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PREPARED FOR: FERRY COUNTY AND THE CITY OF REPUBLIC

Final Draft Restoration Plan

Ferry County Coalition Shoreline Master Program Update

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LIST OF ACRONYMS AND ABBREVIATIONS

ALEA	Aquatic Lands Enhancement Account
BLM	U.S. Bureau of Land Management
BMPs	best management practice
CCFEG	Cascade Columbia Fisheries Enhancement Group
Coalition	Ferry County Coalition
CMZ	channel migration zone
County	Ferry County
CRP	Community-based Restoration Program
CTCR	Confederated Tribes of the Colville Reservation
District	Ferry Conservation District
DNR	Washington State Department of Natural Resources
Ecology	Washington State Department of Ecology
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
IAC	Inventory, Analysis, and Characterization
Lake Roosevelt	Franklin D. Roosevelt Lake
LWD	large woody debris
NOAA	National Oceanographic and Atmospheric Administration
NPS	National Park Service
OHWM	ordinary high water mark
Plan	Restoration Plan
Reclamation	U.S. Bureau of Reclamation
RMP	Resource Management Plan
SMA	Shoreline Management Act
SMP	Shoreline Master Program
SR	Subreach
TMDL	Total Maximum Daily Load

USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
WAC	Washington Administrative Code
WDFW	Washington Department of Fish and Wildlife
WRIA	Water Resource Inventory Area

1 INTRODUCTION

Ferry County (County) and the City of Republic have formed the Ferry County Coalition (Coalition) to update the County Shoreline Master Program (SMP), and apply it to the City of Republic also. The Washington State Department of Ecology (Ecology) adopted the 2003 Shoreline Management Act (SMA) guidelines (Chapter 173-26 Washington Administrative Code [WAC]), which requires local governments to review and update SMPs. The updated version of the Coalition's SMP provides goals, policies, and regulations for the Coalition shorelines.

This Restoration Plan (Plan) has been prepared in support of the Coalition's SMP. Restoration and enhancement elements discussed in this Plan, in addition to the environmental protection and mitigation measures set forth in the SMP, are intended to work together to achieve the SMA goal of no net loss of shoreline ecological function. The Plan was formulated based on a detailed inventory and characterization of the shoreline ecosystem and impaired functions in the Shoreline Inventory, Analysis, and Characterization (IAC) Report for the Coalition (Anchor QEA 2015). A Cumulative Impacts Analysis Report will also be developed to demonstrate how future development under the proposed SMP will result in no net loss of shoreline ecological function.

The scope of this document, the definition of restoration, and the key elements in restoration planning in the SMP process will be discussed.

1.1 Purpose and Scope of Plan

The purpose of this Plan is to describe how and where shoreline ecological functions can be restored within the Coalition's SMP jurisdiction. This Plan identifies protection, restoration, and enhancement actions within the SMP restoration context. The SMP guidelines (WAC 173-26-201(2)(f)) articulate that the Plan is to include specific elements, along with the section in which the element occurs in this Plan:

- Section 3 – This section identifies existing and ongoing projects and programs currently being implemented that are designed to contribute to local restoration goals (such as capital improvement programs and watershed planning efforts).

- Section 4 – This section identifies degraded areas, impaired ecological functions, and sites with potential for ecological restoration within the County.
- Section 4 – This section establishes overall goals and priorities for restoration of degraded areas and impaired ecological functions.
- Sections 4 and 5 – This section identifies additional projects and programs needed to achieve local restoration goals and implementation strategies, including identifying prospective funding sources for those projects and programs.
- Section 5 – This section identifies timelines and benchmarks for implementing restoration projects and programs and achieving local restoration goals.
- Section 5 – This section provides provisions for mechanisms or strategies to ensure restoration projects and programs will be implemented, according to plans, to appropriately review the effectiveness of the projects and programs in meeting the overall restoration goals.

Although this Plan incorporates elements of other shoreline restoration planning documents that involve the shorelines under the County’s SMP jurisdiction, the scope of this Plan under the SMA guidance does not extend to that of a master document combining and aligning priorities of other shoreline restoration documents, plans, or efforts. It is expected that alignment or conflict between this Plan and the goals of other plans (such as Comprehensive Plans) that occur during implementation will be addressed within the context of the applicable regulations. This Plan does not provide or constitute any regulatory approval of the projects identified within the document. All applicable federal, state, and local regulatory requirements will need to be met, and all associated approvals will need to be obtained prior to implementation of any project.

It is important to clarify that restoration, as it is discussed here, is distinct from the concept of protection or no net loss. The WAC defines “restoration” or “ecological restoration” as follows:

“...the reestablishment or upgrading of impaired ecological shoreline processes or functions. This may be accomplished through measures including, but not limited to, revegetation, removal of intrusive shoreline structures and removal or treatment of toxic materials. Restoration does not imply a requirement for returning the shoreline area to aboriginal or pre-European settlement conditions.”

The state's SMP policies include a standard of no net loss of ecological functions that are necessary to sustain shoreline natural resources that must be adhered to by new SMPs. Ecology has clarified that no net loss means that, "establishing uses or conducting development are identified and mitigated with a final result that is no worse than maintaining the current level of environmental resource productivity," and "no uses or development supersede the requirement for environmental protection" (Ecology 2004). The current level of environmental productivity is the baseline level of function of the system. For the purposes of this Plan and the SMP, the environmental baseline is established as part of the IAC Report, or other reports prepared by the County referenced therein, as well as the other maps and data developed by the County as part of the SMP update process. Thus, mitigation activities are the method by which no net loss is compensated. The distinction between no net loss and SMP restoration is that restoration goes beyond no net loss by establishing an increase in the amount, size, and/or functions of an ecosystem or components of an ecosystem compared to a baseline condition. Therefore, mitigation activities, including redevelopment and new development that include mitigation activities, could not be considered as part of restoration under this Plan unless there was a "beyond no net loss" component to the work.

1.2 Key Elements of Restoration Planning in Shoreline Master Program Process

The state's SMP guidelines indicate preference for certain shoreline uses in the following order:

1. Reserve appropriate areas for protecting and restoring ecological functions to control pollution and prevent damage to the natural environment and public health.
2. Reserve shoreline areas for water-dependent and associated water-related uses.
3. Reserve shoreline areas for other water-related and water-enjoyment uses that are compatible with ecological protection and restoration objectives.
4. Locate single-family residential uses where they are appropriate and can be developed without significant impact to ecological functions or displacement of water-dependent uses.
5. Limit non-water-oriented uses to those locations where the above described uses are inappropriate or where non-water-oriented uses demonstrably contribute to the objectives of the SMA (WAC 173-26-201(2)(d)).

The WAC guidelines also state SMPs are to, “include goals, policies and actions for restoration of impaired shoreline ecological functions” (WAC 173-26-186). The impaired functions are to be identified based on a detailed inventory and characterization of the shoreline ecosystem, and a Restoration Plan is to be formulated based on that information (WAC 137-26-201). The results of the inventory assessment were presented in the IAC Report for the County (Anchor QEA 2015). This Plan uses the information from the IAC Report to address the Restoration Plan requirements discussed in the SMP guidelines. This Plan is not a regulatory document or a set of regulatory requirements. However, the SMP points to this Plan as a guide outlining opportunities for improving ecological function within the jurisdiction of the Coalition members’ shorelines.

2 BACKGROUND

The County is located in the northeastern portion of Washington and includes the City of Republic and several other smaller towns. The County is bordered by the Canadian Province of British Columbia to the north, Stevens County to the east, Lincoln County to the south and southeast, and Okanogan County to the west.

The County encompasses a total area of 2,257 square miles (5,846 square kilometers). The Confederated Tribes of the Colville Reservation (CTCR) encompasses 1,079 square miles (2,794 square kilometers; 47.8%) of the southern portion of the County. Private lands held in fee ownership on the CTCR that are along shoreline jurisdiction waterbodies fall under County jurisdiction; as such, entire waterbodies (streams and lakes) were included in the shoreline jurisdiction, as applicable, even where they are on the CTCR. Of the 1,178 square miles (3,051 square kilometers) of land in the study area (but outside of the CTCR), 1,124 square miles (2,912 square kilometers) are land and 54 square miles (139 square kilometers; 4.6%) are water.

