

Final Review Draft
WRIA 47 Lake Chelan Detailed Implementation Plan

Funded through Grant #G1400521 from the Washington State Department of Ecology

1.0 Introduction

This document presents the Phase 4 Detailed Implementation Plan (DIP) for the Lake Chelan Watershed. The Lake Chelan Watershed is designated as Water Resource Inventory Area (WRIA) 47. The completion of this DIP within the first year of Phase 4 Implementation fulfills the requirements for a detailed implementation plan as set forth by the Revised Code of Washington (RCW) 90.82.043 and 90.82.048. The main purpose of this DIP is to guide the implementation of the WRIA 47 Watershed Management Plan developed by the WRIA 47 Lake Chelan Watershed Planning Unit (LCWPU). The plan addresses the implementation of water management strategies, and projects that address water quality, water quantity, and habitat in the watershed.

The Phase 3 Watershed Management Plan prescribes numerous projects, studies, management strategies, and recommendations. This DIP focuses on how these actions will be accomplished, including identifying responsible entities, potential funding sources, and timeline and schedule for implementation. This document is not intended to be a stand-alone document; rather, it is intended to be used in conjunction with the Phase 3 Watershed Plan along with the Water Quantity Assessment, Water Quality Assessment, and Habitat Assessment (RH2, 2012). This is a working implementation plan that is expected to grow and evolve as projects are implemented, data are collected, and issues are better understood by the LCWPU. It is expected that new actions will be added and some existing actions eliminated as they become obsolete as time progresses, and as the LCWPU develops its planning and management expertise.

The actions in this document have been prioritized by the WRIA 47 LCWPU so that they can be implemented in a coordinated manner without duplication of effort by other entities. When successfully implemented, the actions described in this implementation plan will result in a coordinated water resource management effort that merges agricultural and domestic water needs with water resource protection and conservation on a watershed wide scale. Ideally, the actions will be implemented by the entities involved in a timely manner but this will ultimately depend on the availability of funding, staff resources, technical capability, and priorities of the implementing entities.

1.1 Setting (Basin Overview)

General Characteristics

The area occupied by the Lake Chelan WRIA 47 comprises 1,044 square miles, of which 90 percent (937 square miles) includes Lake Chelan and its tributary sub-basins; the remaining 10 percent consists of sub-basins that drain to the Columbia River. One primary tributary, the Stehekin River, and one secondary tributary, Railroad Creek, discharge 85 percent of WRIA 47 runoff into Lake Chelan. The management area consists of ten sub-basins shown

on **Figure 1**. Approximately 1.8 percent (19 square miles) of WRIA 47 lies within Okanogan County. A more detailed summary of the WRIA 47 characteristics is presented in the Phase 2 Water Quantity Assessment (RH2, 2009).

Topography and Vegetation

WRIA 47 has physical and vegetation characteristics similar to other east-slope Cascade watersheds. The watershed includes glaciers and rugged mountains at the highest elevations, dense fir and open ponderosa pine forests, wide expanses of shrub-steppe, and narrow riparian zones in lower elevations. Elevations in WRIA 47 range from 700 feet above mean seal level (MSL) at the Columbia River to 9,511 feet MSL at Bonanza Peak. Landforms consist of the classic U-shaped, glacially-carved valleys of Lake Chelan, the Stehekin River, and smaller tributaries in the higher elevation sub-basins, which are surrounded by high ridges and steep cliffs. Lower elevation sub-basins are narrower incised valleys that are tributaries to Lake Chelan and the Columbia River, bounded by rolling hills near the lake's terminus at the City of Chelan, and gravel terraces along the Columbia River.

The lake consists of two basins: the Lucerne basin, which is deep (1,500 feet) and fjord-like, and extends north from The Narrows north of Manson for approximately 40 miles to the Stehekin River; and the Wapato basin, which is relatively wide and shallow in comparison (maximum depth of 400 feet) and extends for approximately 15 miles south of The Narrows to the lake outlet at the head of the Chelan River.

Geology

Bedrock comprises much of the exposed surficial geologic units on the steeper slopes above terraces and hills of the lower basin, and forms the slopes and ridges of the upper basin above 1,600 feet in WRIA 47. Glacial episodes deposited relatively broad layers of fine to coarse-grained sediment in the valley floors and partially on the valley sidewalls or in patches on ridges. Lakeshore, river, and landslide deposits are found primarily along river and creek bottoms and at the base of slopes. The glacial and post-glacial deposits contain most of the available groundwater in WRIA 47, and nearly all developed and irrigated lands are underlain by unconsolidated geologic units.

Hydrology

Precipitation that is not lost to evapotranspiration runs off steep slopes into stream channels, minor tributaries and primary tributaries of the Stehekin River and Railroad Creek, where they ultimately discharge out of Lake Chelan into the Chelan River and finally into the Columbia River.

