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Pragmatism versus Potential: New Regionalism and Rural Drinking Water Management

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Pragmatism versus Potential: New Regionalism and Rural Drinking Water Management

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Abstract

This article proposes a new approach to managing drinking water at a regional scale, incorporating best practices related to regional development, new regionalism, regional resilience, water management, and sustainable infrastructure. The feasibility of the proposed approach was explored in two rural case study regions in Canada, where key informant interviews and focus groups were conducted with municipal, regional, and provincial officials. From a theoretical perspective, the proposed approach to managing drinking water has the potential to leverage the benefits of regionalism to address many existing challenges in rural drinking water systems by improving efficiencies, fostering collaboration, and helping to build regional resilience through an enhanced infrastructure foundation. We outline a variety of potential strategies to enhance rural drinking water systems using the proposed regional water management model. However, the appropriateness and feasibility of the approach in rural settings remains to be seen. The research reveals gaps among stakeholders in their understanding of drinking water systems generally, and further knowledge gaps associated with the potentials for the application of a regionalist approach more specifically, which hindered a more robust assessment of the approach in the case regions. The research adds to the discourse on rural regional development and provides in-depth case study findings on the potential application of regional development approaches in addressing infrastructure challenges in rural areas.

Keywords: new regionalism; drinking water; rural Canada; watershed management

1.0 Introduction

Rural Canada has been in an extended period of economic, social, environmental, and political restructuring since the early 1980s (Alasia, 2010; Vodden, 2009; Ryser & Halseth, 2014). This period of change has brought decreased levels of investment as well as the downloading of responsibilities from senior governments. These changes continue to impact rural communities and regions across the country. Restructuring is further complicated by a host of more recent economic, political, social, and environmental changes that have exacerbated the traditional challenges facing rural and remote regions. Factors such as physical geography, demographics (e.g., small aging populations, population loss), lack of economies of scale, and capacity limitations hinder the ability of rural communities to manage and adapt to change (Health Protection Branch, Ministry of Health, Government of British Columbia, 2013; Kot, Castleden, & Gagnon, 2011). The impacts are wide reaching and include the physical foundations of rural places. Aging and degrading infrastructure systems are influenced by more than engineering and investment constraints, as displayed in the factors noted above (Burleton & Caranci, 2004; Kennedy, Roseland, Markey, & Connelly 2008; Hrudey, 2008). For drinking water systems in particular the current management approaches not only do little to address these challenges but are too limited in scope to deal with the growing multi-faceted and integrated nature of water (Breen & Markey, 2015).

In order to counter the limitations of individual rural communities, regional development has long been promoted as a way to scale-up local impact and address the difficulties of designing contextualized development policy. Regional-scale approaches are not new to rural Canada. Prior to the 1980s, top-down, centralized regional development efforts dominated the policy landscape. While restructuring signalled a waning of interest in this type of regional-scale approach, and of government intervention more generally, regional development has experienced something of a revival, most notably under the heading of 'new regionalism' (Markey, 2011). Learning from past regional approaches, new regionalism focuses on holistic development within a defined territory, taking a more co-constructed and place-based approach to identifying regional priorities and opportunities while also emphasizing the importance of learning and innovation (Gibbs & Jonas, 2001; Wheeler, 2002). While new regionalism approaches appear prominently in the literature, there is a noticeable gap surrounding their application in rural regions.

This paper explores the potential and challenges of applying a new regionalist approach to drinking water management in rural Canadian regions—with a focus on public drinking water systems. Drinking water systems, including source water, infrastructure (treatment and distribution), and management mechanisms, have always been important to the foundation and function of communities. However, not only do rural regions face a lack of (re)investment in and capacity to manage these systems, but they also must contend with degrading infrastructure and legislative change (e.g., changing regulations) (Kot et al., 2011; Locke, 2011). As a result, drinking water management is a critical issue for rural Canada that current management approaches are often not equipped to address.

The purpose of this paper is twofold: (a) to explain current challenges with rural drinking water management and how the proposed new regionalist approach would address them, and (b) to explore the challenges with assessing a proposed new

regionalist approach for drinking water management in real life contexts. This paper is drawn from two coordinated research projects, (a) *Canadian Regional Development* project, a cross country examination of regional development in rural Canada, and (b) *Exploring Solutions for Sustainable Rural Drinking Water Systems* project a review of rural drinking water systems in Newfoundland and Labrador. Below we present our proposed new regionalist approach to drinking water management, discuss our methods, and provide details of our case study regions, discuss our findings, including the overall case for a new regionalist approach to drinking water management, the current disconnect between theory and practice, and questions for future consideration if this approach is to be further developed. It is our hope to contribute to the emerging literature on the rural applications of new regionalism and infrastructure development, with a particular emphasis on management of drinking water systems. While the contextual setting of the research is unique, many of the patterns are shared by rural regions throughout the industrialized world, creating opportunities for shared research and understandings.

