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RESEARCH ARTICLE/ARTICLE DE RECHERCHE

A Contested Waterscape: The Public's Diminished Participation in Ontario's Water Management Planning Process

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Abstract

Guelph, Ontario, is one of a few cities in Canada that relies solely on groundwater for drinking water. City officials anticipate that the municipality will experience a water deficit in the near future. In response to water security issues residents have actively engaged in the state-sanctioned water source protection committee. This article explores the water management planning process upheld by Ontario's *Clean Water Act*, 2006, and examines the question: Is the *Clean Water Act*'s participatory mode to water governance inclusive of "environmental, health, and other interests of the public"? The analysis of this question engages with the political ecology literature and, in particular, Linton and Budds's three-part hydrosocial cycle framework. It is argued that the technology of regulatory law (i.e., the *Clean Water Act*, 2006) constructs the power dynamics and social relations within the state-sanctioned water committee resulting in the weakening of the environmental interests expressed by the public.

Keywords: Clean Water Act, 2006, S.O. 2006, c.22.; collaborative governance; citizens' participation; hydrosocial cycle

Résumé

Guelph (Ontario) est l'une des rares villes au Canada à dépendre exclusivement des eaux souterraines en tant que source d'eau potable. Les autorités municipales prévoient que la municipalité connaîtra une pénurie d'eau dans un avenir rapproché. En réponse aux enjeux liés à la sécurité de l'eau, les résidents ont participé activement au comité de protection des sources d'eau reconnu par l'État. Cet article explore le processus de planification de la gestion de l'eau tel que défini par la *Loi de 2006 sur l'eau saine* de l'Ontario et s'intéresse à la question suivante : l'approche participative de la gouvernance de l'eau prévue par la *Loi de 2006 sur l'eau saine* inclut-elle aussi les « intérêts environnementaux, sanitaires et autres du public » ? L'analyse de cette question s'appuie notamment sur la littérature en écologie politique et, en

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particulier, sur les trois éléments constitutifs du concept de cycle hydrosocial développé par Linton et Budds. L'article conclut que la technologie du droit réglementaire (c'est-à-dire la *Loi de 2006 sur l'eau saine*) structure les dynamiques de pouvoir et les relations sociales au sein du comité de protection des sources d'eau reconnu par l'État et affaiblit du même coup les intérêts environnementaux exprimés par le public.

Mots clés: Loi de 2006 sur l'eau saine, L.O. 2006, c. 22; gouvernance collaborative; participation citoyenne; concept hydrosocial

I. Introduction

Canada is known as a freshwater-rich country. Yet, for some communities, this Canadian identity is an illusion. Guelph is one of a few cities in Canada that relies solely on groundwater for drinking water.[1] The city's water is extracted from municipal wells (i.e., "25 drilled groundwater wells screened within overburden, shallow and deep bedrock aquifers, one groundwater collection system, the Eramosa River intake and a groundwater recharge system").[2] The municipality's water budgeting programme predicts the city will be facing a water deficit in the near future. In this water-stressed municipality residents have been calling for action on water quantity and quality issues within the provincial government's sanctioned participatory water governance process.[3] Participatory governance is premised upon the inclusion of state and non-state actors in a multilevel environmental decision-making process with the aim of improving policy decisions by including local knowledge, fostering the sharing of knowledge, increasing trust and acceptance of decisions by stakeholders.[4] In drafting the first water plan, Wellington Water Watchers (WWW), a citizen-based environmental nonprofit organization, participated in Ontario's legislated water source protection management planning process with the goal of bringing forward the public's water concerns.[5] The WWW's concerns regarding quarrying activities breaching the aquitard of a local drinking water source were raised to the water source protection committee (SPC) but their concerns were silenced by the committee and beyond the committee level by the state.[6]

Citizens' participation in water governance is now institutionalized as a key feature of collaborative environmental governance.[7] In Ontario, a participatory

[1] Lake Erie Region Source Protection Committee, "Grand River Source Protection Area: Approved Assessment Report, Under the Clean Water Act, 2006 (February 9, 2022): Chapter 7 City of Guelph at 7–1, https://www.sourcewater.ca/media/pkvln5xz/grspa_ar_not-updated_s7_city-of-guelph_clean.pdf.

