DRAFT MEMORANDUM

Project No. 180249

February 26, 2020

To: Mike Hermanson, Spokane County Environmental Services, Lead Agency
WRIA 55 Planning Unit Members

From:

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Re: **Summary of Identified Water and Non-Water Offset Projects**
WRIA 55 ESSB 6091/RCW 90.94 Watershed Plan Update

Introduction

The passage of Engrossed Substitute Senate Bill (ESSB) 6091, as codified by Revised Code of Washington (RCW) 90.94, requires that an update to the existing Watershed Plan for Water Resource Inventory Area (WRIA) 55, the Little Spokane Watershed, be approved by the Washington Department of Ecology (Ecology) by February 1, 2021. Spokane County Environmental Services is serving as the lead agency for this process. The WRIA 55 Initiating Governments for the watershed planning process are Spokane County, Stevens County, Pend Oreille County, the City of Spokane, and Whitworth Water District. The process is supported by convening the WRIA 55 Planning Unit to review technical tasks and memorandums, policy decisions, and the pending watershed plan update. Aspect Consulting, LLC (Aspect) has been contracted by Spokane County to facilitate planning unit meetings, conduct supporting technical tasks, and prepare the Watershed Plan update.

ESSB 6091 and RCW 90.94 require projects to be identified to offset potential impacts to instream flows associated with estimated permit-exempt well use over a 20-year horizon[1].

RCW 90.94.020(b) defines offset project priorities:

- At a minimum, include actions that the planning units determine to be necessary to offset potential impacts to instream flows associated with permit-exempt domestic water use.

[1] In its GUID-2094:*Final Guidance for Determining Net Ecological Benefit*, Ecology noted that this 20-year planning horizon begins on January 19, 2018 (the date ESSB 6091 was signed into law). Publication 19-11-079, July 31, 2019.

- The highest priority recommendations include replacing the quantity of consumptive water use during the same time as the impact and in the same basin or tributary.
- Lower priority projects include projects not in the same basin or tributary and projects that replace consumptive water supply impacts only during critical flow periods.
- Non-water offset projects include projects such as aquatic habitat, fish passage, and water quality improvements that serve to supplement water-offset projects such that the overall plan meets the Net Ecological Benefit (NEB) standard required by RCW 90.94.

Ecology is required to determine that actions identified in the watershed plan, after accounting for new projected uses of water over the subsequent 20years, will result in a NEB[2] to instream resources within the WRIA.

This memorandum is intended to serve the following purposes:

- To provide descriptions of identified water and non-water offset projects to the WRIA 55 Planning Unit for review
- To compare the proposed offset project list to demand estimates for the entire watershed[3] and on a subbasin basis, in support of the required NEB evaluation
- To obtain WRIA 55 Planning Unit review of and concurrence with the proposed project list, prior to incorporating the selected projects into the Watershed Plan addendum

Solicitation of Offset Proposals from WRIA 55 Planning Unit

On December 10, 2019, Aspect submitted a request to WRIA 55 Planning Unit participants to submit offset proposals for the Planning Unit's consideration. The request included a form for providing specific information regarding the proposals. Projects received through this solicitation are summarized in this memorandum, along with several other proposed water offset projects identified and investigated by Spokane County and Aspect. Solicitation forms and supporting material received are provided in Attachment 1 of this memorandum.

Considerations for Implementing Proposed Offset Projects

In Ecology's GUID-2094:*Final Guidance for Determining Net Ecological Benefit*, the following factors were suggested for planning groups to consider:

- Cost of implementation

[2]Ecology GUID-2094 defines NEB as: *"the outcome that is anticipated to occur through implementation of projects in a plan to yield offsets that exceed impacts within: a) the planning horizon; and, b) the relevant WRIA boundary."*

[3]Ecology GUID-2094 notes that the NEB evaluation *"should describe the projected impacts and any offsets within each of the subbasins. Because all impacts at a minimum must be offset at the WRIA level, the evaluation should determine if the plan has succeeded in offsetting the impacts at the WRIA level. This means there may be instances where the amount of offsets provided in certain subbasins will be more or less than the projected new consumptive water use there. This is acceptable because the offsets are provided within the WRIA and in sufficient quantities."*

- Technical feasibility of implementation
- Operations and maintenance needs and costs
- Parties identified to undertake specified project or action
- Political support (i.e., local and stakeholder support)
- The role of uncertainty, including projected trends, in the offset estimates and project or action benefits
- The duration of project or action compared to the duration of the new consumptive water use
- Connections to existing projects and actions, such as land use regulations
- The role of adaptive management in plan implementation

To the extent possible at this stage of offset project proposals and development, these factors are considered in the offset project descriptions presented in this memorandum.

Estimated Future Permit-Exempt Well Demand

Section 202 of ESSB 6091, which is applicable to WRIA 55, contains several provisions regarding how updated watershed plans are to offset or account for projected water use on the 20-year horizon (beginning on January 19, 2018). The permit-exempt well estimate is a critical component of the Watershed Plan update, as it is the 'yardstick' that will be used for comparison to offset projects during the NEB determination. Section 202(4)(b) states, in part:

> *"At a minimum, the [watershed] plan must include those actions that the planning units determine to be necessary to offset potential impacts to instream flows associated with permit exempt domestic water use."*

In March 2018, Ecology issued Recommendations for Water Use Estimates[4] for ESSB 6091 that provides guidance on evaluation of future permit-exempt well demand. This document clarifies that Ecology interprets all projected water use referenced in Section 202(4)(c) to refer to only consumptive permit-exempt domestic groundwater water use (as opposed to water use associated with municipalities or stockwater, for example). Ecology considers this consumptive use to be water that is evaporated, transpired, consumed by humans, or otherwise removed from an immediate water environment due to the use of permit-exempt domestic wells.

During 2019, Aspect worked with the WRIA 55 Counties (Spokane, Stevens, and Pend Oreille) to evaluate future permit-exempt well demand in each county in accordance with ESSB 6091 and RCW 90.94 requirements. The results of this analysis were presented to the WRIA 55 Planning Unit in a draft memorandum. Based on comments from the Planning Unit, the memorandum was revised and redistributed to the Planning Unit on September 9, 2019[5]. The most significant

[4] https://fortress.wa.gov/ecy/publications/documents/1811007.pdf

[5] Aspect 2019. Draft Memorandum, Evaluation of Future Exempt Well Demand, ESSB 6091/RCW 90.94 Watershed Plan Update, September 9, 2019.

change in response to Planning Unit comments was the inclusion of two methods of calculating growth rates in Spokane County, with both Office of Financial Management (OFM) and historical growth rate projections used in the analysis.

The WRIA 55 Planning Unit has not made a final determination on which scenario to include in the final NEB evaluation and Watershed Plan Addendum. Rather than include both of the growth rate estimates throughout, the remainder of this memorandum only references the higher growth rate scenario for comparison to water offset projects.

In addition, since the September 2019 demand memorandum was distributed to the Planning Unit, an updated review of Dartford subbasin demand has been conducted to 1) remove demand projected to occur in the area governed by WAC 173-557. Permit-exempt wells in this area are regulated separately, and Ecology has established a water bank to mitigate for new uses, and 2) separate demand from exempt wells in the Dartford subbasin that do not impact Dartford Creek, but do impact the mainstem Little Spokane River. Table 1 presents the results of the updated demand analysis using the higher growth rate scenario:

Table 1. Total Projected Combined Indoor/Outdoor Consumptive Use in WRIA 55, 20-Year Planning Horizon, Higher Growth Rate Scenario

WRIA 55 Subbasins	Projected Consumptive Use (afy)	Projected Consumptive Use (cfs)
Dartford Creek	124	0.17
Mainstem LSR	162	0.22
Dragoon Creek	453	0.63
Deadman/Peone Creek	480	0.66
Beaver Creek	216	0.30
Otter Creek	297	0.41
West Branch	86	0.12
Little Spokane/Deer Creek	239	0.33
Little Deep Creek	67	0.09
Total	***2124***	***2.93***

Notes: afy = acre feet per year; cfs = cubic feet per second

Habitat Needs and Considerations for Non-Water Offset Projects

In a separate document, Spokane County has prepared a summary of current aquatic habitat conditions that is intended to support the NEB evaluation[6]. That report reviews existing information on habitat conditions, both basin wide and by specific subbasin. It also provides figures showing:

- Distribution of redband trout

[6] WRIA 55 – Little Spokane River Watershed current Aquatic Habitat Conditions for RCW 90.94 Net Ecological Benefit Evaluation, Spokane County Water Resources Staff, February 2020.

- Known areas of poor riparian habitat
- Identified fish passage barriers
- Intrinsic potential habitat for steelhead/redband
- Potential wetland restoration sites
- Intrinsic potential habitat for chinook

Please refer to the above referenced document for background on potential habitat needs and considerations.

Categories of Proposed Offset Projects

This memorandum summarizes identified water and non-water offset projects for the WRIA 55 Planning Unit to review for inclusion in the watershed plan addendum. The summary is provided based on the following categories of projects:

Identified water offset projects

- Water right purchases. Placing valid water rights into Ecology's Trust Water Right Program (TWRP) and the associated cessation of use provides direct instream flow benefits and mitigation for exempt well use. This includes prospective purchases and purchases already completed by Spokane County in support of the Little Spokane Water Bank.
- Managed aquifer recharge (MAR) projects identified through modeling/geographic information systems (GIS) Investigations. MAR projects involve the capture of surface water and infiltration to groundwater, when water is physically and legally available. Successful MAR projects result in streamflow benefits during critical low streamflow periods.
- MAR projects with preliminary design status. Field investigations were conducted at three potential MAR sites identified through modeling/GIS investigations, and two MAR project sites now have preliminary design work completed and site access secured.
- Surface water storage projects. Surface water storage projects involve the retention of surface water when water is physically and legally available, for later release during critical low streamflow periods.
- Water supply source exchange. This involves using alternative sources for water supply that lessen or eliminate impacts at the original water source location, providing streamflow benefits to adjacent surface water bodies from cessation of use at the former source location.

Identified non-water offset (habitat projects)

- Fish barrier removal. These projects involve replacing or modifying culverts to remove barriers to fish passage, thereby increasing available accessible habitat.

- Floodplain restoration. Restoration can include reconnecting side channels and other modifications to stream channel morphology, levee modifications, and enhancement of associated riparian vegetation.
- Habitat restoration/enhancement. Habitat restoration projects can include enhancing riparian vegetation, placing woody debris to improve habitat, gravel augmentation, and other activities that improve habitat.
- Land acquisition. These projects include acquisition (or easements) that protect land from future development and allow preservation and restoration of upland and riparian habitat to preserve and enhance the aquatic environment.

Identified opportunistic projects (coupled with adaptive management)

- Seeking new opportunities for water right purchases
- Future identification of culvert/fish barrier projects
- Future landowner interest in habitat restoration projects

Adaptive Management

Ecology refers to adaptive management in its Streamflow Restoration Policy Statement (POL-2094):[7]

> *"Planning groups may include components which they believe help ensure that projects/actions will be completed successfully (e.g. conditions to allow for adjustment of the watershed plan in the future) as an "adaptive management" element."*

As part of completion of the watershed plan addendum, the WRIA 55 Planning Unit can consider options for adaptive management to address several variables that may affect implementation of the watershed plan addendum. This could occur on a 5-year cycle, for example. Future variables to consider include:

- Increases or decreases in actual new exempt well demand in comparison to the estimates conducted as part of the current watershed plan update, which would potentially shift appropriate offset project needs.
- Availability of project funding for implementation of proposed offset projects.
- Identification of new potential water and non-water offset projects (opportunistic projects), including from future landowner interest in selling water rights or pursing implementation of habitat restoration projects, and from future studies such as fish barrier investigations.

Summary of Proposed Offset Projects

A summary of proposed water and non-water offset projects for the WRIA 55 Planning Unit to review for inclusion in the watershed plan addendum is presented below. This project list was

[7] Ecology POL-2094, Streamflow Restoration Policy and Interpretive Statement, July 31, 2019.

developed from water offset projects investigated by Spokane County and Aspect, and from projects proposed by members of the Planning Unit.