2.0 From Regional Development to New Regionalism

Regional development takes a territorial approach to planning and development, and while the focus is often driven by an economic imperative, development is understood to include social and environmental dimensions, focusing on improvement as opposed to just growth. Regional development in Canada has been studied in detail, with different interpretations of various themes and driving factors (Fairbairn, 1998; Savoie, 2003). Early efforts were motivated by the identification of regional disparities across Canada (Gregory, Johnston, Pratt, Watt, & Whatmore, 2009; Polèse, 1999). Following World War II regional development became the focus of provincial and federal governmental policy, attempting to address regional disparities, as well as identify opportunities for growth (Polèse, 1999; Weaver & Gunton, 1982). This initial period of regional development was characterized by a centralized, top-down approach (Markey, 2011). This approach remained prominent into the 1970s, when it was challenged due to questions about the overall efficacy of various programs and push-back from regions themselves who wanted more of a say in how they were being managed.

Interest in regional development re-emerged in the 1990s, as an emergent response to the rise of neoliberalism in the mid-1970s. However, it adopted a new form, responding to a changed political and economic context. In reaction to the restructuring of the 1980s, combined with the rise of proactive local responses, new regionalism became a reconceptualization of past approaches (Jones et al., 2007; Lovering, 1999; Markey, 2011; Wheeler, 2002). Table 1 highlights the key characteristics of ‘old’ and ‘new’ regionalism.

While it is important to consider that new regionalism is taking place in a fundamentally different and changing, world (Savitch & Vogel, 2000), the broad approach to development taken by new regionalism incorporates various approaches and schools of thought, all focused on the regional scale, such as smart growth, new urbanism, and sustainable communities (Gibbs & Jonas, 2001; Hettne, 2005; Savitch & Vogel, 2000).

Table 1: *New Versus Old Regionalism*

New	Old
Intervention: mix of top-down and bottom-up	Intervention: top-down
Competitive advantage	Comparative advantage
Governance	Government
Place-based	Space-based
Social economy	Economic development

Source: Savitch & Vogel, 2000; Markey, 2011; Markey, Halseth & Manson, 2012.

3.0 New Regionalism and Water Management in Canada

In Canada, ensuring the delivery of drinking water is a responsibility shared between federal, provincial, and local governments. The *Guidelines for Canadian Drinking Water Quality* (GCDWQ) were created by Health Canada in collaboration with the provinces and territories, through the Federal-Provincial-Territorial Committee on Drinking Water (Minnes & Vodden, 2017). The GCDWQ are used at all levels across Canadian jurisdictions as recommendations in order to inform the provincial and territorial legislation and policy requirements for drinking water quality. However, the GCDWQ are voluntary, and provincial and territorial legislative and policy measures are not required to meet the GCDWQ standards (Kot, Castleden, & Gagnon 2011). Provincial and territorial governments are officially responsible for providing safe drinking water and related regulation and policy, with the exception of those areas that are within federal jurisdiction (e.g., First Nations reserves, national parks) (Ramalho, Will, Macleod, & van Zyll de Jong, 2014; Hill, Furlong, Bakker, Cohen 2008). However, most provincial and territorial governments devolve their responsibilities for delivering water services to local governments (Hill et al., 2008; Canadian Council of Ministers of the Environment 2004).

Many argue that to achieve sustainable water management a change in the overall governance of water and water infrastructure is needed (Vodden, 2009; Santora & Wilson, 2008). A focus on the regional scale is increasingly seen in water governance regimes, with local and regional organizations playing important roles (de Loë, Murray, Michaels, & Plummer, 2016). Literature emphasizes the need for more place specific water governance structures and legislation that devolves not only responsibilities, but decision making power to local governments (Hirokawa, 2012; Peterson, Walker, Maher, Hoverman, & Eberhard, 2010). However, while regional efforts have potential to address capacity constraints at the local scale, the successful implementation of regional and place specific water policies and regulations necessitates building all forms of local capacity (de Loë & Kreutzwiser, 2005; de Loë & Kreutzwiser, 2007; de Loë, Murray, Michaels, & Plummer, 2016).

In Canada, when it comes to drinking water management, the gap between the current dominant single community or system approach and the identified need for regional-scale action raises the question of if, and how, a regional approach could be applied to more effectively and sustainably manage drinking water in rural

Canada.¹ Maxwell (2008) explains that consolidating small water systems has potential to decrease costs for communities. Furthermore, using watersheds as the geographic basis for water management and taking an integrated approach that acknowledges the interrelationships between water, humans, and the environment is considered critical (Bakker, 2007; Rothwell, 2006). Integrated Water Resource Management (IWRM) is a common process used in water policy, along with other processes that focus on building capacity and transferring knowledge into social practices (Rouillard, Heal, Ball & Reeves, 2013). Other related best practices in water management include adaptive governance (Hurlbert & Diaz, 2013), as well as adaptive learning (Meinzen-Dick, 2007), and collaborative and participatory governance structures (Cohen, 2012; Sabatier et al., 2005; Breen & Markey, 2015). The concepts and best practices outlined in the water governance and management literature relate to key themes of new regionalism within the regional development literature (see Table 2).

Ideally, applying a new regionalist approach to drinking water management should be capable of linking concepts and agencies broadly across a region in an integrated manner. To develop a new regionalist approach to managing drinking water, we identified a series of characteristics, drawn from the literature, to determine what such an approach would look like (see Table 2). We created a graphic representation (see Figure 1) in an attempt to visually explain, (a) the bodies of literature included, and (b) how the characteristics of the proposed approach relate to four key aspects of water management: policy, planning, operations, and evaluation/monitoring. The proposed approach was deliberately kept flexible and inclusive of different aspects of drinking water systems, as well as leaving the potential to link with related systems (e.g., water management as a whole, watershed management, economic development). To accompany Figure 1, we created an accompanying document for research participants to further detail the approach through the use of scenario-based examples. Prior to data collection Figure 1 and the companion document was discussed with members of the project team, as well as subject to additional review by fellow researchers from the authors' institutions.

