Evaluating Watershed Plans

Assessing Initial Outputs of the Streamflow Restoration Act in Washington State

1/18/2021

Elisa A. Dawson

Submitted in partial fulfillment of the requirements for the
Master of Natural Resources Degree
Oregon State University

Contents

Abstract 4
Chapter 1: Introduction and Theoretical Context 5
Introduction 5
Theoretical Context 8
Watershed Planning 8
The Role of Planning Outputs 9
Plan Output Evaluation 12
Research Questions 14
Chapter 2: Water Resource Planning in Washington State 15
Past Policy and Planning Context 15
Streamflow Restoration Act 17
Chapter 3: Methodology 22
Sample Selection and Data Collection 22
Content Analysis 23
Data Coding 27
Limitations of Study 27
Chapter 4: Results and Discussion 30
WRIA 1 Streamflow Restoration Act Output 30
Overview 30
Analysis 33
WRIA 11 Streamflow Restoration Act Output 40
Overview 40
Analysis 43
WRIA 59 Streamflow Restoration Act Output 49
Overview 49
Analysis 52
Comparison of Plan Quality Scores 58
Chapter 5: Conclusion and Implications 64
Summary of Findings 64
Implication for Water Management in Washington State 66
Implications for Future Research 67
Works Cited 70

List of Figures

Figure 1: Logic Model of Outputs and Outcomes…… 10
Figure 2: Streamflow Restoration Act Implicated Watersheds Map…… 21

List of Tables

Table 1: Characteristics of Plan Quality That Serve as Evaluation Criteria……. 24
Table 2: WRIA 1 Internal Characteristics Coding…… 38
Table 3: WRIA 1 External Characteristics Coding……... 39
Table 4: WRIA 11 Internal Characteristics Coding…….. 47
Table 5: WRIA 11 External Characteristics Coding……. 48
Table 6: WRIA 59 Internal Characteristics Coding…….. 56
Table 7: WRIA 59 External Characteristics Coding……. 57
Table 8: All WRIAs Internal Characteristics Coding……... 62
Table 9: All WRIAs External Characteristics Coding…….. 63

Abstract

The overuse of water in Washington State, including the water used by permit-exempt wells, comes with severe consequences involving streamflow and aquifer depletion, ecosystem health, and salmon survival. Water quantity has become a focus of several powerful and controversial legal cases in Washington State, and the legislative response to this issue has led to the Streamflow Restoration Act. The Streamflow Restoration Act requires that fifteen watersheds take on a collaborative planning process that results in watershed plan outputs which address water quantity issues associated with permit-exempt wells. Plans are one step in a broader process to effectuate change. However, without a quality planning document, the prospect for meeting goals is limited. If plans are not evaluated, it can cast doubt on the extent to which the planning process and plan vision statements will be realized, and goals achieved.

As of September 2020, three of the outputs mandated under the Streamflow Restoration Act have been completed. However, little has been done to assess the quality of these plans. By using the Characteristics of Plan Quality That Serve as Evaluation Criteria to evaluate the plans completed so far, this research finds the outputs are not adequately including all the elements needed to create a quality document. These issues can be divided into three categories: (1) inadequate data on the state of natural resources and constraints (2) absence of specific project details and weak policies that create uncertainty for implementation, and (3) lack of complete monitoring and evaluation strategies. By not adequately addressing all characteristics of a quality plan it undermines the effectiveness of the output and the likelihood of meeting policy goals. These findings indicate that the current Streamflow Restoration Act policy and the state guidance for local plan adoption do not do enough to encourage and assure plans meet plan quality standards.

Chapter 1: Introduction and Theoretical Context

Introduction

Planning and the creation of output documents created by this process is a key strategy used by people and organizations to meet goals. Whether the group is private, public, non-profit, or from any professional sector, the creation of a planning document as the output of a planning process is widespread. The document that comes out of planning processes is considered the written manifestation of a process that establishes clear strategic goals that have measurable outcomes, that will ultimately lead to the success of the plan's topic. However, not all plans that come out of planning processes are the same in quality. How do we know if the output of the planning process is any good?

With this question in mind, this research focuses on the quality of plans coming out of a recent watershed planning process in Washington State. Local watershed plans play a pivotal role in guiding and regulating water resources. The role of planning documents for water resources in Washington State has been a subject of interest since the Washington State Water Planning Act of 1998 (Ryan and Klug 2005). Since the initial Washington State Water Planning Act of 1998, watershed-based planning processes have proliferated throughout the state. Many planning documents have resulted from this widespread mechanism for managing natural resource issues.

The most recent watershed planning process implemented by Washington State is the Streamflow Restoration Act (Revised Code of Washington (RCW) 90.94). The law, passed in 2018, was in response to the Hirst decision. The Hirst decision was a 2016 Washington State Supreme Court decision that limited a landowner’s ability to get a building permit for a new

home when the proposed water source was a permit-exempt well (Washington Department of Ecology 2018). The law clarifies how counties issue building permits for homes that use a permit-exempt well for a water source. The law directs local planning groups to develop watershed plans that offset impacts from new domestic permit-exempt wells and achieve a net ecological benefit within the watershed (Washington Department of Ecology 2018). Additionally, the Washington State Legislature appropriated $300 million over 15 years to implement projects that improve streamflow (Washington Department of Ecology 2018). The funds are available statewide and administered through a competitive grant program.

The law mandates that fifteen identified watersheds will take on this planning process to create the final output of a planning document to guide future work. Guidance documents on how to structure plans, calculate water usage, and develop projects were issued by the Washington State Department of Ecology (Washington Department of Ecology 2018). Using the template provided, the goal is for watershed plans to be prepared, approved, and submitted by local watershed planning units. The Washington State Department of Ecology will review the approved watershed plans and determines whether the output meets the law's minimum requirements. If the plans meet the requirements, the Washington State Department of Ecology then adopts submitted watershed plans by the legislation's deadlines or will move into rulemaking. As of September 2020, three watersheds have finalized their output plans as part of the Streamflow Restoration Act.

The plans were created as part of what the Legislature intended to be a structured, linear process of problem-identification, problem-solving, policy design, and project planning written down into a cohesive and comprehensive document. While three plans have emerged so far under Washington State Department of Ecology guidance, a wide range of approaches, toolkits,

strategies, and content differ between the unique watersheds. Despite the template provided, there is much diversity among the planning outputs, and the shift to implementation, if any, has not been either consistent or linear. Furthermore, little has been done to evaluate and assess the quality and comparative strengths and weaknesses of the three completed plans.

The quality of these plans is a critical issue as these documents will have important implications for the future of water resource management in Washington State. This study seeks to fill this research gap by evaluating the outputs (i.e., plans) to gauge the potential for achieving desired policy objectives. The research uses the 10 Characteristics of Plan Quality that Serve as Evaluation Criteria developed by Berke and Godschalk (2009) to assess the quality of the three plans completed thus far. Assessing plan quality early in the completion of the planning process provides an opportunity for reflection. Such an analysis will provide insight into the contents of plans and how plans vary across the state. Additionally, this valuable insight can supply context and data that can be used in future studies to provide explanatory power when attempting to link planning outputs with future environmental outcomes.

By looking across multiple plans from the Streamflow Restoration Act, this study assesses how the outputs of the process interact across a range of pre-defined criteria and offers suggestions as to the extent to which these outputs are achieving policy objectives and demonstrating the potential for the achievement of environmental outcomes. The following overarching question guided this research: *Did the Streamflow Restoration Act planning processes lead to completed and adopted plans, and if so, do these plans contain the elements of plan quality?*

Theoretical Context

Watershed Planning

Washington State has been managing water primarily through "Water Resource Inventory Areas" (WRIAs) since the 1998 Watershed Planning Act. Principles of ecosystem management specify that watersheds are an appropriate scale for management activities because planning according to jurisdictional boundaries may fragment a watershed and, thus, undermine ecosystem-level planning (Healey 1998). Every watershed is unique in character and in the issues facing it. However, watersheds provide a manageable natural landscape unit where managers can gain a sound scientific understanding of ecological processes. Watersheds are geographically recognizable systems, and the flow of inputs and outputs can be relatively easily evaluated compared to ecosystems covering larger spatial scales (Cortner and Moote 1999).

While the idea of creating a plan may seem simple and straightforward, the watershed planning process has long provided a source of conflict, especially in the western United States. Water is an essential resource for human security and development, and access to water in sufficient quantity and quality can drive competition and conflict where interests are perceived as incompatible. In Washington, conflicts over water supply, water rights, and water quality have persisted for decades (Ryan and Klug 2005, Singleton 2002). The planning process is often used to bring parties together and encourage cooperation.

Over the last two decades, water policies that incentivize, or even require, collaboration among a group of stakeholders to convene for a planning process and ultimately write a planning document as an output has increased in Washington State. These collaborative planning groups vary in their size, responsibility, and authority but commonly include various stakeholders from governmental and non-governmental sectors (Bidwell and Ryan 2006). Community-based

watershed initiatives have garnered high levels of political support by offering the potential for stakeholder-supported, consensus-based approaches to water resource management problems. A large and growing literature on collaborative partnerships in natural resource management has developed, primarily surrounding water resources issues (Ryan and Bidwell 2006, Ryan and Klug 2005, Moore and Koontz 2003, Leach & Pelkey 2001).

Salamon (2001) suggests that collaborative planning approaches have become necessary as public management problems have become too complicated for governments to handle independently. This is because disagreements exist about the proper ends of public action and because the government increasingly lacks the authority to enforce its will on other actors without giving them a seat at the table. However, not all watershed planning is mandated. While mandated policies have been utilized, governments have also tried using voluntary incentives to help initiate local planning (Moore and Koontz 2003). Additionally, grassroots planning is neither mandated nor incentivized by the government but has also occurred at the watershed level (Moore and Koontz 2003). Because of the differing backgrounds, operating styles, organizational cultures, and personal characteristics of participants in collaborative approaches, there is reason to expect that the outcomes will be more flexible and less predictable than traditional public management approaches. Part of the unpredictability of the planning outputs is the plan quality. What is not well understood is how outputs from collaborative planning from local planning groups should be evaluated for plan quality and if the type of initiation (mandate, incentive, or grassroots) plays a role in plan quality.

The Role of Planning Outputs

After a planning process is complete, the focus is often on a process's outcomes, skipping over the initial output. However, measuring outputs can be just as important and insightful.

Public policy, and performance measurement, differentiate between outputs and outcomes (Berke, Smith, & Lyles 2012, Berke & Godschalk 2009). Outputs are thought of as the deliverables of those working within a specific program, while outcomes "are not what the program itself did but the consequences of what the program did" (Baer 1997). Additional literature has furthered this definition, describing outputs as the concrete or tangible products of an institution, while outcomes refer to the actual effects the outputs bring to bear on ecological and social conditions (Koontz and Thomas 2006, Berke & Godschalk 2009).

In order to visualize the chain of outputs through to outcomes, a basic logic model is presented in Figure 1. The model illustrates a simple chain of events, beginning with an activity. That activity generates an output, leading to a series of intermediate outcomes, and ends with the desired overall outcome. In terms of this study, the logic model sequence involves the Streamflow Restoration Act planning as the activity leading to the development of a watershed plan document as the output. This output is in turn followed by intermediate outcomes, including plan implementation of on-the-ground projects. Finally, projects arising from the output achieve the end outcome of improving environmental conditions to meet the policy's goals. However, these end outcomes will take years to arise from the completion of the initial output. The key to realizing end outcome goals is having a complete and well-constructed output as a precondition for environmental outcomes.

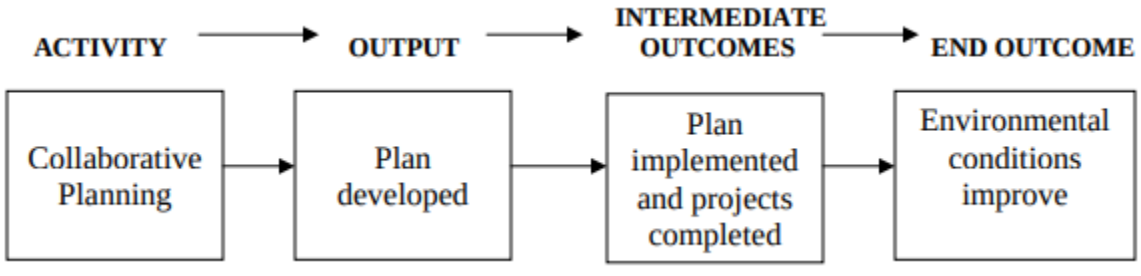

Figure 1: Logic Model of Outputs and Outcomes (Koontz and Thomas 2006)

For water resource protection, the process of creating a plan offers an opportunity to set goals for environmental protection and assemble information about future water use projections and current threats to water availability. The planning process can reconcile competing objectives such as the need for new development access to water while maintaining instream resources in the watershed (Bidwell and Ryan 2006). The plan itself can be viewed as the physical manifestation of a planning process. By looking at the output document, there is the possibility to gain insight into the past which led up to this point, as well as the future possibilities for implementation.

