governments retain during Watershed Management Plan implementation. Additionally, the WRIA 30 Watershed Management Plan provides that the Initiating Governments will provide oversight of plan implementation, initiate planning activities, define the scope of actions with plan implementation, and address policy issues that arise during implementation.

The following responsibilities were jointly developed by the Implementing Governments and the WRPAC to facilitate corporation in implementation of the WRIA 30 Watershed Management Plan.

The Implementing Governments will provide a forum for coordination of state and local efforts to implement the Watershed Management Plan. Common responsibilities of the Implementing Governments members include:

- Act in accordance with the intent of Chapter 90.82 RCW, and within applicable federal laws, state statutes, and local ordinances during implementation;
- Work in accordance with the established WRIA 30 Operating Procedures Manual;
- Review and comment on documentation, including the DIP, developed to support plan implementation;
- Pursue funding sources required to implement activities recommended in the Watershed Management Plan; and

- Work collaboratively with federal, state, and local government agencies, and the WRPAC, to efficiently implement the Watershed Management Plan.

The Implementing Governments will meet quarterly or as needed to provide oversight and coordination of the implementation process.

3.2.2 WRPAC

In accordance with the Watershed Management Plan, the WRIA 30 Water Resource Policy and Advisory Committee (WRPAC) is an advisory body to the Initiating Governments and Implementing Governments, and has no authority that is not specifically granted by the Initiating Governments. Responsibilities of the WRPAC include:

- Development of the DIP, including assisting with prioritizing projects for the WRIA;
- Clarifying the intent of the Watershed Management Plan and DIP as needed during implementation;
- Updating/amending the Watershed Management Plan and/or DIP if requested by the Implementing Governments;
- Reviewing work accomplished and advising on upcoming work during implementation of the Watershed Management Plan; and
- Assisting with assessment of and advisement on water resource and habitat management issues as requested by the Implementing Governments.

The WRPAC will meet during implementation of the Watershed Management Plan, with the frequency dependant on the scope and schedule of the implementation actions.

3.3 Documenting Implementation Commitments

Memoranda of Agreement, letters of intent, resolutions, policy statements, or other interlocal agreements will be prepared to formalize the relationships between entities involved in implementation of the WRIA 30 Watershed Management Plan. The agreements will also document obligations accepted by organizations in accordance with Chapter 90.82.130(3) RCW.

Following adoption by the county legislative authorities, the Watershed Management Plan is recognized by Ecology. In order to formalize this, a memorandum of agreement or official written statement will be prepared as a part of implementation. The binding agreement or official statement will acknowledge that Ecology participated in the planning process and that the plan is deemed to satisfy the Ecology's watershed planning authority for WRIA 30 with respect to the components included under the provisions of Chapter 90.82 RCW.

The Implementing Governments or WRPAC may choose to have additional agreements between WRPAC, individual Implementing Governments, or other state agencies to formalize the process of future involvement of entities in implementing the DIP.

The WRPAC and the Implementing Governments will formalize these agreements within the schedule timeframes for specific implementation actions listed in Chapter 5.

3.3.1 Rule Making

Rule making is not required for any obligation associated with the WRIA 30 Watershed Management Plan. However, should the Implementing Governments or WRPAC come to determine that rulemaking is appropriate, such determination shall be made only through the same process as was used to approve the Watershed Management Plan under Chapter 90.82.130(1)(a) RCW. This does not preclude state agencies, county governments, or other entities from pursuing rule making or promulgation of ordinances under its own authority.

3.4 Adaptive Management

The WRIA 30 Watershed Management Plan specifies that plan implementation include adaptive management - learning from the outcomes of actions taken so that implementation can be changed if warranted. Monitoring the results of actions taken determines the effectiveness of the action in achieving its objective. This and other types of information obtained during implementation may indicate a need to modify a recommended action or other element of the Watershed Management Plan or the DIP.

The Watershed Management Plan specifies that the WRPAC annually review the implementation results to determine if the Watershed Management Plan objectives are being met. During the course of regular reviews, the Implementing Governments or WRPAC can recommend that either the Watershed Management Plan or the DIP be amended if new information indicates that changes are necessary. Such recommendations will be submitted to the Initiating Governments for consideration. Amendment of the Watershed Management Plan or DIP can only be made following the same processes under which the plans were originally approved (see Section 1.8 of the Watershed Management Plan).

3.5 Quality Assurance, Data Management, and Reporting

The WRPAC is committed to the application of quality assurance principles in the implementation of the WRIA 30 Watershed Management Plan. The WRPAC is also committed to ensuring that information developed during studies and monitoring programs is available for public use.

A consistent application of data quality assurance/quality control (QA/QC) is needed for implementing the Watershed Management Plan's recommended actions and evaluating the outcome. To that end, all future Watershed Management Plan implementation activities involving environmental data collection will prepare a Quality Assurance Project Plans (QAPP). The QAPPs will be prepared in general accordance with appropriate guidance (e.g., Ecology, 2004). Water quality data collected for submittal to the state Water Quality Assessment will meet criteria for credible data in accordance with Ecology guidance (Ecology 2006b).

Data collected during plan implementation will be submitted to Ecology's environmental information management (EIM) system as appropriate.

All data and documentation prepared during plan implementation will be publicly available, upon request to the WRIA 30 Lead Agency (Klickitat County).

3.6 Public Education and Outreach

The state watershed planning process is a public process, and involvement of the local community is an important component of the Watershed Management Plan and its implementation. Examples of public outreach during implementation of the WRIA 30 Watershed Management Plan include:

- Regular meetings of the WRPAC, which are open to the public;
- Sending an information request letter to Group A water system purveyors, as described in Section 4.2;
- Completion of a public hearing prior to county adoption of the DIP;
- Coordination with local land owners requesting property access and/or other assistance in carrying out recommended actions of the Watershed Management Plan. An example of this was establishment of a groundwater level monitoring network made up of about 40 private wells in the Swale Creek and Little Klickitat subbasins, accomplished through requests made to well owners in those areas (June 2007); and
- Additional public informational meetings or other outreach activities (news articles, fliers, etc.), as warranted throughout implementation.

Public education and outreach is a component of all of the strategies to be implemented in this DIP. Public education and outreach can include periodic updates on studies conducted, key findings, actions taken and other pertinent information. The form of these updates may take the form of news releases, flyers, public meetings, or other means of dissemination of information. The scope of the annual outreach will be dependent upon the types and amount of new information that has become available.

In addition to the general public education, care will be taken to ensure that data collection efforts are coordinated with affected landowners. Information regarding the purpose of the data collection effort, the types of data to be collected, the study schedule, and dissemination of information will be provided. Sampling areas will be limited to locations where landowners are willing to cooperate with the study. Owners of parcels of land where land uses have been identified as having an effect on fish habitat will be contacted to inform them of the studies conducted and the findings, and to solicit their voluntary cooperation with projects that address the identified situation.

4 Development of the Detailed Implementation Plan

Development of the DIP was the first task undertaken by the WRPAC following receipt of Phase 4 funding. Meetings with the Implementing Governments and the WRPAC reviewed and prioritized the recommendations described in the Watershed Management Plan. The following sections describe efforts undertaken during development of the DIP.

4.1 Coordination with Group A Water System Purveyors

A key component of the DIP, as per 90.82.048 RCW, is addressing the planned future use of municipal inchoate water rights, including how these rights will be used to meet the projected future needs identified in the Watershed Management Plan, and how the use of the right will be addressed when implementing instream flow strategies identified in the Watershed Management Plan.

In order to facilitate this, a letter was prepared and sent out to all Group A water system operators. The letter requests their assistance in helping the WRPAC gather specific information about their water system, including:

- Current water rights, including identification number and authorized amounts (instantaneous flowrate and annual volumes);
- Annual usage over the last 5 years; and
- Projected demand over the next 20 years, or similar planning horizon.

This information will enable the WRPAC to quantify the inchoate municipal water rights within WRIA 30, and work with the municipalities regarding future use of those rights. A copy of the letter is included as Appendix A. The assessment of inchoate municipal water rights is included in Section 5.1.1.5 of this DIP.

4.2 Coordination with Other Planning Efforts in the WRIA

The Implementing Governments will pursue consultation with other entities conducting related planning in WRIA 30, in accordance with RCW 90.82.043(4). Other planning efforts in the WRIA include:

- Subbasin planning being conducted by Northwest Power and Conservation Council (NPCC);
- NOAA Fisheries Service's salmon recovery planning; and
- Habitat-related strategic planning by the Klickitat Citizens Review Committee (Klickitat CRC) pursuant to Chapter 77.85.130 RCW.

4.3 Approval of Detailed Implementation Plan

Chapter 90.82 RCW does not define a process for approval of the DIP. However, the WRIA 30 Watershed Management Plan obligates Ecology to not accept the DIP, or

amendment thereof, until the DIP or its amendment has been approved by the WRPAC, using the same procedures by which the WRPAC approved the Watershed Management Plan, and it has been approved by the legislative authority of Klickitat County following a public hearing. DIP approval requires a consensus of the members representing a unit of government and a majority vote of the regular voting members. Consensus is defined in the "Operating Procedures Manual, Planning Process, Water Resource Inventory Area 30", approved by the Initiating Governments.

The county legislative authority may either approve the DIP by a majority vote of the members, or return the DIP to the WRPAC with recommendations for changes. The county legislative authority is not empowered to change the DIP by itself. If the DIP is returned to the WRPAC, it may amend the DIP and resubmit it to the county for approval using the same process.

5 Strategies and Actions to Implement

This chapter outlines the planned implementation of the water quantity, water quality, and aquatic habitat strategies and actions included in the WRIA 30 Watershed Management Plan. In accordance with the Watershed Management Plan, and outlined in Section 3.2 of this DIP, the Implementing Governments are tasked with implementation of various activities specified in the Watershed Management Plan. The WRPAC serves as a dedicated advisory body to the Initiating Governments and Implementing Governments, providing input regarding water resource and aquatic habitat issues throughout implementation.

As stated in the Watershed Management Plan, implementation of the planned actions and the schedule for implementation are subject to resource constraints (e.g., funding and staff availability). The Implementing Governments and WRPAC also recognize that additional assessment and planning, policy-related work, legislation, authorizations, permitting, and SEPA and/or NEPA review may be necessary before implementation of some actions can occur. The Implementing Governments will help seek and support funding to carry out the actions identified in the Watershed Management Plan, focusing on the priority issues and actions with the greatest expected benefit. Quality assurance and public outreach considerations applicable to all implementation actions are described in Sections 3.5 and 3.6 of this DIP.

5.1 Water Quantity

5.1.1 Ensure Water Supplies to Meet Current and Future Water Demands (High Priority)

A high priority issue in the Watershed Management Plan is to ensure that adequate water supplies are available to meet current and future water needs of the citizens of WRIA 30. Future water demands will be met through a combination of transfer of existing water rights to new uses/locations/users through the water right transfer process, and appropriation of new water rights. Appropriation of new water rights requires that additional water is physically and administratively available for appropriation.

The Watershed Management Plan outlines a range of strategies to address future water needs. These include:

- Estimating water available for appropriation of new water rights; and
- Water management options including:
    - **a.** Water conservation;
    - **b.** Evaluation of a potential WRIA-specific water management/exchange program facilitating water right transfers, water banking, voluntary regional agreements (under the Columbia River Basin Water Supply Act), and/or use of the state water trust, in accordance with the provisions of the Watershed Management Plan; and

c. Water storage.

Public education and outreach is a component of all of the strategies.

Implementation of these actions is described below. In addition, Section 5.1.1.5 addresses future use of municipal inchoate water rights, a required component of a DIP under RCW 90.82.048.

5.1.1.1 Estimate Water Available for Appropriation

Issuing new water right permits requires that additional water is physically and administratively available for appropriation. To better estimate water available to support the issuance of new water right permits, the Watershed Management Plan recommends refining estimated water budgets (including actual use) as well as documenting flow conditions in the Little Klickitat River. Little Klickitat River flow is addressed in Section 5.1.3. Refinement of water budgets is described below.

Self-supplied residential water use (i.e., permit-exempt wells) accounts for a small portion of the total consumptive water use in WRIA 30. For example, consumptive water use from self-supplied residential wells is estimated to account for 48 acre-feet (0.5 percent) of the 9,033 acre-feet total annual consumptive water use in the Little Klickitat Subbasin (Aspect Consulting, 2007a). However, as noted in the Watershed Management Plan, shifts in the spatial distribution of water demand may be occurring. The High Prairie (located primarily in the Lower Klickitat Subbasin but also extending into the western portion of the Swale Subbasin) was identified in the Watershed Management Plan as an area where the development rate is increasing.