One key difference between our proposed approach and other approaches to drinking water management is the deliberate addition of regional development considerations, including quality of life and economic development to the more typically ecologically centric best practices for water management. Our proposed approach is focused on local actions that are feasible within current regulatory and institutional structures, using existing capacity. It is not intended to change external factors like existing provincial legislation, although it does have the potential to do so. While this approach is not intended to change outside factors like existing provincial legislation, it does have the potential to link to other subjects or important factors and provide steps the local level can take to improve and maintain their current systems. Furthermore, a major challenge in both regions is a lack of sustainable funding (Minnes & Vodden, 2017; Breen, 2018). This approach was designed to increase efficiencies in operations—thus reducing costs—and create sustainable funding plans that do not rely on outside funding from provincial or federal agencies.

¹ The research team describes sustainable drinking water systems as systems that can provide safe and reliable drinking water to those that use them, without compromising the drinking water needs of future generations.

Table 2: *New Regionalism and Drinking Water Management*

New Regionalism Theme	Link
Governance	<p>Needed due to the complex, holistic, multi-level, and multi-purpose nature of water.</p> <p>Supports collective action and decision-making in multi-level and multi-sector networks.</p> <p>Enhances capacity, better supporting adaptation and sustainability.</p>
Integration	<p>Needed to account for interdependencies across fragmented and uncoordinated elements of water management.</p> <p>Affords consideration and balance between ecosystem relationships, human activities, values and governance actors at multiple scales.</p> <p>Facilitates sustainability and resilience.</p>
Place-based	<p>Managing water requires consideration of place, including biophysical, social, cultural, and economic factors.</p> <p>Affords greater capacity for community resilience.</p> <p>Able to tailor system to specific local needs.</p>
Innovation and knowledge mobilization	<p>Needed in order to:</p> <p>Help alleviate lock in and path dependence;</p> <p>Facilitate potential solutions, through new technologies or otherwise;</p> <p>Promote learning and knowledge building.</p>
Rural-urban relationships	<p>The need to identify and build on interdependencies, which can include:</p> <p>Physical links;</p> <p>Cost sharing;</p> <p>Co-management.</p>

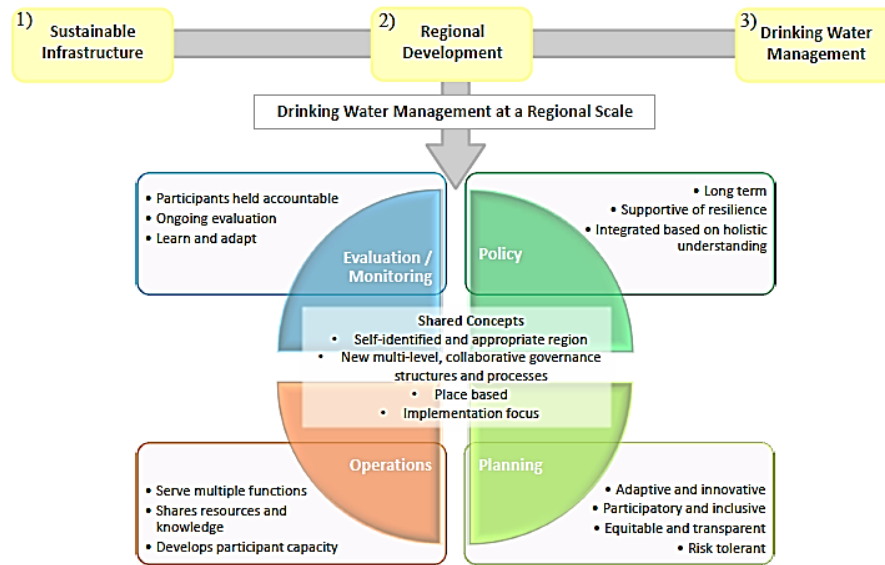
Source: (Breen & Minnes, 2015).

Table 3 provides further details, reflecting the detail included in the companion material provided to participants, on what the proposed new regionalist approach would imply for local and regional planning, governance and management of drinking water systems.