An unresolved yet critical question is whether the planning approaches for developing and implementing watershed management solutions are sufficient. Current research often focuses on outcomes instead of outputs (Berke, Smith, and Lyles 2012). Evaluating if outputs meet the policy requirements, in addition to concerns regarding community needs, growth management, water quality, water quantity, and habitat for other species has been done once before in Washington State. In 2005, Ryan and Klug published the article “Collaborative watershed planning in Washington State: Implementing the Watershed Planning Act” in the Journal of Environmental Planning and Management. This exploratory study sought to examine challenges and benefits associated with collaborative watershed planning and local governments' capacity to conduct collaborative watershed planning under the 1998 Watershed Planning Act (Ryan and Klug 2005). Using documents and interview data from four cases, it was found that all planning groups experience similar challenges. However, newer planning groups experienced more challenges than groups with previous planning experience (Ryan and Klug 2005). However, little was done to analyze plans from that process for plan quality. This paper builds upon previous

research done in Washington State to assess watershed planning processes by using plan output evaluation methods for assessing outputs of the Streamflow Restoration Act.

Plan Output Evaluation

It is not realistic to evaluate the outcomes of recently completed plans, whose effects will be realized at a future time when conditions have changed, and different standards of evaluation may have been formulated. However, it is possible to evaluate the outputs (i.e., plans) according to contemporary standards of good practice. Such evaluations also enable evaluation of the quality of plan making, reviewing the effectiveness of past processes, and guiding future processes (Berke and Godschalk 2009, Hallstom et al. 2017). Plan quality evaluation thus functions as a learning process that yields important planning lessons and guidelines. Plan evaluation can investigate how policy goals and objectives are translated into policy outcomes.

Research on evaluating plan quality as an output of a collaborative planning process emerged during the 1990s. Researchers in plan evaluation often cite Baer (1997), as a cornerstone researcher who comprehensively evaluated the plan evaluation literature, trying to answer the question of how you would know a good plan if you saw one (Berke and Godschalk 2009). Baer (1997) investigated both modernist and postmodernist issues, reviewed published criteria, and proposed a plan evaluation vocabulary. Since then, scholars have produced more than forty-five publications on the topic, with the number of studies appearing to increase steadily (Lyles & Stevens 2014). This growth can be attributed in part to greater awareness of the principles that contribute to a high-quality plan and increasing interest in understanding a holistic plan's components.

In the late 2000s, a meta-analysis of plan quality studies was done by Berke and Godschalk (2009). Based on the previous work by Baer, the authors presented an emerging

methodology for assessing the quality of plans (Berke & Godschalk 2009). The principles proposed by Berke and Godschalk (2009) included ten broad characteristics: (1) issue identification and visioning, (2) goals, (3) fact base, (4) policies, (5) implementation actions, (6) monitoring and evaluation, (7) internal consistency, (8) plan organization and presentation, (9) inter-organizational coordination, and (10) compliance. Each general characteristic has subcomponents by which they can be measured. While this methodology was developed for assessing land use plans, it has been used by others for other natural resource plan evaluations (Berke, Smith, and Lyles 2012, Berke and Godschalk 2009, Hallstom et al. 2017). Theoretically, these principles ensure the inclusion of goals, information, policy solutions, straightforward strategies for implementation and monitoring, and the representation of a diverse set of stakeholders in the plan-making process.

Plan quality research has been proposed as a valuable tool for systematically analyzing and improving plans (Baer 1997, Berke and Godschalk 2009, Hatry 1999). Plan quality research is used to identify a plan's strengths and weaknesses, judge whether its overall quality is good, and provide a basis for ensuring that plans reach a desirable standard (Berke and Godschalk 2009, Hallstom et al. 2017). Previous studies done on the evaluation of planning documents have revealed that while plans can be well crafted in laying out a vision for the future and specifying goals and policies to achieve its vision, they have been found to be weak with regard to implementation, monitoring, and evaluation (Berke and Godschalk 2009, Smith, and Lyles 2012).

Plan quality evaluations have focused on issues such as natural hazard mitigation, coastal plans, watershed protection, and comprehensive land use plans (Berke, Smith, and Lyles 2012, Hallstom et al. 2017). This type of evaluation tells decision-makers whether and how effectively

their plans have achieved their intended goals and objectives. Plan quality evaluation is defined as the 'systematic assessment of plans compared with explicit standards or indicators' (Guyadeen and Seasons 2016). More specifically, plan evaluation should evaluate identified outputs to determine to what degree the planning process has been a success or failure (Guyadeen and Seasons 2016, Berke, Smith, and Lyles 2012, Hatry 1999, Hallstom et al. 2017). Ultimately, plans are products of the planning process. Plans should provide holistic information and the details necessary to translate a community's vision for the future into a physical implementation and ultimately reach outcomes (Berke and Godschalk 2009). If plans are not evaluated, it can cast doubt on how the planning process and plan vision statements will be realized and goals achieved.

Research Questions

Plans are one step in a broader process with the goal of effectuating change. However, without a quality planning document, the prospects for meeting goals and real change are limited. The following two overarching questions guide this research: (1) How well do watershed plans prepared under the Streamflow Restoration Act achieve plan quality principles? (2) What are the comparative strengths and weaknesses of individual completed watershed plans prepared under the Streamflow Restoration Act when evaluated by the plan quality principles? Ultimately, by looking across the three completed planning efforts in this process thus far, this study assesses how well the Streamflow Restoration Act process outputs are achieving policy objectives and demonstrating the potential to achieve environmental outcomes. If plans are not evaluated for quality, a valuable opportunity to learn how to improve them is lost.

Chapter 2: Water Resource Planning in Washington State

Past Policy and Planning Context

The principle of managing water on a watershed scale has been proposed throughout the history of the settlement of the west. However, the 1998 Watershed Planning Act was the first time the Washington State government created a statewide program to encourage watershed stakeholder groups to meet and develop collaborative-based watershed plans. Since then, collaborative watershed planning has emerged as a preferred tool to address the issues associated with balancing environmental concerns and consumptive water uses (Ryan and Klug 2005). Generally, state policies either incentivize or require collaborative watershed planning efforts to be initiated and managed at the local level. In these situations, a diverse group of stakeholders formulate a strategy for managing water resources within their watershed, typically using consensus decision making and joint fact-finding to generate the final output of a plan document.

The foundational 1998 Watershed Planning Act (RCW 90.82) in Washington occurred leading up to the Puget Sound Endangered Species Act listings. The Watershed Planning Act was legislation targeted at water resources management and included fish habitat provisions (Washington Department of Ecology 2018). The Watershed Planning Act outlined a framework for local communities to evaluate water use and plan for future needs. It set forth a formal process whereby local governments and citizens could voluntarily develop watershed management plans through a consensus process. If groups chose to organize, they would be eligible to receive up to a total of $400,000 per watershed over three years to assist in local assessment and planning efforts (Washington Department of Ecology 2018). It is important to

note that watershed planning under the Watershed Planning Act was voluntary. The policy provided a planning framework and financial assistance for planning. Ultimately, the policy was designed so that watershed groups would perceive the available assistance as sufficient incentive to create a final planning document. Thus, there was no mandate for planning under this policy.

For watersheds that did choose to plan, the primary policy output required by the planning process was a watershed plan crafted by local stakeholders. Planning units had flexibility in the content and structure of plans under the Watershed Planning Act. The scope of planning is outlined under Chapter 90.82 of the Revised Code of Washington. As stated in RCW 90.82.060,

> "[p]lanning…must provide for a process to allow the local citizens within a Water Resource Inventory Area (WRIA) or multi-WRIA area to join together in an effort to:
> (a) Assess the status of the water resources of their WRIA or multi-WRIA area; and (b) determine how best to manage the water resources of the WRIA or multi-WRIA area to balance the competing resource demands for that area."

Section 90.82.060 also outlined the types of planning activities required of each planning unit (i.e., the sections to be contained in the watershed plan). The single required planning element under the Watershed Planning Act was water quantity, the goal of which was to better understand water resources in each watershed in order to determine the ability of the watershed to meet the demand for future needs (Washington Department of Ecology 2018). Activities related to this planning element involved conducting an assessment of water supply and water use. From this information, it was intended that strategies could be developed to guide the use of water within the watershed and increase water supplies for the future (Washington Department of Ecology 2018). As noted in the statute, "[t]he objective of these strategies is to supply water in sufficient quantities to satisfy the minimum instream flows for fish and to provide water for

future out-of-stream uses" (Washington Department of Ecology 2018). Ultimately, the plan recommendations were intended to influence the issuance of water rights in the watershed (Washington State Department of Ecology 2018).

Streamflow Restoration Act

While the goal of the plans under the 1998 Watershed Planning Act included addressing water quantity concerns, recently groundwater issues in relation to water quantity have become a predominant concern in Washington State. Outputs from the Watershed Planning Act did not address all water concerns, and permit-exempt private domestic wells were predominately left out of water quantity planning in most watershed (Washington State Department of Ecology 2018). Wells are important because most groundwater in Washington is hydraulically connected to nearby lakes and streams. In fact, during much of the year, groundwater discharge may make up most of the water in Washington streams (Washington State Department of Ecology 2018). When groundwater is pumped and the water is put to use it can lead to a decrease in streamflow. Many factors influence where and how much a groundwater use may affect a stream. These factors include the nature of the aquifer, the distance between the well and the stream, the well depth, and the type of water use (Washington State Department of Ecology 2018). For example, lawn watering consumes much more water than in-house use that discharges to a septic system. However, at least some portion of the well water used in a home typically has a negative impact on nearby streams.

Prior to the recent Streamflow Restoration Act, private domestic wells were not regulated or generally addressed in local watershed plans (Washington State Department of Ecology 2018). Rural homes in Washington that were unable or chose not to connect to municipal

drinking water supplies were built by drilling a well under the Permit-Exempt Groundwater Well state rules. For domestic use, permit-exempt wells have been defined since 1945 as groundwater use for up to 5,000 gallons per day (Washington State Department of Ecology 2018). Although exempt groundwater withdrawals have not required a water right permit and have not been included in local watershed planning efforts, they do fall under state law.

This loophole was prone to litigation and was the subject of *Whatcom County v. Western Washington Growth Management Hearings Board* in 2016. This case challenged Whatcom County's Comprehensive Plan for permitting land that relies on permit-exempt groundwater wells. The court ruled in what is often referred to as the "Hirst decision" that Whatcom County failed to comply with the Washington State Growth Management Act requirements to protect water resources and instream flow. Specifically driving this case was the Washington State instream flow rules. Instream flow rules set flow requirements for rivers and streams, establish requirements for new water right permits, and often closed surface waters to new diversions (Washington State Department of Ecology 2018).

Additionally, instream flow rules require that enough water is kept in streams and rivers to protect and preserve instream resources and values such as fish, wildlife, recreation, aesthetics, water quality, and navigation (Washington State Department of Ecology 2018). Before the Hirst decision, permit-exempt wells were not regulated under the law. However, the Hirst decision changed this, mandating that the county cannot rely on excluding permit-exempt groundwater wells from regulations of the instream flow rule (Washington State Department of Ecology 2018). Therefore, counties must create new regulations to guarantee that permit-exempt uses do not impair instream flows.

The Hirst decision was implemented through the Streamflow Restoration Act. The Legislature passed the Streamflow Restoration Act on January 18, 2018 and was signed by Washington State Governor Jay Inslee the next day (Washington State Department of Ecology 2018). The new law establishes standards for what will constitute proof of an adequate water supply when applying for a building permit or subdivision relying on a new permit-exempt well (Washington State Department of Ecology 2018). Additionally, the Streamflow Restoration Act requires that fifteen watersheds throughout the state convene a collaborative planning process to create Water Resource Enhancement Plans to address groundwater and future development within the watershed. The law requires that defined stakeholders are convened in the form of "planning units" to write the plan to address the new requirements (Washington State Department of Ecology 2018). These plans and projects developed by the local committees will be used to manage groundwater and instream flow in Washington.

The Washington State Department of Ecology published guidance for this process's outputs based on the Streamflow Restoration Act. The guidance offers a framework for determining population estimates, permit-exempt well projects, and consumptive use for wells. Planning units are expected to follow this guide to determine the amount of water the group will need to plan to offset. To offset the impact from permit-exempt wells, planning units are expected to create a list of projects and/or policies to mitigate water usage (Washington State Department of Ecology 2018). The law lists specific requirements for domestic permit-exempt water offset projects:

> "[a]t 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. The highest priority recommendations must 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." (Washington State Department of Ecology 2018)

The law prioritizes offset projects that are in-time and in the same tributary but recognizes that this may not always be feasible. The law also authorizes offset projects in other parts of the basin from where impacts occur (out-of-place projects) and impact offsets that are out-of-time (Washington State Department of Ecology 2018). This new standard is a significant departure from the current legal requirements for permitted water rights holders and those that existed for domestic permit-exempt uses before adopting the Streamflow Restoration Act.