[2] City of Guelph Staff, To: Committee of the Whole/ Subject—2021 Water Supply Master Plan Update, at page 4. Please use the https://pub-guelph.escribemeetings.com/filestream.ashx?DocumentId=28372.

[3] *Clean Water Act*, 2006, SO 2006, c 22.

[4] J. Newig and O. Fritsch, "Environmental Governance: Participatory, Multi-Level and Effective?" *Environmental Policy and Governance* 19 (2009): 197, at 198.

[5] Wellington Water Watchers, https://www.wellingtonwaterwatchers.ca/.

[6] P. Hania, *Water in Canada: The Legislative Experiments in New Governance* (Ph.D. Dissertation, York University - Osgoode Hall Law School, 2015) [unpublished]. online: https://digitalcommons.osgoode.yorku.ca/phd/22/.

[7] A. Y. Lindgren, M. G. Reed, and J. P. Robson, "Process Makes Perfect: Perceptions of Effectiveness in Collaborative Environmental Governance," *Environmental Management* 67 (2021): 228–41; K. S. Quick

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approach to water management planning was introduced in reaction to the Walkerton drinking water tragedy, and the move away from the traditional command-and-control environmental regulatory model where the state prevails and professional experts set water policy.[8] This idea of participation in water policy development is in line with the global shift towards a new governance mode discussed in the literature[9] and typically is described as a collaborative water governance model. While collaborative governance can be defined in a myriad of ways,[10] an accepted definition is: "A governing arrangement where one or more public agencies directly engage non-state stakeholders in a collective decision-making process that is formal, consensus-oriented, and deliberative and that aims to make or implement public policy or manage public programs or assets."[11]

In theory, these collaborative governance arrangements institutionalize a participatory, problem-solving process where stakeholders work through decisions together and where a diversity of issues and perspectives can be brought forward and debated within the localized watershed setting.[12] In effect, a collaborative water governance arrangement is a participatory problem-solving and decision-making practice[13] directed at creating equity through the balancing of

and J. M. Bryson, "Public Participation," in *Handbook on Theories of Governance*, ed. C. Ansell and J. Torfing (Northampton: Edward Elgar, 2016); J. Newig, E. Challies, and B. W. Jager, "Democratic Innovation in Environmental Governance," in *Handbook of Democratic Innovation & Governance*, ed. S. Elstub and E. Oliver (Northampton: Edward Elgar, 2019).

[8] S. Minnes, "Watershed Governance or Intake Governance? Implications of Ontario's Clean Water Act on Collaborative Watershed Governance in Rural Areas," *Canadian Water Resources Journal* 44, no. 4 (2019): 401–22, at 402–04.

[9] S. D. Hardy and T. M. Koontz, "Rules for Collaboration: Institutional Analysis of Group Membership and Levels of Action in Watershed Partnerships," *The Policy Studies Journal* 37, no. 3 (2009-08): 393; C. Ansell and A. Gash, "Collaborative Governance in Theory and Practice," *Journal of Public Administration Research and Theory* 18, no. 4 (2008–10): 543–71, at 545–47; O. Lobel, "The Renew Deal: The Fall of Regulation and the Rise of Governance in Contemporary Legal Thought," *Minnesota Law Review* 89 (2004–05): 342. Lobel's Renew Deal's New Governance frame is succinctly explained in O. Lobel, "New Governance as Regulatory Governance," in *The Oxford Handbook of Governance*, ed. D. Levi-Faur (New York: Oxford University Press, 2012).