Table 3: *New Regionalist Approach Characteristics*

Element of Approach	Characteristics	Reason for Shift
Place-based management	<p>Identify water related values, perceptions, history, geographies, and so forth. Extensive public participation in order to:</p> <p>Understand different uses of and reliance on water</p> <p>Identify common ground</p> <p>Develop mechanisms to balance considerations</p>	<p>Understanding place is a critical consideration in policy, planning, operations, and evaluation/monitoring.</p>
Decision making and knowledge	<p>Informed decisions based on a transparent review of all available evidence/data.</p> <p>Decisions reflect integration of social, economic, and environmental considerations.</p> <p>Knowledge sharing within and outside working region.</p> <p>Public education to enhance understanding and gain buy-in.</p> <p>Support for capacity building, including opportunities:</p> <p>To maintain/enhance professional qualifications</p> <p>For cross-discipline learning and monitoring/evaluation of water governance</p>	<p>Create a culture of understanding and learning.</p>
Technology and infrastructure	<p>Fostering sustainability initiatives related to water.</p> <p>Moving toward sustainable infrastructure:</p> <p>Integrate drinking water infrastructure with other infrastructure systems</p> <p>New infrastructure and retro-fits reflect sustainable characteristics</p> <p>Infrastructure planning is based on future needs</p> <p>Technology choice is driven by knowledge, innovation, and creativity.</p>	<p>Support forward thinking</p>
Resilience and adaptation	<p>Flexible structure supports the ability to learn and adapt with changing circumstances</p> <p>Monitoring and evaluation inform changes</p> <p>Full cost accounting</p> <p>Asset management</p>	<p>Focus on long term success and holistic sustainability (including financial sustainability)</p>

Figure 1: Proposed new regionalist approach to drinking water management.



4.0 Methods and Case Context

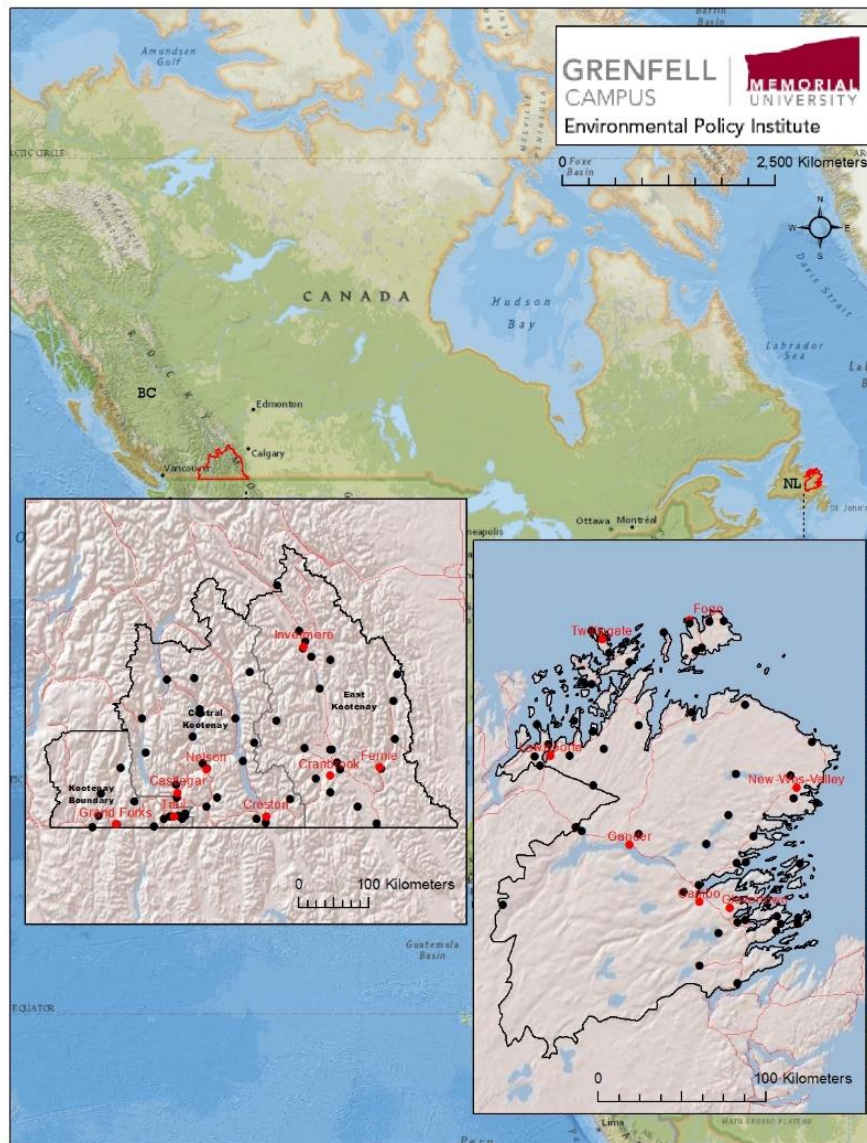
We applied a comparative case study approach to allow for a cross-case aggregation, synthesis, and comparison of existing data, which would allow for the identification, development, and testing of our proposed new regionalist framework (Eisenhardt, 1989; Yin, 2009). Using a case study approach also allowed the research team to assess and compare dynamic situations in real time through the use of multiple sources of evidence (Yin, 2009).

As noted above, the project builds on two larger studies. The case study regions chosen for this project had been previously studied in the *Canadian Regional Development* project. Rather than identify ‘rural’ based on population size, case study regions were selected based on a clearly defined set of rural characteristics: a clearly delineated region with overlapping jurisdictions and sub-regions, remote relative to major decision-making centres and urban influences, connected via ground transportation, historically natural resource based, and low population density (Ryser & Halseth, 2010; Vodden, Markey, Douglas & Reimer, 2015). The two case rural study regions for this project are the Kittiwake region of NL and the Kootenay region of BC (see Figure 2).