Refine Water Budget Estimates

A goal of a water availability assessment is to develop a sufficient understanding of hydrologic conditions in an area to be able to make informed decisions regarding whether additional water is available for appropriation through permitted water rights. This study should provide sufficient information regarding water availability for Ecology to process applications for new water rights in that area. Even if the study indicates that water is available for appropriation for an area, processing of a water right application needs to consider the potential for the new right to impair senior water rights, and the beneficial use and public interest tests, which is done on an application-specific basis.

Another goal of a water availability assessment is to develop a sufficient understanding of hydrologic conditions in an area to be able to make informed decisions regarding the availability of water to accommodate anticipated future shifts in the spatial distribution of water demand.

The general steps for a water availability study are to:

1. Define the local hydrologic "subbasin" encompassing the area of interest.
2. Develop the hydrologic conceptual model for that subbasin, documenting the occurrence of groundwater aquifers and their boundaries; groundwater levels and, if possible their trends over time; groundwater flow directions; hydraulic continuity between groundwater aquifers and adjacent surface water bodies, etc.

3. If possible, establish a groundwater level monitoring network, using existing wells, to allow for measurement of seasonal and longer-term changes to the groundwater system.

4. Prepare a basin-scale water balance accounting for water inputs (e.g., recharge) and water use. Accurate estimation of actual water use is an important element of the water budget. In areas with significant irrigation water use, improved estimates of irrigation water use can include evaluation of aerial photographs or satellite imagery estimate of irrigated acres, and documentation of crop type from local farmers, CKCD, and/or Farm Service Agency.

For example, as an early implementation action in 2007, WRIA 30 obtained grant funding (Grant No. G0700207) from Ecology to conduct a water availability assessment focused on the Swale Creek and Little Klickitat subbasins (Aspect Consulting, 2007a). That assessment covered a large area (more than 200 square miles), including establishing a 40-well monitoring network, and cost on the order of $80,000. Additional work recommended in that study includes installation of a groundwater monitoring well immediately east of the Warwick Fault, on-going monitoring of the wells in the subbasin-wide monitoring network, and data analysis and reporting. Therefore, significant funding is necessary to undertake these detailed assessments and maintain the groundwater monitoring programs that are now established.

Ecology water resources staff should be consulted in scoping of each water availability study to increase the likelihood that adequate information is generated for Ecology to conclude whether water is available for additional appropriation, and thus proceed with processing of pending water right applications for that area of interest (subject to Ecology staff resource availability).

Ideally, water availability assessments and monitoring programs would be implemented immediately across the WRIA. However, funding and other resource constraints will likely necessitate a phased approach guided by the following interim ranking of subbasin priorities:

1. Swale Subbasin

2. Lower Klickitat Subbasin, High Prairie Area

3. Little Klickitat Subbasin

4. Columbia Tributaries Subbasin, Dallesport Area

5. Lower Klickitat Subbasin, West of Klickitat River

6. Middle Klickitat Subbasin.

The lead entity will develop cost estimates for conducting water availability assessment for the area, which will be re-evaluated based on changes in watershed priorities. The scope of these assessments will vary based on size of the geographic area and its hydrologic complexities. The lead entity will simultaneously work with Ecology to identify a range of prospective funding sources to conduct water availability assessments for the priority area.

When sufficient information exists to assess source availability for a priority area - indicating that additional water appears to be available for new water right permits - the lead entity will engage Ecology's Central Regional Office (CRO) to assess availability of Ecology permit writers to process applications for new water rights in that area. The WRPAC will support securing funding to provide Ecology staff for water right processing.

Lead Entity for Implementation: Klickitat County, as the lead agency for watershed planning, will be responsible for coordination and oversight. The County will pursue grant funding to implement the proposed actions. The County will also coordinate with Ecology regarding maintenance of their streamflow gauge at the mouth of the Little Klickitat River. Ecology will consult with the WRPAC prior to discontinuing operation and maintenance of that gauge. Klickitat County will coordinate with Ecology in development of appropriate quality assurance and quality control procedures for all data collection activities.

Schedule for Implementation:

- **Swale Subbasin**: A watershed assessment was conducted in the spring of 2007 (Aspect Consulting, 2007a) and an additional round of groundwater level monitoring was conducted in November 2007. Grant funding has been obtained to install a well in 2008 to monitor ground/surface water interactions adjacent to the Warwick Fault. Grant funding has been obtained to install three streamflow gages in 2008. Implement surface and groundwater monitoring in 2008, 2009, and 2010; analyze data and report at conclusion of 2010. It is anticipated that monitoring will need to continue for the foreseeable future, but the need to continue monitoring will be considered by the WRPAC with review of the 2010 report.
- **Lower Klickitat Subbasin, High Prairie Area**: Groundwater monitoring was conducted in the spring of 2007 for a large portion of the High Prairie area, which also extends into the Swale Subbasin (Aspect Consulting, 2007a), and an additional round of groundwater level monitoring was conducted in November 2007. Develop plan for water availability assessment and expand groundwater monitoring to include the western portion of High Prairie and implement ground water monitoring in 2008, 2009, and 2010; analyze data and report in 2010. The assessment plan can consider whether to supplement groundwater level monitoring with streamflow monitoring in tributary streams draining the area. It is anticipated that monitoring will need to continue for the foreseeable future, but the need to continue monitoring will be considered by the WRPAC with review of the 2010 report. Grant funding is needed, especially for the data analysis and reporting.
- **Little Klickitat Subbasin**: Develop a plan for the water availability assessment and pursue funding in 2008. Relevant ongoing data collection includes a flow gauge operated by Ecology near the mouth of the Little Klickitat River since 2006 and river flow measurements conducted upstream by the City of Goldendale. Grant funding has been obtained to install a SNOTEL monitoring station in the Simcoe Mountains two additional flow gauges in Little Klickitat River in 2008. Funding is needed to establish and maintain a groundwater monitoring network (as done in the Swale Subbasin) and to conduct data analysis and other tasks for the water availability assessment. It is anticipated that 3 to 5 years of data collection will be needed to

complete an initial water availability assessment and that the groundwater and surface water and snowpack monitoring will need to continue for the foreseeable future. This study is consistent and overlapping with the comprehensive study outlined to address summer flows in the Little Klickitat River (Section 5.1.3); the findings of a comprehensive assessment will be used to determine water availability and causes of low flows in the river.

- **Columbia Tributaries Subbasin, Dallesport Area; Lower Klickitat Subbasin, West of Klickitat River; and Middle Klickitat Subbasin**: Develop proposal for the water availability assessments in these three subbasins in 2009. Pursue funding as soon as funding and other resources are secured for implementing monitoring and water availability assessments for the top three priority subbasins.

5.1.1.2 Water Conservation

An obvious benefit of water conservation is making additional water available for instream and out-of-stream uses. Through water conservation, municipalities can gain additional connections to meet future demand with existing water rights, and agriculture and industry can reduce costs. Water conservation is achieved not only through physical upgrades and change in management practices for supply sources, but also through education and public awareness.

The Implementing Governments and WRPAC recognize the importance of increased conservation for both the municipal and agricultural sectors. The following sections describe identified action items related to water conservation.

Municipal/Residential Conservation

In 2003, the Washington state legislature passed the Municipal Water Supply – Efficiency Requirements Act. The law not only gives municipal water purveyors certain benefits, but specifies several obligations. One of the obligations is to comply with the Water Use Efficiency Rule (Part 8 of Chapter 246-290 WAC).

The Water Use Efficiency Rule contains three key elements: water use efficiency planning requirements, distribution leakage standard, and water use efficiency goal setting and performance reporting. All Group A water purveyors in WRIA 30 are required by the Department of Health to comply with the rule. DOH published guidance for implementing the water use efficiency rule in 2007 (DOH, 2007).

Municipal conservation actions that are currently underway to comply with the rule include:

- The City of Goldendale is in the process of replacing 8,000 linear feet of steel distribution piping (Phase 1) that is the cause of significant losses in the distribution system. Additional phases are pending funding, but eventually approximately 24,000 feet will be replaced (future phases). In addition, the City of Goldendale is currently in the process of developing an amendment to its water system plan. The amendment describes the water line replacement project, and, based on the expected quantity of conserved water, recalculates additional equivalent residential units (ERUs) that can be supplied with the existing water rights and source capacity.

- Both the Klickitat PUD and the City of Goldendale have implemented a tiered rate structure that provides financial incentive to promote water conservation. Under a tiered rate schedule, the unit price for water increases as the quantity of use increases.
- Permits for new construction within Klickitat County require water-efficient devices.

A proposed municipal conservation action includes making available water-efficient appliances and appurtenances (low flow toilets, shower heads, washers) to City of Goldendale and Klickitat PUD customers. The literature indicates that toilets are the most inefficient water user in the home, using up to 5 gallons per flush. Newer water-efficient toilets (since 1994) only use 1.6 gallons per flush, with the most recent requiring only 1.28 gallons. The United States Geological Survey (USGS) estimates that use of water-efficient toilets is the single most important item for residential water conservation. Additional water savings can be obtained by replacing other fixtures, such as low-flow shower heads and appliances (e.g., water-efficient clothes washer).

The effectiveness of conservation for municipalities is well documented. For instance, since 1990 the demand on the City of Seattle's water system has dropped by 24 percent while population has increased by 11 percent, largely attributable to installing water-efficient appliances. Through conservation alone, the City of Seattle is expecting to conserve enough water to satisfy its 10-year demand. Because of the large number of customers, City of Seattle is able to self-fund rebate programs to customers installing water-efficient appliances.

Because the public water systems in WRIA 30 do not have that economy of scale, state funding will be sought to organize and promote a water-efficiency program to make available water-efficient appliances (esp. toilets). A program will initially be targeted to the larger municipal purveyors, to maximize residential water savings in the WRIA's population centers.

The lead entities can evaluate the economics of making available the water-efficiency features to the unincorporated area population within the WRIA, including varying degrees of cost sharing by the customer (e.g., rebates). The assistance of Ecology and state DOH will be sought with this action item, which could be a state-wide initiative encompassing areas beyond WRIA 30 if legislative budget appropriation were secured.

Lead Entities for Implementation: City of Goldendale, Klickitat PUD, and Klickitat County (for water users outside municipal service areas) with assistance from Ecology and DOH (resource dependant).

Schedule for Implementation: Leak repair projects are ongoing. By July 2009, work in conjunction with Klickitat County and Ecology and DOH, and regional legislators as appropriate, to pursue a funding program for implementation of a residential water-efficient appliance program.

Irrigation Efficiencies

Efficiencies in irrigation water use may be achieved through numerous means including modification of water conveyance systems, upgrades in irrigation equipment, applications of water at agronomic rates, soil tillage and amendment techniques, and/or changes in crops in dry year, and many other approaches. There are several programs in place to

help fund conversions to more efficient irrigation equipment and/or updates of water transport systems.

CKCD facilitates a cost-share incentive program, which is available by application to landowners of high priority agricultural sites willing to implement Best Management Practices (BMPs). These could be crop land conservation practices or livestock BMPs, and are paid from Washington Conservation Commission (WCC) funds.

Landowners applying for the federal Environmental Quality Incentives Program (EQIP) receive conservation planning assistance from the Natural Resources Conservation Service (NRCS). CKCD will likely offer conservation planning assistance in the future to landowners who do not qualify for federal programs. Participation of landowners in this program is voluntary. Conservation planning is a natural resource problem solving and management process. Resources (soil, water, air, pasture, livestock, human concerns) on site are inventoried and the planner works with the landowner to identify problems and determine objectives. Alternative management practices (e.g., irrigation conservation) are formulated and evaluated with the landowner. The ultimate goal is implementation of the plan, followed by evaluation of its effectiveness.

Landowners who qualify for EQIP to implement Best Management Practices are referred to NRCS. Currently EQIP funds 10 percent of the capital cost to convert from wheel line to center pivot, and 75 percent of the cost to convert from flood irrigation to center pivot. The latter could be particularly valuable in the Glenwood area, where flood irrigation is currently practiced.

In addition, Klickitat PUD provides rebates to irrigators who install new equipment (e.g., nozzles) in irrigation systems. The rebate program is funded by the Bonneville Power Administration to achieve energy savings, but the newer equipment is also likely more water-efficient so can achieve some conservation of irrigation water.