Figure 1 shows the location of offset projects discussed in this memorandum along with established subbasin boundaries for reference. Attachment 1 provides Project Proposals submitted by Planning Unit members, and narrative descriptions of the projects follow:

Water Offset Projects

Water Right Purchases - Proposed by Spokane County

Several water rights have been identified for potential purchase in WRIA 55 based on seller interest. As noted previously, placing valid water rights into the Ecology's TWRP and the associated cessation of use provides direct instream flow benefits and mitigation for permit-exempt well use in perpetuity.

Spokane County submitted an application for a Streamflow Restoration Grant to acquire water rights with WRIA 55. The funding was awarded, but it was determined that a direct purchase by Ecology for the benefit of water offset in WRIA 55 was the best administrative approach. Ecology has contracted with Aspect to facilitate the acquisition of water rights detailed in Streamflow Restoration Grant WRSRP-2019-SCUWRS-00006.

Ecology recently approved a Purchase and Sale Agreement (PSA) template for these purchases, and Aspect is moving forward on working with interested sellers to obtained executed PSAs. Following this work and in coordination with Ecology, Aspect will support required preparation of Reports of Examination (ROEs) for the water right transfers to trust.

Provided that agreements are reached with potential sellers of the water rights, these projects are considered technically feasible. Ecology is providing funding for these purchases and logistical support. No operation and maintenance expenses are associated with water right purchases placed in trust.

Spokane County also has ownership of two water rights (CG3-24214(A), G3-20511C)currently in the TWRP that it purchased for the Little Spokane Water Bank that are included in the water right purchase summary section below. The County intends to use the water bank to support rural residential development in WRIA 55. Mitigation certificates are currently available through the water bank, and the County recently updated the mitigation ordinance to allow for a process to use mitigation certificates in rural developments that require more water than is allowed by the permit exemption (i.e., to address issues raised by the holdings of Ecology v Cambell Gwinn)[8].

The following water right purchases are being pursued at this time:

G3-23099C (G3-CV2-SP52)

Description on Water Right Certificate: 120 gallons per minute (gpm), 78 afy from May 1 to Sept 30, irrigation of 36 acres.

[8] https://caselaw.findlaw.com/wa-supreme-court/1329095.html

Expected Total Water Savings/Streamflow Benefits: The point of withdrawal for G3-23099C is located in the Little Spokane/Deer Creek subbasin. The water duty assigned is less than that required for irrigation of 36 acres with pasture/turf per the Washington Irrigation Guide (WIG). Given this, all of the 78 afy are assumed to be consumptive. Use of irrigation rights over multiple seasons generally result in a year-round, dampened impact to the groundwater flow regime at greater distances away from the point of withdrawal. Cessation of use of this groundwater right is expected to provide 78 afy of benefit to instream flows in the Little Spokane/Deer Creek subbasin and the Little Spokane River.

G3-*02228CWRIS

Description on Water Right Certificate: 300 gpm, 180 afy, for irrigation of 60 acres

Expected Total Water Savings/Streamflow Benefits: The point of withdrawal for G3-*02228CWRIS is located in the Beaver Creek subbasin of WRIA 55. The Beaver Creek subbasin includes the upper reaches of Dragoon Creek. Review of water use indicates that approximately 40 acres, rather than 60 acres, are currently being irrigated. Based on irrigation of 40 acres with alfalfa, consumptive use is estimated to be approximately 100 afy per the WIG. Cessation of use of this groundwater right is expected to provide 100 afy of benefit to instream flows in Dragoon Creek (in both the Beaver Creek and Dragoon Creek subbasins) and the Little Spokane River.

G3-*01844CWRIS

Description on Water Right Certificate: 600 gpm, 160 afy, for irrigation of 40 acres

Expected Total Water Savings/Streamflow Benefits: The point of withdrawal for G3-*01844CWRIS is located near the confluence of Dragoon Creek and the mainstem of the Little Spokane River. Based on irrigation of 40 acres with alfalfa, consumptive use is estimated to be approximately 100 afy per the WIG. Cessation of use of this groundwater right is expected to provide 100 afy of benefit to instream flows in Dragoon Creek and the Little Spokane River.

S3-*12724CWRIS

Description on Water Right Certificate: 0.15 cfs, 50 afy, for irrigation of 20 acres

Expected Total Water Savings/Streamflow Benefits: The point of diversion for S3-*12724CWRIS is located near the confluence of Dragoon Creek and the mainstem of the Little Spokane River and is authorized for diversion from an unnamed stream. Based on irrigation of 20 acres with alfalfa, consumptive use is estimated to be approximately 50 afy per the WIG, the full authorization of the water right. Cessation of use of this water right is expected to provide 50 afy of benefit to instream flows in Dragoon Creek and the Little Spokane River.

S3-*06812CWRIS

Description on Water Right Certificate: 0.15 cfs, 50 afy, for irrigation of 20 acres

Expected Total Water Savings/Streamflow Benefits: The point of diversion for S3-*06812CWRIS is located on Dragoon Creek and is authorized for diversion from an unnamed stream. Based on a review of irrigation and discussions with the owner, it appears that up to 20 acres were irrigated.

Consumptive use is estimated to be approximately 50 afy. Cessation of use of this water right is expected to provide 50 afy of benefit to instream flows in Dragoon Creek and the Little Spokane River.

CG3-24214(A)

This water right is owned by Spokane County and is currently held in the TWRP instream flow mitigation purposes in support of rural residential development. It was purchased by the County as part of developing the Little Spokane Water Bank. Ecology accepted 255.4 afy into the TWRP for mitigation.

Expected Total Water Savings/Streamflow Benefits: The point of diversion for CG3-24214(A) was located in the Beaver Creek subbasin prior to cessation of its use. Based on a suitability map associated the Trust Water Right Agreement for this water right, it provides 255.4 afy of benefit to flows in Dragoon Creek (in both the Beaver Creek and Dragoon Creek subbasins) and the Little Spokane River.

G3-20511C

This water right is owned by Spokane County and is currently held in the TWRP instream flow mitigation purposes in support of rural residential development. It was purchased by the County as part of developing the Little Spokane Water Bank. Ecology accepted 28 afy into the TWRP for mitigation.

Expected Total Water Savings/Streamflow Benefits: The point of diversion for G3-20511C was located in the Dragoon Creek subbasin prior to cessation of its use. Based on a suitability map associated the Trust Water Right Agreement for this water right, it provides 28 afy of benefit to flows in Dragoon Creek and the Little Spokane River.

MAR Projects with Modeling/GIS Investigations - Proposed by Spokane County

Project Cost: MAR project cost estimates through design, permitting, and implementation are expected to be approximately $600,000 per project. Operation and maintenance costs are expected to be approximately $20,000 per year.

As noted previously. MAR projects involve the capture of surface water and infiltration to groundwater, when water is physically and legally available, with successful MAR projects resulting in streamflow benefits during critical low streamflow periods. It is assumed that implemented MAR projects would be operated in perpetuity to address mitigation requirements. MAR has been shown to be technically feasible at other locations, provided that subsurface conditions, water availability and quality, and site access are suitable. Ecology supports the use of MAR projects for mitigation.

Selection of potential MAR sites included a site optimization analysis incorporating use of a previously developed transient integrated surface and groundwater model developed for WRIA 55 by EarthFX, a consulting group specializing in groundwater modeling, using the USGS modeling package GSFLOW[9]. Model results were combined with GIS analysis to evaluate

[9] http://www.spokanewatersheds.org/wria-55-57-current-projects

potentially suitable MAR locations within WRIA 55. The investigation was documented in a memorandum distributed to the WRIA 55 Planning Unit in December 2019[10].

The modeling was conducted with the following assumptions:

- One cfs was recharged (when available in the water source) at the modeled MAR site over the period March, April, and May.
- Streamflow was calculated at the nearest surface water discharge point from recharge site.
- Modeling was done over a multi-year period to provide an indication of longer-term response of groundwater discharge to surface water as a result of aquifer recharge.

Eighteen sites were investigated for potential MAR projects as documented in the optimization memorandum referenced above. Of these, nine sites appeared to have suitable instream flow benefits, with 180 afy per year of benefit estimated from each of the suitable sites for a total of 1,620 afy in combined water offsets. In some subbasins, multiple sites were investigated. In that case, the selected site also has a subbasin site number or other clarifying reference designated. Please refer to Figure 1 for the distribution of the following sites:

- Milan Road/Bear Creek (Little Spokane/Deer Creek subbasin) – This site was selected for field investigations and preliminary design work, as discussed in the following section. Successful implementation of an MAR project at this site would benefit instream flows in Bear Creek and the mainstem of the Little Spokane River below their confluence.
- Dry Creek - Site 1 (Otter Creek subbasin) - This site was also selected for field investigations and preliminary design work, as discussed in the following section. Successful implementation of an MAR project at this site would benefit instream flows in Dry Creek and the mainstem of the Little Spokane River below their confluence.
- Otter Creek - Site 3 (Otter Creek subbasin) - Successful implementation of an MAR project at this site would benefit instream flows in Otter Creek and the mainstem of the Little Spokane River below their confluence.
- County Park/Last Chance Road (West Branch subbasin)- Successful implementation of an MAR project at this site would benefit instream flows in the West Branch and the mainstem of the Little Spokane River below their confluence.
- Little Deep Creek - Site 1 (Little Deep Creek subbasin) - Successful implementation of an MAR project at this site would benefit instream flows in Little Deep Creek and the mainstem of the Little Spokane River below their confluence.

[10] Draft Memorandum, Managed Aquifer Recharge Site Optimization and Selection, WRIA 55 ESSB 6091/RCW 90.94 Watershed Plan Update, Aspect Consulting, December 2, 2019.

- Deadman/ Creek (Deadman Creek/Peone Creek subbasin) - Successful implementation of a MAR project at this site would benefit instream flows in Deadman Creek and the mainstem of the Little Spokane River below their confluence.

- Dry Creek - Site 2 (Otter Creek subbasin) - Successful implementation of an MAR project at this site would benefit instream flows in Dry Creek and the mainstem of the Little Spokane River below their confluence.

- Dragoon DNR (Dragoon Creek subbasin) - Successful implementation of an MAR project at this site would benefit instream flows in Dragoon Creek and the mainstem of the Little Spokane River below their confluence.

- Bear Creek (Little Spokane/Deer Creek subbasin) - Successful implementation of an MAR project at this site would benefit instream flows in Bear Creek and the mainstem of the Little Spokane River below their confluence.

MAR Projects in Preliminary Design Status - Proposed by Spokane County

Project Cost: Detailed MAR project cost estimates through design, permitting, and implementation are under development and are expected to be approximately $600,000 per project. Operation and maintenance costs are expected to be approximately $20,000 per year.

The two sites discussed in this section have been included in the water offset totals noted above. Field investigations were conducted at three potential MAR sites to support an evaluation of project feasibility and preliminary design work[11]. Field investigations began with infiltration testing, which indicated that one of the sites, the Feryn Conservation Area-Deadman Creek, had infiltration rates too low to feasibly implement surface infiltration. Given this determination, that site is not included in the MAR project list presented in this memorandum.

Sites at Milan Road/Bear Creek and on Dry Creek both appear to be feasible for implementation of MAR projects based on infiltration rates, availability of source water during the higher streamflow months, groundwater and surface water quality analysis, engineering considerations, and site access. A technical memorandum summarizing preliminary engineering design work, permitting considerations, water quality considerations, and capital and operation and maintenance cost estimates for each site is in progress and will be submitted to the WRIA 55 Planning Unit when completed. Spokane County intends to file an application in March 2020 for a streamflow restoration grant to implement the MAR project at Milan Road/Bear Creek.

Surface Water Storage - Eloika Lake Project - Proposed by Spokane County

Project Cost: Project cost estimates through design and permitting phase are currently under development.

One surface water storage project, at Eloika Lake in the West Brach subbasin, has been identified that has significant potential to provide water offsets for WRIA 55. Studies completed to date indicated that approximately 1,400 acre feet of water can be stored for release during low flow

[11] Draft Memorandum, Managed Aquifer Recharge Field Investigation, WRIA 55 ESSB 6091/RCW 90.94 Watershed Plan Update, Aspect Consulting, February 13, 2020.

periods while still operating within the natural range of lake levels experienced each year. This would be achieved through design and construction of an outlet control structure capable of maintaining higher lake levels for a longer period each summer, resulting in significant late summer instream flow augmentation. The project would also support habitat restoration by restoring 100 acres of wetlands at the south end of the lake.