Using the criteria defined above, the entirety of both regions, including incorporated municipalities and unincorporated areas are considered rural. Both are isolated and challenging to access, and share similar histories, particularly relating to a reliance on natural resource extraction, as well as similar eras of provincial-led regional development. A general comparison between the two regions is provided in Table 4.

Specific to drinking water, Table 5 provides an overview of the institutional structure in each region, as well as an overview of the drinking water systems. This research focussed on publicly operated drinking water systems. In both regions, these public drinking water systems are funded by local taxes and ad hoc provincial and federal funding.

Figure 2. Case study regions.



Source: Map Courtesy of Myron King, Environmental Policy Institute, Memorial University of Newfoundland-Grenfell Campus.

Table 4: *Regional Comparison*²

	Kootenay BC	Kittiwake NL
Physical Size	57,787 km ² 6.2% of BC	14,000 km ² 3% of NL
Population (2011)	146,264 3% of BC Aging demographic	46,850 9% of NL Aging demographic
Largest Centre	Cranbrook ~18,000	Gander ~11,000
Population Growth (2006-2011)	Positive (2.9) Slower growth than BC average	Negative (-3.6) Greater decline than NL average
Average Income (2011)	\$30,637 Lower than BC average	\$25,000 Lower than NL average
Unemployment Rate (2011)	7.3% Higher than BC average	24.1% Higher than NL average
Economic Drivers	Services (trade, health care and social assistance, accommodation and food) Goods (construction; forestry, fishing, mining)	Sales and services Primary Industry (fisheries, forestry) Processing and manufacturing (fisheries) Construction Fly-in Fly-out
Physical Landscape	Montane Cordillera (mountains, interior plains, inland rainforest)	Boreal shield (forest, exposed bedrock)

Sources: (Bell, 2002; Community Accounts, 2012; Department of Environment and Lands, Water Resources Division, Government of Newfoundland and Labrador, 1992; Kittiwake Economic Development Corporation, 2011; Regional Workforce Table Kootenay, 2012; Skeard, Daniels, Gibson & Vodden, 2013; Statistics Canada, 2012; Work BC, 2014).

² Data (e.g., population) dates to the time period when the research was conducted.

Table 5: *Drinking Water Comparison*

	Kootenay Region	Kittiwake Region
Pertinent provincial authorities ³	Interior Health Authority Ministry of Health Ministry of Community, Sport, and Cultural Development (Local Government Division) Ministry of Forest Lands and Natural Resource Operations Ministry of Environment	Department of the Environment and Conservation Department of Municipal Affairs Department of Health and Community Services Service NL
Pertinent provincial legislation and regulation	<i>Water Sustainability Act</i> (2016) <i>Public Health Act</i> (2009) <i>Drinking Water Protection Act</i> (2001) <i>Drinking Water Protection Regulation</i> (2003, revised 2016) <i>Local Government Act</i> (2015) <i>Community Charter</i> (2003)	<i>Municipalities Act</i> (1999) <i>Municipal Affairs Act</i> (1995, revised 2017) <i>Environmental Protection Act</i> (2002, revised 2013) <i>Water Resources Act</i> (2002, revised 2013) <i>Federal Guidelines for Canadian Drinking Water Quality</i> (1996, revised 2017)
Local Governments	Incorporated Municipalities (26) Regional District (3) Community water systems (e.g., improvement districts, water user communities) (number unknown)	Incorporated Municipalities (33) Local Service Districts (17)
Estimated Number of Drinking Water Systems	53 public systems (regional district or municipality) # of other systems (community or private) unknown	43 public water systems (municipality or local service district) # of other systems (community or private) unknown
Snapshot of reported advisories and notices (September 2013)	124 total of known systems (105 boil water notices, 19 water quality advisories), 7 on public systems (3 boil water notices, 4 water quality advisories)	15 public water supplies on Boil Water Advisory (BWA) of the 43 public drinking water systems

Sources: (British Columbia Ministry of Community Sport and Cultural Development, n.d.; British Columbia Ministry of Environment, n.d.-a, n.d.-b; British Columbia Ministry of Health, n.d.; Christensen, 2011; Drinking Water Leadership Council, 2007; Government of British Columbia, 2001, 2003, 2012, 2013; Government of Newfoundland and Labrador, 2014; Health Protection Branch, Ministry of Health, Government of British Columbia, 2013; Interior Health Authority, 2006, 2014a, 2014b; Ministry of Health Planning & Ministry of Health Services, 2002; The Living Water Policy Project, 2011).

³ Provincial ministries listed are those that were in place at the time the research was conducted.

4.1 Data Collection and Analysis

In 2011 and 2012 as part of the *Canadian Regional Development* project we conducted semi-structure interviews with a range of local agencies (e.g., municipal and regional government), as well as relevant provincial agencies (e.g., regional representatives for government ministries). This resulted in a total of 50 general regional interviews intended to provide a broad understanding of the two regions, 22 in BC and 28 in NL. These interviews were transcribed and coded for common themes using NVivo qualitative software, classifying major topics and identifying patterns (Krueger, 1998; Stewart, Shamdasani, & Rook, 2007). Through this analysis we identified drinking water as a critical regional development issue in both regions. This provided justification of further exploration of drinking water management, as well as providing valuable contextual information related to current challenges, relationships, and opportunities which informed the development of the proposed approach (see Figure 2).