As mentioned above, public outreach and education are a high priority for the CKCD. Public outreach and educational efforts by CKCD include: landowner workshops on riparian habitat restoration, public meetings, brochure development on riparian habitat, quarterly newsletters, an informational fair booth, use of BMP demonstration sites and others.

Lead Entity for Implementation: CKCD.

Schedule for Implementation: CKCD is implementing the conservation actions in cooperation with NRCS, and has public outreach activities ongoing.

Water Re-Use and Reclamation (Gray Water)

The City of Goldendale's wastewater treatment plant effluent is discharged to the Little Klickitat River under the conditions of its national point discharge elimination system (NPDES) permit. The treated wastewater discharge augments flows in the river and, during the summer low-flow months, is usually at lower temperature than the upstream water providing some seasonal cooling of the river from that point downstream. Reclaiming the wastewater effluent for out-of-stream uses (e.g., irrigation of parks, landscaping, etc.) would take water out of the river, with corresponding potential impacts to river flow and temperature during the summer. Currently, this is a disincentive to reclaiming the effluent for other uses. However, if implementation of the Klickitat River

temperature TMDL requires reduced temperature discharge requirements for the wastewater treatment plant effluent, the City may need to evaluate options for reclaimed water use rather than discharging it to the river.

At this time, a possible opportunity for the Klickitat PUD to use reclaimed water is at the Dallesport wastewater treatment plant, which they are scheduled to operate. The sewer plan identifies the possibility of using the treated effluent for irrigation of a proposed local golf course. This potential use of reclaimed water, instead of pumping additional groundwater for irrigation, would be consistent with the intent of the Watershed Management Plan and encouraged by the Implementing Governments. The PUD will continue to evaluate feasibility of this option, consistent with the development proposal.

There is grant funding available to support evaluation and implementation of reclaiming wastewater for beneficial reuse. In May 2007, legislation was passed (E2SSHB 6117) with the stated intent of facilitating and reinvigorating use of reclaimed water as a matter of state water resource policy. The legislative intent is to expand financial support and incentives for capital investments in use of reclaimed water. Section 4 of the legislation was vetoed by the Governor because it was felt it would change the standard for mitigation of water right impairment resulting from a water reuse project, which could have unintended consequences to existing water rights. In the veto language, the Governor directed Ecology to work with the legislative leadership to address water right impairment from water reuse projects as well as reclaimed water planning (coordination with Watershed Management Planning and other land use decisions), and report to the Governor and appropriate legislative committees by the end of 2007. In that report (Ecology, 2007), Ecology recommends that the Reclaimed Water and Water Rights Advisory Committee follow a defined work plan to address the key issues and issue a report of findings, and defer any legislation until 2009. Resolution of this issue is relevant to potential reclamation of wastewater that is currently discharged to surface water.

The state capital budget for the 2007-2009 biennium included approximately $5.5 million for reclaimed water projects, but solely for local governments in Puget Sound – as a result of the Puget Sound Initiative legislation. No funding was allocated for reclaimed water projects in eastern Washington.

Lead Entity for Implementation: City of Goldendale and Klickitat PUD will evaluate water reclamation opportunities in accordance with their water system and sewer plans. If conceptual options for reclamation are identified, the entities can pursue funding for feasibility studies etc. under the state's Reclaimed Water Grants Program if funded for state-wide use by the legislature. Alternate potential funding sources that have been used in state reclaimed water projects include Centennial Clean Water grants, USDA Agriculture Rural Development grants and loans, Community Development Block grants, Clean Water State Revolving Fund loans, Community Trade and Economic Development's (CTED) Public Works Trust Fund, as well as local utility (sewer) rate increases (Ecology, 2005b; Ecology, 2007).

Schedule for Implementation: Ongoing.

5.1.1.3 Prospective WRIA 30 Water Management Program

The WRPAC is strongly committed to preserving and putting to beneficial use within the watershed all of the water rights that currently exist within WRIA 30. Developing a mechanism to preserve, manage, and facilitate use of the inventory of existing water rights in the WRIA is therefore a top priority of the Watershed Management Plan. The Watershed Management Plan specifically required that, during the first year of implementation, the legal, operational, and economic constraints associated with the potential tools and approaches to developing a water management system be evaluated. A water banking/exchange program, implemented consistent with Watershed Management Plan goals, is one recommended action identified in the Watershed Management Plan.

Within the first year of implementation, Ecology provided funds to WRIA 30 under Grant No. G0700207 to evaluate existing water banking and other water management strategies, and develop a conceptual framework for implementation of such strategies at the watershed level. Under that grant, Aspect Consulting (2007b) prepared a preliminary management framework document (version 1.0) that outlined several water management strategies that are potentially applicable to WRIA 30, as described in Section 2.2.2.1.

Notably, the report presented a recommended framework for establishing a water exchange program to facilitate water transactions (sales, leases), which includes a "water banking" concept that aims to protect water rights from statutory relinquishment pending their exchange and promote the use of existing water rights within WRIA 30.

The version 1.0 report was prepared under a tight timeframe which limited the review process by the WRPAC, and is intended to serve as a scoping document to be further developed by the WRPAC during the implementation of the Watershed Management Plan.

The Implementing Governments and WRPAC will now advance and refine the water management framework concepts outlined in the version 1.0 report to a mechanism to preserve and manage the inventory of existing water rights in the WRIA.

It is important that Ecology's implementation policy for the state's water right trust program provide the maximum flexibility consistent with the legislative intent and not constrain the use of the trust program as an important water management tool in watersheds. This is particularly important in watersheds, such as WRIA 30, where groundwater makes up a significant percent of the water supply. In accordance with the WRIA 30 Watershed Management Plan, the Implementing Governments and WRPAC will pursue written clarification from Ecology regarding temporary placement of groundwater rights into the trust program.

The version 1.0 water management framework report outlines a proposed framework for establishing a water exchange in WRIA 30, using mechanisms most adaptable to watershed conditions and constraints. The intent is to provide a single administrative entity that is focused on protecting and facilitating the beneficial use of existing water rights in WRIA 30. The administrative entity could provide a range of services which may include:

- Functioning as an information clearinghouse and staffed resource center to provide information on water rights to holders of existing water rights, persons seeking to

acquire or lease water rights, and the general public; and to perform an initial and confidential analysis of extent and validity of existing water rights;

- Maintaining a posting service ("multiple listing service") to support a local water market, and advertising its existence;
- Acting in the capacity of a "broker" to actively assist in water right transactions; and/or
- Administering a water exchange program. The exchange would develop water management mechanisms to achieve the watershed goals as defined under the WRIA 30 Watershed Management Plan. Mechanisms could include creating a board of joint administration, to provide flexibility in the place of use of water, similar to that of an irrigation district and/or implementing a reserve or "bank" to address unmet current and future needs.

A WRIA 30 water exchange could be administered under the authority of a single governmental agency (e.g., county or PUD) or the Implementing Governments under an intergovernmental agreement or a watershed management partnership established under Chapter 39.34 RCW. Public education would be a key element of a water exchange program if implemented.

The Implementing Governments and WRPAC commit to continuing collaborative discussion of a WRIA 30 water exchange program, specifically:

- Its specific functions and its interaction with existing programs (e.g., Klickitat County Water Conservancy Board); and
- The entity or entities comprising the administrative entity, the administrative method (agreement) by which that entity would function, and how that administration would be funded.

The Implementing Governments will work with Ecology further develop the framework for a water management program for WRIA 30, including 1) developing criteria for placing existing groundwater rights into the state's temporary trust program, and 2) defining the functions and administrative structure for it's operation within the watershed. This effort will lead to a decision whether to formally proceed with implementation or not.

Lead Entity for Implementation: Implementing Governments, in consultation with WRPAC.

Schedule for Implementation: There will be a 1-year period following adoption of this DIP, with a decision by June 2009 regarding whether or not to create a WRIA 30 water exchange. During this period, the Implementing Governments and WRPAC will pursue legislation or policy clarification from Ecology regarding temporary placement of groundwater rights into the state water right trust program.

5.1.1.4 Develop Water Storage

The WRIA 30 water storage screening study (Aspect Consulting 2003) identified a range of storage opportunities within WRIA 30. Of those opportunities, early implementation studies have been started or proposed. A feasibility study for aquifer storage and recovery

(ASR) by City of Goldendale has been started. In addition, Klickitat County has filed a pre-application for funding a feasibility study of in-channel storage in Idlewild Creek and/or Dry Creek within the Little Klickitat subbasin. These early actions are described briefly below.

Goldendale ASR

The City of Goldendale (City) is considering ASR involving subsurface storage of surplus winter/spring discharge water from the City's Simcoe Springs water source. The City's primary objectives for an ASR program would be to provide an additional water source to supply a portion of its projected future summer peak demand. There may also be opportunities to use ASR as a means to provide additional in-stream flow in the Little Klickitat River to improve water quality and enhance habitat. There are considerable uncertainties for the City regarding the technical feasibility and economic practicality of implementing an ASR program. A detailed feasibility study of ASR is being conducted to address these uncertainties, funded under a state water storage project preconstruction grant.

The ASR feasibility study addresses technical, operational, environmental, legal, and economic considerations associated with applying ASR. The feasibility study report will provide information required in an application to Ecology for an ASR permit, as specified in Chapter 173-157 WAC, including:

- A description (conceptual model) of the hydrogeologic system pertinent to the project;
- A conceptual project operation plan describing pilot and operational phases of the project;
- A description of the project's legal framework (e.g., water rights);
- An environmental assessment of potential impacts to the affected area; and
- Scoping of a project monitoring plan to verify the assumptions of the project conceptual model through pilot testing.

The feasibility study will also include recommendations for implementation of an ASR project if deemed feasible based on the results of the technical assessment.

If ASR is deemed technically and economically feasible for the City, the next step would be constructing an ASR well and implementing an ASR pilot testing program using it. Such a project would require substantial funding.

An important determinant for whether ASR would be feasible for the City is compliance with the state antidegradation policy. If the City were to apply ASR, it would store the same treated water that is served to the City's customers. The water must be disinfected using chlorine and therefore contains trace concentrations of the byproducts of this disinfection process. Concentrations of disinfection byproducts in the City's treated water supply are consistently below drinking water standards. However, the disinfection byproducts are not naturally occurring in the prospective storage aquifer. If the water to be stored during ASR has chemical constituents present at concentrations above those in the ambient groundwater in the storage aquifer, the storage might be interpreted to violate

the antidegradation provision of the state's Ground Water Quality Standards (WAC 173-200-030).

However, it is the WRPAC's position that storage of water that meets drinking water standards would not violate the state antidegradation policy[3].

Since the water to be stored via potential ASR in Goldendale meets drinking water standards, beneficial use of the groundwater in a deep storage aquifer would not be degraded as a result of its storage, thus meeting the intent of the Ground Water Quality Standards (Chapter 173-200 WAC). Furthermore, a Goldendale ASR program would be in the overriding public interest, providing greater flexibility and reliability for meeting peak municipal demand while potentially benefiting Little Klickitat River flows during critical flow months. Furthermore, the state ASR regulation states "The department shall give strong consideration to the overriding public interest in its evaluation of compliance with groundwater quality protection standards." (WAC 173-157-200[2]).

This issue has state-wide implications for ASR, since ASR is likely a water management strategy best suited to the state's municipal purveyors that already have in place a high-capacity water treatment system (which necessarily includes chlorine disinfection).

Therefore, if City of Goldendale decides that application of ASR may be feasible, it would coordinate with Ecology water resource and water quality staff during the process of developing an ASR application to discuss Ecology drafting a water quality policy or pursuing a statutory exemption, specific to ASR, which allows for de minimus impact to the quality of the receiving body of groundwater, as long as beneficial use of the groundwater resource is not impaired and it is not detrimental to the public interest.

Again, resolution of this issue has significance for application of ASR across the state, and coordinating with Ecology staff to draft a policy specific to ASR is also a recommended action in the WRIA 31 Watershed Management Plan.

Lead Entity for Implementation: City of Goldendale.

Schedule for Implementation: The feasibility study will be completed in 2008. Based on the results of the study, the City will evaluate whether to proceed with construction and testing of ASR facilities (including seeking suitable funding), and, if so, the schedule for doing so.