Additionally, the law requires that the local planning unit output includes recommendations for projects that will "measure, protect, and enhance instream resources and improve watershed functions" (Washington State Department of Ecology 2018). Under the Streamflow Restoration Act, Ecology must review the final plans, and before accepting them:

> ". . . determine that actions identified in the watershed plan, after accounting for new projected uses of water over the subsequent twenty years, will result in a net ecological benefit to instream resources within the water resource inventory area." (Washington State Department of Ecology 2018)

Thus far in the Streamflow Restoration Act implementation, Ecology has only offered interim guidance on the definition of net ecological benefit. Ecology's Interim Guidance definition for this is "a net ecological benefit determination means anticipated benefits to instream resources from actions designed to restore streamflow will offset and exceed the projected impacts to instream resources from new domestic water use" (Washington State Department of Ecology 2018). Ecology further explains that their evaluation will incorporate existing information on watershed-specific factors addressed during the planning process, and will rely heavily on input from local, state, federal and tribal resource managers and water resource stakeholders that participated in the process (Washington State Department of Ecology

2018). While Ecology plans to review the outputs for the ecological benefit, no mention of overall plan quality evaluation has been presented.

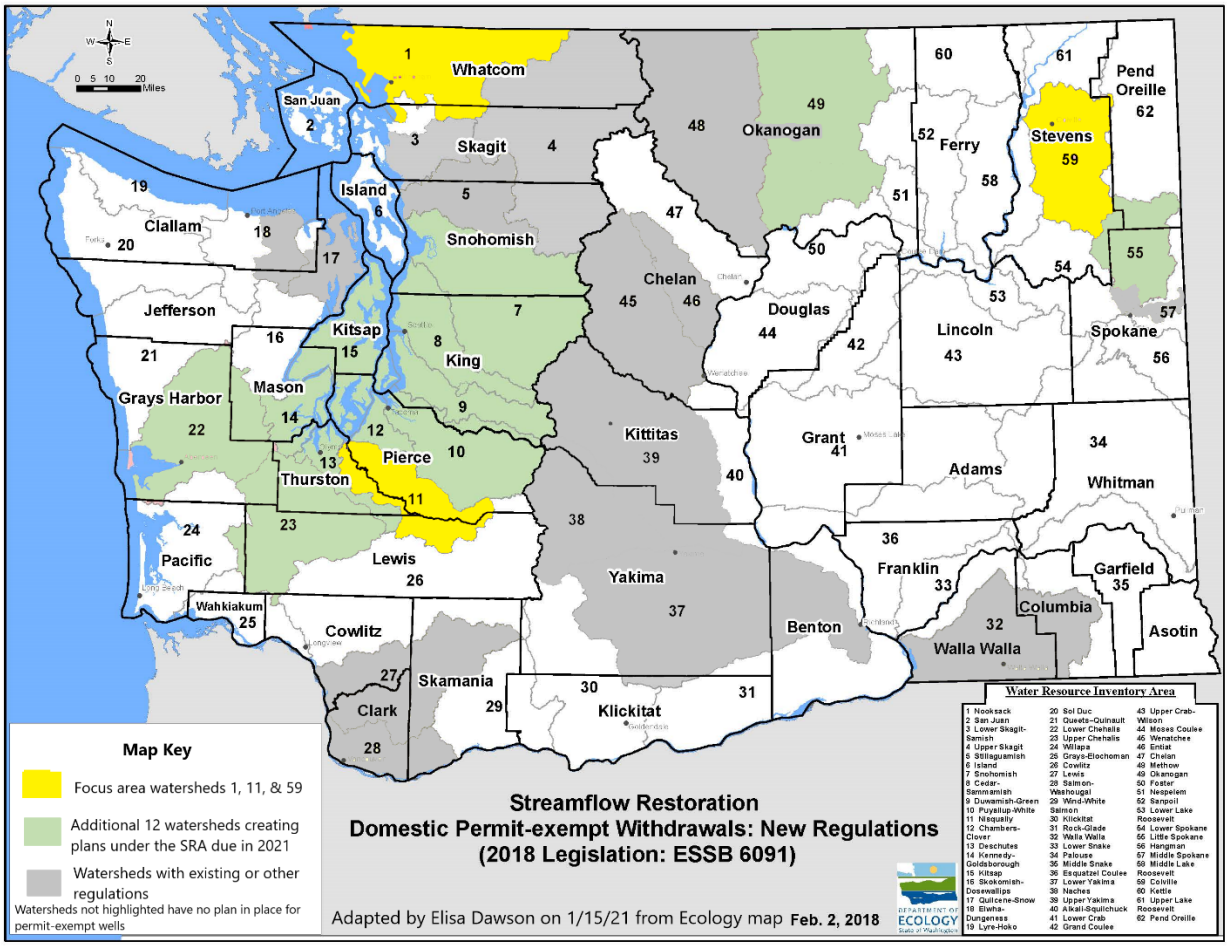

Figure 2: Streamflow Restoration Act Implicated Watersheds Map. WRIAs 1 - Nooksack, 11 - Nisqually, and 59 - Colville are the focus of this research.

Chapter 3: Methodology

Sample Selection and Data Collection

The Streamflow Restoration Act requires fifteen watersheds to create plans to address permit-exempt well groundwater development within their broader watershed planning processes. This paper analyzes plans completed and approved by the Washington Department of Ecology by September 2020. As of September 2020, three of the fifteen designated watersheds had completed and approved plans.

The first plan was completed under the leadership of the Nisqually Indian Tribe. The Nisqually watershed planning unit (WRIA 11) began meeting in July of 2018 to address the Streamflow Restoration Act's requirements with an Addendum to the 2003 Nisqually Watershed Management Plan. The plan was completed and adopted on February 1, 2019.

The second watershed planning process was the Nooksack watershed planning unit (WRIA 1), which was convened under Whatcom County's leadership. While the Nooksack Watershed planning unit worked to address the Streamflow Restoration Act requirements from July 2018 - January 2019, the planning unit was unable to reach a consensus on their plan by their deadline of February 1, 2019. Because of this, the Washington State Department of Ecology started rulemaking on February 5, 2019. On November 19, 2019, the Washington State Department of Ecology proposed the rule amendment and supporting document. The final document was adopted on May 27, 2020. The supporting document of the final ruling is the second output that will be evaluated as a part of this study.

Finally, the Colville watershed planning unit (WRIA 59) was the third watershed to complete a plan before September 2020. While the legislature required the plan to complete and

adopted in 2021, the WRIA 59 planning unit completed their plan in advance of their deadline in December 2019. The Washington State Department of Ecology formally approved the plan on June 25, 2020. All the planning documents evaluated in this study were made available to the public electronically online. The other 12 planning units are expected to finish their plans in 2021.

Content Analysis

The focus of this study is to systematically evaluate watershed plans developed by the Streamflow Restoration Act planning process. Content analysis is an appropriate methodology for systematically evaluating data gathered from documents or archival records. The process relies largely upon the application of a consistent set of criteria to enhance objectivity (Frankfort-Nachmias and Nachmias 2000). The three plans investigated in this study were analyzed using the 10 Characteristics of Plan Quality that Serve as Evaluation Criteria developed by Berke and Godschalk (2009). Table 1 shows the plan quality characteristics and the specific criteria grouped under each characteristic.

Table 1
Characteristics of Plan Quality That Serve as Evaluation Criteria

Internal characteristics

Issue identification and vision: Description of community needs, assets, trends, and future vision

- Assessment of major issues, trends, and impacts of forecasted change
- Description of major opportunities for and threats to desirable land and water use and development
- A vision that identifies what the community wants to be

Goals: Reflections of public values that express desired future land use and development pattern

- Statements of future desired conditions that reflect the breadth of community values

Fact base: An analysis of current and future conditions and explanation of reasoning

- Present and future population
- Existing land and water use and land and water supply
- Existing capacity and future demand for water
- State of natural environment resources and constraints
- Clear maps and tables that support reasoning, and enhance relevance and comprehensibility

Policies: Specification of principles to guide public and private decisions to achieve goals

- Sufficiently specific (not vague) to be tied to definite actions
- Spatial designs that specify future land and water use, population growth, expected well locations.

Implementation: Commitments to carry out policy-driven actions

- Timelines for actions
- Organizations identified that are responsible for actions
- Sources of funding are identified to supporting actions

Monitoring and evaluation: Provisions for tracking change in community conditions

- Goals are based on measurable objectives, e.g., 2 projects implemented within three years of complete plan
- Indicators of objectives to assess progress, e.g., 1 CFS of water put into instream flow.
- Organizations identified responsible for monitoring
- Timetable for updating plan based on monitoring of changing conditions

Internal consistency: Issues, vision, goals, policies, and implementation are mutually reinforcing

- Goals must be comprehensive to accommodate issues and vision
- Policies must be clearly linked back to goals and forward to implementation actions
- Monitoring should include indicators to gauge goal achievement and effectiveness of policies

External characteristics

Organization and presentation: Provisions to enhance understandability for a wide range of readers

- Table of contents, glossary of terms, executive summary
- Cross-referencing of issues, vision, goals, and policies
- Clear visuals, e.g., maps, charts, and pictures, and diagrams
- Supporting documents, e.g., video, CD, Web page

Interorganizational coordination: Integration with other plans or policies of public and private parties

- Vertical coordination with plans or policies of federal, state, and regional parties
- Horizontal coordination with plans or policies of other local parties within or outside local jurisdiction

Compliance: Consistent with the purpose of plan mandates

- Required elements are included in plan
- Required elements fit together

Characteristics were categorized based on the internal and external conceptual dimensions of plan quality (Berke and Godschalk 2009). There were seven internal characteristics, with characteristics 1 through 6 reflecting the sequence of tasks in making plan elements that comprise a watershed plan. The sequence starts with (1) issue identification and visioning, followed by direction-setting elements that include (2) goals, (3) fact base for policy selection, and (4) policies for guiding future patterns. Characteristics 1 through 4 provide the foundation for (5) plan implementation actions, and (6) monitoring and evaluation that tracks and assesses the effectiveness of the plan in resolving issues and achieving goals. Finally, (7) internal consistency addresses how well the first six plan elements are integrated. Three external characteristics include (8) organization and presentation to foster comprehension and understandability of the plan, (9) inter-organizational coordination to facilitate coordination among other plans (e.g., comprehensive and development plans), and (10) compliance to ensure consistency with federal and state mandates. The ten characteristics are described in more detail below.

Internal Characteristics:

1) Issue identification and vision include the description of community needs, assets, trends, and future vision. This characteristic includes a detailed report of significant opportunities and threats related to the issue.

2) Goals should result from a consensus-building process about future conditions where competing interests about how the community should look and function are reconciled by a diverse group of stakeholders. This includes statements of future desired conditions that reflect the breadth of community values.

3) A fact base assembles information about the current state of the community and provides future projections with the purpose of creating a realistic pathway to the community's goals. The fact base characteristic measures how maps, tables, and supporting documents are used to enhance the relevance and comprehensibility of the output.

4) Policies are specific and clearly defined set of principles to guide public and private decisions to achieve goals. Policy strategies are necessary to realize the community's goals using the information gathered in the fact base. This measurement includes assessing how specific policies are tied to definite actions.

5) Implementation includes steps like the assignment of responsibility and the allocation of the time and resources necessary to move a plan from a document into action. Timelines for actions and identified funding strategies are an essential part of measuring implementation.

6) Monitoring involves the on-going review of the implementation and achievement of community goals. Through monitoring, a plan can incorporate new information and adapt to changing conditions. It is important that responsible organizations for monitoring has been defied, there are clear ways of measuring, and timetables have been assigned to ensure monitoring is followed through.

7) Internal consistency measures how well the above characteristics fit together. This includes how well the issues, vision, goals, policies, and implementation are mutually reinforcing.

External Characteristics:

8) Organization and presentation are provisions to enhance understandability for a wide range of readers. This includes a table of contents, glossary of terms, and an executive summary. Additionally, clear visuals and supporting documents are measured in this characteristic.

9) Interorganizational coordination includes the integration with other plans or policies of public and private parties. Both horizontal and vertical coordination are assessed.

10) Compliance assesses how well the output is consistent with the purpose of plan mandates. Additionally, compliance assesses how all required elements are presented and how well the elements fit together.

By performing content analysis of watershed plans from the Streamflow Restoration Act process, this study reviews each individual plan's strengths and weaknesses and highlights the variation in plans between the study areas. The results of this content analysis, in turn, offer insight into the extent to which the Streamflow Restoration Act planning process is producing outputs capable of generating environmental outcomes.