2.1 Planning Area Characteristics

The County shorelines have varied ownership. Private holdings and Indian Allotment Trust Lands make up a majority of the shoreline jurisdiction (6,134 acres or 39% and 4,725 or 30% respectively). The U.S. Bureau of Reclamation (Reclamation) owns the largest share of public shoreline land at approximately 1,732 acres (11%). The National Park Service (NPS) owns 1,200 acres (8%), the U.S. Forest Service (USFS) owns 1,135 acres (7%), and the U.S. Bureau of Land Management (BLM) owns 113 acres (less than 1%). The rest of public lands are owned by state and local agencies. The Washington Department of Natural Resources (DNR) owns 149 acres (1%), the Washington Department of Fish and Wildlife (WDFW) owns 277 acres (2%), Washington Department of Parks and Recreation owns 9 acres (less than 1%), and the County owns 93 acres (less than 1%). Within the City of Republic, approximately 54 acres (99.9%) of the shoreline is publicly owned and approximately 0.03 acre (less than 1%) is owned by Ferry County.

The Columbia River has a large percentage of federally owned lands. Additionally, the Colville National Forest covers large portions of the northern area of the County. As a result,

large parts of Boulder and Sherman creeks are managed by USFS. In the southern half of the County, the shoreline areas are primarily located in the CTCR and, therefore, under tribal ownership. More than half of the total private lands can be found in the Kettle River and Sanpoil River watersheds, especially in the northern half of the County.

2.1.1 Existing Land Use

In the County, the predominant land-cover type within the shoreline jurisdiction area is forest and shrubland. The majority of developed land is located in the Kettle and Sanpoil river basins. Large areas of agricultural land are found along the Kettle and Columbia rivers in the CTCR. Table 1 summarizes the land-cover types in the County shoreline jurisdiction area. Land cover in the City of Republic within shoreline jurisdiction is mostly forest (47 acres or 94%) with some shrubland (3 acres or 6%).

Development within the County consists of two designations: Rural (95%) and Rural Service Areas (5%). Rural Service Areas are associated with relatively higher concentrations of development, including residential, commercial, institutional, and recreation uses. The City of Republic also consists of two designations—Rural (76%) and Rural Service Areas (24%). The City of Republic does not have an existing SMP. For more information on land cover and land use within the County, please refer to the Coalition IAC Report (Anchor QEA 2015).

Table 1
Land-cover Type within Ferry County Shorelines

Land-cover Type	Acreage	Percentage of Total
Agricultural	611	1%
Barren	11	< 1%
Developed	1,295	2%
Fallow/Idle Cropland	43	< 1%
Forest	8,910	17%
Grassland	549	1%
Open Water	33,980	65%
Shrubland	5,533	11%
Wetlands	1,495	3%

Land-cover Type	Acreage	Percentage of Total
Total	52,427	100%

Source: U.S. Department of Agriculture National Agricultural Statistics, Service Cropland Data 2012 (USDA 2012)

2.1.2 Water Resources

The planning area is located in five Water Resource Inventory Areas (WRIAs) as designated by Ecology: Sanpoil (WRIA 52); Lower Lake Roosevelt (WRIA 53); Middle Lake Roosevelt (WRIA 58); Kettle (WRIA 60); and Upper Lake Roosevelt (WRIA 61). Several major surface water resources are located in the planning area, including the Kettle, Columbia, and Sanpoil rivers. The portion of the Columbia River within the County is regulated by the Grand Coulee Dam and referred to as Franklin D. Roosevelt Lake (Lake Roosevelt). Twelve miles of the Sanpoil River and several miles of the Kettle River are also impounded by the Grand Coulee Dam. Additionally, 13 lakes are included in the shoreline jurisdiction, including Curlew Lake and the Twin Lakes.

Surface water resources in the County generally have lower flows in late summer and fall and higher flows in the spring. The highest flows are typically generated from snowmelt runoff after temperatures are warm enough to melt snowpack accumulated from winter precipitation events. However, the Northwest region of the United States has observed regional warming linked to changes in the timing and amount of water availability in basins with significant snowmelt contributions to stream flow (Melillo et al. 2014). The largest hydrologic response to suspected climate change responses is expected to occur in basins with significant snow accumulation, where warming increases winter flows and advances the timing of spring melt (Melillo et al. 2014).

Surface water quality in the County is generally affected by climate, natural occurrences (such as landslides, wildfire runoff, and wildlife waste), dam and hydropower operations, past and current industrial use, agricultural runoff, timber production, grazing, and road construction. These impacts have caused several waterbodies to be impaired by temperature, dissolved oxygen, pH, bacteria, and/or other pollutants. Total Maximum Daily Load (TMDL) programs are actively implemented in Boulder Creek, Sherman Creek, and several smaller

streams within the Colville National Forest. Also, the County has several waterbodies listed as waters of concern on Ecology's 305(b) rating system.

Floodplains, floodways, and channel migration zones (CMZs) have been identified within the County. In areas classified as shorelines, the presence of a floodplain or floodway may cause the shoreline jurisdiction area to increase. In addition, CMZs may require implementation of regulations that are unique to these areas due to the migration potential of a given stream throughout their extents. Groundwater in the County is generally limited by climate and geology with a majority withdrawn from unconsolidated glacial and alluvial deposits contained within the river and stream valleys (Ecology 1995). For more information on water resources within the County, please refer to the Coalition IAC Report (Anchor QEA 2015).

Granite Creek runs along the west side of the City of Republic. No current flow data are collected on Granite Creek. In the upper reach of Granite Creek, no Federal Emergency Management Agency (FEMA) floodplain is designated, except near the City of Republic. There is a FEMA-designated floodplain near the City of Republic. The downstream extent of Granite Creek near Republic is listed by Ecology as a water of concern for pH, dissolved oxygen, temperature, and bacteria. Water quality may be impacted from residential, industrial, wildlife, agricultural, and roadway runoffs. Granite Creek, in the vicinity of the City of Republic, has steep slopes and a confined CMZ; upland soils along the slopes are prone to erosion. The vegetated riparian corridor, when present, likely helps to limit erosion and the delivery of fine sediment to the stream. Additional detail on Granite Creek and water resources for the City of Republic are provided in the Coalition IAC Report Appendix C: Sanpoil River and Tributaries (Anchor QEA 2015).

3 EXISTING RESTORATION PLANNING, PROGRAMS, AND PARTNERS

This section describes the range of restoration planning, programs, and partners at work in the Coalition area.

There are a number of documents on recent habitat and environmental planning efforts that pertain to shoreline ecosystems, flora, and fauna in the region, and a few documents that specifically address shoreline conditions within the County. These documents collectively describe the following plans, projects, and status of the science:

- 2014 Columbia River Basin Fish and Wildlife Program (NWCC 2014)
- Okanagan Ecoregional Assessment (TNC 2006)
- Updated Interior Columbia Basin Strategy (ICBEMP 2014)
- Washington Connected Landscapes Project: Statewide Analysis (WHCWG 2010)
- Intermountain Province Subbasin Plan (GEI 2004)
- Northeast Washington Forest Vision 2020 (NEWFC 2011)
- Coordinated Implementation Plan for Bird Conservation in Eastern Washington (WASC 2005)
- Colville Reservation Integrated Resource Management Plan Resource Assessment, Executive Summary (CFAR 2014)
- Ferry Conservation District (District) Five Year Plan (FCD 2015)

Many groups are involved in shoreline restoration and protection in the County and the larger region, including the federal and state government, non-profit groups, Tribal governments, the District, and the local cities and towns. The following sections list the key groups and their contributions. This is intended to be a list of key parties and may not name all groups that have contributed to shoreline restoration or protection in the past or that may contribute in the future.

3.1 Confederated Tribes of the Colville Reservation

The CTCR are currently in the process of updating their Integrated Resource Management Plan to maintain the CTCR holistic goals and desired future conditions by application of adaptive management techniques as conditions change. The CTCR holistic goals and desired future conditions include maintaining quality of life and sustainable resources, as well as

protection of natural ecosystem functions that support plants and wildlife (CFAR 2014; CTCR 1996).

3.2 Ferry Conservation District

The District helps landowners develop solutions to local resource (e.g., soil, air, and water) concerns through provision of technical and financial assistance. The District also conducts studies to address management of local resources. The District's 2015-2020 Five Year Plan outlined conservation needs, including Voluntary Stewardship Plan development, forest health improvements, fire fuel reduction, water quality assessment and cleanup, water rights education development, riparian restoration, air quality assessment and solutions, soil erosion reduction and education, and Endangered Species Act (ESA) species assessment and solutions (FCD 2015).