In-Channel Storage in Idlewild and/or Dry Creeks

Klickitat County, as lead agency for WRIA 30 watershed planning, has submitted a pre-application to the state Columbia River Basin water supply development grant funding program to conduct a feasibility study for constructing in-channel water storage in Idlewild Creek and/or Dry Creek, which are headwater tributaries of the Little Klickitat River. The feasibility study will evaluate the technical, legal, and environmental feasibility of using surface storage (in-channel dam) in headwater tributaries to serve multiple uses, both instream and out-of-stream. The objective of the feasibility study would be to evaluate whether there is a viable site for constructing an in-channel dam on

[3] Ecology, the regulatory authority for Chapter 173-200 WAC, refrains from taking the WRPAC position in order to remain unbiased for future work.

either of the high-elevation headwater streams, and, if so, collect preliminary information that would support more detailed design-level efforts for the surface storage option(s).

Tasks proposed to be conducted in the feasibility study include:

- **Assess Water Demands.** Assess water demands within the area that could benefit from a water storage project, and how additional water supplies created through storage high in the Little Klickitat subbasin could be allocated to instream and out-of-stream demands.
- **Identify Potential Storage Site.** Evaluate, for Dry Creek and Idlewild Creek, potential location(s) for a dam based on fish and wildlife habitat, topography, geology, property ownership, permitting requirements, cultural resources, access (constructability), etc.
- **Estimate Storage Capacity.** For the identified prospective storage site, estimate volumes and timing of surplus winter water potentially available for storage by establishing, calibrating, and continuously monitoring a stream gauge at the site.
- **Assessment.** For the identified storage site, conduct planning-level assessment of the following:

1. Reservoir yield;
2. Infrastructure needs to store and transmit water;
3. Environmental impacts and need for mitigation;
4. Identification of any cultural sites;
5. Expected land ownership and permitting requirements;
6. Planning-level costs to acquire land, construct reservoir and associated facilities, and engineering;
7. Downstream uses of stored water; and
8. Water rights to divert, store, and use water.

The feasibility study report would provide the basis to evaluate project implementability and cost versus benefit, and thereby make decisions regarding whether a surface storage project in this area should proceed into a more detailed design phase.

Lead Entity for Implementation: Klickitat County.

Schedule for Implementation: Klickitat County has been invited to submit a formal application for grant funding to conduct the feasibility study. Applications that are approved for funding by Ecology's Technical Advisory Group will require legislative approval of a funding package under the Columbia River Basin Water Supply Development Account by spring 2009, with negotiation of a grant agreement for funded projects by summer 2009.

Other Water Storage Opportunities

The 2003 WRIA 30 water storage screening assessment report identifies a range of conceptual water storage opportunities, in addition to those outlined above, that could be

carried forward and developed in greater detail by one or more of the Implementing Governments, or other entities, based on future water need priorities. In defining water needs that may be met through storage, it is important to note that there is a state statutory preference for storage projects that serve multiple purposes rather than a single purpose (RCW 90.54.020).

The WRPAC will continue to evaluate how water storage can be used to help meet emerging priority water demands in the WRIA.

Lead Entity for Implementation: Implementing Governments and WRPAC.

Schedule for Implementation: Ongoing.

5.1.1.5 Municipal Demands and Use of Inchoate Rights

RCW 90.82.048 RCW requires that the DIP address the planned future use of municipal inchoate water rights. The evaluation of municipal water demands and water supplies in WRIA 30, including inchoate water rights in accordance with RCW 90.82.048, is drawn primarily from DOH-approved water systems plans prepared by the municipal purveyors. The two largest municipal purveyors in WRIA 30, City of Goldendale and Klickitat PUD, are both Implementing Governments actively participating in implementation of the WRIA 30 Watershed Management Plan. Water system plans are evaluated during the DOH approval process to ensure they are not inconsistent with watershed plans.

The following subsections outline the current status of inchoate water rights held by the municipal water systems in WRIA 30.

City of Goldendale

Based on its current water system plan (Wilson Engineering, 2004), the City holds inadequate water rights (annual volume) to meet its projected 20-year demand. The City's inchoate water rights will be fully consumed to meet its projected future municipal water demands in the next 20 years.

The City is working with state DOH for approval of an amendment to their 2004 water system plan. The amendment documents reduced water loss through system improvements and conservation, and therefore increases the number of equivalent residential units (ERUs) that can be served with the existing supply capacity and water rights. The amendment does not update demand projections.

The City will continue to take the lead pursuing additional water rights and additional source capacity and storage in accordance with its water system plan. The City is currently evaluating the feasibility of using ASR, as described in Section 5.1.1.4.1. Storing seasonally available water to help offset peak water demands is a key priority of the WRIA 30 Watershed Management Plan.

Klickitat PUD Water Systems

The PUD's existing water system plan (John Grim and Associates, 2003) describes the water right situation for each of its six Group A water systems within WRIA 30; this information is summarized briefly below.

- **Glenwood:** The PUD holds inadequate water rights (annual volume) to meet its currently projected 20-year demand for the Glenwood water system; therefore there are no inchoate water rights for this system to be addressed in this DIP.
- **Ponderosa:** The Ponderosa water system's current demand is essentially at its certificated water right; therefore there are no inchoate water rights for this system to be addressed in this DIP.
- **Rimrock:** The existing water rights exceed the projected 20-year demand, which equates to full development of the planning area. Assuming the currently available 20-year demand projection, approximately 20 gpm and 60 acre-feet/year of the certificated water rights are inchoate. However, construction of new storage capacity has eliminated water-use restrictions in Rimrock, which may increase demand relative to the 2003 projections.
- **Klickitat:** Following a recent water right transfer, the PUD holds sufficient water rights to meet its projected 20-year demand. Assuming the currently available 20-year demand projection, the approximately 640 gpm and 777 acre-feet/year of the certificated water rights are inchoate.
- **Wishram**: The PUD is in process of working with Ecology to resolve a water right transfer to remedy its water right situation. There are no inchoate water rights for this system to be addressed in this DIP.
- **Lyle:** The Lyle water system originally consisted of two permitted wells (Railroad Well and the Homer James Well) located within the two different hydraulic pressure zones in the town of Lyle. The wells have since been replaced by two different wells, the Upper Well and Lower Well. Following review of the PUD's transfer application, Ecology raised concerns about the replacement wells being in the same body of public groundwater – separated by a regional fault that may act as a barrier to groundwater flow. The PUD is currently in the process of working with Ecology to resolve the issue. If approved and conformed for municipal use under RCW 90.03.560, the domestic portion of those transfers would meet the 20-year projected demands for the system. There are no inchoate water rights for this system to be addressed in this DIP.
- **Former Goldendale Aluminum Water Right:** A water system plan is currently in development for the former Goldendale Aluminum water right, which has been transferred to PUD for municipal supply. The water system plan will contain projected demand over a 20-year development schedule. As mandated by Ecology, the water right must be put to beneficial use by 2028.

The PUD will continue to take the lead pursuing additional water rights and additional source capacity and storage to meet projected water demands, in accordance with its water system plans.

Other Group A Water Systems

Other Group A water systems in WRIA 30 were identified through the database maintained by the state DOH. As described in Section 4.1, letters to all Group A purveyors were sent in June 2007, requesting information on the status of their water supplies relative to current and future demands. Attempted followup communications with the purveyors in January 2008 indicated that the majority of the contact information

in the DOH database is inaccurate. Communication with local consulting engineers indicates that the Dallesport Water Association is currently updating their water comprehensive plan. Thus, new projected water demand quantities will be available soon. Attempts to contact other Group A systems (Murdock Water; Prospect Water Association; Dallesport Domestic Water Sharers; Dallesport Mobile Home Park; Mountain View Association) have been unsuccessful. The letters were mailed again via certified mail to the best available contacts in January 2008. Klickitat County will continue to try to contact each of the Group A water systems.

The Port of Klickitat is currently updating its water system plan to include the Columbia Gorge Regional Airport (CGRA), which is jointly owned by Klickitat County and the City of The Dalles, Oregon. The CGRA holds a municipal water right authorizing a maximum instantaneous withdrawal of 615 gpm and annual volume of 750 afy, which is appurtenant to the airport property. The airport has recently completed a replacement well with capacity in excess of that water right. Once approved by DOH, the combined water system will serve the airport and other existing commercial operations within the Port/Airport service area as well as future development plans including a large resort development currently in the permitting process. The update to the Port's water system is not complete, therefore a current estimate of inchoate water rights is not available. Based on existing information (Dallesport Area Water System Plan; KCM, 1999), the Port and CGRA hold inchoate water rights which will support future residential and commercial development in the Dallesport area.

The Klickitat PUD has agreed to take over operations of the Port of Klickitat's water treatment plant, which currently serves Port property. There has been preliminary discussions regarding further consolidating the several public water systems within the Dallesport area, under PUD operation; however, there is no agreement to do so at this time.

Consolidation of Permit-Exempt Water Rights (RCW 90.44.105)

In situations where a municipal water system expands its water service area to encompass permit-exempt well(s), valid permit-exempt water rights can be consolidated into the purveyor's water right. The consolidation is subject to the conditions in RCW 90.44.105, including the exempt right being for withdrawal from the same body of groundwater as the purveyor's water right and proper decommissioning of the exempt well. The quantity of water from the exempt right to be added to the purveyor's right is not less than 800 gallons per day, which, depending on the water system's average daily use, can equate to one or more ERUs.

Lead Entity and Schedule for Implementation: The individual municipal water purveyors will continue to take the lead pursuing additional water rights and additional source capacity and storage to meet projected water demands, in accordance with their DOH-approved water system plans, which are to be updated every 6 years. The PUD's Rimrock and Klickitat water systems hold inchoate water rights exceeding their currently projected 20-year demands. These inchoate rights will be put to beneficial use as future demands increase above those projected in the current water system plan. As mentioned above, Klickitat County will take the lead continuing to try to make contact with the remaining Group A water systems in WRIA 30.

5.1.2 Climate Fluctuation and Water Availability (Moderate Priority)

The Watershed Management Plan emphasizes improving the ability to identify impending drought in WRIA 30 as the initial action. Currently, state drought forecasting focuses on the Yakima River basin. However, drought conditions may occur in WRIA 30 differently from in the Yakima basin, due to the unique hydrologic characteristics of WRIA 30 (e.g., reliance on snowmelt in the lower elevation Simcoe Mountains). Furthermore, the watershed currently has no significant storage capacity and is particularly vulnerable to drought. Chapter 173-166 WAC allows for declaration of drought emergency for individual WRIAs.

Identification of impending drought within WRIA 30 includes implementation of the following actions:

- Installation and operation of a snowpack monitoring (SNOTEL) site in the Simcoe Mountains, the headwaters of the Little Klickitat River. Installing a SNOTEL station is a key recommendation of the WRIA 30 Watershed Management Plan, as currently there are no snowpack measurements being taken and recorded in the Little Klickitat subbasin. Project partners include the City of Goldendale, who will provide a site for the SNOTEL station and maintain access, and the National Resource Conservation Service (NRCS) who will install the station. Additional funding is required for NRCS' long-term operation and maintenance of the station.
- Installation and monitoring of additional stream gauging stations in the Little Klickitat subbasin (refer to Section 5.1.3).
- Installation of other climate and hydrologic monitoring, as warranted based on data from the SNOTEL station and new streamflow gauges, to aid in prediction of drought conditions within WRIA 30.

The data collected will be used to develop a correlation between winter snowpack and summer streamflow in the Little Klickitat subbasin. This information can also be extrapolated to other WRIA 30 rivers and streams for which streamflow gauging data are available.

Using the correlation information, the snowpack information as of March 1 can be used to forecast impending drought conditions for the subsequent summer, specific to WRIA 30, which, because of its unique characteristics, may be different from that occurring in elsewhere in the state. The Implementing Governments can then inform the Governor's office regarding impending drought for WRIA 30 and, if needed, request declaration of a drought emergency for WRIA 30.

Once the Governor declares an emergency, the emergency response actions listed in Section 5.2.3 of the Watershed Management Plan are available for implementation as appropriate. Under Chapter 173-166 WAC, applications to Ecology for emergency drought permits, water transfers, or funding assistance be processed only for previously established activities that, if required, are conducted under a valid water right or registered water right claim.

For example, the City of Goldendale currently has a pending water right application for an emergency standby reserve permit for their Dingmon well. Making available a deep

groundwater well to supplement the City's springs source during a drought is an emergency drought response action that is consistent with the Watershed Management Plan. The Implementing Governments and WRPAC therefore request that Ecology process the application.