Primary and tributary streams to Lake Chelan experience peak runoff during the spring melt in May to July, and low flows during September through February. Water in Lake Chelan is generally stored during the runoff period and released during the low flow season to generate hydroelectric power, resulting in a flattened hydrograph compared to natural flows.

Average annual inflow to Lake Chelan is estimated to be approximately 1.6 million acre-feet (af), equivalent to a constant flow of approximately 2,200 cubic feet per second (cfs). The Stehekin River accounts for 65 percent of the total inflow to the lake, Railroad Creek contributes 10 percent and approximately 50 other smaller tributaries contribute another 25 percent of the surface inflow (FERC, 2001). Precipitation that falls directly on the lake contributes 4.4 percent of the total inflow to the lake, or approximately 70,000 af per year.

Groundwater

Groundwater in WRIA 47 is replenished from precipitation falling in the basin and infiltrating into porous surficial deposits. The broader and hilly terrain of the lower watershed sub-basins promotes groundwater recharge. In contrast, steep, thinly covered bedrock areas promote runoff and little recharge into bedrock fractures. Groundwater is recharged artificially via seepage from irrigation drains, via return flow infiltrating from irrigated lands, and via seepage from Wapato, Roses, and Dry Lakes in the Manson Lakes Sub-basin. Groundwater elevations and yield to wells in these areas are expected to be artificially high relative to non-irrigation conditions.

Population

The 2010 Washington State Census data determined a population of 12,730 within WRIA 47 (excluding the Okanogan County portion of the watershed). The Census forecasted a population of 13,104 for 2008 and 15,650 by 2025. The highest population density in WRIA 47 exists along the lake shoreline. Most residents work within the watershed and live within the Wapato Main Stem and Manson Lakes Sub-basins.

Land Use

Most of the watershed is under federal management, primarily by the U.S. Forest Service and National Park Service; approximately 87 percent of the Lake Chelan watershed is in federal, state, and local-government ownership. The remaining 13 percent is in private ownership. Hillsides above the lakeshore and lower elevation uplands are irrigated for orchard, vineyard, and pasture. Lake Chelan is managed for multiple uses including power, recreation, irrigation, potable water supply, historic and cultural preservation, fisheries, wildlife, and habitat.

Water Rights

The Washington State Department of Ecology's (Ecology) water rights records indicate that more than 800 active certificated water rights are authorized in WRIA 47, consisting of 700 surface water rights and 100 groundwater rights. There are 133 surface water permits and 30 groundwater permits. The database identifies 530 surface water claims and 148 groundwater claims. Approximately 50,000 af of water rights and claims are filed with Ecology for water in Lake Chelan sub-basins within WRIA 47, and more than 350,000 af of water rights and claims are filed for water in Columbia River sub-basins within WRIA 47.

In 1992, Chelan County Public Utility District No. 1 (Chelan PUD) and Ecology prepared an agreement in which the Chelan PUD water right Certificate 319 authorizes Chelan PUD to withdraw 4,000 cfs from the Chelan River for hydroelectric power generation with an unspecified annual use. Permit 548 established a reservation of 33,000 af per year for above-dam diversion for irrigation and domestic use in the watershed. The agreement creates a 20,000 af reservation of new water right from unused portion of Certificate 319 for use only within Chelan WRIA 47.

In 2014, CCNR initiated the development of a Coordinated Cost Reimbursement Program (CCRP) that would facilitate the processing of water right applications on file with Ecology. Initial steps more precisely quantified the availability of water rights in the Chelan PUD water right reservation (approximately 7,000 to 11,000 af) and the amount of water in 158 new water right applications on file with Ecology (approximately 10,000 af). The CCRP will

continue in the next several years and will serve to meet water right planning and water quantity actions of the Watershed Plan.

Water Use

Approximately 89 percent of households receive water from WRIA 47 surface water sources provided by 12 Group A Community systems, with 11 percent from groundwater (7 percent from exempt wells, 4 percent from 63 Group B systems). Approximately 2,500 af of water is used each year for residential consumption. Much of the wastewater from WRIA 47 is collected, treated, and discharged to the Columbia River.

Approximately 16,000 af of water is used for irrigation in the Wapato Main Stem sub-basin, and 5,000 af of water is used for irrigation in Columbia River sub-basins, primarily for orchard crops.

Approximately 350 af of water is used in the Wapato Main Stem sub-basin for commercial and industrial use.

Lake Chelan Project

Lake Chelan is a regulated reservoir under a Federal Energy Regulatory Commission (FERC) license that was initially authorized in 1926 and re-authorized on November 6, 2006. The Lake Chelan Hydroelectric Project FERC Project No. 637 consists of Lake Chelan, a 1,486-foot-deep, 55-mile-long natural glacial lake that was raised 21 feet by the construction of the 40-foot-high, 490-foot-long concrete gravity dam in 1926. Lake Chelan is a 32,560-acre reservoir at normal maximum water surface elevation of 1,100 feet MSL, with a gross storage capacity of 15.8 million af and a useable storage of 677,400 af.