Through previous watershed planning funding, there was significant investigation into the feasibility of a water storage and wetland restoration project on Eloika Lake. In April 2009, PBS&J completed a surface water storage investigation in WRIA 55 and identified Eloika Lake as a potentially feasible surface water storage opportunity and recommended further investigation[12].

In June of 2009, PBS&J completed the Eloika Lake In-Depth Surface Water Storage and Wetland Restoration Feasibility study, which concluded that constructing a water control structure for Eloika Lake was a viable option for creating downstream flow benefits[13]. PBS&J also conducted public outreach that indicated most landowners seemed to understand that the project was a benefit to the watershed and lake as well as to them individually. The project has remained on hold for several years due to lack of a funding source. Recent analysis by Spokane County and its consultants confirm that the project could provide approximately 1,400 afy of mitigation benefit.

This project is expected to be technically feasible, given studies conducted to date. Spokane County has conducted preliminary landowner outreach and has indications that the project will be supported. Spokane County intends to file an application in March 2020 for a streamflow restoration grant to conduct site investigations, stakeholder outreach, engineering design work through final design, and associated permitting work for this water offset project.

Source Exchange - Whitworth Water District System 8 Water Right Transfer - Proposed by Whitworth Water District

Project Cost: Assessment and investigation work estimated to be $100,000. Project construction costs to be developed. Operation and maintenance costs are not expected to vary significantly from those already incurred by the District in operating the existing wells.

The Whitworth Water District (WWD) proposes a detailed assessment of the benefits of transferring up to 400 afy of municipal water currently being withdrawn from wells in WRIA 55 impacting flows in the Little Spokane River, and moving an equivalent amount to WWD wells withdrawing from the SVRP aquifer. Preliminary analysis conducted by WWD suggests that the project can provide a direct benefit to instream flows in the mainstem of the Little Spokane River from approximately Chattaroy and downstream.

Implementation of the source exchange project would require approval by Ecology through a water right change, and consideration of potential mitigation to affected reaches of the Spokane River resulting from the water right source transfer. Future investigations would include assessment and modeling of the transfer, including benefits to the mainstem of the Little Spokane and the impacts to the Spokane River. The project is technically feasible, but assessment by WWD of funding costs for infrastructure to convey the withdrawn groundwater at the SVRP aquifer to the service areas

[12] PBS&J 2009a. Surface Water Storage Investigation, West Branch Little Spokane River, Wetland Restoration and Recharge Opportunities, WRIA 55 & 57. April 2009
[13] PBS&J 2009b. Eloika Lake In-Depth Surface Water Storage and Wetland Restoration Feasibility, June 2009.

that were formerly served by the LSR watershed wells would also need to be conducted and addressed. The source exchange and instream flow benefits are intended to be a permanent change.

Non-Water Offset Projects

Fish Barrier Removal – Deer Creek Fish Barrier Removal Project - Proposed by Spokane Conservation District

Project Cost: Project development, design, and construction estimated to be $124,750. Operation and maintenance costs are expected to be negligible.

The Spokane Conservation District (SCD) proposes replacing a stream crossing located on Deer Creek that has been evaluated and classified as a zero-percent passable fish barrier. The existing culvert is over-sloped and undersized, causing an impoundment upstream of the crossing and excessive velocities through the culvert. The barrier blocks salmonid migration to more than 9 miles of spawning and rearing habitat upstream of the crossing location. The upstream and downstream salmonid habitat are classified as excellent, with the exception of some local stream bank erosion and heavy siltation.

The proposed fish passage restoration approach for this site incorporates replacement of the existing culvert with a pre-fabricated steel bridge superstructure set on pre-cast concrete abutments, with pre-cast concrete end-wall closures and a gravel driving surface. The project is considered feasible, as it is similar to several other State-funded fish passage restoration projects that have been completed by the SCD within this sub-basin through the Family Forest Fish Passage Program (FFFPP). This stream crossing is located one parcel downstream from a recently funded State of Washington Fish Barrier Removal Project #09-1708, scheduled for correction in the Fall of 2020, through the FFFPP. The project has a willing landowner and experienced project management/design/installation team as a proponent. The project is expected to have immediate impacts to restoring natural stream function and link with other work that is planned or has already been completed in this sub-basin.

Floodplain Restoration – Dartford Creek Floodplain Restoration Project - Proposed by Spokane Conservation District

Project Cost: Project development, design, and construction estimated to be $60,000. Operation and maintenance costs are expected to be negligible.

This project is intended to reconnect the floodplain, correct a fish barrier, and reestablish in-stream vegetation and habitat on Dartford Creek. The project is part of a multi-year phased approach to restore habitat in this area, which is adjacent to a no-till farm field. At the proposed location, the creek has a headcut with a 5-foot drop, with disconnected upstream and downstream reaches and fish populations. Phase one of the restoration, which involved planting the upland habitat and installing a 50-foot-long riparian forest buffer, was completed in 2019.

The proposed project would be the second and final phase of restoration. The objectives of the project would be to reconnect the floodplain to the creek, installing five 1-foot drops with a step system of weirs and pools, augmented by plantings and large woody debris. This work would remove the fish barrier at the head cut and reconnect the reaches. The streambanks will be pulled back from vertical to a more appropriate 1:1 ratio, with the in-stream habitat improved by installing

vegetation within the riparian zone. A cultural resource survey was completed during phase one, and there are no concerns for the project location. Additionally, this streamside restoration is part of a larger land management effort taking place on this property. The upland agricultural practices were converted in recent years to a direct seed operation to improve soil health and decrease soil erosion. The project has a willing landowner and experienced project management/design/installation team as a proponent.

Habitat Restoration/Enhancement – Dartford Creek Habitat Restoration Project - Proposed by Spokane Conservation District

Project Cost: Project development, design, and construction estimated to be $17,000. Operation and maintenance costs are expected to be negligible.

The proposed project includes 320 feet of stream habitat restoration on Dartford Creek. This project proposal is downstream from a recent 2019 SCD riparian project that implemented a 50-foot riparian buffer. The completion of these two projects will reconnect 700 feet of habitat at these sites. This project would install a 50-foot-longriparian buffer, utilizing native species found in an analogous forest 500 feet upstream. In addition to the buffer installation, a series of Post Assisted Log Structures (PALS) will be installed to improve habitat, induce sinuosity, and increase turbulence, which will lead to an increase in dissolved oxygen content. The streamside restoration is part of a larger land management effort taking place on this property. The upland agricultural practices were converted in recent years to a direct seed operation to improve soil health and decrease soil erosion in this generally steep topography. The project has a willing landowner and experienced project management/design/installation team as a proponent.

Habitat Restoration/Enhancement – Westover Habitat Restoration Project - Proposed by Pend Oreille Conservation District

Project Cost: Project development, design, and construction estimated to be $46,250. Operation and maintenance costs are expected to be negligible.

The Pend Oreille Conservation District proposes to place large woody debris in a reach of the Little Spokane River near its headwaters, in addition to restoring riparian vegetation on the streambanks. The project would improve habitat and function of approximately 0.5 miles of the mainstem. The project would addres concerns regarding inadequate streamflow velocities due to previous channel straightening that have led to excessive streambed siltation, and would address a lack of diverse riparian vegetation and shading that result in warmer river water temperatures. The project is feasible, and has a willing landowner and the support of the Pend Oreille Conservation District.

Habitat Restoration/Enhancement – Cygiel Habitat Restoration Project - Proposed by Pend Oreille Conservation District

Project Cost: Project development, design, and construction estimated to be $46,250. Operation and maintenance costs are expected to be negligible.

The Pend Oreille Conservation District proposes to install 850 feet of livestock fencing along a reach of the Little Spokane River near its headwaters, in addition to restoring riparian vegetation on the streambanks on 3+ acres. The project would improve habitat and function of approximately 0.5 miles of the mainstem. The project would address concerns of riparian degredation due to livestock

access, and address a lack of diverse riparian vegetation. The project is feasible, and has a willing landowner and the support of the Pend Oreille Conservation District.

Habitat Restoration/Enhancement – Beaver Dam Analogue Project on Deadman Creek - Proposed by The Lands Council

Project Cost: Project development, design, and construction estimated to be $25,000. Operation and maintenance costs are expected to be limited to $1,500 for the first two years to support riparian plant establishment.

The Deadman Creek/Peone Creek subbasin is a priority watershed for habitat restoration for both the WRIA 55 Watershed Plan Update given limited opportunities for direct water offset projects. It is also a priority region for restoration for the Little Spokane River TMDL Update. The Lands Council proposes to install beaver dam analogues (BDAs) in the creek to trap sediment, slow the flow, and improve habitat. In addition to the BDAs, the proposal involves planting the riparian area with a mix of willow cuttings and potted native trees. While no landowner agreements are in place, a property owner has expressed interest in the project and offered support to conduct outreach to build support with neighboring property owners. The placement and design of the BDAs would be done with help from Ecology and installed by The Lands Council. The project is considered feasible provided that landowner access agreements can be secured.

Habitat Protection – Waikiki Springs Habitat Preservation Project - Proposed by The Inland Northwest Land Conservancy and Spokane Tribe of Indians

Project Cost: The land associated with this potential acquisition is currently listed for sale at $1.600,000. Project costs for a potential second phase of work for habitat restoration have not been quantified. Operation and maintenance costs would not be directly associated with the land acquisition but would be assessed if fish habitat restoration and reintroduction occurs at a later date.

Inland Northwest Land Conservancy (INLC) and the Spokane Tribe of Indians (Spokane Tribe) propose creating a new nature preserve along the north shore of the Little Spokane River between the WDFW Fish Hatchery and Dartford, WA. Their mutual goal is to conserve the undeveloped floodplain (95 acres) and over 1,700 feet of shoreline along the Little Spokane River for future salmon reintroduction activities, habitat protection, and facilitation of public access. The proposed nature preserve is adjacent to a relatively intact high functioning riparian habitat immediately adjacent to major North Spokane neighborhoods such as Fairwood I and Fairwood II, which contain over a thousand homes. Protecting this property and preserving the value it provides is considered highly important by INLC and the Spokane Tribe for maintaining the ecology of the area.

Purchase of the property is considered feasible if funding is obtained prior to it being purchased by other potential buyers. It has the support from the land conservancy expertise of INLC, a regional land trust that has successfully protected over 21,000 acres and over 41 miles of shoreline. The Spokane Tribe brings expertise from its Division of Fisheries and Water Resources to accelerate the future goal of reintroducing native anadromous species historically found in the waters the Little Spokane River. The Spokane Tribe's previous analyses determined there are significant amounts of high-quality habitat in the proposed project area.

Opportunistic Projects

Opportunistic project pursuits are proposed for inclusion in the watershed plan addendum to link with adaptive management, to provide for ongoing consideration of new project opportunities. These pursuits can be linked with increases or decreases in actual versus currently estimated new exempt well demand, which would potentially shift appropriate offset project needs. Three key types of opportunistic projects are recommended for inclusion in the watershed plan update:

- Seeking new opportunities for water right purchases. While several potential water right sellers have been identified in WRIA 55, more water right owners may express interest in selling water rights in the future.
- Future identification of culvert/fish barrier projects. A comprehensive study of fish barriers in WRIA 55 has not been conducted. Future work may support identification of key fish barriers to focus on for removal or modification.
- Future landowner interest in habitat restoration projects. Members of the Planning Unit, including conservation districts, the Lands Council, and the Spokane Tribe have noted that habitat restoration projects are often opportunistic in nature based on the timing of landowner interest.

Water Offset Project Distribution vs. Estimate Demand

Ecology's GUID-2094 requires that NEB evaluation in the watershed plan addendum should describe the projected impacts and any offsets within each of the subbasins. Because all impacts at a minimum must be offset at the WRIA level, the evaluation should determine if the plan has succeeded in offsetting the impacts at the WRIA level. Ecology has acknowledged in GUID-2094 that this means there may be instances where the amount of offsets provided in certain subbasins will be more or less than the projected new consumptive water use there, and has stated this is acceptable because the offsets are provided within the WRIA and in sufficient quantities."