Lead Entity for Implementation: Klickitat County with CKCD and City of Goldendale.

Schedule for Implementation: This is a long-term action item to allow for forecasting of droughts on an annual basis, and also measure longer-term trends in snowpack and streamflow. The initial implementation actions are establishing collection of fundamental data to support the long-term decision making, including an intergovernmental agreement, including necessary easement agreements, between the lead entities for implementation.

The Simcoe Mountains SNOTEL station will be sited and installed in 2008, with the first data collected during the 2008-2009 snow season. The Little Klickitat River stream gauges are planned to be installed in 2008. Funding has been obtained to conduct calibration (rating curve development) of the streamflow gauges.

Analysis of the data to develop snowpack/streamflow correlations supporting drought forecasting will commence once the stations are fully operational and calibrated. It is expected that a minimum of five years of data will be required before correlations are attempted (e.g., starting by 2013).

By July 2009, the City will resume discussion with Ecology regarding processing of the City's application for a standby reserve water right for the Dingmon well.

5.1.3 Summer Streamflow in the Little Klickitat River (Moderate Priority)

The Watershed Management Plan identifies an objective of increasing summer stream flow in the Little Klickitat River to the extent that is reasonably possible, while balancing the needs of competing demands. Actions taken to address this issue also will help to address the elevated water temperature problem for the Little Klickitat River, described in Section 5.2.1 of this DIP.

There are substantial data gaps regarding the causes of low summer flows in the Little Klickitat basin. Conducting studies to fill data gaps regarding the hydrology of the Little Klickitat, and how the hydrology has changed over time, is the initial action to be taken to better understand causes of the low flow. Once the causes are understood, better-informed decisions can be made regarding actions that can have the greatest benefit/cost ratio in terms of improving flows.

5.1.3.1 Address Data Gaps Regarding Little Klickitat River Hydrology

A comprehensive hydrologic study of the Little Klickitat River subbasin is needed as the first step to address low flows in the river. This includes stream gauging to better document current surface water hydrology, more detailed evaluation of existing hydrogeologic information to better understand aquifer conditions, update of the subbasin water budget including actual water use, and more detailed review of available historical

information to allow qualitative assessment of historical land use and flow conditions relative to current conditions.

Early implementation actions include Ecology's siting, installation, calibration, and operation of a continuous-reading streamflow gauge near the mouth of the Little Klickitat River (Gauge 30C070; "Little Klickitat near Wahkiacus"). The streamflow data from this gauge are publicly available online (https://fortress.wa.gov/ecy/wrx/wrx/flows/station.asp?sta=30C070).

In addition, Klickitat County and CKCD have obtained funding to site, install, and calibrate two additional streamflow gauges on the Little Klickitat River: one at Hanging Rock Road and a second upstream near the headwaters.

City of Goldendale is also operating a calibrated streamflow gauge within the City limits, at Tom Miller Road.

The historical flow gauging data (discontinuous through 1981) and new flow gauging data will be incorporated into a comprehensive study of the subbasin hydrology, with significant emphasis on groundwater-surface water continuity. The study will include all the basic elements of the water availability study described in Section 5.1.1.1.1, some of which have been prepared, with a supplemental detailed streamflow gauging program to more definitively document groundwater contribution to summer baseflow in the river. The scope of the hydrologic study would be prepared in consultation with Ecology staff.

Information from the hydrologic study will be synthesized to provide a conceptual model of the source(s) of water sustaining summer baseflows in the Little Klickitat River, and how natural conditions and water use in the subbasin affect those flows (inferred from groundwater-surface water continuity and water budget findings). It will also provide the basis to determine projects that are likely to have the greatest benefit for improving summer low flows in the river.

Based on the findings of the comprehensive hydrologic study, a subsequent step will be to identify those actions that have the greatest potential benefit for Little Klickitat River flows, as outlined in Section 5.3.3 of the Watershed Management Plan.

Lead Entity for Implementation: Klickitat County.

Schedule for Implementation: Seek grant funding to develop a scope of work for the comprehensive hydrologic study, in consultation with Ecology, by July 2009.

5.1.4 Statutory Changes (Moderate Priority)

The Watershed Management Plan recommends two changes to state statute that are needed to effectively meet the water quantity objectives of the Watershed Management Plan.

5.1.4.1 Statutory Change for Consultation Process Specified in WAC 173-563-020(4)

Under WAC 173-563-020(4), any application for a new water right from the mainstem Columbia River that is considered for approval or denial after July 27, 1997, will be evaluated for possible impacts to fish and existing water rights in consultation with local,

state, and federal agencies and Indian tribes. The lack of specificity regarding the process and timing for the agency/tribe consultation has hindered processing of Columbia River water right applications.

The Watershed Management Plan recommends pursuing a statutory change to clarify the consultation process for processing applications for new Columbia River water rights. The WRPAC recommends that legislation be drafted to define the Columbia River water right application consultation process under Chapter 173-563 WAC to be the same as the consultation process established for voluntary regional agreements in RCW 90.90.030(4)(a). That is, establish a 60-day period for consultation with county legislative authorities, local Watershed Management Planning units, WDFW, affected tribal governments, and federal agencies, for applications that are not covered by an approved voluntary regional agreement or otherwise covered by statute. The proposed change would require coordination with state Legislators to draft a bill.

Lead Entity for Implementation (both proposed changes): Klickitat County and CKCD.

Schedule for Implementation: Begin coordination with Legislators so that the bill can be acted on during the 2009-2011 biennium.

5.1.4.2 Statutory Change for Pumping Water to Off-Channel Livestock Watering Sources

The Watershed Management Plan identifies as an action item to facilitate development or modification of statute (e.g., RCW 90.03 or RCW 90.22) that will codify Ecology's existing policy POL-1025 regarding conveyance of stock water away from a stream. The proposed change would require coordination with state Legislators to draft a bill. This item should be included in the annual report to the legislature as provided for under RCW 90.82.043(5) until it is addressed.

Lead Entity for Implementation (both proposed changes): Klickitat County with CKCD, in consultation with Ecology.

Schedule for Implementation: Begin coordination with Legislators so that the bill can be acted on during the 2009-2011 biennium.

5.2 Water Quality

5.2.1 Little Klickitat River Temperature (High Priority)

The Watershed Management Plan sets a goal to reduce Little Klickitat water temperature to state water quality standards or to an attainable level, applying an adaptive management approach. Ecology's Little Klickitat River TMDL assumes that specified targets for streamside effective shade (the surrogate for water temperature) can be achieved. Additional information is needed to verify some of the assumptions upon which the TMDL's effective shade targets are based and to identify areas to prioritize actions to improve water temperature.

The Watershed Management Plan identifies, as a first step, conducting a comprehensive assessment to refine estimates of attainable shade and water temperatures using

appropriate methodologies. The assessment will address current flow conditions, site conditions (e.g., sediment, width/depth ratio, shade), attainable shade, and best estimates of natural shading. A detailed scope of work for the assessment is in preparation.

Klickitat County has applied for state grant funding (2007-2009 biennium) to conduct elements of the assessment including documenting baseline shade conditions and conducting a preliminary assessment of recent historical changes in riparian vegetation (as an indicator of shade). Specifically, the grant application provided for:

- Digitizing historical aerial photography to develop a GIS coverage of stream-adjacent vegetation and use GIS analysis to track changes in vegetation extent over time;
- Conducting field measurement of shade and correlating it to the level of canopy cover based on the GIS coverage. Stream aspect will also be documented at each measurement location;
- Extrapolating the correlation of shade measurement versus GIS-estimated canopy cover to stream reaches where actual shade measurement data is lacking; and
- Using the findings from the analysis, identify candidate areas for planting streamside vegetation or implementing riparian vegetation protection measures to improve existing shade.

These proposed actions represent a component of the overall assessment of attainable temperature.

Based on the assessment findings, actions will be identified that have the greatest potential benefit for Little Klickitat River temperature. The Watershed Management Plan's Section 6.1.1 describes several recent actions that have been implemented to address Little Klickitat River water temperature, and Section 6.1.3 identifies additional actions that could be implemented in an adaptive management approach guided by collection of additional information and cost/benefit analysis.

Lead Entity for Implementation: Klickitat County with CKCD, in consultation with Ecology.

Schedule for Implementation: By August 2008, prepare for Ecology review and discussion a draft work plan for the water temperature assessment.

5.2.2 Nitrates in Groundwater (Moderate Priority)

Elevated concentrations of nitrate in groundwater are a water quality issue identified in the Watershed Management Plan. Klickitat County Health Department has jurisdiction to address this issue in the watershed. Klickitat County Health Department monitors nitrates in groundwater in two general ways.

First, samples of water from potable water supply sources are collected for nitrate analysis as part of the water availability review for building permits and for approval of community water systems. If the nitrate result from a single family domestic well sampled for a building permit exceeds the 10 mg/L nitrate drinking water standard, the Health Department provides information regarding nitrate in drinking water to the applicant. Nitrate concentrations must meet drinking water standards for a community water system to receive source approval from state Department of Health.

Second, the Health Department provides information and recommendations to pregnant women through the Health Department's Women, Infant, Children Nutrition (WIC) and Maternity Support Services programs to test their drinking water if its source is a domestic well (not a community water system).

The County Health Department performs analytical testing of water for nitrate in its local labs (Goldendale and White Salmon), and conducts ongoing public education and communications regarding health effects of nitrate in drinking water. These programs will continue. The County Health Department will keep the State Department of Health informed regarding the programs.

Lead Entity for Implementation: Klickitat County Health Department.

Schedule for Implementation: Ongoing.

5.2.3 Swale Creek Temperature (Low Priority)

5.2.3.1 Water Quality Improvement Plan

The Watershed Management Plan identified developing a water quality improvement plan modeled on Ecology's 4B approach to address water temperature in Swale Creek. The water quality improvement plan must meet the following criteria to be considered a 4B plan:

- Be waterbody- and problem-specific, and contain enforceable actions stringent enough to attain water quality standards[4];
- Have reasonable time limits for correcting the specific problem, including interim targets where appropriate;
- Have a monitoring component, with adaptive management built in to allow for future changes in approach if warranted based on the monitoring information;
- Be feasible and have enforceable legal or financial guarantees that implementation will occur; and
- Be actively implemented and show water quality improvement in accordance with the plan.

A draft water quality improvement plan will be submitted for Ecology review to ensure it meets the required criteria. Primary actions to include in the water quality improvement plan include:

- Maintain and/or enhance existing shade; and
- Evaluate potential to increase shade through modification of the existing railroad bed or placement of instream structures to capture sediment that may support vegetation.

The plan will include evaluation and prioritization of reaches of the stream where action would be expected to provide the greatest instream temperature reduction benefit for the

[4] When the natural condition exceeds numeric temperature standards, a narrative criterion applies, limiting human sources of warming to cumulatively increase the water temperature by no more than 0.3°C (0.54°F) (WAC 173-201A-200[1][c][i]).

cost expended. The Watershed Management Plan places strong emphasis on cost-effectiveness for actions taken to address Swale Creek water temperature.

Klickitat County and CKCD have applied for multiple state grants for the 2007-2009 biennium to fund initiation of the Swale Creek water quality improvement plan. The grant applications to start preparation of the water quality improvement plan, and conduct an analysis of historical shade conditions along portions of the creek, were not funded. Grants have been approved to conduct the following activities related to Swale Creek water temperature:

- Siting and installation of three continuous-reading streamflow gauges on Swale Creek, to document seasonal and long-term flow conditions in the creek.
- Siting and installation of a monitoring well in the alluvium of Swale Valley, to provide improved understanding of the relationship between alluvial aquifer groundwater levels in the Swale Valley and streamflows in Swale Canyon downstream of it.
- Stream shade study, including mapping vegetation in Swale Valley and Canyon.
- CKCD currently conducts surface water temperature monitoring near the mouth of Swale Creek and upstream at the Harms Road crossing. Continuation of this work will be funded under pending grants.

Lead Entity for Implementation: Klickitat County, as lead agency, with WRPAC, and in consultation with Ecology.

Schedule for Implementation: Ongoing. Funding will be sought for the next biennium to start preparation of the Swale Creek water quality improvement plan.

5.2.4 Elevated Fecal Coliform Levels (Low Priority)

5.2.4.1 Implement Additional Monitoring Program

A monitoring program will be implemented to confirm whether elevated fecal coliform levels exist in surface waters of the Little Klickitat River and Swale Creek subbasins, and, if so, identify source(s) of fecal coliform.