Chelan PUD establishes target elevations to be achieved between May 1 and October 1, based on seasonal runoff and operational objectives including:

- Maintaining minimum instream flows in the Chelan River;
- Reducing high flows in the Chelan River; and
- Providing usable lake levels for recreation (between 1,090 and 1,098).

The minimum flow varies depending on the time of year and whether it is a dry, normal, or wet water year.

Approximately 2,000 acres of project land lie within the Lake Chelan Project boundary. About 1,300 acres of the Project lands are inundated and project facilities occupy the other 700 acres. The Project lands are owned by the US Forest Service, National Park Service, several state agencies, Chelan PUD, and private property owners. Approximately 465.5 acres are inundated federal lands.

1.2 Background of Watershed Planning In WRIA 47

In 1998, the Washington State Legislature passed the Watershed Planning Act (Chapter 90.82 RCW), which provides for locally-based watershed planning in each of the state's 62 WRIsAs. Watershed Planning consists of four phases of work:

1. *Phase 1* – organization of the Watershed Planning Unit
2. *Phase 2* – assessment of existing conditions and development of technical assessments of water resources
3. *Phase 3* – development and adoption of the Watershed Plan
4. *Phase 4* – development of an implementation plan to carry out the recommendations and obligations outlined in the Watershed Plan

From 1991 to 2007, water quality planning activities were conducted by the Lake Chelan Water Quality Committee (LCWQC), which included Chelan County, the City of Chelan, the Lake Chelan Sewer District, the Lake Chelan Reclamation District, Chelan PUD, and the U.S. Forest Service.

In October 2007, the LCWPU was formed, largely by members of the LCWQC, and has continued the objectives and activities of the LCWQC under the Watershed Planning Act, RCW 90.82.

LCWPU Membership and Procedures

The following entities are members of the WRIA 47 LCWPU.

- Chelan County
- City of Chelan
- Lake Chelan Reclamation District
- Chelan PUD
- Chelan-Douglas Health District
- Washington Department of Ecology
- Washington Department of Fish and Wildlife
- Washington Department of Health
- Washington Department of Natural Resources
- U.S. Army Corps of Engineers
- U.S. Forest Service
- Interested individuals

The initiating governments view watershed planning as a complement to other water resource management efforts in WRIA 47, including implementing regulatory actions as part of re-licensing the Chelan Dam and work done by the LCWQC.

Phase 2 Water Quantity Assessment

The Phase 2 Water Quantity Assessment (RH2, 2009) prepared an updated water balance used existing information to estimate input (precipitation and imported water from outside the basin), and water loss (evapotranspiration, recharge to groundwater and consumptive loss from beneficial uses). The water balance was estimated for natural and developed conditions and average, dry/warm and wet/cool years.

The Water Quantity Assessment report presented the following findings and recommendations:

- The water balance estimates indicate that most of the physically available water (precipitation runoff, shallow groundwater recharge, imported water) entering WRIA 47 is discharged through the Lake Chelan reservoir and used for power generation.
- The lack of stream flow and groundwater data is responsible for large variation in water balance estimates for the sub-basins. Evaluation of the shift in water resource use in these sub-basins will require additional data and analysis to quantify.
- Irrigation water use is very efficient and the incremental improvements in irrigation efficiency are unlikely to significantly increase water availability in the basin.
- Commercial and industrial water use are minor components of the water balance; increased efficiency or reuse of commercial and industrial water are unlikely to significantly increase water availability in the basin.
- Much of the domestic water used in WRIA 47 either returns as groundwater storage and base flow seepage into Lake Chelan, or is exported from the basin to the Columbia River as treated wastewater; domestic consumption is a minor component of water balance.
- Converting the use of water from irrigation use to domestic use could substantially affect groundwater recharge and base flow in the sub-basins, since the consumptive loss of domestic water is low relative to total water present.
- Compilation of current use and estimates of future use are based on limited documentation of actual beneficial uses and return flows.

Phase 2 Water Quality Assessment

The Phase 2 Water Quality Assessment reviewed water quality data from previous assessments and summarized the results in two separate technical memos prepared in 2009: Assessment of Water Quality Issues within WRIA 47 (AMEC, 2009a); and Review and Summary of Existing Water Quality Studies within WRIA 47 (AMEC, 2009b).

A Total Maximum Daily Load (TMDL) for phosphorous in Lake Chelan was approved by Ecology and the Environmental Protection Agency (EPA) in 1993. The Lake Chelan DDT/PCB TMDL to address the DDT and PCB contamination contained in the tissues of fish in the Lake Chelan watershed was initiated in 2003 and completed in 2006. The TMDL identified potential actions designed to prevent DDT and PCB inputs to Lake Chelan and Roses Lake. Monitoring fish tissue concentrations will be the primary strategy to track progress of the TMDL implementation approach.