3.3 National Park Service

The NPS manages the Lake Roosevelt Recreation Area along the Columbia River and the northern boundary of the County. As cited in its mission, NPS, "preserves unimpaired the natural and cultural resources and values of the National Park System for the enjoyment, education, and inspiration of this and future generations" (NPS 2015). As part of this mission, the NPS conducts restoration activities to protect, enhance, and restore natural resources in National Parks.

3.4 Nonprofit Groups

Wild Fish Conservancy Northwest, formerly Washington Trout, is a nonprofit conservation ecology organization that seeks to preserve, protect, and restore Washington's wild fish and their habitats. Pheasants Forever contributes to the restoration of grasslands to benefit upland game birds.

The Nature Conservancy (TNC) helps support restoration on land in the County for the benefit of rare plant species and assemblages found in the Okanogan Ecoregion. The Okanogan Ecoregional Assessment (TNC 2006) identified a group of sites that could maintain biota and community viability and provided an assessment of risks and strategies to conserve biodiversity in the area.

The Okanogan Land Trust works to restore and improve fish and wildlife habitat through promotion of economically sustainable agriculture and forestry practices and encourages the maintenance of private lands as natural areas. This is completed through the creation of conservation easements and community conservation efforts (OLT 2015).

Other organizations involved in restoration in Ferry County include the Kettle River Advisory Board and the Upper Columbia Fisheries Enhancement Group.

3.5 U.S. Bureau of Land Management

The BLM administers federal lands in the County; however, these shorelands comprise less than 1% of all shorelands. The BLM implements the Interior Columbia Basin Strategy, aimed at managing eastside forests in a scientifically sound and ecosystem-based manner. It also implements integrated weed management, including management in shoreline areas.

The County is within the BLM Spokane District. The Spokane District's Resource Management Plan (RMP) identifies protection and enhancement of water quality as a Management Objective (BLM 1987). Additionally, the RMP identifies restoration of natural functions and general habitat improvement as goals for riparian habitat areas, wetlands, and floodplains (BLM 1987).

3.6 U.S. Bureau of Reclamation

Reclamation is the largest owner of shoreline lands in the County, mostly due to ownership of lands within the Lake Roosevelt National Recreation Area. The mission of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public (Reclamation 2009). Reclamation is also proposing a project to protect lake shorelines from erosion caused by boating and other recreational activities by installing log booms within Lake Roosevelt (Reclamation 2015)

3.7 U.S. Department of Agriculture

The U.S. Department of Agriculture administers several programs through its Natural Resource Conservation Service that protect and restore shorelines, including the

Wetlands Protection, Resource Conservation and Development, Wildlife Habitat Incentives, and Conservation Reserve Programs, among several others.

3.8 U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service (USFWS) administers a number of programs that restore and protect other shoreline and aquatic habitats. The Partners for Fish and Wildlife Program helps private landowners restore wetlands and other habitats on their properties through voluntary cooperative agreements. The Water Management and Evaluation Program coordinates and manages issues that affect instream flows and shorelines.

3.9 U.S. Forest Service

The USFS manages the Colville National Forest in the northern County. The mission of USFS is to, “sustain the health, diversity, and productivity of the Nation’s forests and grasslands to meet the needs of present and future generations.” This includes using sustainable multi-use management, providing technical and financial assistance to promote stewardship, and educating the public (USFS 2015). Several streams and lakes are within USFS lands, and management and restoration activities affect ecological functions along these waterbodies. Forest plans and other USFS programs govern activities that occur on USFS lands.

3.10 Washington State

The State of Washington’s Governor’s Office coordinates restoration efforts with state agencies under the legislation of the Salmon Recovery Planning Act and the Salmon Recovery Funding Act. In addition, Washington State administers the Recreation and Conservation Office, as discussed in Section 3.16.

3.11 Washington State Conservation Commission

The Washington State Conservation Commission provides incentives to restore and improve salmon and steelhead habitat on private land under its Conservation Reserve Enhancement Program.

3.12 Washington State Department of Ecology

Ecology works with local jurisdictions, agricultural interests, and others to develop cleanup plans or TMDLs for waterbodies, which contain pollutants that exceed state water quality criteria.

Surface water quality in the County is generally affected by climate, dam, and hydropower operations, past industrial use, agricultural runoff, and natural occurrences, such as forest fires and landslides. These impacts have caused certain waterbodies to be impaired by temperature, dissolved oxygen, total dissolved gas, polychlorinated biphenyls, pH, and other pollutants.

Ecology provides water quality monitoring grants and administers the Watershed Planning Act, which supplies grants to local groups to produce watershed plans. Ecology administered one grant in 2004 to begin the process of creating a watershed plan for WRIA 60 – Kettle River. However, the effort was discontinued after the technical assessment; no further studies were proposed (Ecology 2015).

3.13 Washington State Department of Fish and Wildlife

WDFW works with local jurisdictions to ensure all activities, programs, facilities, and lands are consistent with federal and local protection and recovery efforts for species and habitats. WDFW has close involvement in the technical and policy aspects of fisheries and wildlife research and conservation, as well as habitat restoration in the region. WDFW administers several federally funded pass-through grant programs that provide funding opportunities for projects within Washington State, which are conducted by outside organizations or members of the public. Projects are designed to benefit the conservation and management of fish and wildlife and their habitat. In some cases, other sources provide grant funds, which are then also administered by WDFW.

WDFW has close involvement in the technical and policy aspects of fisheries and wildlife research and conservation, as well as habitat restoration in the region. In addition, WDFW oversees the Regional Fisheries Enhancement Groups Program. Currently there are 14 regional groups that work to restore salmonid populations through community

involvement, including engaging with citizen volunteers and landowners. The regional group that covers the County is the Cascade Columbia Fisheries Enhancement Group (CCFEG) (WDFW 2015; CCFEG 2015). Currently, no CCFEG projects are occurring in the County.

3.14 Washington State Department of Natural Resources

DNR manages state trust lands in the County as Natural Area Preserves, which are areas earmarked for protection, research, and education. DNR restores freshwater and marine habitat under its Aquatic Lands Enhancement Account (ALEA) Grant Program. ALEA grants may be used for the acquisition, improvement, or protection of aquatic lands for public purposes. They also may be used to provide or improve public access to the waterfront.

3.15 Washington State Recreation and Conservation Office

The Washington State Recreation and Conservation Office, formerly the Interagency Committee for Outdoor Recreation, administers many funding opportunities, habitat protection and restoration projects and associated activities to benefit recreation and conservation opportunities (see Section 3.11).

4 RESTORATION CONTEXT, GOALS, AND PRIORITIES

Shoreline restoration is a response to habitat impairment that has occurred as a result of alterations to the hydrology and physical structure of the shore. To plan restoration, there must be an understanding of the major existing impairments, an overarching set of goals to guide the work, a prioritization context to organize the efforts, and a list of the available opportunities.

4.1 Shoreline Impairments

The ecosystem-wide processes and structure of County and City shorelines were described in detail in the IAC Report (Section 5; Anchor QEA 2015). In addition, the alterations to these processes were discussed in terms of how the processes are interrupted or curtailed either naturally or by human impacts, and how physical and biological functions of habitat are affected. Table 2 provides a summary of the County and City shoreline reaches, level of existing function, key stressors, and restoration and protection opportunities as included in Appendices A through E of the Coalition IAC Report.

As shown in Table 2, alterations have occurred from both natural and human causes, and impacted shoreline processes involving hydrology, sediment, water quality, and habitat. These alterations include water storage and conveyance, impervious surfaces, vegetation alterations, water quality impacts, structural effects on habitat, shoreline hardening/stabilization, channel realignment, channel-floodplain disconnection, and other alterations such as lighting, noise, recreation, crop production, livestock grazing, and species competition. Basins affected by these alterations include the Columbia River/Lake Roosevelt, Kettle River, Sanpoil River, Granite Creek, and other creeks and lakes within the County.