In order to address the comparison of water offset projects with estimated demand, mitigation quantities associated with the water offset projects described are summarized in this section. The following categories of projects and estimated mitigation quantities are included in the tally:

- Water right purchase G3-23099C (G3-CV2-SP52): 78 afy
    - Benefits Little Spokane/Deer Creek subbasin and Little Spokane River
- Water right purchase G3-*02228CWRIS: 100 afy
    - Benefits Beaver Creek subbasin, Dragoon Creek subbasin, and Little Spokane River
- Water right purchase G3-*01844CWRIS: 100 afy
    - Benefits Dragoon Creek subbasin and Little Spokane River
- Water right purchase S3-*12724CWRIS: 50 afy
    - Benefits Dragoon Creek subbasin and Little Spokane River
- Water right purchase S3-*06812CWRIS: 50 afy

  - Benefits Beaver Creek subbasin, Dragoon Creek subbasin, and Little Spokane River
- Water right purchase (owned by Spokane County) CG3-24214(A): 255.4 afy
  - Benefits Beaver Creek subbasin, Dragoon Creek subbasin, and Little Spokane River
- Water right purchase (owned by Spokane County) G3-20511C: 28 afy
  - Benefits Dragoon Creek subbasin and Little Spokane River
- Milan Road/Bear Creek MAR Project: 180 afy
  - Benefits Little Spokane/Deer Creek subbasin and Little Spokane River
- Dry Creek - Site 1 MAR Project: 180 afy
  - Benefits Otter Creek subbasin and Little Spokane River
- Otter Creek - Site 3 MAR Project: 180 afy
  - Benefits Otter Creek subbasin and Little Spokane River
- County Park/Last Chance Road MAR Project: 180 afy
  - Benefits West Branch subbasin and Little Spokane River
- Little Deep Creek - Site 1 MAR Project: 180 afy
  - Benefits West Branch subbasin and Little Spokane River
- Deadman Creek MAR Project: 180 afy
  - Benefits Deadman Creek/Peone Creek subbasin and Little Spokane River
- Dry Creek - Site 2 MAR Project: 180 afy
  - Benefits Otter Creek subbasin and Little Spokane River
- Dragoon DNR MAR Project: 180 afy
  - Benefits Dragoon Creek subbasin and Little Spokane River
- Bear Creek MAR Project: 180 afy
  - Benefits Little Spokane/Deer Creek subbasin and Little Spokane River
- Eloika Lake Surface Water Storage: 1,400 afy
  - Benefits Little Spokane River
- Whitworth Water District Source Exchange Project: 400 afy

- Benefits Little Spokane River

Figure 1 shows the distribution of water offset projects and non-water offset projects, along with accounting by subbasin of the water offsets. All water offset projects combined provide a mitigation benefit of 4,081 afy, compared to the high estimate for basin wide demand of 2,124 afy, indicating that the water offset projects provide more than enough water to offset the estimated exempt well demand at the WRIA level, as required. **The combined water balance at the WRIA scale indicates a basin wide surplus of 1,957 afy**.

Most of the WRIA 55 subbasins have sufficient offset supplies to meet estimated 20-year permit-exempt well demand, including:

- West Branch subbasin
- Beaver Creek subbasin[14]
- Dragoon Creek subbasin
- Otter Creek subbasin
- Little Spokane/Deer Creek subbasin
- Little Deep Creek subbasin

Two of the WRIA 55 subbasins have deficits in offset supplies, including:

- Deadman Creek/Peone Creek subbasin
- Dartford Creek subbasin

Many of the subbasins have non-water offset projects proposed that were previously presented in this memorandum, including the subbasins with offset water deficits. The non-water offset projects are intended to support the NEB determination and, where applicable, compensate for subbasin water offset deficits.

Project Funding Opportunities and Constraints

This section will be completed in a future draft following consultation with the WRIA 55 Planning Unit.

[14] Note that a surplus water offset in the Beaver Creek subbasin was transferred downstream to the Dragoon Creek subbasin in the offset accounting, given that the two subbasins are both part of the overall Dragoon Creek drainage.

Conclusions

This memorandum has provided descriptions of identified water and non-water offset projects to the WRIA 55 Planning Unit for review to obtain support for the proposed water and non-water offset project list to be included in the WRIA 55 watershed plan addendum. Key conclusions from this work include:

- The combined water balance at the WRIA scale from proposed offset projects indicates a basin wide surplus of 1,957 afy relative to the estimated 20-year permit-exempt well demand, exceeding water offset requirements for WRIA 55 required by RCW 90.94.

- Most subbasins have sufficient water offset projects identified to meet or exceed projected 20-year subbasin permit-exempt well demand. The Deadman Creek/Peone Creek and Dartford Creek subbasins are the exceptions.

- Many of the subbasins have non-water offset projects proposed, including the two subbasins with offset water deficits (i.e., Deadman Creek/Peone Creek and Dartford Creek subbasin). The WRIA 55 Planning Unit should consider prioritizing non-water habitat projects in those subbasins given the offset water deficits.

- A review of actual annual permit-exempt well demand increases is recommended on a 5-year cycle to incorporate adaptive management into implementation of the watershed plan addendum. This will allow for inclusion of opportunistic projects into plan implementation and will also allow for a review of water and non-water offset project priorities over time.

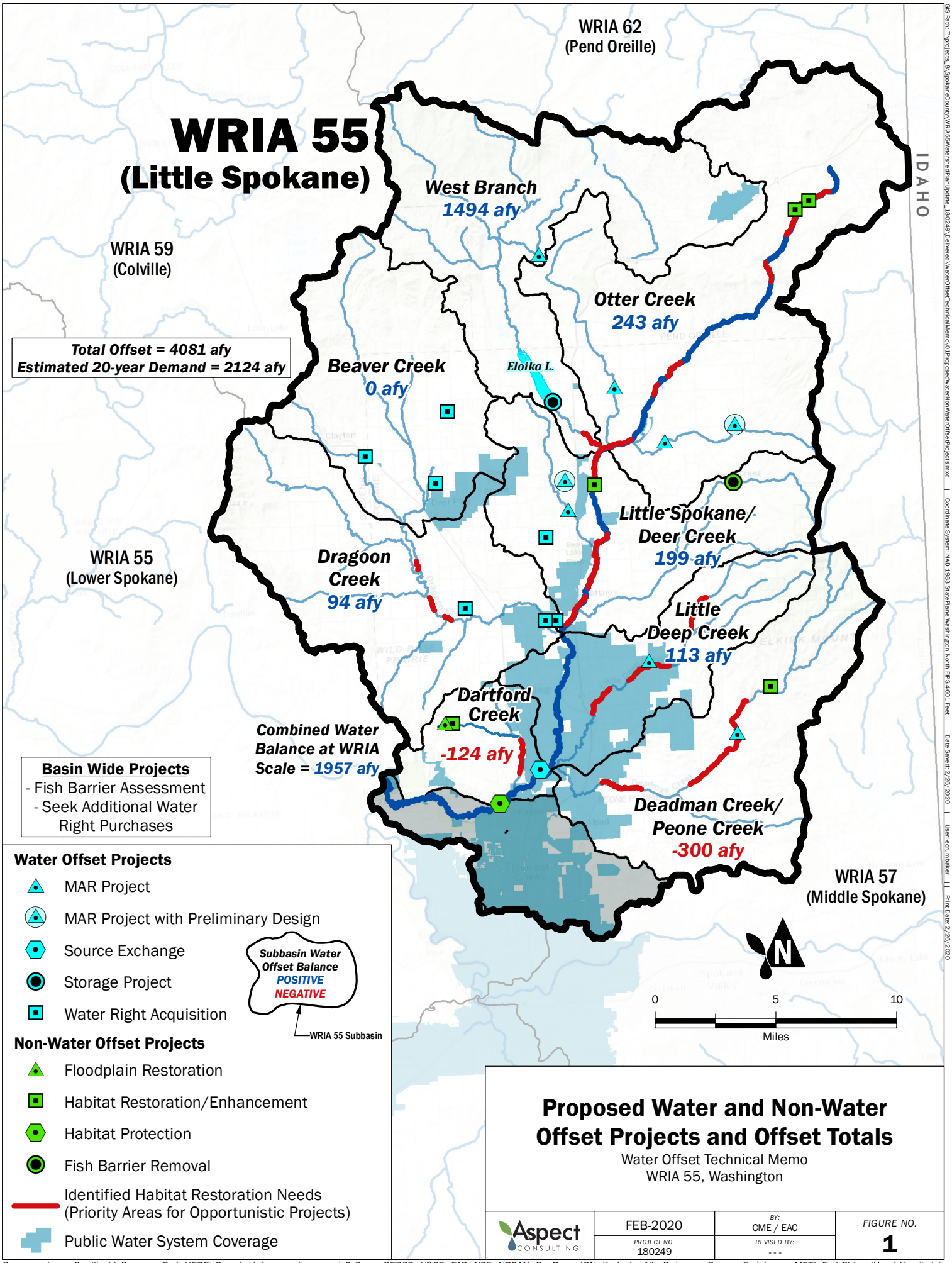
Limitations

Work for this project was performed for the Spokane County Environmental Services (Client), and this memorandum was prepared in accordance with generally accepted professional practices for the nature and conditions of work completed in the same or similar localities, at the time the work was performed. This memorandum does not represent a legal opinion. No other warranty, expressed or implied, is made.

All reports prepared by Aspect Consulting for the Client apply only to the services described in the Agreement(s) with the Client. Any use or reuse by any party other than the Client is at the sole risk of that party, and without liability to Aspect Consulting. Aspect Consulting's original files/reports shall govern in the event of any dispute regarding the content of electronic documents furnished to others.

Attachments: Figure 1. Proposed Water and Non-Water Offset Projects and Offset Totals
Attachment 1. WRIA 55 Offset Project Summaries Submitted by WRIA Planning Unit Members

FIGURES



Proposed Water and Non-Water Offset Projects and Offset Totals

Water Offset Technical Memo
WRIA 55, Washington

Aspect Consulting	FEB-2020	BY: CME / EAC	FIGURE NO. 1
	PROJECT NO. 180249	REVISED BY: ---	

GIS Path: T:\projects_8\SpokaneCounty\WRIA55WatershedPlanUpdate_180249\Deliverest\WaterOffsetTechnicalMemo\02\ProposedWaterNonWaterOffsetProjects.mxd || Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet || Date Saved: 2/26/2020 || User: escumbaker || Print Date: 2/26/2020

ATTACHMENT 1

WRIA 55 Offset Projects Summaries Submitted by WRIA Planning Unit Members

DRAFT WRIA 55 STREAMFLOW RESTORATION PLANNING
PRELIMINARY PROJECT PROPOSAL TEMPLATE

The purpose of this document is to provide project background and to summarize characteristics that contribute toward offset of future permit-exempt domestic use and achievement of a Net Ecological Benefit in WRIA 55 for evaluation under RCW 90.94. The information provided in this proposal will be presented to the WRIA 55 Planning Unit and considered for inclusion in the WRIA 55 Watershed Plan Update. When complete, please submit to Carl Einberger (ceinberger@aspectconsulting.com) by January 31, 2020

1. Title: WWD System 8 Water Right Transfer	**2. Proposal Preparer(s): Mr. Tim Murrell, WWD General Manager**

3. General Description of Proposal: *Briefly explain the proposed project (project objective, infrastructure requirements, connection to other new, ongoing or past projects and/or funding, other stakeholders, maintenance requirements, various sizing or phasing, etc.).*

The WWD would like to assess the benefits of a proposal to transfer up to 400 acre-feet of municipal water currently being withdrawn from wells in the LSR watershed and move that withdrawal to WWD wells withdrawing from the SVRP aquifer. WWD has conducted a preliminary review that shows an immediate net ecological benefit to flows within the LSR. If the transfer of the water right withdrawals can be approved from Ecology, consideration of potential mitigation to the Spokane River reach of the new withdrawal would have to be addressed also. Funding of this project would need to include the assessment/modeling of the transfer, both to benefits to the LSR and the impacts to the Spokane River. If approved, additional assessment into the funding for costs of infrastructure would also need to be addressed to convey the withdrawn groundwater at the SVRP aquifer to the service areas that were formerly served by the LSR watershed wells.