Water quality concerns within WRIA 47 include elevated concentrations of organochlorine pesticides, PCBs, and dioxins/furans within fish tissues, and elevated water quality constituents including phosphorous, pH, dissolved oxygen, and invasive exotic plants. Water quality monitoring data for WRIA 47 were obtained to meet study-specific objectives and contain few consistently measured parameters; this limits the ability to evaluate long-term trends in water quality in WRIA 47. This lack of adequate monitoring data led to LCWPU recommendation to develop and implement a long-term monitoring plan (LTMP). The

LCWPU recommended developing a water quality model to evaluate water clarity/eutrophication, and a bioaccumulation food-web model to model toxics transfer between sediment, water, and the aquatic food chain.

AMEC prepared the LTMP (AMEC, 2009c) and associated Quality Assurance Project Plan (QAPP) for water quality modeling (AMEC, 2009d). The LTMP and provides an initial framework for the plan that focuses on the calibration and application of two models: 1) CE-QUAL-W2, a water quality model to support evaluation of water quality conditions including water clarity and eutrophication; and 2) the Lake Chelan food web bioaccumulation food web model. The QAPP for the CE-QUAL-W2 model will guide the collection, management, and interpretation of data used in the model. Due to funding cuts, a QAPP for the food web model was put on hold, pending future funding.

Phase 2 Habitat Assessment

The habitat assessment addressed both aquatic habitat and fish species. While fishery management often involves habitat restoration and/or other habitat considerations, it may also include methods and processes distinct from habitat management. However, both habitat and non-habitat management components are vital to fish management in WRIA 47 and are the subjects of public interest and past restoration efforts.

Factors impacting fish populations in the watershed include habitat degradation and loss; land development, conversion, and management; agricultural practices; fish-passage barriers; dam operations; flooding; species introductions; interspecific breeding; competition for resources; disease; harvest; and hatchery and stocking operations. Impacts and their effects on aquatic habitat in the watershed are described in the Phase 2 Habitat Component (Watershed Company, 2011).

Other WRIA 47 Planning Activities

Other planning activities not conducted under WRIA 47 watershed Planning have similar water quality, water quantity, and habitat management objectives and activities that overlap with those of WRIA 47 watershed planning. These activities include the Chelan County Shoreline Master Program (SMP) update; Chelan County in-lieu fee program development; Chelan PUD FERC license activities under the Lake Chelan Settlement Agreement; and development of the Northwest Power and Conservation Council Lake Chelan Sub-basin Plan. Details regarding these plans are presented in the WRIA 47 Watershed Plan (RH2, 2012).

To accelerate or expedite processing the backlog of water right applications, CCNR and the LCWPU are proposing an approach that would collectively process the new water right applications under a coordinated cost-reimbursement program (CCRP) authorized under Revised Code of Washington (RCW) 90.03.265(3). The CCRP is an expansion of the successful cost-reimbursement program used throughout the state. The cost-reimbursement program allows applicants for new water rights to pay for the review, analysis, and processing of their water right application in addition to any other pending senior applications that propose new withdrawal or diversion from the same body of water as the cost-reimbursement applicant. The application is reviewed and processed by a consultant under contract with Ecology and Ecology reviews the consultant's analysis and recommendation to either authorize or reject the application. The standard cost-reimbursement approach typically is used for applications related to a single aquifer or

surface water body. The CCRP looks at an entire basin and draws all interested applicants together to collectively fund review and processing of all applications within the basin to reduce the individual cost and accelerate the review and approval process.

Ecology has funded the initial review and quantification of the existing water rights and pending applications in the Chelan basin. Additional funding is necessary to proceed with public participation to develop the CCRP in the Chelan basin. Ecology and the Chelan PUD need to resolve the uncertainty in accounting for valid water right claims and exempt wells that would reduce the amount of water remaining in the reserve.

Phase 3 Watershed Plan

Preliminary objectives for watershed planning in WRIA 47 were developed by the LCWPU during Phase 1 in 2008. WRIA 47 water quantity and quality conditions and challenges to meet the LCWPU objectives were identified during Phase 2 Watershed Planning, which included water quantity assessment and compilation of water quality conditions. Recommendations from the Phase 2 assessments were developed and carried forward into the Phase 3 watershed planning effort. A summary habitat assessment, compiled during Phase 3, identified watershed planning-related objectives and conditions to protect and enhance fish habitat in WRIA 47, and recommendations from habitat assessment activities are included in the Phase 3 watershed planning effort. The LCWPU reviewed and refined recommendations to meet the objectives developed in Phase 2 and 3, and the Phase 3 watershed planning recommendations are summarized in this section.