Table 2
Ecological Processes and Structures Affected by Major Alterations

Notes: BMPs = best management practices IAC = Shoreline Inventory, Analysis, and Characterization LWD = large woody debris N/A = not applicable SR = subreach USFS = U.S. Forest Service					Key						Protection Opportunities													
					Agriculture	Hydrologic management regimes	In-water or overwater development	Recreation	Upland development	Vegetation (i.e., invasive or non-native species)	Riparian restoration (passive or active) to reduce erosion and increase filtration	Riparian restoration (passive or active) to increase shading and nutrient input	Protect existing riparian and upland forest areas	Conservation easements	Increase channel complexity (i.e. LWD, soft bank stabilization)	Remove invasive species	Promote alternative livestock watering areas	Expanded use of BMPs to protect shoreline from livestock operations	Promote BMPs for water quality impacts from agriculture	Implement stormwater controls consistent with County stormwater regulations, and provisions of the Eastern Washington Stormwater Manual as applied to Stevens County	Infrastructure improvements	Concentrate or limit recreational access points	Remove historical fill	
Reach	Reach Description	Shoreline Jurisdiction	Subreach	Level of Existing Function																				
Kettle River – Reach 1	Kettle River from Canada-United States boundary to T39N R32E S2 near the mouth of Tonata Creek	759 acres	N/A	Partially Functioning	•		•	•	•		IAC							IAC			IAC			
Kettle River – Reach 2	Kettle River from T39N R32E S2 near the mouth of Tonata Creek to the edge of the Curlew community	567 acres	SR 2a	Partially Functioning	•				•			IAC						IAC						
			SR 2b	Partially Functioning			a		•		IAC									IAC				
			SR 2c	Partially Functioning	•				•		IAC		IAC							IAC				
			SR 2d	Partially Functioning	•				•		IAC	IAC								IAC	IAC			
Kettle River – Reach 3	Kettle River from the southwest edge of the Curlew community to the northern edge of the community	46 acres	N/A	Impaired				•	•	•	IAC	IAC		IAC	IAC					IAC	IAC			

Notes: BMPs = best management practices IAC = Shoreline Inventory, Analysis, and Characterization LWD = large woody debris N/A = not applicable SR = subreach USFS = U.S. Forest Service					Key						Protection Opportunities													
Reach	Reach Description	Shoreline Jurisdiction	Subreach	Level of Existing Function	Agriculture	Hydrologic management regimes	In-water or overwater development	Recreation	Upland development	Vegetation (i.e., invasive or non-native species)	Riparian restoration (passive or active) to reduce erosion and increase filtration	Riparian restoration (passive or active) to increase shading and nutrient input	Protect existing riparian and upland forest areas	Conservation easements	Increase channel complexity (i.e. LWD, soft bank stabilization)	Remove invasive species	Promote alternative livestock watering areas	Expanded use of BMPs to protect shoreline from livestock operations	Promote BMPs for water quality impacts from agriculture	Implement stormwater controls consistent with County stormwater regulations, and provisions of the Eastern Washington Stormwater Manual as applied to Stevens County	Infrastructure improvements	Concentrate or limit recreational access points	Remove historical fill	
Kettle River – Reach 4	Kettle River from the northern edge of the Curlew community to southwest quarter of T40N_R34E_S09 at Lone Ranch Creek Road Bridge	717 acres	N/A	Partially Functioning	•			•	•		IAC		IAC								IAC			
Kettle River – Reach 5	Kettle River from the Lone Ranch Creek Road Bridge to Canada-United States border	184 acres	SR 5a	Partially Functioning	•			•	•		IAC	IAC	IAC											
			SR 5b	Partially Functioning	•		•	•	•			IAC										IAC		
Kettle River – Reach 6	Kettle River from the Canada-United States border to the northwest quarter of T40N_R36E_S14 near the edge of grazing fields	196 acres	N/A	Partially Functioning	•		•		•		IAC		IAC							IAC				
Kettle River – Reach 7	Kettle River from the northwest quarter of T40N_R36E_S14 to Rock Cut Road Bridge	141 acres	N/A	Partially Functioning				•	•			IAC	IAC									IAC		
Kettle River – Reach 8	Kettle River from Rock Cut Road Bridge to the edge of the community of Orient	149 acres	SR 8a	Partially Functioning	•				•		IAC		IAC								IAC			
			SR 8b	Partially Functioning					•				IAC	IAC					IAC		IAC			

Notes: BMPs = best management practices IAC = Shoreline Inventory, Analysis, and Characterization LWD = large woody debris N/A = not applicable SR = subreach USFS = U.S. Forest Service					Key						Protection Opportunities														
Reach	Reach Description	Shoreline Jurisdiction	Subreach	Level of Existing Function	Agriculture	Hydrologic management regimes	In-water or overwater development	Recreation	Upland development	Vegetation (i.e., invasive or non-native species)	Riparian restoration (passive or active) to reduce erosion and increase filtration	Riparian restoration (passive or active) to increase shading and nutrient input	Protect existing riparian and upland forest areas	Conservation easements	Increase channel complexity (i.e. LWD, soft bank stabilization)	Remove invasive species	Promote alternative livestock watering areas	Expanded use of BMPs to protect shoreline from livestock operations	Promote BMPs for water quality impacts from agriculture	Implement stormwater controls consistent with County stormwater regulations, and provisions of the Eastern Washington Stormwater Manual as applied to Stevens County	Infrastructure improvements	Concentrate or limit recreational access points	Remove historical fill		
Kettle River – Reach 9	Kettle River between northern and southern extents of the community of Orient near the northeast quarter of T39N_R36E_S23	22 acres	N/A	Partially Functioning				•	•			IAC	IAC							IAC					
Kettle River – Reach 10	Kettle River from the edge of the community of Orient to the southeast quarter of T38N_R37E_S18	202 acres	SR 10a	Partially Functioning	•			•	•		IAC		IAC									IAC			
			SR 10b	Partially Functioning	•			•	•		IAC		IAC										IAC		
Kettle River – Reach 11	Kettle River from the southeast quarter of T38N_R37E_S18 to the SE quarter of T38N_R37E_S20	163 acres	N/A	Impaired	•			•	•		IAC	IAC	IAC												
Kettle River – Reach 12	Kettle River from the southeast quarter of T38N_R37E_S20 to the confluence with the Columbia River	665 acres	SR 12a	Partially Functioning			•	•	•				IAC		IAC										
			SR 12b	Partially Functioning				•	•					IAC										IAC	
			SR 12c	Partially Functioning	•		•	•	•			IAC		IAC											

Notes: BMPs = best management practices IAC = Shoreline Inventory, Analysis, and Characterization LWD = large woody debris N/A = not applicable SR = subreach USFS = U.S. Forest Service					Key						Protection Opportunities													
					Agriculture	Hydrologic management regimes	In-water or overwater development	Recreation	Upland development	Vegetation (i.e., invasive or non-native species)	Riparian restoration (passive or active) to reduce erosion and increase filtration	Riparian restoration (passive or active) to increase shading and nutrient input	Protect existing riparian and upland forest areas	Conservation easements	Increase channel complexity (i.e. LWD, soft bank stabilization)	Remove invasive species	Promote alternative livestock watering areas	Expanded use of BMPs to protect shoreline from livestock operations	Promote BMPs for water quality impacts from agriculture	Implement stormwater controls consistent with County stormwater regulations, and provisions of the Eastern Washington Stormwater Manual as applied to Stevens County	Infrastructure improvements	Concentrate or limit recreational access points	Remove historical fill	
Reach	Reach Description	Shoreline Jurisdiction	Subreach	Level of Existing Function																				
Toroda Creek	Toroda Creek from Okanogan-Ferry County line to the confluence with the Kettle River	223 acres	SR 1a	Partially Functioning	•			•	•		IAC								IAC	IAC		IAC		
			SR 1b	Partially Functioning	•					•				IAC							IAC			
			SR 1c	Partially Functioning	•					•		IAC		IAC										
South Fork Boulder Creek	South Fork Boulder Creek from the southwest quarter of T38N_R35E_S27 to the confluence with North Fork Boulder Creek	533 acres	N/A	Functioning					•				IAC									IAC		
Boulder Creek	Boulder Creek from North Fork and South Fork Boulder Creek confluence to the confluence with the Kettle River	126 acres	N/A	Partially Functioning				•	•		IAC		IAC											
Deadman Creek	Deadman Creek from the northwest quarter of T37N_R36E_S23 to the confluence with the Kettle River	267 acres	N/A	Partially Functioning					•				IAC		IAC									