Data Coding

First, plans were recorded for the following attributes: watershed name, type of plan (if it was an amendment to a previous plan or a new standalone document), and plan author (local watershed or a ruling by the Washington Department of Ecology). Next, each plan was read in its entirety. The plan was then reread while actively assessing the contents according to the "Characteristics of Plan Quality That Serve as Evaluation Criteria" in Table 1. Each characteristic was coded on a 0-3 ordinal scale. Ordinal measurement is a level of measurement describing a variable with attributes that can be rank-order (Babbie 2014). The ordinal measurement used in this study was:

- 0 characteristic was not mentioned
- 1 Characteristic was mentioned but not addressed, or no detail offered
- 2 Characteristic was addressed with some specific information
- 3 Characteristic was addressed with detailed information and holistic context

Limitations of Study

Plan output evaluation is concerned with providing guidance on how to gauge the success of plans in terms of assessing the content quality of the plan. The primary limitation of this study is the subjectivity inherent in evaluating plans. Studies relying on subjective methods of data analysis can provide insights, but an outside reader has virtually no way of knowing if they are valid. Different people observing the same document can interpret different things unless given relatively detailed criteria to standardize their perceptions. Methodically and consistently applying evaluative criteria reduces subjectivity to the maximum extent possible. However, the

content analysis relies upon a human interpretation of highly variable and dense documents, and as a result, the analysis is subject to human error and evaluative variation.

Specifically, my own bias must be recognized in this study. As a planning practitioner in Washington State, I am familiar with the background and current status of the Streamflow Restoration Act. I have been involved in planning for the Streamflow Restoration Act for watersheds not investigated in this study, and those plans will be finalized after this study is completed. However, my involvement in the overall process over the last three years gives me information others who review these documents may not have and impacts my scores. My background including education, training, and involvement in the process impacts my perspective when evaluating the plans in this study. Additionally, as a planner, my bias differs from those of a hydrologist or engineer who would evaluate these plans with a different perspective.

Furthermore, looking at planning output documents presents only one view of the world, that of the planning group, or even small subset of the planning group, responsible for developing the document. This view is but a snapshot at one point in time. While evaluating watershed plans is an important piece in an overall policy evaluation, attention to only planning documents does not account for those activities or programs arising organically or that were not documented and may underestimate the true potential for achieving environmental outcomes.

Finally, another limitation of this study is that the time frame allowed for only three of the fifteen policy required outputs to be examined. The Streamflow Restoration Act policy determined different timelines for watersheds based on their prior experience dealing with instream water issues. Therefore, the three plans evaluated in this report can be seen as having a head start on this policy. The other twelve watersheds were given more time because it was

assumed that those watersheds would need more time to gather the information that was not already on hand. The accelerated timeline of the three plans evaluated makes them early adopters of the Streamflow Restoration Act policy. Further studies should incorporate the twelve additional plans to gather an understanding of plan quality among all the outputs of the Streamflow Restoration Act planning process.

Chapter 4: Results and Discussion

This section presents the key findings of the content analysis conducted in this study. The sections are broken down by plan. In each section, the plans are first discussed at a broad level, explaining the specific watershed planning context which brought about the document. Then, plans are evaluated against the plan evaluation table. After a review of each of the three plans, the plans are reviewed among each other for their comparative strengths and weaknesses.

WRIA 1 Streamflow Restoration Act Output

Overview

The Nooksack River watershed, WRIA 1, is located in northwestern Washington State. The area drains to the Nooksack River but also includes the Sumas River. It is bounded by Bellingham Bay and the Strait of Georgia on the west and the Cascade Mountains on the east and lies in the western portion of Whatcom County and small portions of Skagit County. The Nooksack watershed covers over 830 square miles in northwestern Washington and British Columbia (Nooksack Indian Tribe 2019). The Nooksack River's middle fork begins at Mount Shuksan, in North Cascades National Park, and the north and south forks flow from Mount Baker, at 10,778 feet, and Twin Sisters Mountain. Glacier melt, snowmelt, groundwater, and rainfall feed the 1,400 stream and river miles that comprise the watershed (Nooksack Indian Tribe 2019). Most of the upper watershed is federally owned, but the middle section consists of private land, state land, and small landowner forestry operations. The lower portion of the

watershed is still fairly rural, but more heavily developed than the upper reaches, with farms and residences dominating the landscape.

The Streamflow Restoration Act established a February 1, 2019 deadline for Ecology to adopt a locally developed and approved watershed plan update for WRIA 1. The WRIA 1 planning process accomplished tremendous work. However, a final planning output under the Streamflow Restoration Act was not locally approved by the deadline (Washington Department of Ecology 2020). Since a plan was not approved by the deadline, Ecology was required to carry out a rulemaking process under RCW 90.94.020. To build off the planning unit's work, Ecology reviewed technical information, including water use scenarios, project lists, technical reports, and planning meeting notes from WRIA 1 Streamflow Restoration-related planning meetings from January 2018 - January 2019 (Washington Department of Ecology 2020). These documents included work from the WRIA 1 watershed staff team, planning unit, watershed management team, and Watershed Management Board meetings (Washington Department of Ecology 2020).

Thus far in the Streamflow Restoration Act implementation, WRIA 1 has been the only watershed not to adopt a plan by their established deadline and is the only watershed to have gone through the rulemaking process to date. On February 5, 2019, Ecology's Water Resources Program announced the start of rulemaking to amend *Chapter 173-501 WAC - Instream Resources Protection Program – Nooksack WRIA 1* to meet the requirements in RCW 90.94.020 (Washington Department of Ecology 2020). RCW 90.94.020 required Ecology to adopt rules for WRIA 1 by August 1, 2020 (Washington Department of Ecology 2020). Per RCW 90.94.020(4)(e), any changes to fees or groundwater withdrawal limits for new uses must be established by rule (Washington Department of Ecology 2020).

A series of in-person and online workshops were held during 2019 and early 2020 to solicit stakeholder review and gather feedback on how Ecology proposed meeting the requirements of RCW 90.94.020 through a limited amendment to the WRIA 1 rule and supporting document. Preliminary drafts were available from April 8, 2019, through May 10, 2019, for comment. Ecology received 329 formal comments on the initial draft rule (Washington Department of Ecology 2020). The comments were read and analyzed by Ecology and used to inform the draft rule amendment development. Ecology's Proposal Notice was filed on November 19, 2019 (Washington Department of Ecology 2020). Ecology collected comments on the proposed rule amendment and draft rule supporting document from November 19, 2019, through January 17, 2020, through the online eComment system and the mail (Washington Department of Ecology 2020). In this draft, Ecology reported that the agency considered that the WRIA 1 Planning Unit and Initiating Governments considered changes to water use standards during their work under RCW 90.94.020, recognizing that there was no consensus on water use standards between the Planning Unit and Initiating Governments.

Ultimately, the final documents for WRIA 1 were adopted on May 27, 2020. The process's output looked different from a typical planning document that comes out of a collaborative process. Instead, a Ruling was passed, the Final Rule Supporting Document Amendment to Chapter 173-501 WAC Instream Resources Protection Program - Nooksack Water Resource Inventory Area (WRIA) 1 (Washington Department of Ecology 2020). The Final Rule Supporting Document is considered the output of the Streamflow Restoration Act for this analysis and will be the output that is evaluated in this study.

Analysis

Issue identification and vision scored three in the analysis. By taking information gathered from the planning process and incorporating it into this output, The Washington Department of Ecology (Ecology) does provide a strong issue identification, vision, and goals. The final output includes a detailed description of community needs, assets, trends, and future vision. The plan offered clear insight into significant issues and trends in water use and identified a vision of achieving specific water flows. With the inclusion of a 1.5 safety factor, Ecology estimates that 390 acre-feet per year are required to offset the consumptive use impacts associated with the 20-year planning horizon. In total, 2,150 new domestic permit-exempt wells are projected during this timeframe in WRIA 1 (Washington Department of Ecology 2020). The plan includes statements of desired future conditions that reflect the community values identified in the planning process. Ecology included a list of initially developed projects by the planning team that adds or retimes 3,767 acre-feet of offset water to the watershed, representing a tenfold offset of the estimated consumptive use (Washington Department of Ecology 2020). While the rule amendment put in place by Ecology does not change fees, it does establish policies that change limits for groundwater withdrawals.

The WRIA 1 planning unit could not come to a consensus, and Ecology was required to write this output, which impacted the score for goals. Goals should result from a consensus-building process about future conditions where a diverse group of stakeholders reconciles competing interests about how the community should look and function. However, a clear linkage between this output goal and the local planning group's information was apparent in the output. Therefore, the plan scored two in this category.

The output uses the same framework defined by the state to identify well forecast estimates, water use, total water consumption, and the ultimate water offset goal identified in the plan. The plan ranked three in all fact-based characteristics due to its adherence to the framework mandated for this plan and the use of science-based information to inform its policies. The output uses technical tools to inform its water use estimates, including the USGS analytical tool (STRMDEPL08) for calculating streamflow depletion caused by nearby groundwater pumping (Reeves, 2008). The USGS's analytical tool is conservative. It will likely overestimate stream depletion because it doesn't consider induced recharge that may occur within the watershed (when groundwater pumping lowers a high water table below the land surface, allows additional infiltration), it only reflects water table conditions.

The output ranked two in policies. Ecology identifies policies in the output with some detail, including water use standards for new permit-exempt wells. Ecology states that the agency "looked at other water use standards, descriptions, and water reservation assumptions established for domestic permit-exempt wells in recent (post-2001) instream flow rules in other WRIAs in Washington," and includes a list of that information in the output (Washington Department of Ecology 2020). While this document has policies that guide decisions, additional detail within the policies would help tie them to definitive actions to meet outcomes ultimately.

Ecology adopts several policies within this output. The first was adding regulations to establish limits for domestic permit-exempt groundwater withdrawals for new users. The other policy change was on current regulations to increase flexibility for projects that retime high flows. Based on the information reviewed, Ecology determined that a quantity limit standard promoting conservation is necessary to protect instream resources. Withdrawals from a new permit-exempt well(s) serving a domestic group system that qualifies for the group domestic

permit exemption under RCW 90.44.050 are limited. Indoor domestic water use from the domestic group system shall not exceed 500 gallons per day for each connection and shall not exceed a total usage of 3,000 gallons per day for the entire group (Washington Department of Ecology 2020). These policies outline the strategies necessary to realize the community's goals using the information gathered in the fact base but lack information on how they will be measured.

Implementation of this plan is ranked as two. Implementation includes steps like the assignment of responsibility and allocating the time and resources necessary to move a plan from a document into action. The WRIA 1 Planning Unit identified 45 projects categorized as "Early Action," "Preliminary Projects, or "Other Projects" (Washington Department of Ecology 2020). Ecology considered this project list as a starting point to develop its list of projects and actions that, once implemented, achieve the goals of the plan listed under RCW 90.94.020. The final output is built on the information provided for each of these projects. Descriptions, offset, and benefit data were taken from the WRIA 1 Streamflow Restoration planning process, primarily captured in the "FINAL Task 2 Deliverable – Projects and Actions" technical memorandum (Washington Department of Ecology 2020). Ecology identifies fourteen projects and actions in the final output and says that they were chosen based on their likelihood of implementation and ability to achieve net ecological benefit. While Ecology claims there is a high level of interest in pursuing the projects, therefore improving certainty around implementation, further detail is need on clear community support.

While the plan states that project proponents voluntarily agreed to have their projects listed here, each project's proponents are not identified in the output. Additionally, the listing of a project does not obligate Ecology to fund a project or the project proponent to carry out the

project. Therefore, neither the completion of projects nor the attainment of their anticipated results is guaranteed. Within the plan, Ecology encourages project proponents and advocates to complete the projects and use incentives through the grant funding provided under the law (Washington Department of Ecology 2020). Additionally, while the WRIA 1 plan identifies the 20-year timeline of the entire plan, it does not give specific information on when projects will be done or project sponsors. The output does not rank plans or provide detailed information on which projects should be a priority for the watershed. Within the plan, only 8 of the 14 projects have funding identified. The lack of specific and holistic detail made the final ranking a two.

Monitoring and evaluation of the plan was mixed from one - three. Evaluation of the plan is mentioned, and some details are given, but the evaluation goals were not based on detailed, measurable objectives. While the goal of the plan is to offset the water use from plans, this output lacks specific indicators of objectives to assess progress. Instead, the output identifies self-reporting from Whatcom County to Ecology for their monitoring plan (Washington Department of Ecology 2020). The output names Whatcom County as the responsible agency and requires that Whatcom County reports specific information to Ecology but lacks detail on how that information will be analyzed for effectiveness. The output includes a review every five years over the next 20 years saying that "Whatcom County, in its role as Lead Agency, will prepare annual reports and 5-year self-assessments... Depending on the progress of individual projects, the entity or entities implementing the project may choose to update the flow benefit estimates, based on conditions and circumstances encountered" (Washington Department of Ecology 2020). The plan does not mention what will happen to monitoring efforts after the 20 year planning horizon.