4. Water-for-Water Source (if applicable): *Mark all applicable and identify (water right number, stream name, source aquifer).*

X a. Existing Water Right X b. Groundwater □ c. Surface Water □ d. Other
WWD has numerous water rights currently withdrawing groundwater from the LSR aquifer. An analysis would be made as to which water right is best suited for transfer of water right.

5. Quantity/Timing/Location of Water Instream: *Estimate average amount of water, when and where. Can project be considered at various sizes (flow outputs) and/or considered in phases?*

a. Acre-feet and/or Cubic-feet-per-second:
400 acre-feet to be moved from LSR aquifer to SVRP aquifer.

b. Timeframe(s) or Season of Use:
The timeframe of the proposed transfer would result in a reduction of groundwater withdrawals in the LSR aquifers during the summer and fall months (low flow period), by supplementing the withdrawal from the SVRP aquifer during that same time frame.

c. Tributary (name) or Mainstem Little Spokane River and Location(s):
The existing WWD wells are located adjacent to the main stem of the LSR.

6. Net Ecological Benefit: *Describe the factors that may contribute to Net Ecological Benefit (i.e., fish passage restoration; channel, riparian, and/or floodplain restoration and/or protection; upland improvements)*

The NEB will be an immediate increase in instream flows during the low flow periods which in turn enhances fish habitat.

7. Data Gaps: *Describe major unknowns or studies that would need to be completed.*

Further refinement of potential beneficial impacts to the LSR from the reduction of withdrawals will be required. In addition to the assessment of the impacts to SVRP aquifer from increased pumping. Continued communication with Ecology relative to the transfer of water from LSR aquifer to SVRP aquifer under the authorization of RCW 90.03.380. An engineering assessment will also be required to determine the required infrastructure improvements required for the transfer of the water right withdrawals.

8. Cost Estimates: *Provide known and estimated costs to develop and implement the project.*

a. Project Development and Design: Evaluation of water rights transfer, filing of change applications, processing of change applications, hydrogeology assessments, engineering evaluations, and projected project implementation infrastructure designs could be completed by June 2021 or earlier. Estimated costs for preliminary work from WRIA 55 RCW 90.94 funding would be approximately $100,000. WWD anticipates providing at least this amount and greater into the project development and design as in-kind contributions.

b. Project Construction: Project construction costs would be developed in design phase above

c. Project Annual O&M: Future O&M costs would be absorbed by WWD in normal system operations.

8. Existing or Potential Funding: *List sources and approximate amounts if known.*

WWD has invested some preliminary funding to conduct the initial assessment of the proposed project. WWD is offering the planning unit a cost share for the initial project development and design assessment.

9. Mitigation Requirements: I*s any part of the project associated with other federal or state mitigation requirements (i.e., FERC, BiOp, etc)?*

Some mitigation requirement may be required for the reach of the SVRP withdrawal to the mouth of the Spokane River watershed. Initial evaluation has shown that the mitigation is less than 0.05 cfs during the irrigation season (proposed withdrawal period)

10. Project Advantages: *In addition to helping address RCW 90.94 requirements, briefly explain other potential benefits (e.g. reduced O&M costs, cropping flexibility, etc)*

This transfer is a one-time expense that will not require a long term O&M commitment to the Planning Unit. The cost of this project will show an immediate NEB of more than 1 cfs to the LSR. As such, the minimal proposed cost to show an immediate flow benefit, in addition to the limited costs of long term O&M, would be a great advantage to the WRIA group over other high construction and O&M costs associated with MAR projects. WWD feels the watershed group should have these types of low cost options within their proposed RCW 90.94 watershed and NEB portfolio.

11. Potential Project Barriers: *Briefly explain potential barriers to completing the project (e.g. landowner willingness, site access, permitting requirements, increased O&M costs, legal implications)*

The transfer of water right process and potential resistance from some environmental groups for moving the water right withdrawal to the SVRP aquifer may occur.

12. Estimated Time Frame to Implement Project?

Assessment of transfer and transfer of water right completed by June 2021 (if funding available). Implementation and construction of infrastructure completed by June 2024 (if funding available).

DRAFT WRIA 55 STREAMFLOW RESTORATION PLANNING
PRELIMINARY PROJECT PROPOSAL

The purpose of this document is to provide project background and to summarize characteristics that contribute toward offset of future permit-exempt domestic use and achievement of a Net Ecological Benefit in WRIA 55 for evaluation under RCW 90.94. The information provided in this proposal will be presented to the WRIA 55 Planning Unit and considered for inclusion in the WRIA 55 Watershed Plan Update. When complete, please submit to Carl Einberger (ceinberger@aspectconsulting.com) by January 31, 2020

1. Title: Deer Creek Fish Barrier Removal Project	**2. Proposal Preparer(s): Daniel Ross, Lindsay Chutas Spokane Conservation District (SCD)**

3. General Description of Proposal: *Briefly explain the proposed project (project objective, infrastructure requirements, connection to other new, ongoing or past projects and/or funding, other stakeholders, maintenance requirements,* v*arious sizing or phasing, etc.).*

The proposed project consists of replacing a stream crossing located on Deer Creek, a tributary to the Little Spokane River, that has been evaluated and classified as a zero percent passable fish barrier. The existing culvert is over-sloped (1.03%) and undersized, causing an impoundment upstream of the crossing and excessive velocities through the culvert. The bankfull width of the creek at this location is measured at 10.5 feet and according to Washington State standards for fish passage, the total conveance width for the crossing should be greater than 14.6 feet (1.2xBankfull Width+2.0') to allow for natural stream function. This fish passage barrier blocks salmonid migration to more than 9.44 miles of spawning and rearing habitat upstream of the crossing location. The upstream and downstream salmonid habitat are classified as excellent, but with some localized stream bank erosion and heavy siltation as a result of upstream crossing washouts that occurred during a heavy run-off event in 2017. This stream crossing is located just one parcel downstream from the recently funded State of Washington Fish Barrier Removal Project #09-1708, scheduled for correction in the Fall of 2020, through the Family Forest Fish Passage Program (FFFPP). The proposed fish passage restoration approach for this site shall be the replacement of the existing culvert with a pre-fabricated steel bridge superstructure set on pre-cast concrete abutments, with pre-cast concrete end-wall closures and a gravel driving surface, similar to several other State funded fish passage restoration projects that have been completed by the Spokane Conservation District within this sub-basin through the Family Forest Fish Passage Program.

4. Water-for-Water Source (if applicable): *Mark all applicable and identify (water right number, stream name, source aquifer).*

□ a. Existing Water Right □ b. Groundwater □ c. Surface Water X d. Other
This is a Net Ecological Benefit Project.

5. Quantity/Timing/Location of Water Instream: *Estimate average amount of water, when and where. Can project be considered at various sizes (flow outputs) and/or considered in phases?*

a. Acre-feet and/or Cubic-feet-per-second:
N/A

b. Timeframe(s) or Season of Use:
N/A

c. Tributary (name) or Mainstem Little Spokane River and Location(s):
Deer Creek, Tributary to LSR, Lat. 47.961291, Long. -117.210268
Site Address: 14650 E. Laurel Rd., Elk WA 99009

6. Net Ecological Benefit: *Describe the factors that may contribute to Net Ecological Benefit (i.e., fish passage restoration; channel, riparian, and/or floodplain restoration and/or protection; upland improvements)*

Restoration of natural stream function by removal of the impoundment caused by the undersized culvert will result in a stable channel habitat, a reduction of sediment inputs and improvement of population connectivity for all in-stream organisms. A site restoration planting component will result in long-term stability of stream banks and approximately 1 acre of riparian habitat restoration within the affected project area of the reach. The net result of restoring fish passage at this site, in combination with the upstream State funded FFFPP Project #09-1708, would be 9.44 miles of spawning and rearing habitat made accessible upstream of the crossing location.

7. Data Gaps: *Describe major unknowns or studies that would need to be completed.*

The unknowns for the project are the outcome of a required Cultural Resource Review and the specific dimensions of the proposed pre-fabricated steel bridge and pre-cast materials. A design engineer will be hired by the SCD as a part of the project cost and employed throughout the course of the project for design and construction oversight services.

8. Cost Estimates: *Provide known and estimated costs to develop and implement the project.*

a. Project Development and Design: Engineering/Design - **$17,500**; Administrative - **$8,500**; Permitting/CR Review - **$2,500**

b. Project Construction: Materials - **$42,500**; Installation Contractor - **$42,500**; Site Restoration - **$4,500**; Construction Oversight/Travel - **$5,750**

c. Project Annual O&M: Once the project has been completed, the operation and maintenance is expected to be negligible. 2nd Year Planting Replacements, as needed - **$1,000**

Total Estimated Project Budget: $124,750

8. Existing or Potential Funding: *List sources and approximate amounts if known.*

No other known potential funding sources.

9. Mitigation Requirements: I*s any part of the project associated with other federal or state mitigation requirements (i.e., FERC, BiOp, etc)?*

N/A

10. Project Advantages: *In addition to helping address RCW 90.94 requirements, briefly explain other potential benefits (e.g. reduced O&M costs, cropping flexibility, etc)*

The proposed project has negligible O&M costs, a willing landowner and a very experienced project management/design/installation team. This proposed project will have immediate impacts to restoring natural stream function and will become an important part of other work that is planned and has already been completed in this sub-basin.

11. Potential Project Barriers: *Briefly explain potential barriers to completing the project (e.g. landowner willingness, site access, permitting requirements, increased O&M costs, legal implications)*

None known.

12. Estimated Time Frame to Implement Project?

The typical timeline for a project of this nature is 4-6 months for Planning/Design/Permitting, 1-2 months for Bidding/Contracting and 1-2 months for Construction/Site Restoration.

DRAFT WRIA 55 STREAMFLOW RESTORATION PLANNING
PRELIMINARY PROJECT PROPOSAL TEMPLATE

The purpose of this document is to provide project background and to summarize characteristics that contribute toward offset of future permit-exempt domestic use and achievement of a Net Ecological Benefit in WRIA 55 for evaluation under RCW 90.94. The information provided in this proposal will be presented to the WRIA 55 Planning Unit and considered for inclusion in the WRIA 55 Watershed Plan Update. When complete, please submit to Carl Einberger (ceinberger@aspectconsulting.com) by January 31, 2020

1. Title:	**2. Proposal Preparer(s):**
Dartford Floodplain Reconnection	**Lindsay Chutas**

3. General Description of Proposal: *Briefly explain the proposed project (project objective, infrastructure requirements, connection to other new, ongoing or past projects and/or funding, other stakeholders, maintenance requirements,* v*arious sizing or phasing, etc.).*

This project aims to reconnect the floodplain, correct a fish barrier, and reestablish in-stream vegetation and habitat on Dartford Creek. This project is part of a multi-year phased approached, habitat restoration effort, which is adjacent to a no-till farm field. The creek has a headcut with a 5 foot drop, with disconnected upstream and downstream reaches and fish populations. Phase one of the restoration, which involved planting the upland habitat and installing a 50 ft riparian forest buffer, was completed in 2019. The proposed project would be the second and final phase of restoration. The objectives of the project would be to reconnect the floodplain to the creek, installing 5, 1 foot drops with 20 ft pools step system of weirs and pools, augmented by plantings and large woody debris, to remove the fish barrier at the head cut and reconnect the reaches. Finally, the banks will be pulled back from vertical to a more appropriate 1:1 ratio, and improve the in-stream habitat by installing vegetation within the riparian zone. A cultural resource survey was completed during phase one and there are no concerns for the project location. Additionally, this streamside restoration is part of a larger land management effort taking place on this property. The upland agricultural practices were converted in recent years to a direct seed operation to improve soil health and decrease soil erosion in this generally steep topography.