In 2013–2014 we returned to the regions specifically seeking feedback on the proposed new regionalist approach. The aim for data collection was to conduct two focus groups, one in each case study region, conducted in conjunction with two existing local government events: the 2014 Association of Kootenay Boundary Local Government Annual General Meeting in Creston, BC and Municipalities Newfoundland and Labrador (MNL) 2014 Symposium in Gander, NL. Event attendees included local and regional government decision makers—elected officials and staff—as well as relevant provincial representatives. Potential participants were contacted via email prior to the events and invited to attend. Our proposed approach, including the graphic and accompanying text, was made available to all potential participants in advance.

Scheduling conflicts resulted in the BC focus group shifting into a combination of semi-structured interviews and participant engagement at a trade show booth in April 2014. In NL, hosting the focus group at an MNL event resulted in participants from outside the study area also attending the focus group, but also allowed for engagement through a trade booth with municipalities from across the province. These activities resulted in transcripts from semi-structured interviews (BC–2, NL–11⁴), the transcript from one completed focus group in NL with ~ six rural local staff and elected official representatives, transcribed notes from researcher observations and conversations with people (~20) at the BC trade booth show, and written feedback (two) from trade show participants in BC. Feedback included a cross section of both small (e.g., water users communities) and large (e.g., municipal) systems. All data were coded by researchers for common themes using NVivo qualitative research software, classifying major topics and issues, and identifying patterns (Krueger, 1998; Stewart et al., 2007).

While it was possible to return to both field sites for additional data collection, particularly from water focused individuals, our initial round of fieldwork identified a distinct gap between our proposed theory-based approach and the rural reality; calling into question our initial assumptions as well as our framework design.

⁴ NL interviews were with rural town staff, residents, councillors, and mayors in the region, as well as some provincial officials. These interviews were obtained from the affiliated Exploring Solutions for Sustainable Rural Drinking Water Systems project and used to help provide additional context.

The following section provides a reflection on the findings from this initial fieldwork period.

5.0 Findings

5.1 New Regionalist Opportunities

The review of the secondary data indicated potential for the proposed approach, as well as evidence that some aspects of the approach were already present within the case study regions (e.g., watershed groups, ad hoc regional approaches, innovative water operator training programs). For example, we received written feedback from a BC participant who had recently submitted a letter to the IHA urging consideration of several points included in the proposed framework, such as addressing current regulatory issues, as well as identifying the need for appropriate technology, risk assessment, and the sharing of small water system information through associations. However, the primary data we collected indicated that the local actors considered the approach to be too far beyond the present reality of rural drinking water management. Key informant interviews and the focus group in NL spoke more generally about issues in the community and potentials for regional collaboration. Feedback on the proposed approach often came following discussion and additional explanation, suggesting the framework is not immediately understood and requires more clarity and explanation before it makes a local connection. Despite the gap between theory and reality, we found indications that our approach held some merit, as individual elements included in the framework were present or being discussed.

During the focus group in NL, regional-scale approaches were noted as being able to help in the cost effectiveness of employing certified water operators, planners and engineers, and to help address the lack of expertise in individual communities. Interviewees noted the successes of existing regional water operator programs:

What is nice about the regional operator is that it allows a way of sharing experiences and things like that across the board. It doesn't isolate as much. Some things can be accomplished on a regional scale instead of at community level, so it cuts down on the time with that. Particularly the data, a lot of the data review that I did, there is no way that the regular maintenance staff have the time to do that—to look for those systemic problems and trends. For someone to do that on a broader level, and then present the smaller picture to maintenance staff then there can be solutions for ongoing problems that way. They don't have time to do the things that need to be done let alone the long-term work (NL Respondent).

The successes of the regional operator program in NL in terms of asset management and sharing knowledge amongst small communities suggest a regional approach can work when accompanied by sustained funding. Moreover, that this regional approach was to some extent co-constructed between the local and provincial levels suggests potential for multi-level governance, a key pillar of new regionalism. However, there was a common conclusion that, "...a lot of things

need to be worked out and thought about before you get involved into [regionalism]” (NL Respondent). In another NL regional operator example from outside the Kittiwake region, a regional approach was credited with the removal of boil water advisories (BWAs) for the involved communities, and also noted in the return to a BWA for one community, upon abandonment of the regional operator program. Policy windows that incite drinking water reform (e.g., after drinking water contaminations), were also identified as providing enabling conditions for new approaches, and an incentive for proactive change.

One element of our research noted to be of particular use is the transference of existing ideas and examples between regions, something our research has helped with. For us this drew attention to the need for the provision of concrete, relatable examples, which could be adapted to different contexts, when presenting a new approach or idea. Some existing programs share commonalities with our proposed framework, including existing regional approaches to: (a) governance, (b) technology, (c) databases and information–asset management, (d) cost sharing, (e) training and education, and (f) watershed level training. In BC, existing regional-scale environmental stewardship plans were mentioned as examples. For example, the Kettle River Management Plan is focused on environmental stewardship and presents an example of a co-constructed plan.