Overall, internal consistency within the output ranked well. This plan ranked three in goals and policies, but a two for lacking details in the monitoring component. As can quickly happen in the planning process, this plan has many ideas for addressing the issue at hand but lacks the same level of detail in the monitoring section. In order to produce a fully holistic output, additional detail on monitoring is needed.

External characteristics ranked threes in all subcategories. The organization and presentation, inter-organizational coordination, and compliance within the plan benefitted from Ecology being both the regulator and the writer of this output. Integration with other plans and policies within the watershed, county, and state is mentioned throughout the output. The plan often references different watershed planning outputs that have been completed, which informed this output, including the WRIA 1 Salmonid Recovery Plan, WRIA 1 Watershed Management Plan, and Whatcom Local Integrating Organization Ecosystem Recovery Plan (Washington Department of Ecology 2020). The final output is also consistent with the purpose of the policy mandate.

Table 2: WRIA 1 Internal Characteristics Coding

WRIA 1:			
Internal characteristics	***Issue identification and vision:* Description of community needs, assets, trends, and future vision**	Assessment of major issues, trends, and impacts of forecasted change	3
		Description of major opportunities for and threats to desirable water use and development	3
		A vision that identifies what the community wants to be	3
	***Goals:* Reflections of public values that express desired future conditions**	Statements of future desired water use and development pattern that reflect the breadth of community values	2
	***Fact base:* An analysis of current and future conditions and explanation of reasoning**	Present and future population	3
		Existing land and water use and land and water supply	3
		Existing capacity and future demand for water	3
		State of natural environment resources and constraints	3
		Clear maps and tables that support reasoning, and enhance relevance and comprehensibility	3
	***Policies:* Specification of principles to guide public and private decisions to achieve goals**	Sufficiently specific to be tied to definite actions	2
		Spatial designs that specify future land and water use, population growth, expected well locations.	2
	***Implementation:* Commitments to carry out policy-driven actions**	Timelines for actions	2
		Organizations identified that are responsible for actions	2
		Sources of funding are identified to supporting actions	2
	***Monitoring and evaluation:* Provisions for tracking change in community conditions**	Goals are based on measurable objectives, e.g., 2 projects implemented within three years of complete plan	1
		Indicators of objectives to assess progress, e.g., 1 CFS of water put into instream flow.	2
		Organizations identified responsible for monitoring	3
		Timetable for updating plan based on monitoring of changing conditions	3
	***Internal consistency:* Issues, vision, goals, policies, and implementation are mutually reinforcing**	Goals are comprehensive to accommodate issues and vision	3
		Policies must be clearly linked back to goals and forward to implementation actions	3
		Monitoring should include indicators to gauge goal achievement and effectiveness of policies	2

Table 3: WRIA 1 External Characteristics Coding

WRIA 1			
External Characteristics	***Organization and presentation:* Provisions to enhance understandability for a wide range of readers**	Table of contents, glossary of terms, executive summary	3
		Cross referencing of issues, vision, goals, and policies	3
		Clear visuals, e.g., maps, charts, and pictures	3
		Supporting documents, e.g., video or webpage	3
	***Interorganizational coordination:* Integration with other plans or policies of public and private parties**	Vertical coordination with plans or policies of federal, state, and regional parties	2
		Horizontal coordination with plans or policies of other local parties within or outside local jurisdiction	3
	***Compliance:* Consistent with the purpose of plan mandates**	Required elements are included in plan	3
		Required elements fit together	3
Total for Internal and External Characteristics			76/ 87

WRIA 11 Streamflow Restoration Act Output

Overview

The Nisqually Watershed, WRIA 11, is in western Washington State and encompasses parts of Thurston, Lewis, and Pierce Counties. Flowing 78 miles from its source at the Nisqually Glacier on Mount Rainier to its delta at the Billy Frank Jr. Nisqually National Wildlife Refuge, the Nisqually is a direct link between the summit snows of Mount Rainier and the marine waters of Puget Sound (Nisqually Planning Unit 2019). The watershed drains 768 square miles in the southern Puget Sound basin (Nisqually Planning Unit 2019). Heavily influenced by glacier runoff, the Nisqually is supplied by glacial outflow and snowmelt from the Nisqually, Kautz, and Wilson Glaciers and surrounding snowfields on Mount Rainier. The watershed encompasses a broad range of land uses and jurisdictions: rural communities; national and state parks and forests; public and private timberlands; municipal hydropower dams and reservoirs; farmlands; the Nisqually Indian Reservation; Joint Base Lewis-McChord, and the Billy Frank Jr. Nisqually National Wildlife Refuge (Nisqually Planning Unit 2019). The Nisqually River basin is one of the least developed watersheds in south Puget Sound.

The Nisqually River Council, also known as the Nisqually planning unit, is the oldest watershed council in the American West and has provided a forum for education, discussion, and problem-solving for watershed leaders and community stakeholders for over 30 years. The Nisqually River Council was formed in 1987 to implement the Nisqually Watershed Management Plan, a document drafted by an interagency task force by legislative request to guide the Nisqually River's stewardship (Nisqually Planning Unit 2019). The 1987 Watershed Management Plan focused on the river itself and land within 300 feet of the banks (Nisqually Planning Unit 2019). It outlined management principles intended to balance private landholders' rights, statewide public interests, public access to the river, and fish and

wildlife protection. Then, acting under the authority of the 1998 Watershed Management Act (chapter 90.82 RCW) with the Nisqually Indian Tribe as the Lead Agency, the Nisqually Planning Unit adopted the Nisqually Watershed Management Plan in 2003 (Nisqually Planning Unit 2019).

Continuing this collaborative work, the Nisqually planning unit in February 2007 adopted the Phase IV Nisqually Implementation Plan (Nisqually Planning Unit 2019), further identifying actions to be taken to implement the 2003 Plan. Today, with 24 member agencies representing federal, state, local, and tribal governments and a Citizens Advisory Committee, the Nisqually planning unit has evolved to adopt a whole-watershed approach. The group recognizes the interconnected impacts that regional development, population growth, community health, and economic stability have on the long-term sustainability of the watershed's habitat, water, and natural resources (Nisqually Planning Unit 2019). The planning unit's mission is to create sustainability in the Nisqually Watershed for current and future generations by developing a shared culture of environmental, social, and economic balance (Nisqually Planning Unit 2019).

Under the Nisqually Indian Tribe's leadership, in July 2018, the Nisqually planning unit began to address the Streamflow Restoration Act (RCW 90.94.020) with an Addendum to the 2003 Nisqually Watershed Management Plan. Consistent with Ecology guidance for developing water use estimates to delineate the WRIA into suitably sized areas to allow meaningful determination, WRIA 11 was divided into eight regions referred to as aggregated sub-basins. Each sub-basin was analyzed for its geology, water, salmon usage, land use development, and regulatory history (Nisqually Planning Unit 2019). The counties and planning unit have forecast rural growth and water use through 2040 (2018 – 2040) in order to better match growth projections used in the counties' comprehensive planning work (Nisqually Planning Unit 2019). Therefore, the consumptive use mitigation offsets proposed in this document address 22, rather than 20, years of permit-exempt well use associated with rural growth in WRIA 11.

Total new permit-exempt well connections were projected to be 2,987 (Nisqually Planning Unit 2019). On a watershed scale, the minimum identified mitigation offsets (4.22 cubic-foot-per-second) are significantly greater than the total forecast consumptive use (1.03 cubic-foot-per-second) (Nisqually Planning Unit 2019).

The Nisqually planning unit took a two-part approach to mitigate future rural growth impacts on streamflows in the watershed. The first aspect was sub-basin specific offsets or "micro-mitigation." Micro-mitigation is defined as projects involving aquifer recharge, deeper aquifers to minimize impacts to local surface water bodies and water right acquisition, and policies that reduce rural water use and track mitigation credits as part of the county building permit approval (Nisqually Planning Unit 2019). These sub-basin specific micro-mitigation strategies are intended to restore streamflows impacted by permit-exempt groundwater use within sub-basins over the planning horizon of 22 years. Micro-mitigation actions can, in most cases, be implemented as specific offsets within sub-basins, via a mitigation credit bank or other accounting systems available to new development applicants (Nisqually Planning Unit 2019). Local habitat projects also generate some sub-basin-specific offsets. Micro-mitigation projects are strategically linked to the second aspect, large-scale habitat projects that are watershed wide. Large-scale habitat initiatives that address the watershed's net ecological benefit, but the streamflow benefits they provide are applied at a sub-basin scale (Nisqually Planning Unit 2019).

The plan provided by the Nisqually planning unit was approved by consensus. The law then requires review and approval by Ecology for final adoption. Ecology received a final version of the Addendum from the planning unit on January 18, 2019. RCW 90.94 requires final Ecology action regarding plan update adoption no later than February 1, 2019 (Washington Department of Ecology 2020). Despite the short timeframe for review by Ecology, the plan was approved. Ecology recognized that the Nisqually Planning Unit had a very short timeframe to respond to the Hirst legislation. In their

review, Ecology stated that the output of the process "offers conceptual frameworks and quantification for priority habitat and other mitigation projects that can both supply streamflow benefits and forward the goals of salmon recovery and sustainable community development" (Washington Department of Ecology 2020). The Nisqually Tribe, the lead entity for this planning effort, has long demonstrated a commitment to restore habitat function, and this Addendum builds on many years of the Tribe's efforts.

Analysis

The WRIA 11 output of the Streamflow Restoration Act is the first output of this process to be adopted by consensus. The output clearly states that it is an Addendum to the larger and more detailed Nisqually Watershed Plan (Nisqually Planning Unit 2019). By formatting their output in this way, the output does not come across as a standalone document and lacks aspects of a complete plan. The output scored two in issue identification, vision, and goals. The plan gathers information on permit-exempt well projection and water consumption. However, it does not state holistic and clear goals about the desired future condition and vision for meeting planning goals. While lacking some detail, the goals mentioned result from a consensus-building process about future conditions where a diverse group of stakeholders reconciles competing interests about how the community should look and function.

The output uses the same framework defined by the state to identify well forecast estimates, water use, total water consumption, and the ultimate water offset goal identified in the plan. The plan ranked three in the fact-based characteristics for defining the population, existing water use and land supply, and existing capacity and future water demand. This is due to its adherence to the framework mandated for this plan and the use of science-based information to inform its policies. The plan includes a safety factor to give a conservative water use estimate and limit uncertainty (Nisqually Planning Unit 2019).

However, the plan ranked poorly for the fact base characteristics for defining the state of the natural resources and constraints. The output offers nearly no detailed information about the current water

supply and instream resources. Another element under fact base is to include clear maps and tables, which this output has nearly none. The output states that "relevant background information and associated figures from the 2003 plan are referenced and, unless of a specific benefit, are not repeated herein" (Nisqually Planning Unit 2019). Not including these types of figures in the output detracts from reasoning and takes away from relevance and comprehensibility. Instead, the plan refers to using the separate parent document, limiting the reader's ability to understand this output quickly.

The original legislation gives the planning groups the authority to make additional policies. The stakeholders of this plan chose not to include additional policies to implement this output. Instead, the output relies on policies already put in place by the legislature but recognizes that those policies on their own will not "financially support the ambitious recovery approach set out in this plan" (Nisqually Planning Unit 2019). Because policies are mentioned but not addressed or included in the output, the final ranking in policies was one.

Instead, the plan focuses on projects as the implementation mechanism to carry out their goal. Mitigation strategies and recommendations in this output use an "actual consumptive" versus "legal consumptive" distinction, a distinction the writers term micro and macro (Nisqually Planning Unit 2019). The macro-mitigation approach involves large-scale initiatives to provide mitigation and net ecological benefit within existing salmon recovery strategies. The micro-mitigation techniques provide procedures to mitigating within sub-basins as needed to offset permit-exempt well use. At least some of these strategies are site-specific, and all are sub-basin specific. However, the micro-mitigation strategies discussed "require further work to analyze benefits and develop implementation strategies at the county or municipal level" (Nisqually Planning Unit 2019). Due to the lack of detail in the project category, implementation ranked poorly for this output.

There is no detailed timeline for actions other than the broad 22-year planning horizon. Additionally, the output does not state which organizations are responsible for which action. Finally, the output identifies some funding opportunities but does not offer specific details on how each project will be funded. There is some general discussion of the benefits these projects could provide. Still, no details for implementing these strategies are provided, and there are no predictions of the amounts of water that would be offset.

This output also ranked poorly for monitoring. In the output, the planning unit states that the group recognizes that the process set up by the legislation and the strategies of the plan address only a small portion of water use in the watershed; that attributed to future domestic permit-exempt wells (Nisqually Planning Unit 2019). The plan does not address historical impacts, nor does it attempt to quantify or address potentially larger impacts to streamflows from factors such as non-domestic uses, climate change, and changes to land cover. Perhaps due to this viewpoint, the output gives off the impression that meaningful monitoring is not possible. The output states that adaptive management is an essential principle in ensuring that managing the impacts of permit-exempt wells occurs in the context of more considerable water use and environmental issues in the watershed. However, there is no detailed plan for how the Nisqually planning unit will accomplish adaptive monitoring.