4. Water-for-Water Source (if applicable): *Mark all applicable and identify (water right number, stream name, source aquifer).*

□ a. Existing Water Right □ b. Groundwater □ c. Surface Water □ d. Other
NA

5. Quantity/Timing/Location of Water Instream: *Estimate average amount of water, when and where. Can project be considered at various sizes (flow outputs) and/or considered in phases?*

a. Acre-feet and/or Cubic-feet-per-second:
NA

b. Timeframe(s) or Season of Use:
NA

c. Tributary (name) or Mainstem Little Spokane River and Location(s):
Dartford Creek
Site address: 4322 W Ballard Rd, Spokane, WA

6. Net Ecological Benefit: *Describe the factors that may contribute to Net Ecological Benefit (i.e., fish passage restoration; channel, riparian, and/or floodplain restoration and/or protection; upland improvements)*

This project will restore the natural stream and reconnect the reach, which is in a degraded state due to conversion of the land from its natural forest to agriculture. This will result in a stable channel habitat, reduction of sediment inputs and improve population connectivity for all in-stream organisms. Rainbow Trout, Eastern Brook Trout, and Longnose Dace were identified as native species in Dartford Creek through the JSAP project in the early 2000's. The primary genetic reports at the time of this report suggest that there is little genetic influence of hatchery stocked rainbow trout on the Dartford Creek fish, which suggests that the population that will be affected by these restoration efforts is native redbands. The in stream and near stream restoration component will result in long-term stability of the stream banks and 0.5 acres of riparian habitat restoration within the project area. Additionally, the addition of pools and slowing the velocity of the water from the headcut will increase aquifer recharge by increasing bank and pool storage and creating a slower release of water from this particular reach, which will help with groundwater infiltration. While the amount of this effect has not been calculated, it is another benefit consistent with the goals of the WRIA 55 streamflow restoration goals of slowing the flow, increasing residence time of water in the system, and encouraging water storage.

7. Data Gaps: *Describe major unknowns or studies that would need to be completed.*

The unknowns for this project are dimension refinements that will be clarified by a design engineer, to be hired by the SCD as a part of the project cost, and employed throughout the course of the project for design and construction oversight services.

8. Cost Estimates: *Provide known and estimated costs to develop and implement the project.*

a. Project Development and Design: Engineering/Design: $10,000, Administrative: $4500

b. Project Construction: Materials: $24,000 Installation Contractor: $17,000 Construction Oversight Travel: $3500

c. Project Annual O&M: Once the project has been completed the operation and maintenance is expected to be negligible. 2nd year planting replacements as needed $1000

Total Estimated Project Budget: $60,000

8. Existing or Potential Funding: *List sources and approximate amounts if known.*

No other potential funding sources are known at this time. The Spokane County Voluntary Stewardship program funded phase 1 of this project, but this funding source is not appropriate for phase 2.

9. Mitigation Requirements: I*s any part of the project associated with other federal or state mitigation requirements (i.e., FERC, BiOp, etc)?*

NA

10. Project Advantages: *In addition to helping address RCW 90.94 requirements, briefly explain other potential benefits (e.g. reduced O&M costs, cropping flexibility, etc)*

The proposed project has negligible O&M costs, a willing landowner and a very experienced project management/design/installation team. This proposed project will have immediate impacts to restoring natural stream function and will become an important part of other work that is planned and has already been completed in this sub-basin.

11. Potential Project Barriers: *Briefly explain potential barriers to completing the project (e.g. landowner willingness, site access, permitting requirements, increased O&M costs, legal implications)*

None known

12. Estimated Time Frame to Implement Project?
A typical timeline for a project of this scope is approximately 6 months for planning/design, 1-2 months for bidding and contracting, and 1-2 months for construction and site restoration.

DRAFT WRIA 55 STREAMFLOW RESTORATION PLANNING
PRELIMINARY PROJECT PROPOSAL TEMPLATE

The purpose of this document is to provide project background and to summarize characteristics that contribute toward offset of future permit-exempt domestic use and achievement of a Net Ecological Benefit in WRIA 55 for evaluation under RCW 90.94. The information provided in this proposal will be presented to the WRIA 55 Planning Unit and considered for inclusion in the WRIA 55 Watershed Plan Update. When complete, please submit to Carl Einberger (ceinberger@aspectconsulting.com) by January 31, 2020

1. Title:	**2. Proposal Preparer(s):**
Dartford Creek Habitat Restoration	**Lindsay Chutas**

3. General Description of Proposal: *Briefly explain the proposed project (project objective, infrastructure requirements, connection to other new, ongoing or past projects and/or funding, other stakeholders, maintenance requirements,* v*arious sizing or phasing, etc.).*

The proposed project includes 320 feet of stream habitat restoration on Dartford Creek. This project proposal is downstream from a recent 2019 SCD riparian project that implemented a 50 ft riparian buffer. The completion of these two projects will reconnect 700 feet of habitat at these sites. This project would install a 50 ft riparian buffer, utilizing native species found in an analogous forest 500 feet upstream. In addition to the buffer installation, a series of Post Assisted Log Structures (PALS) will be installed to improve habitat, induce sinuosity, and increase turbulence which will lead to an increase in dissolved oxygen content. These positive effects are outlined in the proposed LSR TMDL for DO, pH and turbidity, which is under review at this time.

The stream habitat in this area has been degraded over the years, as the land was converted from a forest upstream to agricultural lands in the 20th century. Additionally, this streamside restoration is part of a larger land management effort taking place on this property. The upland agricultural practices were converted in recent years to a direct seed operation to improve soil health and decrease soil erosion in this generally steep topography.

4. Water-for-Water Source (if applicable): *Mark all applicable and identify (water right number, stream name, source aquifer).*

□ a. Existing Water Right □ b. Groundwater □ c. Surface Water □ d. Other
NA

5. Quantity/Timing/Location of Water Instream: *Estimate average amount of water, when and where. Can project be considered at various sizes (flow outputs) and/or considered in phases?*

a. Acre-feet and/or Cubic-feet-per-second:
NA

b. Timeframe(s) or Season of Use:
NA

c. Tributary (name) or Mainstem Little Spokane River and Location(s):
Dartford Creek
Site address: 4206 W Ballard Rd, Spokane, WA

6. Net Ecological Benefit: *Describe the factors that may contribute to Net Ecological Benefit (i.e., fish passage restoration; channel, riparian, and/or floodplain restoration and/or protection; upland improvements)*

This project will restore the natural stream vegetation and improve aquatic species habitat, which is in a degraded state due to conversion of the land from forest to agriculture in the 20th century. This will result in a stable channel habitat, reduction of sediment inputs, and improve population connectivity for all in-stream organisms. The instream and near stream restoration component will result in long-term stability of the stream banks, reduce headcutting, and provide 0.5 acres of riparian habitat restoration within the project area. Additionally, the addition of the PALS, inducing sinuosity and lightly introducing pools and riffles will improve the water quality by increasing the dissolved oxygen level as well as increase aquifer recharge in this particular reach. While the amount of the effect of the recharge has not been calculated, as this is primarily a habitat restoration project, it is a side benefit consistent with the goals of the WRIA 55 streamflow restoration goals.

7. Data Gaps: *Describe major unknowns or studies that would need to be completed.*

This project has not had a cultural resource survey conducted on site, although the neighboring parcel has a current survey that was conducted in 2019. It is located in a potentially sensitive area and we anticipate the local tribes may want a survey completed prior to any plantings. We have added this as a project cost and anticipate the survey will add one month to the project timeline if needed.

8. Cost Estimates: *Provide known and estimated costs to develop and implement the project.*

a. Project Development and Design: $3000 cultural resources, $4000 oversight/admin/design
b. Project Construction: $5000 plants and supporting planting materials. (plants, hydrosorb, repellent, mulch). $3000 labor
c. Project Annual O&M: $1000 watering supplies to be watered by landowner on volunteered time. Once the project has been completed the operation and maintenance is expected to be negligible. 2nd year planting replacements as needed $1000
Total Estimated Project Budget: $17,000

8. Existing or Potential Funding: *List sources and approximate amounts if known.*

No other potential funding sources are known at this time.

9. Mitigation Requirements: I*s any part of the project associated with other federal or state mitigation requirements (i.e., FERC, BiOp, etc)?*

NA

10. Project Advantages: *In addition to helping address RCW 90.94 requirements, briefly explain other potential benefits (e.g. reduced O&M costs, cropping flexibility, etc)*

The proposed project has negligible O&M costs, a willing landowner and a very experienced project management/design/installation team. This proposed project will have immediate impacts to restoring natural stream function and will become an important part of other work that is planned and has already been completed in this sub-basin.

11. Potential Project Barriers: *Briefly explain potential barriers to completing the project (e.g. landowner willingness, site access, permitting requirements, increased O&M costs, legal implications)*

None known

12. Estimated Time Frame to Implement Project?

A typical timeline for a project of this scope is approximately 6 months for planning/design, 1-2 months for bidding and contracting, and 1-2 months for construction and site restoration.

Pend Oreille
Conservation District

FROM: David Marcell
POCD Director
PO BOX 465
Newport, WA 99156
(509) 447-1155
www.pocd.org

TO: WRIA 55 Planning Committee

WRIA 55 Planning Committee

All, please see the attached submissions for streamflow restoration / habitat improvement projects. To summarize, both projects are in South Pend Oreille County on the Little Spokane River. Proposed practices (verified as eligible in the ECY streamflow restoration guidelines) include: Livestock Exclusion Fencing, Native Tree and Shrub Establishment and Large Woody Debris Placement.

Project 1

(850 feet) Fencing estimated cost $1,778.00
(3acrea, 200+)Planting estimated cost.....$5,763.00

Project 2

(QTY27)Large Woody Debris Placement estimated cost.....$40,500.00
(QTY 1150)Planting estimated cost.....$ 5,750.00

TOTAL.....$53,791.00

Looking forward to discussing further in March. Take care.

Sincerely,
David Marcell

Pend Oreille CD

DRAFT WRIA 55 STREAMFLOW RESTORATION PLANNING PRELIMINARY PROJECT PROPOSAL TEMPLATE

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1. Title: Westover Stream Flow Restoration project.

2. Proposal Preparer(s):

3. General Description of Proposal: *Briefly explain the proposed project (project objective, infrastructure requirements, connection to other new, ongoing or past projects and/or funding, other stakeholders, maintenance requirements, various sizing or phasing, etc.).*

BMP 1

BMP 2

BMP 3

BMP 4

See Attachments

Resource Concern:

4. Water-for-Water Source (if applicable): *Mark all applicable and identify (water right number, stream name, source aquifer).*

□ a. Existing Water Right □ b. Groundwater □ c. Surface Water □ d. Other

5. Quantity/Timing/Location of Water Instream: *Estimate average amount of water, when and where can project be considered at various sizes (flow outputs) and/or considered in phases?*

a. Acre-feet and/or Cubic-feet-per-second:

b. Timeframe(s) or Season of Use:

c. Tributary (name) or Mainstem Little Spokane River and Location(s):

6. Net Ecological Benefit: *Describe the factors that may contribute to Net Ecological Benefit (i.e., fish passage restoration; channel, riparian, and/or floodplain restoration and/or protection; upland improvements)*

ID BMPs & their "CADS," associated Benefits:

7. Data Gaps: *Describe major unknowns or studies that would need to be completed.*

8. Cost Estimates: *Provide known and estimated costs to develop and implement the project.*

a. Project Development and Design:

b. Project Construction:

c. Project Annual O&M:

Based on as BMP.

8. Existing or Potential Funding: *List sources and approximate amounts if known.*

FFFPP? ECY?

9. Mitigation Requirements: *Is any part of the project associated with other federal or state mitigation requirements (i.e., FERC, BiOp, etc)?*

10. Project Advantages: *In addition to helping address RCW 90.94 requirements, briefly explain other potential benefits (e.g. reduced O&M costs, cropping flexibility, etc)*

"How the BMPs chosen are the most sustainable option?"

11. Potential Project Barriers: *Briefly explain potential barriers to completing the project (e.g. landowner willingness, site access, permitting requirements, increased O&M costs, legal implications)*

↳problem? ↳what's needed?
↳railroad? Co. SMP + HPA?

↓
Property resale

12. Estimated Time Frame to Implement Project?

(A)

Westover Property Boundary Map via PC[illegible]-GIS20200103

1/3/2020, 11:14:46 AM

Parcels

1:8,000

0 0.04 0.09 0.18 mi

0 0.05 0.1 0.2 km

Pend Oreille County GIS

Pend Oreille County GIS
Pend Oreille County GIS

Westover,Bert 941 Pines Rd.