Water Quantity Recommended Actions

- Improve the documentation of beneficial water use, inchoate rights, municipal water supply, irrigation water use, and irrigation return flow to update water balance estimates and monitor the effects of changes in water use to improve estimates of future water availability in WRIA 47.
- Initiate surface water and groundwater monitoring in the Wapato, Manson, and lower Lucerne sub-basins to provide data to support water quality and habitat monitoring and improvement plans in WRIA 47.
- Use improved water balance estimates to support implementation of water quality studies and water quality management.
- Promote joint comprehensive analysis and prioritization of future municipal/domestic use by large and small Group A systems, Group B systems, future irrigation use, and future commercial/industrial use.
- Evaluate regional growth patterns, regional demands, inchoate water rights and water system connections for future/expanded service areas.
- Evaluate potential future irrigation demands and transfers of water rights following conversion of agricultural land prior to transfer for other purposes.

- Prioritize and establish quantities for the current 20,000 af Chelan PUD water right reservation and any future Chelan PUD water right reservations when needed.
- Identify an adequate domestic water and fire-fighting supply as airport and planned developments proceed in the Howard Flats sub-basin.

Water Quality Recommended Actions

- Calibrate the CE-QUAL-2K water quality model with the first year of data to initiate the LTMP.
- Prepare a QAPP for the food web bioaccumulation model to support the characterization and monitoring objectives of the LTMP.
- Initiate the LTMP using the initial modeling results to advance the implementation of the TMDLs for phosphorous and DDT/PCB.
- Evaluate the feasibility and benefits of including benzene as part of the LTMP.
- Inform and educate agencies and the public regarding LTMP objectives and findings to support watershed protection in WRIA 47.
- Evaluate the feasibility and priority for extending sanitary sewer to rural areas along the north and south shores and around the Manson Lakes.
- Evaluate the feasibility and benefits for establishing an On-site Wastewater Management District to improve rural septic system performance in removing both bacteria and nutrients.
- Evaluate the feasibility and benefit of managing irrigation drain return flows that discharge to surface water.
- Promote land use practices and regulations for stormwater and clearing/grading to reduce unmanaged stormwater and sediment discharge to surface water.

Habitat Recommended Actions

- Support the Lake Chelan Fishery Plan (LCFP) objectives to improve understanding of Lake Chelan fisheries and fisheries management, and address competing management approaches.
- Support the monitoring and understanding of habitat and species interactions and reproduction by coordinating LTMP activities with Lake Chelan Fishery Forum (LCFF) activities to implement the LCFP.
- Support habitat restoration efforts to improve limiting factors for both fish and wildlife.
- Support developing a detailed implementation plan that includes prioritized fish and wildlife actions.

Phase 4 Detailed Implementation Plan

The next step in the watershed management planning process prioritizes the potential actions and develops a strategy to achieve the desired future conditions identified by the

Watershed Plan in a DIP. The DIP (this document) outlines a comprehensive approach for accomplishing the goals of the WRIA 47 LCWPU. The DIP will be periodically revisited to update progress in implementation, adjust planning objectives as conditions or regulations in the watershed change, and reorganize priorities according to changes in demand, feasibility, and funding availability.

RCW 90.82.043 and 90.82.048 provides guidance to the Planning Unit regarding DIP content and process. The DIP must cover the following elements:

- Strategies to provide for sufficient water for beneficial uses identified in the watershed.
- Timelines to achieve these strategies.
- Interim milestones to measure progress.
- Coordination and oversight responsibilities.
- Needed inter-local agreements and administrative approvals.
- Specific funding mechanisms.

Furthermore, the watershed management planning entity must consult with other local and state entities to ensure that no efforts proposed in the DIP are duplicative or inconsistent with their work.

Purpose

The Detailed Implementation Plan outlines a framework for conserving, improving and protecting the water quantity, quality, and habitat conditions of the Lake Chelan watershed through the implementation of the WRIA 47 Watershed Plan recommendations. The five priority recommendations of the watershed plan are as follows:

- A. Implement the LTMP.**
- B. Improve the water balance estimates in the Wapato Basin to support the LTMP.**
- C. Improve the estimates and locations of the current and future proposed beneficial uses of water in WRIA 47.**
- D. Support wildlife and fisheries monitoring and management objectives of the LCFP and LCFF.**
- E. Support land use planning activities, such as Shoreline Master Program, Chelan County in-lieu fee program, FERC licensing activities, and county infrastructure planning that share watershed planning objectives with the WRIA 47 Watershed Plan.**

The completion of this DIP also fulfills the requirement in RCW 90.82.043 to submit the implementation plan to Ecology as a condition of receiving continued funding for Phase 4 Implementation.