Due to the lack of policies and monitoring information, internal consistency also ranked poorly. Internal consistency means that issues, vision, goals, policies, and implementation are mutually reinforcing. While the plan states large goals and provides enough projects to mitigate the detriments created by future permit-exempt domestic wells anticipated in WRIA 11 over the next 22 years, there is not enough detail on implementation and monitoring to be mutually reinforcing.

The rankings for external characteristics in this output were mixed. The plan is organized with a table of contents, glossary of terms, executive summary, and an accompanying website to enhance

understandability to a wide range of audiences. However, only mentioning maps and visuals without including them in the document make it extremely difficult for a reader who does not know the geography of this area. On the other hand, inter-organizational coordination for this effort is evident in the group's ability to create and adopt a plan within a short timeline. The relationships and trust between Nisqually planning unit members are at the foundation of the watershed's accomplishments in conservation and restoration, pursuing voluntary rather than regulatory strategies for sustainable resource management, and in responding to emergent issues, whether they come from community concerns or external mandates.

The finding from the Nisqually watershed output evaluation demonstrates that investing in relationships, both institutional and interpersonal pays tremendous dividends in meeting long-term goals and adapting to new challenges. However, the planning unit could create more comprehensive documents that meet the standards of plan quality.

Table 4: WRIA 11 Internal Characteristics Coding

WRIA 11:			
Internal characteristics	***Issue identification and vision:* Description of community needs, assets, trends, and future vision**	Assessment of major issues, trends, and impacts of forecasted change	2
		Description of major opportunities for and threats to desirable water use and development	2
		A vision that identifies what the community wants to be	2
	***Goals:* Reflections of public values that express desired future conditions**	Statements of future desired water use and development pattern that reflect the breadth of community values	2
	***Fact base:* An analysis of current and future conditions and explanation of reasoning**	Present and future population	3
		Existing land and water use and land and water supply	3
		Existing capacity and future demand for water	3
		State of natural environment resources and constraints	1
		Clear maps and tables that support reasoning, and enhance relevance and comprehensibility	1
	***Policies:* Specification of principles to guide public and private decisions to achieve goals**	Sufficiently specific to be tied to definite actions	1
		Spatial designs that specify future land and water use, population growth, expected well locations.	2
	***Implementation:* Commitments to carry out policy-driven actions**	Timelines for actions	1
		Organizations identified that are responsible for actions	1
		Sources of funding are identified to supporting actions	2
	***Monitoring and evaluation:* Provisions for tracking change in community conditions**	Goals are based on measurable objectives, e.g., 2 projects implemented within three years of complete plan	1
		Indicators of objectives to assess progress, e.g., 1 CFS of water put into instream flow.	1
		Organizations identified responsible for monitoring	1
		Timetable for updating plan based on monitoring of changing conditions	1
	***Internal consistency:* Issues, vision, goals, policies, and implementation are mutually reinforcing**	Goals are comprehensive to accommodate issues and vision	2
		Policies must be clearly linked back to goals and forward to implementation actions	1
		Monitoring should include indicators to gauge goal achievement and effectiveness of policies	1

Table 5: WRIA 11 External Characteristics Coding

WRIA 11			
External Characteristics	***Organization and presentation:* Provisions to enhance understandability for a wide range of readers**	Table of contents, glossary of terms, executive summary	3
		Cross referencing of issues, vision, goals, and policies	2
		Clear visuals, e.g., maps, charts, and pictures	1
		Supporting documents, e.g., video or webpage	3
	***Interorganizational coordination:* Integration with other plans or policies of public and private parties**	Vertical coordination with plans or policies of federal, state, and regional parties	2
		Horizontal coordination with plans or policies of other local parties within or outside local jurisdiction	3
	***Compliance:* Consistent with the purpose of plan mandates**	Required elements are included in plan	3
		Required elements fit together	3
Total for Internal and External Characteristics			54/ 87

WRIA 59 Streamflow Restoration Act Output

Overview

The Colville River is located in northeastern Washington. It is a 60-mile long tributary of the Upper Columbia River (Colville Watershed Planning Unit 2019). The river flows in a northerly direction from its headwaters near Loon Lake, past the rural towns of Chewelah, Colville, and Kettle Falls, and then northwest into Lake Roosevelt near Kettle Falls, where a U.S. Geological Survey gauge monitors its flow. The Colville River watershed includes just over 1,000 square miles of land (Colville Watershed Planning Unit 2019). Approximately 79 percent of the watershed is forested, 17 percent is devoted to agriculture, but only about four percent is irrigated (Colville Watershed Planning Unit 2019). Seventeen major tributary sub-basins range in size from less than five cubic-feet-per-second (CFS) flows to flows around 100 CFS (Colville Watershed Planning Unit 2019).

Watershed planning in the Colville Watershed began long before the Watershed Planning Act of 1998. On July 22, 1977, Ecology adopted Chapter 173-559 WAC, establishing the Colville River Water Resources Program (Colville Watershed Planning Unit 2019). The Colville Water Management Rule applies "to all waters that lie within or contribute to the Colville River Drainage basin" (Colville Watershed Planning Unit 2019). The rule sets different management regimes for the upper mainstem Colville River, the lower mainstem Colville River, and the tributaries. The law established base flows for the lower Colville River ranging from 33 CFS in August to 200 CFS in April and for the upper Colville River ranging from 11 CFS in August to 76 CFS in April (Colville Watershed Planning Unit 2019). The rule provisioned new surface water rights in the mainstem Colville River to the base flows. The rule closed the Colville River mainstem to new consumptive appropriations from July 16 through September 30.

In 1999, in response to the 1998 Watershed Planning Act, citizens of Stevens County and local, state, federal and tribal government representatives organized into the formal Colville watershed planning unit and began to develop the WRIA 59 Colville River Watershed Plan. Over the next eight years, the local planning unit developed the WRIA 59 Watershed Plan and WRIA 59 Colville River Detailed Implementation Plan (Colville Watershed Planning Unit 2019). In addition to adopting the Watershed Plan, the local governments and citizens of WRIA 59 organized entities to facilitate water resource discussions and decisions. The local governments developed the WRIA 59 Watershed Management Partnership (WMP) and the WRIA 59 Water Resources Management Board. Local governments created the WMP to work cooperatively and seek funding for the Watershed Plan's ongoing administration (Colville Watershed Planning Unit 2019). The Board was created to provide ongoing oversight on implementing the Watershed Plan and Detailed Implementation Plan.

Stevens County, WMP, the WRIA 59 Water Resources Management Board, and Washington Department of Ecology also entered into a Memorandum of Agreement related to water resources management in the Colville River Watershed regarding water resource management activities in WRIA 59 (Colville Watershed Planning Unit 2019). The groups continued water resource planning activities following the adoption of the Watershed Management Plan. These activities included instream flow surveys for the Colville River's mainstem and tributaries, proposed amendments to the Colville Watershed Management Rule, and a water bank to provide mitigation for future water needs (Colville Watershed Planning Unit 2019).

The WRIA 59 Water Resources Management Board and associated agencies continue to plan for watershed management actively. From 2018-2020, the Water Resources Management Board (planning unit) focus has been on the response to the Streamflow Restoration Act. Over two years, the WRIA 59 planning unit met to assess the potential impacts of permit-exempt domestic groundwater use from 2018

to 2038 in response to the Streamflow Restoration Act. The planning unit reviewed population data from state and federal sources and historical building permit data compiled by Stevens County. The planning unit estimated that 1,118 homes, an average of 56 homes per year, could be constructed within the WRIA 59 watershed during the 20-year planning horizon (Colville Watershed Planning Unit 2019). The planning unit calculated the likely consumptive use of the new permit-exempt domestic water uses established to be 434.8 acre-feet per year through 2038 (Colville Watershed Planning Unit 2019). The assessment conducted by the planning unit looked at future uses to a sub-basin level and even further refined the estimated use by aquifer type in the sub-basins.

The planning unit for the Streamflow Restoration Act reviewed the previously adopted WRIA 59 Watershed Plan, related plans such as the WRIA 59 Detailed Implementation Plan (DIP), and technical reports. It sought input from citizens, local, state, and federal government entities on potential projects in WRIA 59 to be considered to offset new permit-exempt domestic water uses. The Board held twenty-two public meetings to compile projects that would offset, and in some cases negate, the projected impacts of new permit-exempt wells (Colville Watershed Planning Unit 2019). The Board reviewed forty-eight projects within WRIA 59 to provide offsets for new permit-exempt domestic water uses and enhance instream resources (Colville Watershed Planning Unit 2019). The planning unit reviewed each project for potential benefits, costs, and factors of certainty. In considering the merits of a proposed project, the planning unit considered where the project was in relation to the needs of each sub-basin and associated flow needs as determined from previous WRIA 59 watershed evaluations (Colville Watershed Planning Unit 2019). The review resulted in the final output recommending sixteen projects throughout the watershed to offset new permit-exempt domestic water uses and enhance instream resources.

The WRIA 59 planning unit committee members submitted their final Streamflow Restoration Act output document to Ecology on June 25, 2020, far ahead of the statutory deadline of February 1, 2021

(Washington Department of Ecology 2020). The planning unit's long history and capacity have been remarked on as the reason for this early submittal. Stevens County Commissioner Wes McCart said, "our community has been working together for years to generate local solutions to meet local needs. Now, landowners can continue to develop their property with the knowledge that they have a durable, legal water supply" (Washington Department of Ecology, 2020). The same sentiment has been shared by the Washington Department of Ecology, in a press release they reported that "this milestone shows the importance of strong, successful partnerships. The planning committee not only met their deadline, but they also completed their plan early and with unanimous support. This update will ensure that there is water for both rural growth and improved streamflow" (Washington Department of Ecology, 2020).

Analysis

The WRIA 59 output of the Streamflow Restoration Act is the second output of this process to be adopted by consensus. The output scored three and twos in issue identification vision. The plan includes a basic description of community needs, assets, trends, and future vision. Goals scored two. This plan resulted from a consensus-building process where stakeholders reconciled competing interests. However, it lacks detail on if all stakeholder groups were represented on defining how the community looks and functions.

The output uses the same framework defined by the state to identify well forecast estimates, water use, total water consumption, and the ultimate water offset goal identified in the plan. The plan ranked three in the fact-based characteristics for defining the population, existing water use and land supply, and existing capacity and future water demand. This is due to its adherence to the framework mandated for this plan and the use of science-based information to inform its decisions. Additionally, the plan ranks three for clear maps and tables. Throughout the document, there are figures that increase the plan's relevance and comprehensibility and allow the output to serve as a standalone document. However, the

plan ranked two for the fact base characteristics for defining the state of the natural resources and constraint. The has some information on the current water supply but lacks complete details on instream resources.

The WRIA 59 planning unit does not make any policy recommendations under RCW 90.94.020(4)(d). The original legislation gives the planning groups the authority to take those suggestions, but this group chose not to. Instead, the output relies on policies already put in place by the legislature. However, the state's policies do not guarantee the plan's implementation and only partially guide public and private decisions to achieve goals. Because policies are mentioned by not utilized in this output, it was ranked one.

Instead, the plan focuses on projects as the implementation mechanism to carry out their goal. The planning unit identifies and gives specific detail for projects. Projects are placed in three categories: (1) acquiring senior water rights; (2) developing natural and constructed infrastructure; and (3) habitat enhancement. The planning unit recognized the importance of projects acquiring senior water rights to offset consumptive water use of future permit-exempt domestic groundwater uses. However, the planning unit expressly notes that water rights should only be acquired from willing sellers at market rates (Colville Watershed Planning Unit 2019). Furthermore, the planning unit recognized that it should not pursue the purchase of water rights for every sub-basin because that may undermine the essential agricultural community in the Colville River watershed. The planning unit expressly focused on building a group of projects that would offset consumptive uses, improve streamflow in the low flow period, and improve habitat function to achieve a net ecological benefit in the watershed.

In terms of plan quality, the output scored well for implementation. The planning unit determined the certainty of success by considering two factors: (1) the confidence of the project occurring and (2) the assurance of project benefits (Colville Watershed Planning Unit 2019). The planning unit gives in-depth

detail on projects' cost-effectiveness, explicitly considering the overall estimated costs, including upfront construction and acquisition costs and long-term operation and maintenance prices. Additionally, the projected flow benefits for high priority projects are recorded by sub-basin, mitigation type, downstream flow benefit, and the projected mitigation time. Each project was evaluated based on the criteria listed above and either removed from or retained on the project list and identified as having medium or high priority. The high priority projects were generally those projects that are "shovel ready" with project benefits commonly understood and anticipated to provide an overall net ecological benefit to WRIA 59 (Colville Watershed Planning Unit 2019). The medium priority projects are those that the planning unit identified as providing generally understood and anticipated ecological benefits to WRIA 59 (Colville Watershed Planning Unit 2019). The planning unit members considered that the state's available grant does not include operation and maintenance funding. Therefore, the members focused on projects with minimal operation and maintenance costs. The planning unit even details years to implement the projects and consequently ranked a three for implementation, timelines for actions. However, within the output's specifically identified project list, sponsors were not completely clear. With some details lacking, funding and identifying responsible parties ranked two.