Landowner: Bert Westover **Landowner Id:** 17641

Mailing Address: 941 Pines Rd. Newport, WA 99156

Land Use: Residential **Land Type:** Residential/Lifestlye farm

Conservation District: Pend Oreille

Property Description:

Bert contacted POCD to gather information on practices that could help him achieve his goals of improving the wildlife habitat / function of the 1/2 mile or so of Little Spokane Riverfront he owns. Aside from introducing native trees, shrubs and woody debris to the river's banks, Bert hopes to create an outdoor classroom with the site, eventually to host local students for tours of the restoration work and to help assist with ongoing planting maintenance and so on.

Primary resource concerns:
1.) inadequate stream flow, resulting in excess silting of the river bed - degrading habitat.
2.) Lack of diverse riparian vegetation, resulting in warmer water temperatures, specifically on section where south side banks are bare.

Unique site aspects:

-This section of the LSR is adjacent to an old railway. The straightening of the river channel seems to be influenced by this feature. Thus the need for large woody debris is necessary to reduce velocity and stream complexity.
-There is currently a FFFPP project in the works to replace two undersized culverts down stream with a bridge. We had included this culvert replacement in our initial plan, but discovered that a neighbor is already working on a replacement.

BMP Cost Estimates:

612 Tree and Shrub Est. (2700 ft. of bank, riparian zone 10 feet wide (5 feet each side) = total planting area of 27000 sq. ft.) Divide this by 25 sq. ft. (the area needed to space trees and shrubs at 10 feet on Center)= 1080 Trees / Shrubs Needed. I added an additional 70 plants due to quantities in which they must be ordered, rounding it out to 1,150 plants needed. At Approx $5 / plant = $5,750.00

Large Woody Debris Placement (2700 ft. of river, 1 log every 100 feet = 27 total. At 1500 ea. = $40,500.00

Resource Concerns

Water Quality Degradation - Excessive Sediment in Surface Water

Fish and Wildlife - Inadequate Habitat - Cover/Shelter

Fish and Wildlife - Inadequate Habitat - Water

Resource Concern Description:

Fish and Wildlife - Inadequate Habitat - Cover/Shelter : Lack of woody debris in a straightened channel.

Water Quality Degradation - Excessive Sediment in Surface Water +Fish and Wildlife - Inadequate Habitat - Water : Lack of riparian vegetation resulting in excessive water temps, low dissolved oxygen, and erosion prone banks.

BMP Funding

LWD Structure(1) 2804-3938-9550

Program	Fund Source	Agency	Grant Number	Proposed Amount	Awarded Amount
Centennial Clean Water Fund	State	Ecology	TBD	$30,375.00	$0.00
Landowner Match	Local	CD	TBD	$10,125.00	$0.00
			Total:	$40,500.00	

Tree/Shrub Establishment(1) 2804-3938-9550

Program	Fund Source	Agency	Grant Number	Proposed Amount	Awarded Amount
Landowner Match	Local	CD		$1,437.50	$0.00
Centennial Clean Water Fund	State	Ecology	TBD	$4,312.50	$0.00
			Total:	$5,750.00	

Funding Summary

BMP	Program	Proposed Amount	Awarded Amount
LWD Structure	Centennial Clean Water Fund	$30,375.00	
LWD Structure	Landowner Match	$10,125.00	
	Total:	$40,500.00	
Tree/Shrub Establishment	Centennial Clean Water Fund	$4,312.50	
Tree/Shrub Establishment	Landowner Match	$1,437.50	
	Total:	$5,750.00	

Best Management Practices

(E)

Name: Tree/Shrub Establishment

Code: 612

Status: Ready for Funding

Start Date: 4/30/2020

Completion Date:

Planned Implementation Measurements

Measurements	Value	Units
Number of trees/shrubs/cuttings planted	1150	Number
Quantity of BMP	11.00	Acres

Closeout Actual Measurements

Measurements	Value	Units
Quantity of BMP	11.00	Acres

Name: LWD Structure

Code: SCC26

Status: Ready for Funding

Start Date: 4/30/2020

Completion Date:

Planned Implementation Measurements

Measurements	Value	Units
Length of stream (one side) protected	2700	Feet
Quantity of BMP	27.00	Number

Closeout Actual Measurements

Measurements	Value	Units
Quantity of BMP	27.00	Number

(F)

Before Photos

Pend Oreille C.D.

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1. Title: "Cygnet" Habitat Enhancement along the Little Spokane River

2. Proposal Preparer(s): Alex Case-Cohen, Pend Oreille Cons. District
David Marcell, " "

3. General Description of Proposal: *Briefly explain the proposed project (project objective, infrastructure requirements, connection to other new, ongoing or past projects and/or funding, other stakeholders, maintenance requirements, various sizing or phasing, etc.).*

See Attachments A: E

4. Water-for-Water Source (if applicable): *Mark all applicable and identify (water right number, stream name, source aquifer).*

□ a. Existing Water Right □ b. Groundwater □ c. Surface Water □ d. Other

5. Quantity/Timing/Location of Water Instream: *Estimate average amount of water, when and where. Can project be considered at various sizes (flow outputs) and/or considered in phases?*

a. Acre-feet and/or Cubic-feet-per-second:

b. Timeframe(s) or Season of Use:

c. Tributary (name) or Mainstem Little Spokane River and Location(s):

6. Net Ecological Benefit: *Describe the factors that may contribute to Net Ecological Benefit (i.e., fish passage restoration; channel, riparian, and/or floodplain restoration and/or protection; upland improvements)*

7. Data Gaps: *Describe major unknowns or studies that would need to be completed.*

8. Cost Estimates: *Provide known and estimated costs to develop and implement the project.*

a. Project Development and Design:

b. Project Construction:

c. Project Annual O&M:

8. Existing or Potential Funding: *List sources and approximate amounts if known.*

None.

9. Mitigation Requirements: *Is any part of the project associated with other federal or state mitigation requirements (i.e., FERC, BiOp, etc)?*

No.

10. Project Advantages: *In addition to helping address RCW 90.94 requirements, briefly explain other potential benefits (e.g. reduced O&M costs, cropping flexibility, etc)*

11. Potential Project Barriers: *Briefly explain potential barriers to completing the project (e.g. landowner willingness, site access, permitting requirements, increased O&M costs, legal implications)*

12. Estimated Time Frame to Implement Project?

Cygiel Property Map
282 Meadow Lane
Newport, WA 99156

Created By: Alex Case-Cohen

Date Exported:

Total Acreage: 30

0 0.01 0.03 0.05 0.08 0.1

Dawn & Gary Cygiel
282 Meadow Lane Newport, WA 99156
November 2019 Potential Project Map

VOLUNTARY STEWARDSHIP PROGRAM

Pend Oreille Conservation District

erimeter Maps
- Cygiel Railroad
- Cygiel Property

Point Data
- Spring

Project Name
- Fence along Little Spokane
- Pasture boundary fence

Project Name
- Thinning/Pruning/Brush Management
- Permaculture Garden
- Riparian Planting
- Rotational Grazing

By: Alex Case-Cohen
Date Exported: 12/4/2019 5:29 PM

Scale: 1:3,602

0 105 210 420 630 Feet

(C)

Cygiel Best Management Practice Implementation Summary

25%

IM Year	Practice Code	Practice Name	Component	Unit Type	Unit Cost	Total Area/Length /number (acres/feet)	Estimate w/ NRCS rates	POCD Estimate NRCS X 1.5	Cost Share Portion	Landowner Portion	Notes
2020	315	Herbaceous Weed Treatment	Mechanical Treatment	acres	$ 40.25	8	$ 322.00	$ 483.00	$ 362.25	$ 120.75	Mechanical treatment (unless Herbicide is desired)
2020	340	Cover Crop	Multi-Species	acres	$ 73.55	5	$ 367.75	$ 551.63	$ 413.72	$ 137.91	Year 1: plant cereal rye after plowing to aid in weed suppression. Terminate at appropriate stage
2020	382	Fence	Woven Wire	feet	$ 4.52	850	$ 3,842.00	$ 5,763.00	$ 4,322.25	$ 1,440.75	fencing applicable for VSP cost share applies to protecting/enhancing critical areas (i.e. riparian areas only)
2020	614	Spring Development	with headwall	Ea.	$ 3,372.46	1	$ 3,372.46	$ 5,058.69	$ 3,794.02	$ 1,264.67	develop spring for livestock access to water
2020	490	Tree/Shrub Site Preparation	Mechanica, Shredding, Light vegetation	acres	$ 514.51	3	$ 1,543.53	$ 2,315.30	$ 1,736.47	$ 578.82	site preparation for critical area planting along Little Spokane River
2020	612	Tree/Shrub Establishment	Conservation, Hand Planting, Browse Protection	acres	$ 395.08	3	$ 1,185.24	$ 1,777.86	$ 1,333.40	$ 444.47	planting 200+ native riparian trees and shrubs along the Little Spokane River
2021	315	Herbaceous Weed Treatment	Mechanical Treatment	acres	$ 40.25	8	$ 322.00	$ 483.00	$ 362.25	$ 120.75	Mechanical treatment (unless Herbicide is desired)
2021	512	Forage & Biomass Planting	Small acreage, non-native high seeding rate	acres	$ 315.19	5	$ 1,575.95	$ 2,363.93	$ 1,772.94	$ 590.98	Inter-mountain west mix (orchardgrass, alfalfa, smooth bromegrass, fescue and clover)
2021	516	Watering Facility	Frost Free Trough	gallons	$ 1,000.00	1	$ 1,000.00	$ 1,500.00	$ 1,125.00	$ 375.00	5-10 gallon ball free-proof tank for sheep
2021	561	Heavy Use Protection Area	Rock/Gravel with Geotextile	sq. feet	$ 1.10	100	$ 110.00	$ 165.00	$ 123.75	$ 41.25	heavy use protection area for watering facility to protect soil from compaction
2021	642	Livestock Pipeline	PVC 1-2 inch diameter	feet	$ 2.11	150	$ 316.50	$ 474.75	$ 356.06	$ 118.69	
2022	528	Prescribed Grazing	Targeted Grazing, Herbaceous Weed Control	acres	$ 636.21	5	$ 3,181.05	$ 4,771.58	$ 3,578.68	$ 1,192.89	Implement prescribed grazing 1 year after re-planting your pastures
						Totals	$ 17,138.48	$ 25,707.72	$ 19,280.79	$ 6,426.93	

Eligible "ECY Stream Flow" BMPs.

TTL:
~$ 7,541"

= 850 ft. Livestock Fence

+ 3acre (1,720) Trees + Shrubs @ 5 ft. Spacing.

D

Cygiel,Gary & Dawn 282 Meadow Lane

Landowner: Gary & Dawn Cygiel **Landowner Id:** 17575

Mailing Address: 282 Meadow Lane Newport, WA 99156

Land Use: Residential **Land Type:** Residential/Lifestlye farm

Conservation District: Pend Oreille

Property Description:

The Cygiel property is at least 30 acres in size and has direct access to the Little Spokane River. The family does not yet have livestock, though they plan to install a fence before bringing livestock onto their property. They have a few acres of riparian area, a small wetland, a pasture in need of restoration, and a densely vegetated forest with steep slopes throughout.

Resource Concerns

Soil Erosion - Sheet and Rill Erosion

Soil Quality Degradation - Organic Matter Depletion

Soil Quality Degradation - Compaction

Soil Quality Degradation - Subsidence

Excess Water - Seeps

Water Quality Degradation - Nutrients in Surface water

Water Quality Degradation - Excess Pathogens and Chemicals from Manure, Bio-solids or Compost Applications in Surface Water

Degraded Plant Condition - Undesirable Plant Productivity and Health

Degraded Plant Condition - Inadequate Structure and Composition

Degraded Plant Condition - Excessive Plant Pest Pressure

Degraded Plant Condition - Wildfire Hazard, Excessive Biomass Accumulation

Fish and Wildlife - Inadequate Habitat - Food

Fish and Wildlife - Inadequate Habitat - Cover/Shelter

Fish and Wildlife - Inadequate Habitat - Water

Livestock Production Limitation - Inadequate Feed and Forage

Livestock Production Limitation - Inadequate Water

Resource Concern Description:

Soil: Due to steep slopes in the forested area, it is essential that vegetative cover is maintained. It is possible that compaction exists in the pasture due to previous over-grazing and over-stocking. A test is required to confirm this. Organic matter depletion is also likely, due to the pasture's previous history. If improperly treated, the wetlands along the Little Spokane River may be at risk to subsidence due to a high level of organic matter.