Approach and Implementation Strategy

The DIP is meant to be a reasonable approach to achieving the principle recommendations of the watershed plan in a realistic timeframe under known physical, political, social and economic limitations. It is based on the LCWPU's belief that using the best available science, local knowledge, working collaboratively to address issues and encouraging voluntary actions is the best way to achieve shared objectives. Furthermore, an adaptive management approach will be used to address new water related issues as they arise in the watershed. As new data are collected this approach will allow the recommendations and strategies of the implementation plan to evolve in a way to best suit the objectives of the watershed plan.

The implementation approach realistically considers the priority of an implementation task against the availability of funding and the readiness to implement the task. Rather than establishing a sequential implementation for all potential tasks, the LCWPU has transferred the recommended actions from the Watershed Plan into a prioritized list for each of the principle watershed recommendations. Part of the implementation strategy includes identifying and securing funding, and developing the project feasibility. These prioritized recommended actions are expected to develop and be implemented somewhat concurrently as funding and personnel become available.

The approach consists of the prioritization of each potential project actions within each of the five principle recommendations and identifying the subtasks to implement each action. The subtasks include:

- Identifying the project sponsor;
- Completing a sufficient statement of technical feasibility, schedule, and cost-benefit analysis;
- Identifying permitting and operation requirements, and confirming permitting requirements through coordination with agencies; and
- Developing a project cost and identifying the funding source.

The implementation approach creates an implementation table that summarizes the status of the prioritized projects, and will be annually updated. This planning tool will help the LCWPU identify the progress and level of commitment to each action and help refine or reorganize the priorities of the implementation plan.

This compilation of the status of each potential task as they develop will further the prioritization of the actions and help the LCWPU identify the initial and subsequent actions as they become readily implementable. These first actions may not be considered the highest priority, but completing several early actions will promote the success of the LCWPU and its activities in the watershed and build a sustainable planning effort. Successful project completion will also demonstrate the ability for the LCWPU to complete worthy projects and build on its credibility for pursuing the more challenging projects in the watershed.

The strategy keeps the LCWPU focused on the primary recommendations to increase and protect sustainable water supply in the watershed which meets the requirements of RCW 90.82. The implementation strategy involves periodic review of the prioritized actions, and aggressively pursuing available and potentially innovative funding and partnerships with funding and management agencies, for example, the Office of Columbia River (OCR) and FERC.

Permitting

The implementation actions will require little or no permitting, as most of the actions involve data collection and analysis or supporting existing agency programs that align with the Watershed Plan objectives. Working with Ecology to develop a coordinated cost reimbursement program will require preparing water rights documentation, which are not permits, but do describe compliance with water laws and rules. The implementation tables summarize permitting requirements.

Coordination and Oversight

The LCWPU is the primary entity responsible for oversight of the implementation of the WRIA 47 Watershed Plan. While the LCWPU is ultimately responsible for approving and providing overall direction for implementation projects, the Chelan County Natural Resource Department (CCNRD)(as the Lead Agency) is responsible for convening the LCWPU, preparing meeting summaries, administering implementation grant funds, keeping track of the Phase 4 projects and budgets and handling day to day tasks.

The CCNRD coordinates but does not direct the activities of the LCWPU. The LCWPU provides overall direction for implementation, development of requests for proposals from contractors, approval for contractor selection, development and approval of scopes of work and project reviews and approvals. The LCWPU is also responsible for development and approval for revisions to the WRIA 47 Watershed Plan and DIP. The LCWPU and CCNRD's roles in coordination and implementation are further defined by a number of implementation actions defined in the watershed plan.

The CCNRD has received outside technical support (primarily, RH2 Engineering, Inc., in East Wenatchee) to develop each phase of watershed planning and likely will continue to rely on this or similar support to oversee and support the activities of the LCWPU to implement the watershed plan.

Ecology will continue to provide regulatory guidance to ensure compliance of the implementation phase with the objectives of RCW 90.82. Ecology also oversees financial responsibility for watershed planning funds and financially supports watershed planning activities from other State funding sources.

Members of the LCWPU may identify specific actions and act as a Project Sponsor to: promote activities; document action status; identify and coordinate the initial LCWPU effort in funding applications; and communicate interim status of the action to the LCWPU. Much of the implementation progress will depend on the Project Sponsor to initiate the funding and feasibility process and energize the other LCWPU members towards implementing the project.

Agreements, rules, and ordinances that would be needed to implement an action will be developed in detail as part of initial implementation. Most of the implementation actions do not require agreements or already have these agreements in place. Many actions, such as water level and water quality monitoring, consist of data collection and analysis and do not require agreement between agencies. Some actions will require agreements and compliance with rules. For example, implementing the long term monitoring plan actions will require concurrence with Ecology to confirm the monitoring objectives to align with TMDL implementation. Development of the Coordinated Cost Reimbursement Program will

require agreement between Ecology, Chelan County, and Chelan PUD. Actions that overlap rules or other existing plans, such as the Lake Chelan Dam FERC license, Lake Chelan Fishery Plan, City of Chelan Comprehensive Plan, or Chelan County Growth Management Plan will require coordination, agreement, and compliance with the existing license, plan, or rules. In most cases, this effort would be limited to simple letters of agreement confirming and outlining how implementation actions would comply with the existing rules and ordinances. These cases are summarized in the implementation tables.