Four potential benefits of regional efforts were frequently noted as enabling factors for the adoption of a new regionalist approach:

- The opportunity to save money (e.g., sharing human resources, access to better funding).
- The provision of a venue for technological innovation through shared knowledge and costs (e.g., in water treatment), data sharing, and data consolidation.
- Increased communication, relationship building, and integration in the region.
- Synergies from building off existing, successful regional initiatives (e.g., conservation programs) to facilitate expanded regional approaches for drinking water management. In other words, success often breeds success for regional approaches.

5.2 New Regionalist Critiques

Some common themes between case study regions also revealed barriers to the proposed new regionalist approach including:

- Knowledge, understanding, and awareness (e.g., limited understanding of connections between untreated water and potential contamination and health effects; the need for asset management activities to improve life span of infrastructure).
- Institutional and regulatory structure (e.g., the current management systems are not conducive to regional approaches; lack of enforcement mechanisms and integration of data management and other efforts).

- Equity concerns (e.g., conflicts between communities over issues of free ridership and unequal benefits of potential collaborations).

In terms of specific critiques, we received various suggested amendments. Directly, interviewees identified the need to more carefully consider the particular circumstances of small water systems, an observation particularly relevant to BC where there are numerous small systems outside the purview of municipal governments or regional districts. It was explained by one BC informant that the costs associated with being managed by the regional district, as well as fear of ‘take-over’ often deters small water systems:

What tipped it there, well, first of all 300 hundred thousand dollars scared them. They didn’t understand that you know you can pay that over 20 years. I mean it wasn’t really that onerous. But, what bothered them was the fact that the regional districts taking over their system. We had told them minimum 50 dollars and more likely 60 dollars a month (BC Respondent).

Capacity for dealing with complicated water related issues is often lacking in rural areas, as well as the understanding of how regional approaches could address the capacity gaps. Participants suggested that it must be clear that the approach is not a prescriptive checklist but rather offering a suite of possible alternatives depending on context. It was mentioned that seeing the long-term benefit of regional approaches is often difficult, especially for local decision makers and that this was not adequately explained or addressed in our proposed regional approach. When talking about what kind of services could be provided through regional approaches benefits of a regional approach became more apparent. For example, one respondent from the NL focus group said:

This is why when you were talking about regionalizing right, I mean you have to have experts in each region that’s not government officials. So, if we had, and that’s what we had talked about, if we had a regional operator, we had a regional town planner, and a regional town engineer, for an area (NL Respondent).

As displayed by the above quote there is much to be desired for providing regions with the right professional staff and technical aid in order to properly undertake regional approaches. However, making the hiring of these professionals cost-effective through regional sharing was noted as a positive of regional thinking. Furthermore, where regional scale actions offered a possible solution it was noted that current institutional structures often did not explicitly support, or even actively blocked this type of approach. As noted, the concept of ‘regional’ itself presented an issue as a result of multiple, overlapping, regions. For example, our case study regions may be too large for some proposed elements (e.g., a regional water operator), but fine for other elements (e.g., knowledge sharing networks). Though the need or potential for regionalization was recognized in many cases, issues relating to equity and bad experiences in the past with regional efforts remain a stumbling block. Clearly, there is still a significant amount of remaining challenges

to be addressed in both case study regions in order to raise the capacity—from an institutional, social, financial and technical perspective—of the areas to be able to implement a new regionalist approach.

6.0 Discussion and Conclusion

Our research makes clear that our case study regions, despite differences in governance, regulatory framework, and overall context share many common experiences and challenges related to the management of drinking water. The applicability and feasibility of applying a new regionalist management approach to address these challenges in practice, however, is far from certain.

Our proposed new regional approach takes a holistic, coordinated perspective. It recognizes links and interdependencies within a larger system—a single community drinking water system not only relates to the surrounding environment and development of that community, but to the surrounding region as well. From a theoretical perspective, taking an approach to managing drinking water that acknowledges and thoughtfully considers these links has the potential to address many of the existing challenges in drinking water systems and rural regions more generally by improving efficiencies, fostering collaboration, and helping to build regional resilience. However, what we found is that there are significant gaps between theory and practice when attempting to implement drinking water governance and management best practices at the regional level in the case study regions.

The introduction of our proposed new regionalist approach encountered initial difficulties in comprehension, suggesting both an initial failure to portray the information in a sufficiently tangible manner, and a lack of general knowledge and awareness about new regionalist practices in the case regions. In practice, we found evidence that certain elements of our new regionalist framework exist, albeit in an uncoordinated fashion. For example, there are knowledge sharing networks for specific practitioners, however these networks are rarely integrated, despite the potential benefits of doing so. We also found that many facets of the proposed framework were positively acknowledged in both regions as important. These facets include collaborative and inclusive governance; the need for databases and integrated data management with straightforward and open access; the need for knowledge sharing venues; the need for sustained funding and more accurately priced water fees.

However, envisioning the elements of our framework (a) together as a coordinated approach, and (b) at a deliberately undefined regional scale appeared difficult for key informants to conceptualize, particularly where different elements were applicable in different contexts and at different scales. For example, sharing a drinking water operator may be of interest to small systems, while large systems may be more interested in a consolidated data sharing agreement or source water protection plan.