The CKCD currently collects routine fecal coliform samples at four sites within the Little Klickitat subbasin. These include three sites on Little Klickitat River (at Hanging Rock Road, at Olsen Road, and near the mouth), and one site on Bloodgood Creek near its confluence with the Little Klickitat River. The first step will be evaluating the results of the current monitoring program with statistically-based water quality methods for fecal coliform under Chapter 173-201A WAC. All of the data collected will continue to be submitted to Ecology, and will be used by Ecology in its periodic updates to the state water quality assessment list.

If exceedances of state water quality standards are confirmed by the current monitoring program, an additional phase of sampling will be conducted to help identify likely sources of the fecal coliform. This will include sampling for additional geochemical indicators to help differentiate probable sources, and, if warranted, can expand the number of monitoring locations to encompass other waterbodies in the WRIA.

If a waterbody is determined to be impaired by fecal coliform, a water quality improvement plan modeled on Ecology's 4B approach will be developed to address the situation. A list of possible actions that can be incorporated into a water quality improvement plan is included in Section 6.4.3 the Watershed Management Plan.

Lead Entity for Implementation: CKCD with assistance from the City of Goldendale's analytical laboratory. If a water quality improvement plan is required, the lead entity will be Klickitat County with WRPAC, and in consultation with Ecology.

Schedule for Implementation: Ongoing.

5.3 Fish Habitat

This section discusses actions related to fish habitat, focusing on habitat issues not previously addressed in the DIP. Two fish habitat issues are identified in the Watershed Management Plan. These are 1) fish habitat protection and/or restoration, and 2) the potential effects of population growth and population movement on fish habitat. Approaches described previously addressing water quality and water quantity can also serve to restore and protect fish habitat. The reader is referred to Sections 5.1 and 5.2 for a discussion of strategies and actions that address stream flow and water temperature.

5.3.1 Fish Habitat Protection and/or Restoration (High Priority)

Fish habitat protection and/or restoration was given a high priority in the Watershed Management Plan. The stated preference in the Watershed Management Plan is to identify issues and develop approaches to resolve those issues based on quality data. Due to the scarcity of quality fish habitat data for the WRIA, the approach identified to address fish habitat restoration and protection options relies on extensive data collection efforts to be conducted during implementation of the Watershed Management Plan. Specific projects to be implemented will be identified based on the results of those studies.

The Watershed Management Plan identified an approach to addressing the issue which included the following actions:

- Address data gaps;
- Identify and implement potential restoration projects;
- Protect habitat through existing regulations and voluntary programs;
- Public education; and
- Monitoring and adaptation of the Plan to new information.

These steps follow an adaptive management approach to meeting the goals of the Watershed Management Plan. Assessment of current conditions and factors affecting those conditions is the first step of adaptive management. This information is used to identify actions and develop plans to address situations of concern. Projects are identified and implemented. Monitoring of trends and of effectiveness of specific projects is conducted. Monitoring data is analyzed and a determination regarding the effectiveness of the program is developed. The program is then modified as needed based upon the results of the assessment of effectiveness.

Public education activities are discussed elsewhere in this document. The approach to completing the other actions related to fish habitat protections and/or restoration is discussed below.

5.3.1.1 Data Gaps

Quality data regarding fish habitat and situations affecting that habitat in WRIA 30 is sparse. Hence, the Watershed Management Plan specifies an approach which includes the data collection and analysis needed to identify those situations that are having the greatest impact on fishery resources. The investment in upfront data collection and analysis is expected to result in substantial savings during project implementation.

The Watershed Management Plan specifies that "*Data collection efforts must be developed using statistically robust methods and must include a quality assurance process. Data collected must be publicly available to ensure that the information can be used to identify projects, to facilitate monitoring of success against the goals of this action item, and to reduce redundancy of efforts, as well as to provide opportunity for critical review and validation. All data, with sample sites, methods, quality assurance data, data analyses, and discussion and conclusions must be provided in a publicly available format*." The approach outlined below incorporates these goals for data quality.

The Watershed Management Plan outlines an approach which includes collection of the quality data to describe current habitat conditions, identification of key habitat factors limiting fish populations, identification of the land uses and/or other habitat forming processes affecting those limiting habitat factors, identification and prioritization of projects that address the limiting habitat factors, and implementation of projects that are expected to have the greatest benefit to fish populations. The Watershed Management Plan also calls for monitoring fish population size, productivity, and other factors affecting population dynamics. Hence, the following sections address:

- Quality Assurance;
- Current habitat conditions;
- Limiting habitat characteristics and processes affecting those characteristics; and
- Fish population abundance, productivity, spatial structure, and diversity

Quality Assurance

Quality assurance plans are an important part of the data collection process. These plans help to ensure that the data are collected using appropriate protocols and are thoroughly documented. Specifically, quality assurance plans list the goals and objectives of a study, identify the type and quality of data needed, describe the sampling and measurement procedures to acquire those data, and describe the quality control and assessment procedures needed to ensure that the study objectives are met.

Prior to initiating any data collection project, a quality assurance plan is to be developed. The plans will at minimum meet the requirements outlined in Ecology's Guidelines for Preparing Quality Assurance Project Plans for Environmental Studies (Ecology, 2004) and will meet the standards specified in the State's Quality Assurance Monitoring Plan Addressing Status and Trends Monitoring for Watershed Health and Salmon Recovery (Ecology, 2006c). Quality assurance for the collection of water quality data will at

minimum meet Ecology's Water Quality Policy 1-11, section 7, Data Quality Assurance (Ecology, 2006a, which includes the use of a state certified laboratory for any analysis of water quality samples.

Current Habitat Conditions

Documentation of current habitat conditions will provide valuable information regarding areas which are currently in good condition and areas that are impacted by one or more factors. Key components to fish habitat include:

- Stream flow;
- Instream wood size and abundance;
- Pool size and abundance;
- Cover;
- Water temperature;
- Nutrient concentrations;
- Prey availability;
- Passage barriers;
- Overall volume and condition of spawning areas; and
- Overall volume and condition of rearing areas.

DEVELOP PROTOCOLS FOR ASSESSING HABITAT CONDITIONS

Inventories of current habitat within the management area will be developed. These inventories will include a quantification of the volume of rearing and spawning habitat, an assessment of prey available to fish, and summer stream temperature. Information collected during the inventories will include data regarding habitat quality for the parameters listed above plus general descriptions of channel morphology such as stream gradient, stream width, and observations of bank erosion, channel braiding, sediment deposition, and sediment scour.

Details of the methodology used to document current habitat conditions, including sampling design, will be developed during implementation and should be consistent with the Washington Comprehensive Monitoring Strategy for Watershed Health and Salmon Recovery (Monitoring Oversight Committee, 2002).

It is unlikely that sufficient funding will be available to conduct a complete survey of all fish habitat in the WRIA. Hence, data collection efforts will have to be prioritized and subsampled. Priority will go to subbasins or parts of subbasins where anadromous species, including salmon, steelhead, and lamprey, are present and/or where land use has the greatest potential to affect fish habitat. Priority areas are likely to include fish bearing waters of the mainstem Klickitat River, the Little Klickitat River, and Swale Creek. Subsampling of sites within priority areas will likely be necessary.

Generally, it will be more cost efficient to collect all of the needed information within one area at a time than it would be to collect part of the data over a broader area. Hence, collection of all of the data within priority areas is preferred over collection of a portion

of the data over a larger area. However, funding constraints may necessitate restrictions in the amount of data collected at sampled sites. Documentation of substrate, pools, instream wood, stream temperature, and shade will take precedence over data collection for nutrients, prey levels, and scour depth.

Lead Entity for Implementation: Klickitat County with assistance from the CKCD and in consultation with the state caucus.

Schedule for Implementation: Within 1-year after adoption of this DIP, Klickitat County, in coordination with the WRPAC, will develop a list of priority project areas for assessment and analysis. Priority will be given to areas with anadromous fish (i.e., salmonids and lamprey) and/or areas where land use has the greatest potential to affect fish habitat (residential or anadromous). Within 2 years, the County will also scope and pursue funding for conducting fish habitat assessments for the top-priority area(s). Implementation of habitat assessment studies will then be conducted as appropriate funding is received.

Limiting Habitat Characteristics and Processes Affecting Those Characteristics

The Watershed Management Plan provides a process for identifying habitat protection and restoration projects that are likely to have the greatest benefit to fish populations in the Klickitat basin. The preferred approach is to identify factors limiting fish production and then identify cause(s) of the identified limiting factors. This information would then be used to develop a list of priority projects that would be implemented as funding becomes available. The adaptive management process (see Section 5.3.1.4) will be used to monitor progress and effectiveness and to guide changes in approach if needed.

LIMITING FACTORS

The Watershed Management Plan specified an approach to identifying limiting factors which followed the ecological concepts described by Hall and Field-Dodgson (1981) and Nickelson, et al. (1992). These authors refer to limiting factors as the habitat required to support a particular life stage of a species but is in the shortest supply relative to habitats required to support other life stages. Limiting factors can include rearing habitat characteristics, spawning habitat characteristics, prey availability, migration barriers, competition with other fish populations, harvest, and out-of-basin effects. Further discussion of limiting factors within this concept is provided in the Watershed Management Plan.

At present, the SHIRAZ model (Seuerell, et al., 2006) and Oregon Department of Fish and Wildlife's carrying capacity model (Nickelson, et al., 1992) provide the best approaches to identifying limiting factors and estimating carrying capacity of the habitat for salmonids. These models utilize the habitat data described in the previous section. Other, potentially preferable, approaches may become available in the future.

IDENTIFICATION OF HABITAT FORMING PROCESSES

The limiting factor analysis described above will identify those habitat factors that are in shortest supply. Factors affecting the productive capacity of fish populations may vary between subbasins. Once the factors limiting production are known, an assessment will be conducted to determine the natural and/or anthropogenic processes and actions that are having the greatest effect on the limiting factor(s).

The preferred approach to completing the assessment will depend upon the factor(s) identified. Analyses will focus on the primary limiting factor identified and will strive to identify sources. Some potential approaches were discussed in the WRIA 30 Management Plan. New approaches are becoming available. A detailed study approach will be developed once the limiting factor(s) are known and funding becomes available.

If any of the factors unrelated to habitat in the WRIA are determined to be the primary limiting factor (e.g. ocean conditions, hatcheries, harvest), coordination with appropriate management agencies to encourage actions that address those issues may be necessary.

Lead Entity for Implementation: Klickitat County supported by CKCD, in consultation with the state caucus. In addition, the Klickitat Lead Entity strategy identifies and prioritizes salmonid limiting factors, habitat forming processes, and actions for purposes of guiding voluntary salmon habitat restoration actions and for evaluating projects proposed for SRFB funding. Information obtained through the following actions will help to inform the lead entity process as well as support implementation of the WRIA 30 management plan.

Schedule for Implementation: Once the baseline aquatic habitat data has been collected, Klickitat County will pursue completion of the limiting factors analysis and site-specific source assessments. Project schedules will be dependent upon the receipt of funding. This is a high priority for obtaining funding.

Passage Barriers

Elimination of manmade passage barriers has been a major focus of the Washington Department of Transportation, Washington Department Natural Resources, Klickitat County, and timber companies in recent years. The majority of the manmade physical barriers to anadromous fish passage previously present in the WRIA have been addressed. A few manmade barriers to anadromous fish likely remain, but the County, forest industry, and State have programs in place to address them. Some anadromous passage barriers may be present on private roads. These will be assessed during habitat surveys described previously. Assessments will be compatible with the WDFW Fish Passage and Surface Water Diversion Screening Assessment and Prioritization Manual (WDFW, 2000). Any manmade anadromous passage barriers that are identified will be brought to the attention of the owners. Where such barriers are privately owned, efforts will be made to enlist the cooperation of the owner to address the situation. WDNR's fish passage restoration program for small forestland owners may be a source of assistance to these landowners under some circumstances.

The frequency with which steelhead pass above the Little Klickitat Falls needs to be assessed. The falls may be passable to steelhead under some restricted conditions (high flows during the migration period). The frequency that passable conditions exist and the number of fish passing the falls during such times needs to be evaluated to help determine the relative importance of the Little Klickitat River to steelhead production in the WRIA. Due to flow conditions and the low number of fish expected to pass the falls, physical monitoring of passage through weirs might not be feasible due to difficulties with deployment and cost. Efforts to identify a cost-effective means to evaluate upstream passage will continue.