The Watershed Plan and DIP was developed through coordination with the members of the planning unit, and communicated the Plan and DIP to other agencies within Chelan County and Washington State through public meetings and meetings with LCWPU members. The DIP identifies specific agencies and organizations for current and future consulting and collaborating on coordination of implementation action efforts and to prevent overlap or competing objectives. For example, completing the LTMP will require coordination with Ecology and the EPA to meet objectives of the TMDL Implementation. Completing water balance estimates, water rights analysis, and the coordinated cost reimbursement program will require coordination with Ecology and Chelan PUD. Actions that will require coordination are summarized on the implementation tables.

Planned Future Uses of Inchoate Water Rights

RCW 90.82.043 requires that the DIP contain strategies to provide sufficient water for production agriculture; commercial, industrial, and residential use; and instream flows, along with timelines to achieve these strategies and interim milestones to measure progress.

The Phase 2 Water Quantity Assessment described and quantified the current water use, the potential future water use and the amount of water rights in WRIA 47. Preliminary evaluation of the available groundwater rights in the Chelan PUD water right reserve and quantity of water right applications on file with Ecology has been completed in preparation for developing a Coordinated Cost Reimbursement Program for WRIA 47. The primary inchoate rights are held by Chelan PUD in their water right reservation, and by the City of Chelan to meet projected future municipal as described in comprehensive water plans.

The development of the CCRP will address future water uses for agriculture; commercial, industrial, and residential use. The Chelan PUD FERC license is the primary management that affects and promotes instream flows, and Chelan PUD is the senior right holder in the basin with the largest influence on how water use and management will provide sufficient water to meet instream flow requirements.

The DIP contains recommended actions in the Implementation Tables that pertain to managing and developing inchoate rights in WRIA 47.

Funding Options

This section meets the requirements to define “specific funding mechanisms” (per RCW 90.82.043[3]) for implementation of the WRIA 47 Watershed Management Plan recommended actions. The following funding mechanisms are considered: 1) Phase 4

Implementation grant funds; 2) resources committed by implementing entities; and, 3) other grant funding.

The LCWPU recognizes that implementation is subject to budgetary constraints and that no entity is obligated to implement an action without adequate funding. In reality, since there is insufficient funding through Watershed Planning Phase 4 to implement all the actions, the resources to implement actions will come primarily from the obligated / responsible entities defined in the Watershed Management Plan and from additional grant sources. The LCWPU may consider hiring a grant writer to assist with applying for potentially available funds.

The implementation tables include potential funding sources for each of the actions. No attempt has been made to quantify the likelihood of gaining funding or the level of completion for of these sources.

Phase 4 Watershed Planning Funds

Phase 4 Watershed Planning Implementation funds provided by the State Legislature have historically included:

- Up to \$25,000 for the first 3 years of implementation, with a 10-percent required match (\$2,500 per year). Second year funding is conditioned on the completion of an approved DIP.
- At the end of 3 years, up to \$12,500 for the fourth and fifth years of implementation, with a 10-percent required match (\$1,250 per year).

Phase 4 Implementation funds (potentially available through 2019) will be utilized primarily by the CCNRD to administer and facilitate implementation of the WRIA 47 Watershed Management Plan and implement priority projects.

Coordinating Funding with Other Implementation Processes

The LCWPU will seek coordination of grant funding with other planning processes. For example, funding of water actions and projects would occur through Chelan County Lead Entity for Salmon Recovery and through other money that comes through the Upper Columbia Salmon Recovery Board (UCSRB). Members of the LCWPU are participating in the LCFP and LCFE, and the Chelan PUD largely funds FERC-related projects that may have similar objectives to the WRIA 47 Watershed Plan. The OCR funds projects that occur in the mainstem of the Columbia and its tributaries, where the projects benefit both instream and out of stream uses. The OCR may participate in projects within WRIA 47 which contributes to water quality, habitat and beneficial use in the Columbia River.

Review of Grant Funding Sources

In order to aid in the implementation of actions prescribed in this Implementation Plan, specifically for those policy statements, management strategies, and projects that will not be funded through Phase 4 Watershed Planning Biennium Grant funds, additional funding sources must be sought. The most common additional funding sources include:

- Specific grants that may be available through the Washington State Departments of Ecology, Fish and Wildlife, and Health. These will vary over time. Several granting sources are identified in the implementation tables.