Monitoring was also addressed in this plan. The output notes that implementation of this output will be monitored by the Stevens County and other local groups including; the Board, WMP and Ecology. Seeking funding for continued local water resource planning efforts and developing projects identified in the watershed plan is identified as a significant part of implementation (Colville Watershed Planning Unit 2019). The output includes a statement that Stevens County will continue to track each new building permit relying on a permit-exempt domestic groundwater withdrawal and geolocate the parcel in its geographic information system (Colville Watershed Planning Unit 2019). However, there is no formal process or timeline identified for reporting and following through on this in the output. While ongoing

efforts to collect information are described, there is not complete detail about how to meet goals will be met. For these characteristics, the plan ranks a two.

Internal consistency in this plan is mixed. The output notes that there is a tremendous amount of water resource protection overlap amongst existing program including watershed planning under RCW 90.82, this Addendum (RCW 90.94), the Voluntary Stewardship Program, Stevens County Critical Areas Ordinance, Stevens County Shoreline Master Program, water banking implementation, and other non-regulatory programs (Colville Watershed Planning Unit 2019). Stevens Country's Comprehensive Plan requires consistency between regulations and coordination of programs to enhance the success of inter-connected programs. This shows that there are mutually reinforcing mechanisms in place. However, the lack of policy to link back to implementation shows concern for this output's follow-through. The overall uncertainty of achieving this output's goals in the watershed will be the availability of funding for implementing the proposed projects and the continued operation and maintenance funding to keep the projects operational.

External characteristics in this output ranked mostly threes. The plan is organized with a table of contents, glossary of terms, executive summary, and an accompanying website to enhance understandability to a wide range of audiences. Detailed and well-referenced maps and visuals enhance the understandability of a wide range of audiences. There is horizontal coordination with other plans and policies within the watershed and precise vertical coordination with state and regional policies from the Streamflow Restoration Act. Interorganizational coordination for this effort is explicit by the group's ability to create and adopt a plan far before the required deadline. The output has all the required elements of the Streamflow Restoration Act and fits together nicely. Ultimately, the plan was approved by Ecology on June 25, 2020.

Table 6: WRIA 59 Internal Characteristics Coding

WRIA 59:			
Internal characteristics	***Issue identification and vision:* Description of community needs, assets, trends, and future vision**	Assessment of major issues, trends, and impacts of forecasted change	3
		Description of major opportunities for and threats to desirable water use and development	2
		A vision that identifies what the community wants to be	2
	***Goals:* Reflections of public values that express desired future conditions**	Statements of future desired water use and development pattern that reflect the breadth of community values	2
	***Fact base:* An analysis of current and future conditions and explanation of reasoning**	Present and future population	3
		Existing land and water use and land and water supply	3
		Existing capacity and future demand for water	3
		State of natural environment resources and constraints	2
		Clear maps and tables that support reasoning, and enhance relevance and comprehensibility	3
	***Policies:* Specification of principles to guide public and private decisions to achieve goals**	Sufficiently specific to be tied to definite actions	1
		Spatial designs that specify future land and water use, population growth, expected well locations.	3
	***Implementation:* Commitments to carry out policy-driven actions**	Timelines for actions	3
		Organizations identified that are responsible for actions	2
		Sources of funding are identified to supporting actions	2
	***Monitoring and evaluation:* Provisions for tracking change in community conditions**	Goals are based on measurable objectives, e.g., 2 projects implemented within three years of complete plan	3
		Indicators of objectives to assess progress, e.g., 1 CFS of water put into instream flow.	3
		Organizations identified responsible for monitoring	2
		Timetable for updating plan based on monitoring of changing conditions	2
	***Internal consistency:* Issues, vision, goals, policies, and implementation are mutually reinforcing**	Goals are comprehensive to accommodate issues and vision	2
		Policies must be clearly linked back to goals and forward to implementation actions	1
		Monitoring should include indicators to gauge goal achievement and effectiveness of policies	3

Table 7: WRIA 59 External Characteristics Coding

WRIA 59			
External Characteristics	***Organization and presentation:* Provisions to enhance understandability for a wide range of readers**	Table of contents, glossary of terms, executive summary	3
		Cross referencing of issues, vision, goals, and policies	2
		Clear visuals, e.g., maps, charts, and pictures	3
		Supporting documents, e.g., video or webpage	3
	***Interorganizational coordination:* Integration with other plans or policies of public and private parties**	Vertical coordination with plans or policies of federal, state, and regional parties	2
		Horizontal coordination with plans or policies of other local parties within or outside local jurisdiction	3
	***Compliance:* Consistent with the purpose of plan mandates**	Required elements are included in plan	3
		Required elements fit together	3
Total for Internal and External Characteristics			72/ 87

Comparison of Plan Quality Scores

Plans were scored individually first to understand how well each unique planning unit's output included plan quality characteristics. To understand the plans' comparative strengths and weaknesses, the plans were next evaluated against the scores of the other plans. Tables 8 and 9 present the plan quality scores for all three documents and show the total plan quality scores. By looking across the outputs for each characteristic, it can be seen that scores vary widely in some areas and are similar in other categories.

All three of the plans scored twos and threes for issue identification and vision. WRIA 1's plan scored the strongest in this category. This strong ranking could be influenced by the fact that the Washington State Department of Ecology was responsible for the final output of WRIA 1 and is the same jurisdictional body that wrote the guidance document for this planning process. However, all plans scored a two in goals, showing that there wasn't a significant difference in how well a plan met this characteristic despite who was responsible for writing the document. With no output scoring the full score of three for goals, it shows that there could be a lack of clear understanding of the purpose of this process across the three completed plans.

The fact-based scores are strong for all three plans among the first three subcategories, which include information and analysis on (1) present and future population, (2) existing land and water use and land and water supply, and (3) existing capacity and future water demand. This consistency shows that the policy and supporting guidance provided a clear roadmap for incorporating this information and that the data was accessible for the planning units. However, the outputs varied widely in their quality for the two final subcategories for a fact-based plan. This includes (4) state of natural environment resources and constraints and (5) clear maps and tables that support reasoning and enhance relevance comprehensibility. The wide range in scores for the state of natural environment resources and constraints could reflect the different information depths and types available to watershed planning units. Inadequate data to inform a

quality planning document will undoubtedly impact a plan's quality on a fundamental level. Without this information, the output cannot provide local decision-makers with the information they need to properly inform future decisions. Additionally, the outputs did not universally include clear maps and tables. Specifically, WRIA 11 chose not to have any additional maps or tables, which could lead to a lack of comprehensibility for readers not familiar with this watershed.

For the policies principle, scores we widely mixed, indicating a broad array of approaches to policies across the plans. The Streamflow Restoration Act distinctly gave local watershed planning units the ability to choose if they would like to include additional policies to guide public and private decisions to achieve goals. However, the two plans put together by local planning groups both chose not to include any policies beyond the ones already issued by the Washington State Department of Ecology. The only output that did have specific policies for the watershed was the plan written under rulemaking by the Department of Ecology.

Implementation was not consistent among the plans investigated. WRIA 59 scored the highest in this category, as their plan included specific details for projects, timelines, and a ranking system to prioritize actions. On the other hand, the WRIA 11 planning unit had a list of projects but lacked timelines, details, or project sponsors associated with the projects. This lack of detail for projects could be addressed by a more robust policy that requires details for projects to be included in the output.

Monitoring and evaluation are critical components to making sure the implementation of a plan is effective. However, the documents reviewed were mixed when it came to including elements of a complete monitoring and evaluation component. Most concerning was the results from WRIA 11's output, which scored one for all subcategories. While WRIA 1 scored better, this output was ranked one in one subcategory because it did not have goals that are based on measurable objectives. Primary goals, e.g., two projects implemented within three years of a complete plan, would help strengthen the outputs from

WRIA 1 and 11. WRIA 59 had a full timetable of projects but could use more detail on identifying an organization responsible for monitoring and the timeline for monitoring evaluation. This lack of a complete monitoring and evaluation plan can be tied back to the goals characteristic's suboptimal rankings. Without clear, firm goals, monitoring plans for meeting those goals can falter.

Based on the varying degrees of completeness in addressing the internal plan characteristics, the outputs also varied on their internal consistency scores. The low scores do not come as a surprise, as internal consistency measures how well the previous characteristics of issues, vision, goals, policies, and implementation are mutually reinforcing.

The external characteristics for the outputs are primarily ranked two and three. The only outlier was for WRIA 11, which ranked one within the organization and presentation characteristic for not having clear visuals. WRIA 1 and WRIA 59 scored similarly for all but one external element. WRIA 1 scored three, while WRIA 59 scored two for cross-referencing issues, vision, goals, and policies. This close ranking for external characteristics indicates that although the Washington State Department of Ecology wrote the WRIA 1 output, while the local planning unit wrote the WRIA 59 plan, there was little difference in quality in external characteristics.

Finally, scores were summed for each output. The maximum score an output could earn was 87. WRIA 1 scored the highest, with 76 points. Closely following by total points was WRIA 59, with 72 points. This total score shows that these two plans have an overall quality that is relatively similar. While each scored higher in some subcategories than the other, the sum is within four points. On the other hand, WRIA 11 scored much lower with a total of 54 points. There were twelve subcategories where WRIA 11 scored one, meaning that the characteristic was mentioned, but no detail was included in the output. In comparison, WRIA 1 scored one only once, and WRIA 59 scored one in two subcategories. This shows that WRIA 11 may have mentioned the importance of many plan quality characteristics. Still, this

process's final output lacked many of the details needed to make the plan meaningful. Overall, by comparing the outputs, several issues can be identified. These issues can be divided into three categories: (1) inadequate data on the state of natural resources and constraints, (2) absence of specific project details and weak policies that create uncertainty for implementation, and (3) lack of complete monitoring and evaluation.

Table 8: All WRIAs Internal Characteristics Coding

WRIA			1	11	59
Internal characteristics	***Issue identification and vision:* Description of community needs, assets, trends, and future vision**	Assessment of major issues, trends, and impacts of forecasted change	3	2	3
		Description of major opportunities for and threats to desirable water use and development	3	2	2
		A vision that identifies what the community wants to be	3	2	2
	***Goals:* Reflections of public values that express desired future conditions**	Statements of future desired water use and development pattern that reflect the breadth of community values	2	2	2
	***Fact base:* An analysis of current and future conditions and explanation of reasoning**	Present and future population	3	3	3
		Existing land and water use and land and water supply	3	3	3
		Existing capacity and future demand for water	3	3	3
		State of natural environment resources and constraints	3	1	2
		Clear maps and tables that support reasoning, and enhance relevance and comprehensibility	3	1	3
	***Policies:* Specification of principles to guide public and private decisions to achieve goals**	Sufficiently specific to be tied to definite actions	2	1	1
		Spatial designs that specify future land and water use, population growth, expected well locations.	2	2	3
	***Implementation:* Commitments to carry out policy-driven actions**	Timelines for actions	2	1	3
		Organizations identified that are responsible for actions	2	1	2
		Sources of funding are identified to supporting actions	2	2	2
	***Monitoring and evaluation:* Provisions for tracking change in community conditions**	Goals are based on measurable objectives, e.g., 2 projects implemented within three years of complete plan	1	1	3
		Indicators of objectives to assess progress, e.g., 1 CFS of water put into instream flow.	2	1	3
		Organizations identified responsible for monitoring	3	1	2
		Timetable for updating plan based on monitoring of changing conditions	3	1	2
	***Internal consistency:* Issues, vision, goals, policies, and implementation are mutually reinforcing**	Goals are comprehensive to accommodate issues and vision	3	2	2
		Policies must be clearly linked back to goals and forward to implementation actions	3	1	1
		Monitoring should include indicators to gauge goal achievement and effectiveness of policies	2	1	3

Table 9: All WRIAs External Characteristics Coding

WRIA			1	11	59
External Characteristics	***Organization and presentation:* Provisions to enhance understandability for a wide range of readers**	Table of contents, glossary of terms, executive summary	3	3	3
		Cross referencing of issues, vision, goals, and policies	3	2	2
		Clear visuals, e.g., maps, charts, and pictures	3	1	3
		Supporting documents, e.g., video or webpage	3	3	3
	***Interorganizational coordination:* Integration with other plans or policies of public and private parties**	Vertical coordination with plans or policies of federal, state, and regional parties	2	2	2
		Horizontal coordination with plans or policies of other local parties within or outside local jurisdiction	3	3	3
	***Compliance:* Consistent with the purpose of plan mandates**	Required elements are included in plan	3	3	3
		Required elements fit together	3	3	3
Total for Internal and External Characteristics			76 /87	54 /87	72 /87

Chapter 5: Conclusion and Implications

Summary of Findings

The overuse of water in Washington State, including the water used by permit-exempt wells, comes with severe consequences, including the depletion of streamflow and aquifers. The legislative response to the Washington Supreme Court decision in *Whatcom County v. Western Washington Growth Management Hearings* (Hirst Decision) ultimately led to the Streamflow Restoration Act. The Streamflow Restoration Act has required watershed planning processes that result in watershed plan outputs. Local watershed plans can be valuable tools for managing water resources and are one step in a broader strategy of managing and implementing change. They are generally seen as the blueprint for future management. However, little has been done to assess the quality of these plans. Using the Characteristics of Plan Quality That Serve as Evaluation Criteria to evaluate three plans completed under the Streamflow Restoration Act, this research finds the outputs are not adequately including all the characteristics to meet plan quality. These issues can be divided into three categories:

- Inadequate data on the state of natural resources and constraints
- Absence of specific project details and weak policies that create uncertainty for implementation
- Lack of complete monitoring and evaluation, which undermines the effectiveness of the output

This process's outputs are ultimately supposed to mitigate water use from permit-exempt wells on hydraulically connected streams. To determine the impact of permit-exempt wells the plans were required to gather information on population and forecasted number of wells over a 20-year planning horizon. Then, the plans needed to determine the consumptive used of water to examine the impact. The Washington State Department of Ecology's guidance offered formulas for determining this impact but lacked any direction for determining the current state of water resources available. This became evident in the outputs, which had inadequate data on the state of natural resources and constraints. Without the

proper information on streamflow, it will be impossible to have a fact-based output that includes the resource's current conditions.