Lead Entity for Implementation: Klickitat County in consultation with the state caucus.

Schedule for Implementation: When manmade fish barriers are identified, the pertinent landowner will be contacted and efforts will be made to attain the cooperation of the landowner. Assistance will be provided to the landowner regarding possible sources of funding.

Fish Population Abundance, Productivity, Spatial Structure, and Diversity

In the past, available information regarding fish populations and estimates of catch were limited. The situation has improved in recent years. Some documentation of upstream and downstream movement of salmonid species has become available and more may become available in the future. There are no known data addressing lamprey population size. Klickitat County will continue to coordinate with the WDFW to obtain data useful for developing estimates of population size. Population estimates will be compared to estimates of carrying capacity in the basin to determine if the primary limiting factors are in-basin or out-of-basin effects.

Documentation of fish harvest, run size, and productivity could be improved. Klickitat County will coordinate with WDFW to try to attain needed improvements.

Lead Entity for Implementation: Klickitat County in consultation with the state caucus.

Schedule for Implementation: Klickitat County will continue to coordinate with WDFW to obtain annual updates on fish trapping data.

5.3.1.2 Identify and Implement Restoration Projects

Once the limiting factors in the WRIA and the site-specific land uses affecting those factors are known (see above sections), a list of priority projects will be developed. The projects will be drawn from the results of the assessments and will be prioritized based on the expected benefits to fish. Projects may include a wide range of possible actions, depending upon the limiting factor that is to be addressed. Projects will be completed as funding is obtained.

Prior to the completion of analyses, project implementation will be encouraged to address known problems areas. Specifically, temperature in the Little Klickitat River is known to be high. Projects that implement the Little Klickitat River Watershed Temperature TMDL plan (Ecology 2005a) are currently considered high priority projects.

The Klickitat Lead Entity strategy will be used to obtain Salmon Recovery Funding Board (SRFB) funding. Other funding sources will also be sought.

Lead Entity for Implementation: Klickitat County and the Conservation Districts, and coordination with the Klickitat Lead Entity Organization.

Schedule for Implementation: The WRPAC will prioritize projects once analyses are completed. Priority projects will be implemented as appropriate funding is received. Klickitat County will work with the annual Lead Entity Process to facilitate coordination with other entities in the region and to work towards obtaining project funding.

5.3.1.3 Habitat Protection

The following actions will be implemented:

- Develop public education program to inform landowners of processes affecting fish habitat; and
- Assist landowners with habitat protection projects (e.g. projects to protect riparian habitat, water quality).

Lead Entity for Implementation: Conservation Districts with assistance from Klickitat County and the state caucus.

Schedule for Implementation: The Conservation Districts have been working with local residents to implement priority projects for many years. The Conservation Districts will continue to solicit landowner cooperation in the implementation of priority projects. The Conservation Districts will also coordinate with other basin entities to seek opportunities to provide public education and support for voluntary habitat protection projects.

5.3.1.4 Monitoring and Adaptive Management

Trends in Habitat over Time

Once the initial collection of data has been completed, representative sites will be selected to be monitored over time to assess relative changes in habitat quality in the WRIA. Data collection efforts will follow methods used in the original data collection effort and the QA/QC procedures developed for the assessment. Data collection methods will meet the guidance provided in the State's Comprehensive Monitoring Strategy (Monitoring Oversight Committee, 2002). Habitat data should be collected periodically (5 year intervals is preferable) to document trends in habitat quality. All data will ideally be incorporated into a GIS database, where practicable, to allow for assessment of trends. The frequency that data collection efforts are conducted to monitor trends will be dependent upon funding. Priority for funding will go to filling existing data gaps regarding land use effects on fish habitat (see next section) and documentation of effectiveness of implemented projects. Monitoring of trends will be conducted when funding becomes available.

Trends in Population Size and Population Productivity

Klickitat County will continue to coordinate with the WDFW to obtain data useful for monitoring population trends. The county will coordinate with WDFW to try to attain needed improvements.

Evaluation of Monitoring Data and Adaptation of Plan

All monitoring actions will include a requirement for reporting of results. Monitoring data will be evaluated to determine the efficacy of the program. Evaluation of monitoring data may suggest a need to modify the Watershed Management Plan or the Detailed Implementation Plan in order to meet the plan objectives.

As described in Section 3.4, the WRPAC will annually review progress against the plan and information obtained through studies and monitoring to determine if objectives of the plan are being met. The WRPAC may make recommendations for modifications of the Watershed Management Plan and/or the Detailed Implementation Plan if the available

information suggests that adjustments to the plans are necessary. Recommendations will be forwarded to the Initiating Governments for consideration. Upon concurrence of the Initiating Governments, the WRPAC will pursue amendment of the plan(s) following the plan approval procedures outlined the management plan.

Lead Entity for Implementation: WRPAC and Klickitat County supported by CKCD and in consultation with the state caucus.

Schedule for Implementation: Klickitat County and the CKCD will continue efforts to obtain funding for monitoring. Implementation will be dependent upon the receipt of funds. The WRPAC will annually review available information to determine whether modifications to the plan are needed and will forward any recommendations to the Initiation Governments.

5.3.2 Potential Effects of Population Growth and Population Movement on Fish Habitat (Moderate Priority)

Future development might impact fish habitat through reductions in summer low stream flow, detrimental increases in peak flow, reductions in riparian shade, and/or changes in water quality. The Watershed Management Plan calls for the development of simple metrics to generally measure changes over time. These metrics would be used to trigger more in-depth investigations of the effects of land use on surface erosion, stream flow, and water quality.

The action items include the following:

- Develop and implement a simple metric (e.g. percent impervious area) which can be used to estimate potential for significant effects on peak stream flow (storm runoff).
- Identify a threshold in the metric which will trigger more in-depth evaluations of effects on peak flows.
- Develop and implement a simple metric (e.g. miles of road in the basin, acres of agricultural land, acres of higher gradient land in development, or other factors) which can be used to estimate potential for significant effects on sediment inputs.
- Identify a threshold in the metric which will trigger more in-depth evaluation of sediment inputs.
- Monitor trends in water quality (See Section 5.2).
- Using aerial photos, develop a baseline coverage and monitor trends in riparian conditions (see Section 5.2) (funding has been obtained to develop the baseline coverage).

Lead Entity for Implementation: Klickitat County supported by the CKCD.

Schedule for Implementation: Within 2 years after adoption of this DIP, Klickitat County will develop a scope and pursue funding for the development of metrics, development of baseline data, and long-term monitoring of parameters. Implementation will be conducted, under management by the County, as appropriate funding is received.

6 Summary of Organizational Responsibilities

Table 6-1 in this chapter provides a compilation of the lead entity responsibilities and schedule milestones for the initial implementation actions detailed in Chapter 5. For each issue, Table 6-1 lists the initial implementation action(s), the section of the DIP in which it is discussed, the issue priority, the responsible lead entity(ies), and the schedule milestones.

If there are any discrepancies between information presented in Table 6-1 versus that presented in the text of the respective section of the DIP, the DIP text governs.

Table 6-1 - Summary of Initial Actions to Implement
WRIA 30 Detailed Implementation Plan

070024-002-01

Issue / Initial Action Item	Priority	Lead Entity Responsibility	Schedule for Initial Actions
5.1 Water Quantity			
5.1.1 Ensure Water Supplies to Meet Current and Future Water Demands			
5.1.1.1 Estimate Water Available for Appropriation			
Refine Water Budget Estimates			
Conduct area-specific water availability assessments.		Klickitat County	Swale Subbasin: Implement monitoring in 2008-2010; report at conclusion of 2010. Lower Klickitat Subbasin, High Prairie: Prepare plan for water availability study to include High Prairie monitoring; implement monitoring in 2008-2010; report at conclusion of 2010. Little Klickitat Subbasin: Install SNOTEL and streamflow gauges in 2008; 3-5 years of monitoring; report thereafter. Columbia Tributaries, Lower Klickitat (west of river), and Middle Klickitat Subbasins: Scope water availability studies for each area in 2009.
5.1.1.2 Water Conservation			
Municipal/Residential Conservation			
Comply with the Water Use Efficiency Rule Municipal conservation actions include: - *City of Goldendale distribution pipe replacement;* - *Implementation of a tiered rate schedule.* Residential water-efficient appliance replacement program.		City of Goldendale and Klickitat PUD with assistance from Ecology and DOH	Leak repair projects are ongoing. By July 2009, pursue a funding program for residential water-efficient appliance program.
Irrigation Efficiencies			
Cost-share incentive programs. Conservation planning assistance. PUD rebates for new irrigation equipment	High	CKCD	Ongoing.
Water Re-Use and Reclamation (Gray Water)			
If warranted based on TMDL implementation, evaluate water re-use from City of Goldendale's wastewater treatment plant. Evaluate use of treated effluent from Dallesport for irrigation of local golf course.		City of Goldendale and Klickitat PUD	Ongoing, in accordance with approved water system plans and sewer plans.
5.1.1.3 Prospective WRIA 30 Water Management Program Initiate 1-year dialogue on establishing a water exchange, including coordinating with Ecology to obtain legislation or policy clarification re: putting groundwater rirghts into temporary trust.		Implementing Governments in consultation with WRPAC	A decision will be made by June 2009 regarding whether or not to create a WRIA 30 water exchange. During this period, pursue legislation or policy clarification re: temporary placement of groundwater rights into the trust program.
5.1.1.4 Develop Water Storage *Goldendale ASR* Conduct ASR feasibility study.		City of Goldendale	Feasibility study will be completed in 2008. Then evaluate whether to proceed with pilot testing.
In-Channel Storage in Idlewild and/or Dry Creeks Conduct feasibility study.		Klickitat County	Preapplication for funding submitted. Klickitat County has been invited to submit a formal application for grant funding (ongoing).
Other Water Storage Opportunities Continue to evaluate how water storage can meet future needs.		Implementing Governments and WRPAC	Ongoing.
5.1.1.5 Municipal Demands and Use of Inchoate Rights Continue to pursue additional water rights to meet future demands. Put inchoate rights to beneficial use to meet future demands. Contact remaining Group A water systems.		Individual municipal water purveyors	Ongoing, in accordance with DOH-approved water system plans. Klickitat County will take the lead continuing to try to make contact with the remaining Group A water systems in WRIA 30.
5.1.2 Climate Fluctuation and Water Availability Installation and monitoring of a snowpack monitoring (SNOTEL) site. Installation and monitoring of stream gauges in the Little Klickitat subbasin. Installation of other climate and hydrologic monitoring, as warranted. Consult with Ecology processing of the City's Dingmon well standby reserve application.	Moderate	Klickitat County with CKCD and City of Goldendale	Ongoing. Simcoe Mountains SNOTEL station will be sited and installed in 2008, with the first data collected during the 2008-2009 snow season. The Little Klickitat River stream gauges are planned to be installed in 2008. Five years of analysis data by 2013. By July 2009, City coordinate w/ Ecology re: processing application for standby reserve right.
5.1.3 Summer Streamflow in the Little Klickitat River			
5.1.3.1 Address Data Gaps Regarding Little Klickitat River Hydrology Scope a comprehensive hydrologic study of the subbasin in consultation with Ecology	Moderate	Klickitat County	Seek grant funding to scope the comprehensive hydrologic study by July 2009.
5.1.4 Statutory Changes **5.1.4.1 Statutory Change for Consultation Process Specified in WAC 173-563-020(4)** **5.1.4.2 Statutory Change for Pumping Water to Off-Channel Livestock Watering Sources**	Moderate	Klickitat County with CKCD	Begin coordination with regional legislative staff so that the bills can be acted on during the 2009-2011 biennium.