- The OCR is actively seeking projects to fund water projects to benefit instream and out of stream uses of water. The OCR grants provides funding in exchange for quantifiable amounts of water either returned to the Columbia River Basin for federal funding sources for monitoring, pollution prevention and control, watershed and drinking water source protection, wetlands and wildlife.
- Chelan PUD to support FERC licensing requirements to benefit shoreline habitat, water quality, fisheries, and water availability.
- Centennial Clean Water Funds available through Ecology.
- The Northwest Power and Conservation Council funding of habitat restoration projects and public involvement and education through the Bonneville Power Administration (BPA).
- Boise State University's Environmental Finance Center has partnered with the EPA's Environmental Finance Program to provide a searchable database containing funding options for a variety of environmental protection programs including watershed planning. The database can be found at the following Boise State website: <http://efc.boisestate.edu/searchmenu.asp>. Some of the grants listed in the table may not be applicable to the watershed, so some level of scrutiny must be applied when referencing this table for viable funding options.
- Salmon recovery funding sources, particularly from the UCSRB. The UCSRB Implementation Schedule identified several strategies and actions for Chelan River including increase irrigation efficiency, and removing obstructions in Stemilt Creek. Collaboration between the LCWPU and UCSRB is implied in mutual objectives, and receiving participation funds from UCSRB may increase the opportunities for WRIA 47 Phase 4 implementation.
- CCNR funding to facilitate management and leadership of watershed, land use, water availability projects and policies.

Implementation Schedule

Implementation of the plan actions by recommendation and priority are summarized in the Implementation Table attached at the end of the DIP. The timing of the implementation of the actions is subject to funding, legislative action, the availability of data, staffing priorities and limitations, and the commitment of stakeholders to implementation of obligated actions. The availability of funding is a critical component of implementation as without funding many of the projects would not be able to be completed. The estimated time to implement each action is estimated based on the projection by the LCWPU and priority. The timeline for each action is an estimate of the year that the action will be initiated or implemented and does not necessarily reflect the year that the action will be completed. Some actions may be completed quickly whereas others may be implemented over the long-term. Several long-term actions would not likely begin implementation or possibly even consideration before 2017, and therefore a timeline for completion is only estimated. The timelines are shown on the Implementation Table.

Implementation 2014

The recommended action listed for implementation in 2014 includes initiation of the LTMP by obtaining funding for the first year of monitoring to calibrate the CE-QUAL-W2 model. This action would start in 2014 or 2015, pending funding support.

Implementation 2015

The recommended actions listed for implementation in 2015 include collection of 1 year of water quality data, using the data to calibrate the CE-QUAL-W2 model, and preparing a QAPP for the food web bioaccumulation model.

The initial findings of the first year of monitoring for the LTMP will guide the LCWPU towards re-prioritization and seeking funds for water quality monitoring and prioritizing actions based on initial results of the monitoring. Additional funding to revise or improve groundwater and surface water monitoring data to improve the water balance estimates may be considered to refine initial estimates of water exchanges within the Wapato Basin that would affect the CE-QUAL-W2 calculations and subsequent monitoring requirements. The expectation is that sensitivity analysis of the first year of data will focus the monitoring to a sufficient level that meets data quality objectives.

Long-term Actions for Implementation

Recommended actions for implementation beyond 2015 include continuing an appropriate amount of surface water and groundwater monitoring that would support the initial findings of LTMP, and developing programmatic (continuous, annual) or long-term actions which are included in the Implementation Tables. These actions are those that will be implemented only after selected short-term actions are completed, or may be re-prioritized if watershed conditions or commitment to proposed actions change.

Review of Actions for Implementation

This Implementation Plan is the initial forecast of the LCWPU to initiate formal watershed planning actions in WRIA 47. As such, the LCWPU recognizes the likelihood that watershed understanding will increase, and actions will rise and fall in priority each year and consequently anticipates periodically updating the Implementation Plan schedule. The LCWPU will annually review the Implementation Plan as follows:

1. Inspect those actions in the Implementation Table that have variable schedules and attempt to refine the timelines and/or reconsider the actions or identify an alternate project sponsor. New timelines/actions/implementing entities will be included in updates of the Implementation Plan as needed. These actions also include orphan recommendations (i.e., recommendations that currently have not been assigned to a project sponsor). Actions that are not accomplished in the estimated implementation year will be addressed the following year.
2. Annual review and update of the prioritization in the Implementation Table.
3. Annual review and update of funding sources and opportunities.
4. Update Implementation Table to include refinements of cost estimates, or implementation progress.

REFERENCES

RH2 Engineering, Inc. 2009. WRIA 47 Phase 2 Water Quality Assessment. Prepared for Chelan County Natural Resources Department.

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The Watershed Company. March, 2011. WRIA 47 Phase 3 Habitat Component.