Finally, and perhaps most importantly, it was noted that there appeared to be steps missing between the current state of, and context surrounding, drinking water systems and the proposed new regionalist approach. The information gathered from participants in both regions was important in identifying (a) the gap between the reality of current conditions and a theoretically informed approach and (b) the potential to build on our initial conceptual design in order to improve current management of drinking water systems in rural Canada. As a continuum, our initial theory-based approach proposed a shift from the current approach to a coordinated new regionalist approach (see Figure 3). However, while our proposed approach

included a variety of possibilities, we failed to accurately capture two critical stages: (a) the need to build a solid foundation of knowledge and understanding surrounding drinking water systems (e.g., the need for treatment, watershed dynamics and so on) and (b) the benefit of building a strong case for a regional approach, including providing specific, relevant examples prior to a more coordinated new regionalism approach.

Figure 3. Suggested Additional Steps Needed (in red) for a Transition from the Current Approach to a New Regionalist Approach



Challenges from water literature reflect some of the critiques found during this research. For example, issues with sustainable infrastructure management—including both natural and built infrastructure—in rural areas are outlined (Pollalis, Georgoulis, Ramos, & Schodek, 2012; Santora & Wilson, 2008). The need to reconsider current approaches to planning, design, and management of infrastructure is clear (Pollalis et al., 2012). However, in rural areas there is a prevalence of low user costs for drinking water services, degrading infrastructure, and a lack of financial resources to switch to new approaches and technologies (Kot, Castleden & Gagnon 2011). This is in addition to the aforementioned challenges such as lack of economies of scale, remote locations and environmental challenges, and demographics (e.g., low population density, aging, out migration) (Health Protection Branch, Ministry of Health, Government of British Columbia, 2013; Kot, Castleden, & Gagnon 2011). These challenges in rural areas can influence the investment available for maintaining degrading infrastructure—including basic asset management or the ability to collaborate regionally (Kot, Castleden, & Gagnon, 2011; Locke, 2011; Minnes & Vodden, 2017), as well as the ability to find and retain trained water operators to maintain and manage drinking water systems (Minnes & Vodden, 2017).

The gap between the current and the proposed approach was simply too large to allow us to determine the feasibility of a new regionalist approach to managing drinking water as the approach was presented at the time. A revised design and presentation of a new regionalist approach would have to include a necessary period of foundation building, as well as singular regional-scale initiatives to create relationships, build experience, and confidence in the benefits of a regional approach and lead up to a coordinated, system-focused new regionalist approach. A key challenge is the creation of an approach that is adaptive and flexible enough to allow it to be tailored and transferred across different places, but clear and concrete enough to be understood. This is a common challenge with creating actionable mechanisms for water law and governance (Hill Clarvis, Allan, & Hannah, 2014). We saw a need for flexibility, consideration of place, and mechanisms for adaptive governance but more practical and tangible ways of outlining the proposed new regionalist framework are required.

Given the range of potential approaches to address rural drinking water challenges it is entirely possible that a new regionalist approach is not the ideal. Indeed, the

literature is full of alternative suggestions for legislative, regulatory, and funding changes to address many of the same issues. What we suggest is that the potential of a new regionalist approach lies in its ability to bring several of these ideas together. However, questions remain as to the extent to which new regionalist approaches can offer a viable alternative to drinking water management in rural Canada. Our research did not meet its original goal of determining the feasibility of our proposed approach as a result of a clear gap between the new regionalists concepts put forward in the literature and the rural reality(ies). However, we received enough positive indications to warrant moving forward, revising and revisiting the approach in a continued effort to accurately ascertain the potential and feasibility of applying new regionalism to drinking water management.

The literature suggests that shifts to new regionalist governance structures in water management do not come without problems (Pahl-Wostl, Gupta, & Petry, 2008). Collaborations in water management have been criticized for having: (a) high transaction costs, (b) potential implementation gaps and problems with translating plans into policies, (c) issues ensuring commitments to long term goals, and (d) challenges in making sure benefits and costs of collaborations are fairly distributed (Fish, Ioris, & Watson, 2010). It was suggested by participants that it would be helpful if regional approaches were outlined in a scenario-based manual, which had different regional options depending on local needs. Furthermore, the framework must have mechanisms to deal with communities at different stages and coming from different perspectives, while also maintaining an overall umbrella approach with common themes or principles—such as those outlined in Tables 2 and 3. Ultimately, we need to revise the framework to ensure that it is easily understood, adaptable and applied to different regions and contexts. As noted above, even though a major challenge in both regions is a lack of sustainable funding (Minnes & Vodden, 2017; Breen, 2018). This approach was designed to increase efficiencies in operations—thus reducing costs—and create sustainable funding plans that do not rely on outside funding from provincial or federal agencies.

Our research offers an initial regional option that provides links beyond drinking water management and aims to be more integrated in nature than current institutional arrangements will allow. However, there is a need for further research and refinement. If scholars want to seek impact from research—increasingly a criterion used to assess scholarly work—then we must critically assess best practice, and ensure theoretical ideas can also be employed in ways that are both actionable and appropriate for the suite of actors that must implement these ideas. This is especially true for rural communities with limited capacity to go beyond regulatory requirements. The proposed new regionalist approach provides an opportunity to link several different concepts related to drinking water management into one comprehensive framework. However, the delivery of this approach requires significant refinement in order to be properly tested for feasibility in rural Canada. This lesson is equally relevant for the application and piloting of new regionalist theory in other dimensions of regional development, in Canada and internationally.

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