Table 6-1 - Summary of Initial Actions to Implement
WRIA 30 Detailed Implementation Plan

070024-002-01

Issue / Initial Action Item	Priority	Lead Entity Responsibility	Schedule for Initial Actions
5.2 Water Quality			
5.2.1 Little Klickitat River Temperature			
Conduct comprehensive assessment to refine estimates of attainable shade and water temperature. Based on assessment findings, identify actions that will have the greatest potential benefit for Little Klickitat River temperature.	High	Klickitat County with CKCD, in consultation with Ecology	By August 2008, prepare for Ecology review a draft work plan for the water temperature assessment.
5.2.2 Nitrates in Groundwater			
Continue existing monitoring and education programs, and keep State DOH informed.	Moderate	Klickitat County Health Department	Ongoing.
5.2.3 Swale Creek Temperature			
5.2.3.1 Water Quality Improvement Plan Develop a water quality improvement plan modeled on Ecology's 4B approach.	Low	Klickitat County with WRPAC, in consultation with Ecology	Several related activities are ongoing. Funding will be sought for next biennium to initiate preparation of water quality improvement plan.
5.2.4 Elevated Fecal Coliform Levels			
5.2.4.1 Conduct Additional Monitoring Continue current monitoring program within the Little Klickitat subbasin. If exceedances are identified, conduct additional sampling to identify likely sources of fecal coliform. If a waterbody is determined to be impaired, prepare a water quality improvement plan modeled on Ecology's 4B approach.	Low	CKCD with assistance from City of Goldendale lab. If a water quality improvement plan is required, the lead entity will be Klickitat County with WRPAC, in consultation with Ecology.	Monitoring is ongoing.
5.3 Fish Habitat			
5.3.1 Document Fish Habitat Conditions			
5.3.1.1 Data Gaps *Quality Assurance* Prepare QAPP prior to data collection activities.	High	Lead entity for specific actions	Prior to data collection activities described in this section.
Current habitat conditions Inventory current habitat conditions, prioritized based on anadromous fish presence and potential for land use to affect habitat. Methodologies for coducting inventories will be established during implementation.		Klickitat County with CKCD, in consultation with state caucus.	Within 1 year of DIP adoption, develop a list of priority habitat projects. Within 2 years, scope and pursue funding for top-priority projects.
Limiting Habitat Characteristics and Processes Affecting Those Characteristics Identify limiting factors. Conduct assessment to identify habitat forming processes and causes, after limiting factors determined.		Klickitat County with CKCD, in consultation with state caucus and Klickitat Lead Entity.	Conducted after baseline data is collected.
Fish Passage Barriers Evaluate remaining fish passage barriers on private roads as part of habitat inventories. Assess means to cost effectively measure frequency that passable conditions (steelhead) exist at Little Klickitat Falls. If manmade barriers are identified, coordinate with pertinent landowner(s) regarding them.		Klickitat County, in consultation with state caucus.	Assessment is part of habitat inventories described above. If manmade fish barriers are identified, coordinate with landowner regarding them.
Fish Population Abundance, Productivity, Spatial Structure, and Diversity Coordinate with the WDFW to obtain data for estimating population size, and to improve documentation of fish harvest, run size, and productivity.		Klickitat County, in consultation with state caucus	Continue to coordinate with WDFW to obtain fish trapping data.
5.3.1.2 Identify and Implement Restoration Projects Develop a list of priority habitat improvement projects based on assessments described above, and seeking funding to implement them. Projects can be implemented to address known problem areas prior to completion of assessments.		Klickitat County with Conservation Districts, in coordination with Klickitat Lead Entity Organization.	Priority projects will be implemented as funding is received.
5.3.1.3 Habitat Protection Develop public education program to inform landowners of processes affecting fish habitat Assist landowners with habitat protection projects		Conservation Districts with assistance from Klickitat County and the state caucus.	Ongoing, with continued solicitation of landowner cooperation for implementation of priority projects.

Table 6-1 - Summary of Initial Actions to Implement
WRIA 30 Detailed Implementation Plan

070024-002-01

Issue	Initial Action Item	Priority	Lead Entity Responsibility	Schedule for Initial Actions
5.3 Fish Habitat (continued)				
5.3.1.4 Monitoring and Adaptive Management				
Trends in Habitat over Time	Following initial data collection, choose sites for long-term monitoring of habitat change. Assist landowners with habitat protection projects	High	WRPAC and Klickitat County with CKCD, in consultation with state caucus	Ongoing evaluation of data, and annual review of progress relative to watershed plan objectives.
Trends in Population Size and Population Productivity	Coordinate with WDFW to obtain data re: population trends.			
Evaluation of Monitoring Data and Adaptation of Plan	Review data collected and annually review progress relative to objectives of watershed plan, with recommendations for modiciation of the watershed plan if warranted.			
5.3.2 Potential Effects of Population Growth and Population Movement on Fish Habitat	Develop and implement a simple metric to estimate effects on peak stream flow. Identify a threshold which would trigger more in-depth evaluation of effects on peak flows. Develop and implement a simple metric to estimate effects on sediment inputs. Identify a threshold which would trigger more in-depth evaluation of sediment input. Monitor trends in water quality. Develop a baseline coverage and monitor trends in riparian conditions	Moderate	Klickitat County with CKCD	Within 2 years after adoption of this DIP, Klickitat County will develop a scope and pursue funding for the development of metrics, development of baseline data, and long-term monitoring of parameters.

Notes: For issues and initial action items, the referenced section number within Chapter 5 of the DIP is provided (e.g., Section 5.1.1).
If there is any discrepancy between information here and that in the Chapter 5 text, the language of the Chapter 5 text governs.

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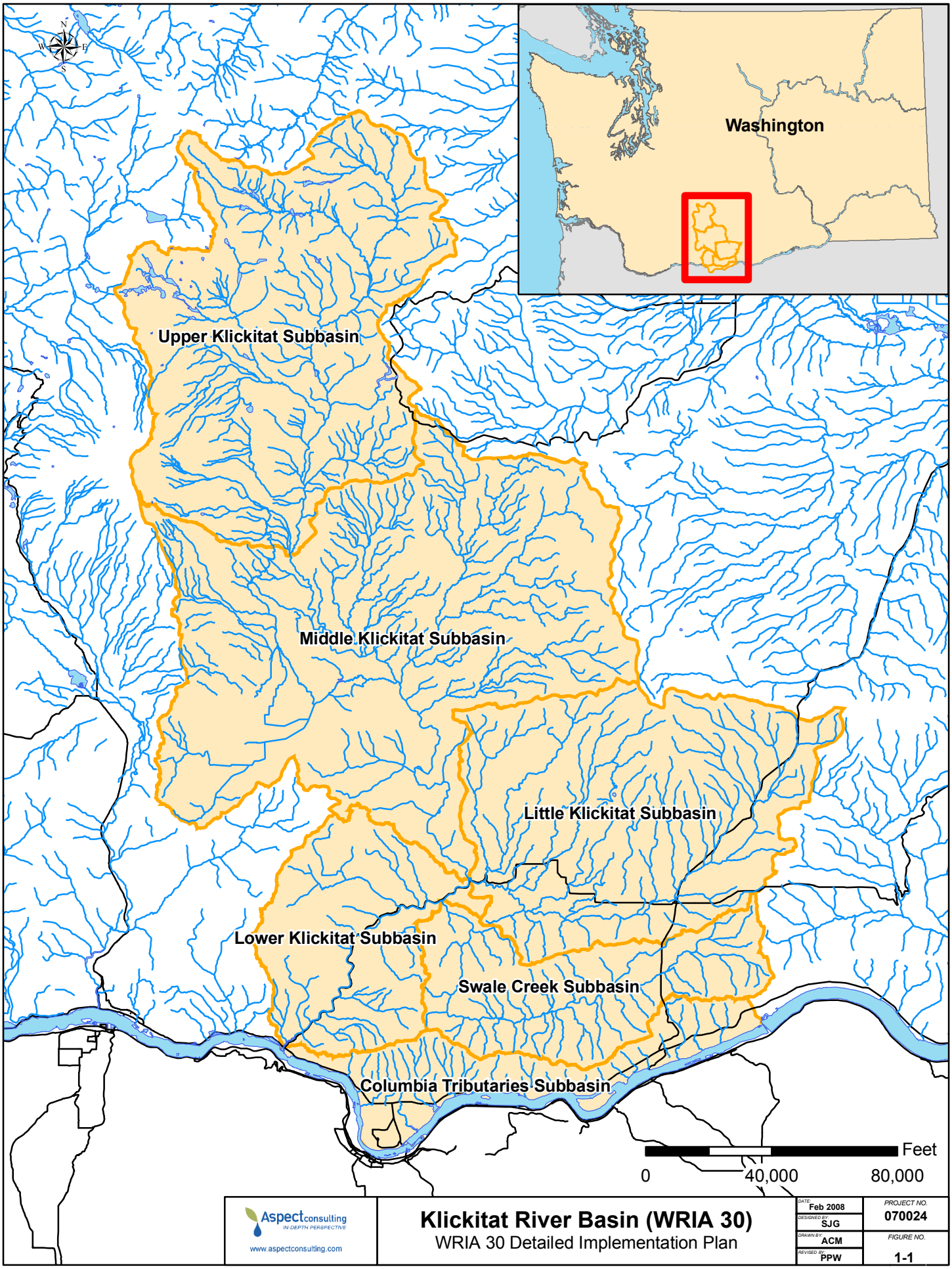

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Klickitat River Basin (WRIA 30)

WRIA 30 Detailed Implementation Plan

DATE: Feb 2008	PROJECT NO. 070024
DESIGNED BY: SJG	
DRAWN BY: ACM	FIGURE NO. 1-1
REVISED BY: PPW	

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APPENDIX A

Letter to Group A Water System Purveyors

January 29, 2008

Contact
Water System Name
Street Address
City, State ZIP

Re: Water System Data Request
WRIA 30 Detailed Implementation Plan
Project No. 070024-002

Dear Water System Operator:

Klickitat County, serving as lead agency, and the Water Resource Planning and Advisory Committee (WRPAC) are currently involved in a State watershed planning process for your local watershed. The Klickitat watershed, or formally known as Water Resource Inventory Area (WRIA) 30, consists of the entire Klickitat River basin, plus other minor tributaries that drain directly to the Columbia River between the mouth of the Klickitat River and the John Day Dam.

Enacted in 1998 by the Washington State Legislature, the Watershed Planning Act provides a framework for developing local solutions to issues facing individual watersheds – including water quality, water quantity, and habitat. The Watershed Planning effort in the watershed to date has included completion of technical studies and a Watershed Management Plan, which summarizes the current status of the watershed and outlines recommendations for future water resource management. The WRIA 30 Watershed Management Plan was formally adopted in January 2006. A copy of the adopted plan, along with other technical studies and documents, may be found on Klickitat County's website (www.klickitatcounty.org/planning).

The next step following adoption of the Watershed Management Plan is implementation of the plan's recommendations, which entials preparing a Detailed Implementation Plan (DIP). The DIP defines a schedule and specific actions and milestones to be taken to achieve the recommendations outlined in the Watershed Management Plan. This document is currently in development by Aspect Consulting – the lead technical consultant to the WRPAC.

Key to the DIP development is notification and involvement from the community, especially entities that possess municipal water rights, as required by State Law – Chapter 90.82.048 Revised Code of Washington (RCW). This ensures that all existing water rights, including inchoate water, are accounted for in developing strategies to meet projected future water needs. The statute specifically requires consideration of how the use of inchoate rights will be addressed when implementing instream flow strategies in WRIA 30. Inchoate rights are defined as that portion of a water right that has not been put to beneficial use (perfected), and is *not* subject to relinquishment because your water right is legally defined as *Municipal*, per Chapter 90.03.015 RCW.

Therefore, we request your assistance in helping us gather specific information about your water system to meet the statutory requirements of DIP. This information should already be publicly available in your Water System Plan. The information we are requesting includes:

- Current Water Rights, including identification number and authorized amounts (instantaneous flowrate and annual volumes);
- Annual usage over the last five years; and
- Projected demand over the next 20 years, or similar planning horizon.

We request you either email, fax, or mail this information to Aspect Consulting – the WRPAC's technical consultant. Our contact information is:

Aspect Consulting, LLC
Attn: Tim Flynn
179 Madrone Lane North
Bainbridge Island, Washington 98110

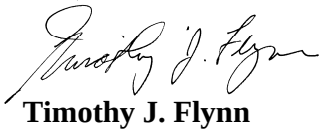
Email: tflynn@aspectconsulting.com

Fax (206) 780-9438
Phone (206) 780-7730

We appreciate your assistance in gathering this information. If there are any questions or comments, please don't hesitate to contact myself, Dave McClure at Klickitat County (509-773-2606), or Greg Schuler with the Washington State Department of Ecology (509-454-3619).

Sincerely,

Aspect consulting, LLC



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Principal Hydrogeologist
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cc: Dave McClure, Klickitat County
Greg Schuler, Washington State Department of Ecology

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