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					Agriculture	Hydrologic management regimes	In-water or overwater development	Recreation	Upland development	Vegetation (i.e., invasive or non-native species)	Riparian restoration (passive or active) to reduce erosion and increase filtration	Riparian restoration (passive or active) to increase shading and nutrient input	Protect existing riparian and upland forest areas	Conservation easements	Increase channel complexity (i.e. LWD, soft bank stabilization)	Remove invasive species	Promote alternative livestock watering areas	Expanded use of BMPs to protect shoreline from livestock operations	Promote BMPs for water quality impacts from agriculture	Implement stormwater controls consistent with County stormwater regulations, and provisions of the Eastern Washington Stormwater Manual as applied to Stevens County	Infrastructure improvements	Concentrate or limit recreational access points	Remove historical fill		
Reach	Reach Description	Shoreline Jurisdiction	Subreach	Level of Existing Function																					
Curlew Creek	Curlew Creek from Curlew Lake to the confluence with the Kettle River	613 acres	N/A	Partially Functioning	•		•	•	•					IAC	IAC					IAC					
Columbia River – Reach 1	Columbia River from the confluence with the Kettle River to the northeast quarter of T35N_R37E_S31 near French Point Rocks	3,446 acres	SR 1a	Partially Functioning				•	•				IAC	IAC							IAC	IAC			
			SR 1b	Partially Functioning					•	•			IAC	IAC	IAC									IAC	
			SR 1c	Impaired						•	•						IAC						IAC	IAC	
			SR 1d	Partially Functioning						•	•				IAC								IAC	IAC	
Columbia River – Reach 2	Columbia River from to the northeast quarter of T35N_R37E_S31 near French Point Rocks to the NE quarter of T29N_R35E_S27	14,518 acres	SR 2a	Partially Functioning					•	•			IAC		IAC										
			SR 2b	Partially Functioning	•					•	•					IAC							IAC	IAC	
			SR 2c	Partially Functioning						•	•	•					IAC							IAC	
			SR 2d	Functioning							•					IAC									
Columbia River – Reach 3	Columbia River from the northeast quarter of T29N_R35E_S27 to the mouth of the Sanpoil River	10,253 acres	SR 3a	Functioning						•				IAC											
			SR 3b	Functioning							•					IAC									
			SR 3c	Partially Functioning							•					IAC									
Columbia River – Reach 4	Columbia River from the mouth of the Sanpoil River to	4,161 acres	N/A	Partially Functioning	•			•	•					IAC						IAC	IAC				

Notes: BMPs = best management practices IAC = Shoreline Inventory, Analysis, and Characterization LWD = large woody debris N/A = not applicable SR = subreach USFS = U.S. Forest Service					Key						Protection Opportunities													
					Agriculture	Hydrologic management regimes	In-water or overwater development	Recreation	Upland development	Vegetation (i.e., invasive or non-native species)	Riparian restoration (passive or active) to reduce erosion and increase filtration	Riparian restoration (passive or active) to increase shading and nutrient input	Protect existing riparian and upland forest areas	Conservation easements	Increase channel complexity (i.e. LWD, soft bank stabilization)	Remove invasive species	Promote alternative livestock watering areas	Expanded use of BMPs to protect shoreline from livestock operations	Promote BMPs for water quality impacts from agriculture	Implement stormwater controls consistent with County stormwater regulations, and provisions of the Eastern Washington Stormwater Manual as applied to Stevens County	Infrastructure improvements	Concentrate or limit recreational access points	Remove historical fill	
Reach	Reach Description	Shoreline Jurisdiction	Subreach	Level of Existing Function																				
	Okanagan-Ferry County line																							
Sherman Creek	Sherman Creek from the southeast quarter of T35N_R36E_S06 to the confluence with the Columbia River	563 acres	N/A	Partially Functioning	•		•		•												IAC	IAC	IAC	
Hall Creek	Hall Creek from the southeast quarter of T34N_R35E_S17 to the confluence with the Columbia River	1,268 acres	SR 1a	Partially Functioning					•		IAC										IAC			
			SR 1b	Partially Functioning	•		•		•				IAC									IAC		
Stranger Creek	Stranger Creek from the northwest quarter of T32N_R36E_S21 to the confluence with the Columbia River	563 acres	N/A	Partially Functioning	•		•		•		IAC			IAC								IAC		
Ninemile Creek	Ninemile Creek from the southeast quarter of T30N_R34E_S25 to the confluence with the Columbia River	386 acres	N/A	Functioning					•					IAC										

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					Agriculture	Hydrologic management regimes	In-water or overwater development	Recreation	Upland development	Vegetation (i.e., invasive or non-native species)	Riparian restoration (passive or active) to reduce erosion and increase filtration	Riparian restoration (passive or active) to increase shading and nutrient input	Protect existing riparian and upland forest areas	Conservation easements	Increase channel complexity (i.e. LWD, soft bank stabilization)	Remove invasive species	Promote alternative livestock watering areas	Expanded use of BMPs to protect shoreline from livestock operations	Promote BMPs for water quality impacts from agriculture	Implement stormwater controls consistent with County stormwater regulations, and provisions of the Eastern Washington Stormwater Manual as applied to Stevens County	Infrastructure improvements	Concentrate or limit recreational access points	Remove historical fill		
Reach	Reach Description	Shoreline Jurisdiction	Subreach	Level of Existing Function																					
Sanpoil River – Reach 1	Sanpoil River from the northeast quarter of T36N_R33E_S07 near the City of Republic to the northwest quarter of T35N_R32E_S12 near National Forest Road 53	667 acres	SR 1a	Partially Functioning	•				•						IAC							IAC			
			SR 1b	Partially Functioning	•		•			•						IAC								IAC	
			SR 1c	Partially Functioning			•			•					IAC									IAC	
Sanpoil River – Reach 2	Sanpoil River from the northwest quarter of T35N_R32E_S12 near National Forest Road 53 to the northwest quarter of T35N_R33E_S19 at the edge of USFS-owned lands	137 acres	N/A	Partially Functioning	•		•		•						IAC							IAC			
Sanpoil River – Reach 3	Sanpoil River from the northwest quarter of T35N_R33E_S19 at the edge of USFS-owned lands to the northeast quarter of T33N_R32E_S35	1,103 acres	SR 3a	Partially Functioning				•	•													IAC			
			SR 3b	Partially Functioning	•					•					IAC								IAC		
			SR 3c	Partially Functioning	•		•			•		IAC											IAC		
	Sanpoil River from the northeast quarter of	1,017	SR 4a	Partially Functioning	•			•	•						IAC							IAC			

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					Agriculture	Hydrologic management regimes	In-water or overwater development	Recreation	Upland development	Vegetation (i.e., invasive or non-native species)	Riparian restoration (passive or active) to reduce erosion and increase filtration	Riparian restoration (passive or active) to increase shading and nutrient input	Protect existing riparian and upland forest areas	Conservation easements	Increase channel complexity (i.e. LWD, soft bank stabilization)	Remove invasive species	Promote alternative livestock watering areas	Expanded use of BMPs to protect shoreline from livestock operations	Promote BMPs for water quality impacts from agriculture	Implement stormwater controls consistent with County stormwater regulations, and provisions of the Eastern Washington Stormwater Manual as applied to Stevens County	Infrastructure improvements	Concentrate or limit recreational access points	Remove historical fill				
Reach	Reach Description	Shoreline Jurisdiction	Subreach	Level of Existing Function																							
Sanpoil River – Reach 4	T33N_R32E_S35 to the northeast quarter of T31N_R33E_S06		SR 4b	Functioning					•															IAC			
			SR 4c	Partially Functioning	•					•																IAC	
Sanpoil River – Reach 5	Sanpoil River from the NE quarter of T31N_R33E_S06 to the northwest quarter of T30N_R33E_S33 at the head of Sanpoil River Arm	946 acres	SR 5a	Partially Functioning	•				•		IAC														IAC		
			SR 5b	Partially Functioning	•			•	•				IAC													IAC	
			SR 5c	Partially Functioning	•					•				IAC													IAC
			SR 5d	Partially Functioning					•	•																IAC	IAC
Sanpoil River – Reach 5	Sanpoil River from the northwest quarter of T30N_R33E_S33 at head of Sanpoil River Arm to the confluence with Columbia River	2,701 acres	N/A	Partially Functioning					•	•																IAC	
Granite Creek	Granite Creek from the northeast quarter of T36N_R32E_S03 to the confluence with Sanpoil River	197 acres	SR 1a	Partially Functioning	•			•	•																IAC	IAC	IAC
			SR 1b	Partially Functioning	•				•	•		IAC															IAC