Water: Large amounts of groundwater result in a few springs and seeps found throughout the property, especially in the wetland and along the riparian area. Once livestock are introduced to the pasture, the risk of nutrient loading in the Little Spokane is high.

Plant: Plant health in both the pasture and the forest require improvement. In the pasture, lack of management and previous over-grazing may result in lack of organic matter, compaction, and a weed pressures, including Knapweed. Along the riparian area, Reed Canary Grass dominates native plant species. In the forest, poor structure and composition have resulted in an increased risk to wildfire as well as poor forest and tree health.

Wildlife: The presence of Reed Canary Grass along the Little Spokane River prevents native vegetation from growing. These plants prevent native shrubs and trees from shading the river, which degrades fish habitat. In addition, dense vegetation renders the forests impassable by many wildlife species.

Livestock: Current conditions on the pasture are not ideal for livestock. In addition, fencing off the Little Spokane River will prevent livestock access to water.

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1. Title:	**2. Proposal Preparer(s):**
Beaver Dam Analogues on Deadman Creek	**Amanda Parrish, The Lands Council**

3. General Description of Proposal: *Briefly explain the proposed project (project objective, infrastructure requirements, connection to other new, ongoing or past projects and/or funding, other stakeholders, maintenance requirements,* v*arious sizing or phasing, etc.).*

The Deadman Creek subwatershed is a priority watershed for habitat restoration for both the WRIA 55 Watershed Plan Update and the Little Spokane River TMDL Update. We proposed to install beaver dam analogues (BDAs) in the creek to trap sediment, slow the flow, and improve habitat. In addition to the BDAs, we will plant the riparian area with a mix of willow cuttings and potted native trees. While no landowner agreements are in place, a property owner at S13 T27N R44E is interested in working with us and will help us reach out to neighboring properties as well. The placement and design of the BDAs will be done with help from the Department of Ecology and installed by The Lands Council.

4. Water-for-Water Source (if applicable): *Mark all applicable and identify (water right number, stream name, source aquifer).*

□ a. Existing Water Right □ b. Groundwater □ c. Surface Water □ d. Other

Deadman Creek

5. Quantity/Timing/Location of Water Instream: *Estimate average amount of water, when and where. Can project be considered at various sizes (flow outputs) and/or considered in phases?*

a. Acre-feet and/or Cubic-feet-per-second:

b. Timeframe(s) or Season of Use:

year round, especially helpful during summer low flows

c. Tributary (name) or Mainstem Little Spokane River and Location(s):

Deadman Creek, S13 T27N R44E

6. Net Ecological Benefit: *Describe the factors that may contribute to Net Ecological Benefit (i.e., fish passage restoration; channel, riparian, and/or floodplain restoration and/or protection; upland improvements)*

This project will provide both channel and riparian restoration.

7. Data Gaps: *Describe major unknowns or studies that would need to be completed.*

Once property owners are selected, placement and structure design can take place.

8. Cost Estimates: *Provide known and estimated costs to develop and implement the project.*

a. Project Development and Design: $5,000

b. Project Construction: $20,000

c. Project Annual O&M: $1,500/year for the first two years to help riparian plants establish

8. Existing or Potential Funding: *List sources and approximate amounts if known.*

Potential Funding from EPA 319 grants.

9. Mitigation Requirements: I*s any part of the project associated with other federal or state mitigation requirements (i.e., FERC, BiOp, etc)?*

n/a

10. Project Advantages: *In addition to helping address RCW 90.94 requirements, briefly explain other potential benefits (e.g. reduced O&M costs, cropping flexibility, etc)*

This project is relatively low maintenance and low cost. Construction materials can come from local sources such as logs in the vicinity, old Christmas trees, and harvested willow whips. This area is also identified as a priority region for restoration by the Little Spokane River TMDL update.

11. Potential Project Barriers: *Briefly explain potential barriers to completing the project (e.g. landowner willingness, site access, permitting requirements, increased O&M costs, legal implications)*

Much of this stretch of Deadman Creek is on private property, so finding willing landowners needs to occur before implementation can.

12. Estimated Time Frame to Implement Project?

Planning will take 4-6 months, implementation can be done in 1 week, and riparian plants will be watered once per week during the first two summers following implementation.

DRAFT WRIA 55 STREAMFLOW RESTORATION PLANNING
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1. Title: Waikiki Springs Fish Habitat Project	**2. Proposal Preparer(s): Todd Dunfield – Inland Northwest Land Conservancy and Conor Giorgi – Spokane Tribe of Indians**

3. General Description of Proposal: *Briefly explain the proposed project (project objective, infrastructure requirements, connection to other new, ongoing or past projects and/or funding, other stakeholders, maintenance requirements,* v*arious sizing or phasing, etc.).*

Inland Northwest Land Conservancy (INLC) and the Spokane Tribe of Indians (STI) are partnering to create a new nature preserve along the North shore of the Little Spokane River between the WDFW Fish Hatchery and Dartford, WA. Our mutual goal is to conserve the undeveloped floodplain (95 acres) and over 1,700 feet of shoreline along the Little Spokane River for salmon reintroduction activities, habitat protection, and facilitation of public access. The future nature preserve lies in the Little Spokane River corridor, an area of relatively intact high functioning riparian habitat immediately adjacent to major North Spokane neighborhoods such as Fairwood I and Fairwood II, which contain over a thousand homes. Protecting this property and preserving the value it provides is of utmost importance for maintaining the ecology of the Little Spokane.

The INLC is a regional land trust that has successfully protected over 21,000 acres and over 41 miles of shoreline. INLC comes into this partnership with STI with expertise to conserve the lands and shoreline through the usual vehicles of conservation, such as fee land ownership, conservation easements, and the creation of nature preserves common to land trusts. The STI comes into this partnership with vigor and expertise from their Division of Fisheries and Water Resources to accelerate the reintroduction of native anadromous species historically found in the waters of the Inland Northwest and the Little Spokane River. The property is perfectly positioned for the Tribe's next steps planned to reintroduce anadromous fish to the region. Through previous analyses the Tribe determined there are significant amounts of high-quality habitat in the proposed project area. Coupled with relatively easy access, this property is well situated for releases of juvenile and adult salmon and the studies that will accompany their release.

The proposed Waikiki Springs preserve, when established, will ensure that existing ecological function is not only retained, but is also bolstered through the reintroduction of keystone species to their historic range.

Western Parcel: 26014.9007 Listed as 35.82 Acres of land
Eastern Parcel: 36063.9123 Listed as 58.58 Acres of land

4. Water-for-Water Source (if applicable): *Mark all applicable and identify (water right number, stream name, source aquifer).*

□ a. Existing Water Right □ b. Groundwater □ c. Surface Water □ d. Other

N/A

5. Quantity/Timing/Location of Water Instream: *Estimate average amount of water, when and where. Can project be considered at various sizes (flow outputs) and/or considered in phases?*

a. Acre-feet and/or Cubic-feet-per-second:

N/A

b. Timeframe(s) or Season of Use:

Year-round use for public with intense seasonal use for fish rearing and release as well as antenna monitoring movement of fish.

c. Tributary (name) or Mainstem Little Spokane River and Location(s):

Mainstem of Little Spokane River – Approximate river mile 9.5

6. Net Ecological Benefit: *Describe the factors that may contribute to Net Ecological Benefit (i.e., fish passage restoration; channel, riparian, and/or floodplain restoration and/or protection; upland improvements)*

The proposed nature preserve includes designated wetlands within the floodplain as well as a forested bench of ponderosa pine forest above the Little Spokane River. This area along the Little Spokane River's north bank has seen limited to no development and includes a productive bald eagle nest, plethora of gopher snakes, and megafauna such as moose. The site also includes an abundance of cold clean water from the springs located just upstream along the southern facing shore from this property. Even during hot summer months the stream water temperatures remain conducive to supporting fish populations, due to the broad leaf vegetation along the shores of the Little Spokane River as well as the ground water discharging into the Little Spokane River. These unique geological and ecological qualities make these lands and shoreline optimal for native fish species as well as salmon reintroduction.

The return of salmon, in various life stages, is an ecological restoration that will support instream and upland productivity through the deposition of marine-derived nutrients. It will also immediately increase the biological diversity of the river, restoring components of the fish community that have been blocked due to hydroelectric dam development.

7. Data Gaps: *Describe major unknowns or studies that would need to be completed.*

For decades during the latter part of the 20th century a small sized sewage treatment facility was in operation on these lands and were subsequently remediated and filled. These remediation actions need to be confirmed by reviewing previous documentation and performing both and a Phase 1 and Phase 2 environmental study.

8. Cost Estimates: *Provide known and estimated costs to develop and implement the project.*

a. Project Development and Design:

No further development is expected at this time. Small antennas instream or along the bank may be installed at a later date to facilitate the study of reintroduced fish species; however the aesthetic and ecological impact of these is negligible.

b. Project Construction: Currently the 95 acres of land is listed by an agent for sale at $1.6 million. INLC and STI are pursuing a WA State RCO grant. This will require an appraisal to be made by an independent appraiser. This appraisal may be higher, lower, or very close to the asking price.

c. Project Annual O&M: Depending on the level of temporary or permanent infrastructure needed for fish reintroduction, O&M is expected to be relatively low cost. Funding to support the operation and maintenance of related equipment will be sourced independently of WA State RCO grant funding.

8. Existing or Potential Funding: *List sources and approximate amounts if known.*

WA State RCO funding. The next grant application deadline is May 1, 2020 and the grant would match 50% of the sale price of the land. The remainder 50% will need to be raised locally though other funding vehicles such as private philanthropy.

9. Mitigation Requirements: I*s any part of the project associated with other federal or state mitigation requirements (i.e., FERC, BiOp, etc)?*

No, this project proposal is not associated with *required* federal or state mitigation, however protection of this property and accompanying salmon reintroduction efforts are consistent with mitigation and other restoration plans. This project, by facilitating reintroduction, is consistent with the 2014 Columbia River Basin Fish and Wildlife Program, put forth by the Northwest Power and Conservation Council. It's also consistent with the joint Fish Passage & Reintroduction plan developed by Columbia River Basin Tribes and Canadian First Nations; plans developed by the State of Washington for recovering Southern Resident Orca; and the Columbia Basin Partnership Task Force lead by NOAA.

10. Project Advantages: *In addition to helping address RCW 90.94 requirements, briefly explain other potential benefits (e.g. reduced O&M costs, cropping flexibility, etc)*

This project presents a unique advantage, as shoreline access is difficult to find or acquire along the Little Spokane River. The acquisition of this property will support preservation of riparian habitat and access for the Spokane Tribe of Indians and their partners to perform the necessary studies to further inform salmon reintroduction. It will also allow access by the general public to use and appreciate this unique area and its habitats.

11. Potential Project Barriers: *Briefly explain potential barriers to completing the project (e.g. landowner willingness, site access, permitting requirements, increased O&M costs, legal implications)*

There are at least three potential barriers to this project. The first being that the land in question could sell to a different buyer prior to our ability to agree on a purchase and sale agreement with the seller. This property is currently zoned as RCV-Rural Conservation and would support a single residence per 10 acre parcel. Potential buyers include developers, which would put the land and associated water resources at risk. The second being the willingness of landowner to agree on the appraised price, which is a RCO Grant restriction. Lastly, there is a chance that our RCO grant proposal will not rank favorably enough to be chosen for funding in the 2020 application period.

12. Estimated Time Frame to Implement Project?

Preliminary Timeline: 2020-2022
May 1, 2020 RCO Grant Application Due
Fall 2020 Grant acceptance known
Winter 2021 Appraisal conducted, followed by a purchase and sale agreement
Spring 2021 Fundraising
Final Purchase 2021-2022
2022 Fish Reintroduction Activities Begin