This could be called "cart-before-the-horse" planning and creates issues with blending in-kind and out-of-kind mitigation. Outputs identified in this analysis have given habitat projects CFS number values, representing an assumed ability to provide in-kind mitigation, despite a lack of necessary data and the inability to measure their impact because of a lack of baseline data. No matter how beneficial a habitat project could be, if it does not replace water necessary for fish migration and other life stages, it is not truly mitigation. Water rights exist in perpetuity, while habitat projects may not be guaranteed to function in the condition they were first planned in a lengthy timeframe. Once a river is over-appropriated, out-of-kind mitigation fails to repair the damage to senior water rights and public uses, such as maintaining healthy fisheries and water quality and recreational uses.

Thus far, plans adopted through consensus by watershed groups have chosen not to include any policies in their output. The output done for WRIA 1 under a ruling by Ecology did include additional policies but lacked sufficiently specific policies to be tied to definite actions. The absence of, or weak, policies create uncertainty for implementing the output and the success of the Streamflow Restoration Act. By not including adequate policies, these outputs fail to ensure the likelihood that recommended mitigation projects will occur. In doing so, these outputs lack not only general principles of plan quality but also the clear legislative directives of the Streamflow Restoration Act.

Monitoring and evaluation are critical pieces of a plan. Through monitoring and evaluation, provisions are defined to track change and assess progress towards goals. All three of the outputs struggled to meet many of the characteristics of plan quality under monitoring and evaluation. There is a high degree of uncertainty that mitigation offsets will be successful, especially for conceptual projects, due to uncertain funding sources and feasibility. This is further complicated by how the outputs claim that as projects are

funded and implemented, uncertainty will be reduced through permit tracking, project implementation, site characterization, data collection, and monitoring. Across the board, the plans struggled to meet the detailed documentation aspects of plan quality to ensure that monitoring and evaluation will happen. Lack of monitoring and evaluation undermines the effectiveness of the output and the Streamflow Restoration Act overall.

These findings indicate that the current Streamflow Restoration Act policy, the state guidance for local plan adoption, and the Department of Ecology plan review do not do enough to encourage and assure plans meet plan quality standards. More stringent plan quality requirements designed to raise Streamflow Restoration Act plan quality, incentives rewarding high plan quality for the specific characteristics found to be weak in this analysis, or some combination thereof should be considered necessary for elevating local plan quality. Going forward, Washington State policymakers will need to carefully consider the ways different features of their state's planning policy mandates and context can influence principles of local plan quality.

Implication for Water Management in Washington State

A great deal is at stake in the protection of the waters flowing through Washington rivers and aquifers. In particular, the survival of salmon and other aquatic species as climate change warms and depletes Washington's rivers is a matter of utmost public concern. However, this concern appears to be in direct conflict with the need for additional housing in Washington State, some of which is required to reply on permit-exempt wells for domestic water supply. The purpose of the Streamflow Restoration Act states that it is intended to ensure that water is available to support development. The legislation eliminates the conflict between instream flows and permit-exempt wells by waiving the protections for instream flows and instead allowing individual outputs intended to be produced at the local level provide

guidance for water resource management moving forward. Moving forward, local jurisdictions no longer need to ensure that water is available for development. Instead, they are responsible for assessing whether watersheds comply with the Streamflow Restoration Act.

Increasingly troubling is that the outputs coming out of the Streamflow Restoration Act are based on minimal data inputs and insufficient feedback on outputs or policies' efficacy during their implementation. From the analysis, it can be seen that plans are approved while not requiring that identified projects and actions actually come to fruition. The Streamflow Restoration Act and the planning process's outputs do not create an obligation on any party to ensure that plans, projects, or actions are implemented. Further, the Streamflow Restoration Act and the subsequent outputs published thus far do not predicate the issuance of building permits on the implementation of watershed plans or any projects and actions in those plans.

Management is further complicated by the lack of clearly defined adaptive management the analysis found. Adaptive management sections of the plans include, at best, only information gathering in five-year self-assessments. There are no built-in penalties, incentives, or adjustments designed to produce results. At the same time, it appears that local jurisdictions are allowed adjustments and course corrections over time and establish an approach to incorporate new information and new projects and actions. However, little detail is given on how this will occur without an ongoing assessment of impacts through monitoring or triggers for mandatory intervention.

Implications for Future Research

The Streamflow Restoration Act is in its infancy in Washington State. While this research investigated the first three outputs to come out of this process, twelve more plans are being developed in response to this policy. Future research opportunities should consider more of the planning process

outputs to help clarify and build upon this study's contributions to the plan and policy implementation literature. By eventually looking across all fifteen of the outputs from the Streamflow Restoration Act, a more comprehensive understanding of the policy's implications can be gathered.

Additionally, the secondary data analysis presented here could be used to inform primary data collection (e.g., interviews or surveys) to delve deeper into the findings and attempt to explain better the trends observed in the planning documents of watershed planning. For example, querying those involved in the respective planning processes could uncover how institutional history contributed to plan development and adoption, the degree to which planning groups are coordinating with other planning processes, or the reasons lying behind the failure to adopt a drafted plan by consensus. Furthermore, interviews or surveys could reveal the extent to which the social outcomes of collaboration impacted the quality outputs. Following up with planning groups in the future could also illustrate whether the recommendations outlined within plans are being put into practice. This follow-up research would contribute to a better understanding of how policy outputs link to environmental outcomes.

Finally, it should be recognized that there are thirty-two other watersheds in Washington State that the Streamflow Restoration Act did not cover, but who will need to continue planning to address streamflow concerns. Although these watersheds lack instream flow rules, streamflows in many rivers and streams are purportedly protected through the state's Surface Water Source Limitation program. The Washington State Department of Ecology has restricted stream depletions in these watersheds using water right permit conditions adopted under Washington Department of Fish and Wildlife recommendations. The Streamflow Restoration Act does not acknowledge or address the legal protections the Surface Water Source Limitation program provides to streams, leaving half or more of the state's aquatic waters unprotected from new permit-exempt wells.

The watersheds not covered by the Streamflow Restoration Act will continue planning under previous processes. An analysis of their plan quality could help identify gaps and opportunities for addressing some of the Streamflow Restoration Act's challenges. The situation in Washington State, where some watersheds are mandated to plan while others are not, leads to the opportunity to evaluate plans and compare quality between mandated and non-mandated watersheds within the same state governance and relative geographic location. This research opportunity would allow for further insights into whether there is an association between state planning mandates and plan quality.

Works Cited

Babbie, Earl R. 2016. The Practice of Social Research. Fourteenth ed. Boston, MA: Cengage Learning. Print.

Baer, William C. 1997. “General plan evaluation criteria: An approach to making better plans.” *Journal of the American Planning Association*, 63.3: 329–344.

Berke, Philip, and David Godschalk. 2009. "Searching for the Good Plan: A Meta-Analysis of Plan Quality Studies." *Journal of Planning Literature* 23.3: 227-40.

Berke, Philip, Gavin Smith, and Ward Lyles. 2012. Planning for Resiliency: Evaluation of State Hazard Mitigation Plans under the Disaster Mitigation Act. Natural Hazards Review 13, no. 2: 139-49.

Bidwell, Ryan D., and Clare M. Ryan. 2006. Collaborative partnership design: The implications of organizational affiliation for watershed partnerships. *Society and natural resources* 19: 827-843.

Colville Watershed Planning Unit. 2019. WRIA 59 Watershed Plan Addendum (RCW 90.94. Stevens County, WA.

Cortner, Hanna J., and Margaret A. Moote. 1999. The politics of ecosystem management. Washington D.C.: Island Press.

Frankfort-Nachmias, Chava, and David Nachmias. 2000. Research methods in the social sciences. New York: Worth Publishers.

Guyadeen, Dave, and Mark Seasons. 2016. Plan Evaluation: Challenges and Directions for Future Research. Planning Practice & Research 31.2: 215-28.

Hallstrom, Lars K., Glen T. Hvenegaard, Jennifer L. Stonechild, and Nusrat J. Dipa. 2017. “Rural Sustainability Plans in Canada: An Analysis of Structure, Content and Influence." *Journal of Rural Studies* 56: 132-42.

Hatry, Harry P. 1999. Performance measurement: Getting results. Washington D.C.: The Urban Institute Press.

Healey, Michael C. 1998. Paradigms, policies, and prognostication about the management of watershed ecosystems. River Ecology and Management: Lessons from the Pacific Coastal Ecoregion, 642-661. New York: Springer Verlag.

Koontz, Tomas M., and Craig W. Thomas. 2006. What do we know and need to know about the environmental outcomes of collaborative management? *Public administration review* 66: 111-121.

Leach W.D., & Pelkey, N. 2001. “Making Watershed Partnerships Work—a Review of the Empirical Literature.” *Journal of Water Resources Planning and Management, 127* (6):378-385.

Lyles, Ward, and Mark Stevens. 2014. "Plan Quality Evaluation 1994–2012: Growth and Contributions, Limitations, and New Directions. *Journal of Planning Education and Research* 34.4: 433-50.

Moore, E.A., & Koontz, T.M. 2003. “A Typology of Collaborative Watershed Groups—Citizen-Based, Agency-based, and Mixed partnerships.” *Society and Natural Resources, 16* (5):451-460.

Nisqually Watershed Planning Unit. 2019. Nisqually Watershed Response to the 2018 Streamflow Restoration Act (RCW 90.94): Addendum to the Nisqually Watershed Management Plan. Olympia, WA.

Nooksack Indian Tribe. 2019. Watershed Planning: Water Resources. Deming, WA. https://nooksacktribe.org/departments/cultural-resources/water-resources/watershed-planning/

Reeves, H.W., 2008. STRMDEPL08—An extended version of STRMDEPL with additional analytical solutions to calculate streamflow depletion by nearby pumping wells: U.S. Geological Survey Open-File Report 2008–1166, 22 p.

Ryan, Clare M., and Jacqueline S. Klug. 2005. Collaborative watershed planning in Washington State: Implementing the Watershed Planning Act. *Journal of Environmental Planning and Management* 48: 491-506.

Singleton, Sara. 2002. Collaborative environmental planning in the American west: The good, the bad and the ugly. Environmental politics 11: 54-75.

Salamon, L.M. (Ed.) 2001. *The Tools of Government: A Guide to the New Governance*. London, UK: Oxford University Press.

Washington Department of Ecology. 2020. Rule Supporting Document: Amendment to Chapter 173-501 WAC Instream Resources Protection Program - Nooksack Water Resource Inventory Area (WRIA) 1. Olympia, WA.

Washington Department of Ecology. 2020. State adopts updated Colville River watershed plan. Press Release. Olympia, WA. https://ecology.wa.gov/About-us/Get-to-know-us/News/2020/June-30-WRIA-59-Colville-Streamflow-Plan

Washington Department of Ecology. 2018. Streamflow Restoration. Olympia, WA.

Washington State Department of Ecology. June 2018. Interim Guidance for Determining Net Ecological Benefit. Publication 18-11-009 https://fortress.wa.gov/ecy/publications/SummaryPages/1811009.html