Notes: BMPs = best management practices IAC = Shoreline Inventory, Analysis, and Characterization LWD = large woody debris N/A = not applicable SR = subreach USFS = U.S. Forest Service					Key						Protection Opportunities											
					Agriculture	Hydrologic management regimes	In-water or overwater development	Recreation	Upland development	Vegetation (i.e., invasive or non-native species)	Riparian restoration (passive or active) to reduce erosion and increase filtration	Riparian restoration (passive or active) to increase shading and nutrient input	Protect existing riparian and upland forest areas	Conservation easements	Increase channel complexity (i.e. LWD, soft bank stabilization)	Remove invasive species	Promote alternative livestock watering areas	Expanded use of BMPs to protect shoreline from livestock operations	Promote BMPs for water quality impacts from agriculture	Implement stormwater controls consistent with County stormwater regulations, and provisions of the Eastern Washington Stormwater Manual as applied to Stevens County	Infrastructure improvements	Concentrate or limit recreational access points
Reach	Reach Description	Shoreline Jurisdiction	Subreach	Level of Existing Function																		
Granite Creek – Republic Reach	Granite Creek within the City of Republic limits (from the northeast quarter of T36N_R32E_S01 to the northwest quarter of T36N_R33E_S07)	58 acres	N/A	Partially Functioning				•	•													
West Fork Sanpoil River	West Fork Sanpoil River from Okanagan/Ferry County line (northwest quarter in T34N_R32E_S07) to the confluence with Sanpoil River	263 acres	N/A	Functioning					•					IAC							IAC	IAC
East Ferry Lakes Group – North	East Ferry Lake Group North is located along the west side of Columbia River between Sherman Creek and Hall Creek	Lake Ellen (129 acres), Elbow Lake (140 acres), and La Fleur Lake (166 acres)	N/A	Partially Functioning				•	•						IAC						IAC	

Notes: BMPs = best management practices IAC = Shoreline Inventory, Analysis, and Characterization LWD = large woody debris N/A = not applicable SR = subreach USFS = U.S. Forest Service					Key						Protection Opportunities												
					Agriculture	Hydrologic management regimes	In-water or overwater development	Recreation	Upland development	Vegetation (i.e., invasive or non-native species)	Riparian restoration (passive or active) to reduce erosion and increase filtration	Riparian restoration (passive or active) to increase shading and nutrient input	Protect existing riparian and upland forest areas	Conservation easements	Increase channel complexity (i.e. LWD, soft bank stabilization)	Remove invasive species	Promote alternative livestock watering areas	Expanded use of BMPs to protect shoreline from livestock operations	Promote BMPs for water quality impacts from agriculture	Implement stormwater controls consistent with County stormwater regulations, and provisions of the Eastern Washington Stormwater Manual as applied to Stevens County	Infrastructure improvements	Concentrate or limit recreational access points	Remove historical fill
Reach	Reach Description	Shoreline Jurisdiction	Subreach	Level of Existing Function																			
East Ferry Lakes Group – South	East Ferry Lake Group South is located south of Hall Creek along the west side of Columbia River	Camille Lake (53 acres), Round Lake (212 acres), and Bourgeau Lake (87 acres)	N/A	Partially Functioning	•			•	•													IAC	
Twin Lakes Group	Twin Lakes are located about 7 miles southwest of Inchelium	North Twin Lake (1,174 acres) and South Twin Lake (1,161 acres)	N/A	Partially Functioning				•	•						IAC							IAC	
Curlew Lake	Curlew Lake is located about 4.5 miles northeast of Republic	613 acres	N/A	Partially Functioning			•	•	•						IAC							IAC	
West Ferry Lakes Group – North	West Ferry Lake Group North is located about 2 miles north of Republic, south of Curlew Lake	Mud Lake (52 acres) and Sanpoil Lake (123 acres)	N/A	Impaired	•			•	•		IAC	IAC										IAC	

Notes: BMPs = best management practices IAC = Shoreline Inventory, Analysis, and Characterization LWD = large woody debris N/A = not applicable SR = subreach USFS = U.S. Forest Service					Key						Protection Opportunities												
					Agriculture	Hydrologic management regimes	In-water or overwater development	Recreation	Upland development	Vegetation (i.e., invasive or non-native species)	Riparian restoration (passive or active) to reduce erosion and increase filtration	Riparian restoration (passive or active) to increase shading and nutrient input	Protect existing riparian and upland forest areas	Conservation easements	Increase channel complexity (i.e. LWD, soft bank stabilization)	Remove invasive species	Promote alternative livestock watering areas	Expanded use of BMPs to protect shoreline from livestock operations	Promote BMPs for water quality impacts from agriculture	Implement stormwater controls consistent with County stormwater regulations, and provisions of the Eastern Washington Stormwater Manual as applied to Stevens County	Infrastructure improvements	Concentrate or limit recreational access points	Remove historical fill
Reach	Reach Description	Shoreline Jurisdiction	Subreach	Level of Existing Function																			
West Ferry Lakes Group – South	West Ferry Lakes Group – South is located between the Okanagan-Ferry County line and Sanpoil River, and north of West Fork Sanpoil River	Swan Lake (97 acres) and Ferry Lake (49 acres)	N/A	Partially Functioning			•	•								IAC						IAC	

Notes:
 BMPs = best management practices
 IAC = Shoreline Inventory, Analysis, and Characterization
 LWD = large woody debris
 N/A = not applicable
 SR = subreach
 USFS = U.S. Forest Service

4.2 Restoration Goals and Objectives

As described in Section 3, a number of government and private organizations are involved in habitat management and restoration planning within the County. In addition, some work has been done with regard to setting the direction for habitat management and restoration planning in the region. The general management goals identified in plans for the region are applicable to the County, due to similar habitat conditions across the region, and were used to formulate a list of goals and objectives for this Plan. These goals and objectives, as follows, will guide the restoration actions described herein and can be used to formulate metrics to monitor progress in implementing the Plan:

1. Restore and maintain old-growth forests and promote sustainable ecosystem function in early- and mid- successional forests through management and restoration on public lands. This may include forest practices to reduce fire risk (thinning) or prescribed burns that reintroduce fire into fire-dependent systems.
2. Promote and enhance habitat diversity and connectivity, especially for sensitive or rare habitats (e.g., shrub-steppe, wetland, and riparian zones). Example objectives could include incorporating habitat complexity and reconnecting streams with their floodplains and off-channel habitats.
3. Protect and maintain water quality, which contributes to the recovery of sensitive species and improves impaired temperatures and contaminant conditions. Example objectives could include implementing best management practices for reducing soil erosion, reducing unnecessary impervious surface areas, and implementing best management practices for applying pesticides, herbicides, and fertilizers in irrigated areas.
4. Protect, maintain, and, where feasible, enhance or restore riparian, forest, shrub-steppe, wetland, and floodplain areas within SMP jurisdiction. Example objectives could include removing or managing invasive vegetation and replanting natives; terracing streambanks; managing runoff from crop production and livestock operations; and consolidating recreation access away from sensitive habitats.

4.3 Restoration Opportunities

Restoration opportunities exist for County and City shorelines. The following sections identify general restoration opportunities that may apply to multiple locations, as well as

specific projects and sites where restoration actions could be completed or have been identified by others as priority restoration actions.

4.3.1 General Restoration Opportunities

Various ecological benefits can be realized if shoreline impairments are addressed by restoration in the County. Opportunities can be identified and compared against various criteria to prioritize implementation. The habitat plans and programs described in Section 3 of this document describe direction and/or recommendations for actions to address many of the impairments that occur within the County. Table 3 shows the restoration or protection opportunities that these plans and programs have identified, including the reasons for the habitat impairment and a summary of the ecological benefits to be realized from the actions. The IAC (Anchor QEA 2014) also recommended actions for specific areas within Coalition SMP boundaries, which are shown in Table 3 by reach and subreach (see IAC report for reach extents).

Major opportunities identified include re-establishing or protecting sensitive habitats such as riparian, wetland, forest and shrub-steppe habitats. This could be accomplished by consolidating access to these areas for recreational purposes, livestock grazing, crop production, and development in general. Protecting or improving water quality is also a key element of habitat management in the County, particularly in regards to water temperature. Examples of measures that could be used to improve or protect water quality include implementing the most recent state stormwater controls and livestock exclusion, using best management practices for soil erosion, and controlling the use of pesticides, herbicides, and fertilizers in irrigated areas within the County.

The following benefits to ecological functions can be derived as a result of implementing the restoration and protection opportunities identified in Table 3:

- Improved vegetation recruitment for riparian, forest, shrub-steppe, and wetland habitats
- Improved temperature-, dissolved oxygen-, toxin-, and pathogen-management capabilities
- Increased habitat for aquatic and terrestrial species for foraging, breeding, nesting, and migration

- Increased hyporheic exchange, groundwater recharge, and water storage
- Increased subsurface infiltration and flow and surface water quality protection
- Reduced soil erosion
- Reduced excess nutrient sources to improve water quality

4.3.2 Site-specific Restoration and Protection Opportunities

Although most plans and programs from the SMP jurisdictional area address large-scale direction and management, there is a small set of actions that were identified or planned for specific areas. These include publically owned lands and existing wildlife protection areas, as well as privately owned lands. Table 3 lists these locations and opportunities and includes the source document, as well as the impairment to be addressed and key benefits to ecological function expected as a result of the project implementation.

Table 3
Restoration and Protection Opportunities and Priorities¹ in the Ferry County Coalition Area

No.	Area	Location	Restoration/Protection Opportunities	Priority ¹	Source	Key Impairments	Key Benefits to Ecological Functions
1	Columbia River	SR 3c (Redford Canyon), Reach 4 (Moonbeam Bay)	Reduce erosion from wave action by installing log booms	Moderate	USBR Lake Roosevelt Shoreline Protection Systems ²	Shoreline stabilization	Reduce erosion
2	Kettle River	Reach 1	Restore 900 linear feet of the northeast bank of the Kettle River through placement of large wood, native vegetation planting, and exclusion fencing	High	Private Project ³	Habitat quality, riparian vegetation	Increase habitat complexity, recruit riparian vegetation
3	Curlew Creek	Headwaters/ Curlew Creek	Improve floodplain connectivity through placement of large wood and boulders	High	USFS – Republic Ranger District ⁴	Habitat quality	Increase habitat complexity
4	Curlew Lake	Roberta Lake/ Southern Extension of Curlew Lake	Improve trail facilities including a new boardwalk across Roberta Creek	Moderate	RCO ALEA Act ⁵	Shoreline stabilization, water quality	Reduce erosion
5	Curlew Lake	Entire Lake	Remove purple loosestrife from lake via herbicide treatment	Moderate	Ferry County Weed Board ⁶	Water quality	Reduce presence of noxious weeds
6	Kettle River	Reach 7	Riparian restoration planting efforts to provide shading and nutrient inputs in non-vegetated areas along U.S. Route 395	Moderate	IAC Report ⁷	Riparian vegetation	Recruit riparian vegetation
7	Kettle River	Reach 10	Implement riparian restoration planting efforts to reduce erosion and increase filtration near agricultural field at southern edge of subreach	High	IAC Report	Riparian vegetation, water quality	Recruit riparian vegetation/ reduce erosion
8	South Fork Boulder Creek	N/A	Rebuild National Forest-6110 bridge	Moderate	IAC Report	Shoreline stabilization	Reduce erosion
9	Columbia River	SR 1c	Formalize boat launch and incorporate riparian or aquatic structure complexity associated with these improvements	Moderate	IAC Report	Riparian vegetation, recreation	Recruit riparian vegetation
10	Sanpoil River	SR 5d	Stabilize banks along Silver Creek Road	Moderate	IAC Report	Shoreline stabilization	Reduce erosion
11	Granite Creek	SR 1b	Remove or replace aging wooden trail bridges within the Perry Wilderness Park	Moderate	Community ³	Riparian vegetation, habitat quality	Remove unneeded structures and improve riparian vegetation and reduce erosion
12	Toroda Creek	SR 1a	Replace two farther upstream culverts on Toroda Creek Road	Moderate	Ferry County Public Works	Improve fish passage and habitat quality	Increase habitat complexity and improve fish passage

Notes:

1 = Very High – Habitat protection projects or actions that have a high likelihood of successfully addressing restoration of ecosystem functions and a high certainty of funding; or address critically important species and habitat concerns; High – Restoration of ecosystem functions (funded actions take higher priority within this category); and Moderate – Restoration of habitat structure (funded actions take higher priority within this category)

2 = USBR (United States Bureau of Reclamation) 2015

3 = Ferry County View 2015a

4 = Ferry County View 2015b

5 = RCO (Recreation and Conservation Office) 2013

6 = Ferry County View 2015c

7 = Anchor QEA 2015

IAC = Inventory, Analysis, and Characterization

NF = North Fork

SR = subreach

4.4 Project Evaluation and Prioritization Criteria

Projects and opportunities in this Plan can be evaluated against various criteria to prioritize implementation. The following list includes a description of criteria that indicate when a project is viewed as implementable under this Plan. Potential projects should:

- Meet goals and objectives for shoreline restoration (see Section 4.2)
- Maintain consistency with existing plans and programs (see Section 3)
- Have public support
- Be located on public property or property owned by a willing partner in restoration projects
- Protect habitat
- Restore ecosystem processes (those that only restore habitat structure would take a lesser priority)
- Improve a rapidly deteriorating habitat condition
- Provide a high benefit to ecosystem function relative to cost
- Provide riparian, shoreline, or instream habitat , restore and maintain forests and shrub-steppe habitat, or improve conditions in sensitive systems for state and federally listed native wildlife

All specific projects or actions that comprise a project listed in Table 3 exhibit some, if not all, of the above criteria. To prioritize these actions, they were assigned to a category of Very High, High, and Moderate relative to their value in achieving the SMP goal of no net loss for shorelines within Coalition SMP jurisdiction (see Table 3). Projects were categorized as follows:

1. Very High – Habitat protection projects or actions
2. High – Restoration of ecosystem functions (funded actions take higher priority within this category)
3. Moderate – Restoration of habitat structure (funded actions take higher priority within this category)

5 IMPLEMENTATION, MONITORING, AND REVIEW

Implementation of the Plan will require close coordination among the County, Ecology, and other organizational partners noted in Section 3 of this Plan.

5.1 Potential Restoration Funding Partners

There is currently no single dedicated funding source for the restoration actions presented in this Plan. Restoration described in this Plan is dependent on federal, state, or local budgets; grant funding; and the variety of outside funding sources available for restoration work. Funds are distributed through grant-making agencies at the local, state, and federal level. Opportunities described below are primarily administered by state and federal agencies. It is expected that funding will be derived from various sources. Sources listed in this Plan do not represent an exhaustive list of potential funding opportunities, but are meant to provide an overview of the types of opportunities available. These sources include the following:

- American Sportfishing Association’s Fish America Foundation Grants
- Washington State Department of Ecology:
 - Aquatic Weeds Financial Assistance Program
 - Water Quality Grants, including federal Clean Water Act Section 319 Program
- Environmental Protection Agency Region 10: Pacific Northwest:
 - The Clean Water State Revolving Fund Program
 - Nonpoint Source Implementation Grant (319) Program
 - Wetland Protection, Restoration, and Stewardship Discretionary Funding
- Ferry County Conservation District
- National Fish and Wildlife Foundation:
 - Bring Back the Natives: A Public-Private Partnership for Restoring Populations of Native Aquatic Species
 - Five-Star Restoration Matching Grants Program
 - Native Plant Conservation Initiative
 - The Migratory Bird Conservancy
- Recreation and Conservation Office of Washington:

- Salmon Recovery Funding Board
- ALEA
- Family Forest Fish Passage Program
- Land and Water Conservation Fund
- Washington Wildlife Recreation Program
- USFS:
 - Collaborative Forest Landscape Restoration Program
- USFWS:
 - Partners for Fish and Wildlife Program
 - National Fish Passage Program
 - Cooperative Endangered Species Conservation Fund
 - North American Wetlands Conservation Act Grants Program
- NOAA Restoration Center:
 - Community-based Restoration Program (CRP)
 - NOAA CRP 3-Year Partnership Grants
 - NOAA CRP Project Grants
- WDFW:
 - ALEA Volunteer Cooperative Projects Program
 - Landowner Incentive Program

Private foundations, businesses, and other groups administer grant programs that include funding for shoreline habitat and ecosystems, include funding for shoreline habitat and ecosystems, such as the Kettle River Advisory Board and the Upper Columbia Fisheries Enhancement Group.

5.2 Timelines, Benchmarks, and Monitoring

The County's restoration work, as it relates to this Plan, should be monitored and evaluated on a set timeline against a suite of benchmarks to determine consistency with the State's SMP policy standard of no net loss of ecological functions. This Plan will be implemented when the SMP is adopted by Ecology, and could be implemented with the following suggested timeline, depending on funding availability and constraints.

Within 10 years of Plan adoption, objectives could include the following:

- Prioritize, fund, and complete a set number of restoration projects (two to five)
- Explore and solidify regular funding opportunities for future projects
- Identify and implement public workshops, webpages, or other forums for periodically updating residents on shoreline restoration efforts

Quantifiable benchmarks should also be noted over time to track changes in shoreline conditions and create documentation for no net loss of shoreline function. A county-wide mechanism to track this could be established.

Information that could be tracked and monitored can be sourced from permit information, project applications, and completion reports filed with various jurisdictions. Possible data could include the following:

- Shoreline variances and reasons/nature of variance
- Linear distance of new hard armoring or hard armoring removed, above the ordinary high water mark (OHWM)
- Linear distance of new, soft shoreline stabilization
- Linear distance of new or enhanced riparian vegetation or vegetation removals
- Number of new docks and coverage area
- Number of new piles or piles removed
- Cubic yardage and coverage area of fill removed or replaced, below the OHWM
- Number of new boat ramps or boat ramps removed
- Number of new outfalls or outfalls removed/consolidated
- Wetland acreage existing, restored, and lost
- Increases or decreases in impervious surface area

5.3 Shoreline Master Program Review

The County will be required to conduct periodic SMP updates, which will include an evaluation of the efficacy of the SMP and this Plan. This review will involve comparing past conditions with existing conditions, and assessing whether the actions, policies, and regulations set since the last SMP update have been valuable in ensuring no net loss. The

evaluation will be an opportunity to adjust these measures, as applicable, for the benefit of future shoreline conditions.

6 REFERENCES

- Anchor QEA, 2015. *Draft Shoreline Inventory, Analysis, and Characterization Report, Ferry County Coalition Shoreline Master Program Update*. Prepared for the Ferry County Coalition. June 2015.
- BLM (Bureau of Land Management), 1987. Spokane Resource Management Plan Record of Decision. Rangeland Program Summary. Available from: http://www.blm.gov/or/districts/spokane/plans/files/RMP_ROD_1987.pdf.
- CCFEG (Cascade Columbia Fisheries Enhancement Group), 2015. About Us. Cited June 19, 2015. Available from: <http://www.ccfeg.org/about/about-us/>.
- CFAR (Center for Applied Research), 2014. Integrated Resource Management Plan Resource Assessment. Prepared for the Confederated Tribes of the Colville Reservation. Available from: <http://www.colvilletribes.com/irmp.php>.
- CTCR (The Confederated Tribes of the Colville Reservation), 1996. Holistic Goal and Desired Future Conditions. Available from: <http://www.colvilletribes.com/irmp.php>.
- Ecology (Washington State Department of Ecology), 2004. *A Department of Ecology Report: What Does No Net Loss Mean in the 2003 SMA Guidelines?* June 2004.
- Ecology, 1995. *Initial Watershed Assessment Water Resource Inventory Area 60 – Kettle River Watershed*. Open-File Technical Report 95-16. May 1995.
- Ecology, 2015. Watershed Management: Kettle Falls – WRIA 60. Cited June 1, 2015. Available from: <http://www.ecy.wa.gov/programs/eap/wrias/Planning/60.html>.
- FCD (Ferry Conservation District), 2015. Five-Year Plan (2015-2020). Available from: http://media.wix.com/ugd/c28dcb_970281f2c2c945b1a31c9df65cabe24b.pdf.
- Ferry County View, 2015a. Notice of Shoreline Management Substantial Development. Updated: April 2015. Available from: http://ferrycountyview.com/index.php?option=com_adsmanager&view=details&id=7494&catid=1&Itemid=106.

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- Ferry County View, 2015b. Request for Comments: Lambert Restoration Project. Updated: February 2015. Available from: http://ferrycountyview.com/index.php?option=com_adsmanager&view=details&id=7459&catid=1&Itemid=106.
- Ferry County View, 2015c. Cleaning up Curlew Lake. Updated: April 2015. Available from: http://ferrycountyview.com/index.php?option=com_content&view=article&id=851:cleaning-up-curlew-lake-&catid=35:general-news&Itemid=67.
- GEI (GEI Consultants Inc.), 2004. Intermountain Province Subbasin Plan. Prepared for Northwest Power and Conservation Council. Available from: <http://www.nwcouncil.org/fw/subbasinplanning/intermountain/plan/>.
- ICBEMP (Interior Columbia Basin Ecosystem Management Project), 2014. The Interior Columbia Basin Strategy. Available from: <http://www.icbemp.gov/>.
- Melillo, J.M., T.C. Richmond, and G.W. Yohe, Eds., 2014. *Climate Change Impacts in the United States: The Third National Climate Assessment*. Prepared by the U.S. Global Change Research Program. Available from: <http://nca2014.globalchange.gov/>.
- Morris, G.A., P. Larson, and P. Hooper, 2000. 'Subduction Style' Megmatism in a Non-subduction Setting: The Colville Igneous Complex, NE Washington State, USA. *Journal of Petrology* 41(1):45-67.
- NEWFC (Northeast Washington Forestry Coalition), 2011. Northeast Washington Forest Vision 2020: Collaborative Forest Landscape Restoration. Available from: <http://www.fs.fed.us/restoration/CFLRP/overview.shtml>.
- NPS (National Park Service), 2015. About Us. Cited: June 1, 2015. Available from: <http://www.nps.gov/aboutus/index.htm>.
- NWCC (Northwest Power and Conservation Council), 2014. Columbia River Basin Fish and Wildlife Program. Available from: <https://www.nwcouncil.org/fw/program/2014-12/program/>.
- OLT (Okanagan Land Trust), 2015. Our History. Cited: June 25, 2015. Available from: <http://www.okanoganlandtrust.org/about-the-olt.html>.

- RCO (Recreation and Conservation Office), 2013. Roberta Lake Wetland Development. Updated: December 2013. Available from: <https://secure.rco.wa.gov/prism/search/ProjectSnapshot.aspx?ProjectNumber=12-1012>.
- Reclamation (U.S. Bureau of Reclamation), 2009. Lake Roosevelt Incremental Storage Releases Project Draft Environmental Assessment. Pacific Northwest Region. Yakima, Washington. February 2009.
- Reclamation, 2015. *Draft Environmental Assessment, Two Shoreline Protection Systems, Lake Roosevelt, Grand Coulee Project, Washington*. February 2015.
- TNC (The Nature Conservancy), 2006. Okanagan Ecoregional Assessment. Available from: <http://waconservation.org/projects/ecoregions/>.
- USDA (U.S. Department of Agriculture), 2012.
- USFS (U.S. Forest Service), 2015. What We Believe. Cited: June 1, 2015. Available from: <http://www.fs.fed.us/about-agency/what-we-believe>.
- WASC (Washington Steering Committee), 2005. Coordinated Implementation Plan for Bird Conservation in Eastern Washington. Available from: http://iwjv.org/sites/default/files/plan_eastwa_scp.pdf.
- WDFW (Washington Department of Fish and Wildlife), 2015. Regional Fisheries Enhancement Groups. Cited: June 19, 2015. Available from: <http://wdfw.wa.gov/about/volunteer/rfeg/index.html>.
- WHCWG (Washington Wildlife Habitat Connectivity Working Group), 2010. Washington Connected Landscapes Project: Statewide Analysis. Prepared by the Washington Departments of Fish and Wildlife and Transportation. Available from: <http://wacconnected.org/>.