[10] Ibid, Orly, 2004; ibid.; M. C. Brisbois and R.C. de Loë, "Natural Resource Industry Involvement in Collaboration for Water Governance: Influence on Process and Outcomes in Canada," *Journal of Environmental Planning and Management* 60, no. 5 (2017): 883, at 883.

[11] Ansell and Gash, "Collaborative Governance," 544.

[12] Ibid.; M. Mcllwain et al, "Understanding the Complex Power Dynamics that Shape Collaborative and Social Learning in Multi-Stakeholder Water Governance," *Ecology and Society* 29 (2024): 31; M. Tadaki et al, "Does Collaborative Governance Increase Public Confidence in Water Management? Survey Evidence from Aotearoa New Zealand," *Water Alternatives* 13, no. 2 (2020): 302–23; R. C. de Loë et al, "Policy Transfer Among Regional-Level Organizations: Insights from Water Source Protection in Ontario," *Environmental Management* 58 (2016): 31–47; B. Taylor, R. C. de Loë, and H. Bjornlund, "Evaluating Knowledge Production in Collaborative Water Governance," *Water Alternatives* 6, no. 1 (2012): 42–66., H. Simpson, R. C. de Loë, and J. Andrey, "Vernacular Knowledge and Water Management—Towards the Integration of Expert Science and Local Knowledge in Ontario, Canada," *Water Alternatives* 8, no. 3 (2015): 352–72; C. Ferreyra et al, "Imagined Communities, Contested Watershed: Challenges to Integrated Water Resources Management in Agricultural Areas," *Journal of Rural Studies* 24 (2008): 304–21.

[13] P. Hania, "Uncharted Waters: Applying the Lens of New Governance Theory to the Practice of Water Source Protection in Ontario," *Journal of Environmental Law and Practice* 24, no. 2 (2013): 177–221.

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"societal power" and empowering marginalized voices with the aim of promoting democratic ideals.[14]

Ontario's legislatively designed water source protection planning process is an example of a participatory arrangement. It is based on science-based decision-making and is organized at a local watershed basis and carried out in the SPC where members of the general public can participate in the water committee's activities. Under O.Reg. 288/07 of the *Clean Water Act*, 2006 (*CWA*), the SPC is premised upon the participation of diverse range of state and non-state stakeholders where the composition of the committee "must" include "persons appointed to reflect interests [...] in particular, environmental, health and other interests of the general public." This means a group such as the WWW is legislatively offered a seat at the water management decision-making table where the group's water quality and quantity concerns can be expressed and they can participate in the development of a water plan.[15] However, a legally constructed seat at the decision-making table does not necessarily lead to an inclusive decision-making approach where the public's environmental and health concerns are taken into account.[16] Research examining the *CWA*'s water planning process has demonstrated power dynamics at play with the effect of marginalizing interests of the public.[17] This stifling of the public's water concerns fails to bring to life the "participatory spirit" of the *CWA*, as expressed by Justice O'Connor in the Walkerton Inquiry.[18]

The aim of this article is to bring into focus a local water conflict where the state has adopted technical, engineered and administrative planning based values that are in direct conflict with the environmental protection values advanced by a citizen group (i.e., the WWW) participating in the water committee. In this conflict, the provincial government upholds a legally structured participatory water governance structure, through the *CWA*'s SPC, which as envisioned by Justice O'Connor in the Walkerton Inquiry Report should be inclusive of citizens and their water concerns.[19] Even though Justice O'Connor

[14] See Generally, Newig et al., "Democratic Innovation," 324.

[15] Source Protection Committees, O. Reg, 288/07; *Clean Water Act*, 2006, SO 2006, c 22.

[16] Mcllwain et al, "Understanding the Complex Power Dynamics."

[17] Brisbois and de Loë, "Natural Resource Industry Involvement;" M. C. Brisbois and R. C. de Loe, "Power in Collaborative Approaches to Governance for Water: A Systematic Review," *Society & Natural Resources* 29, no. 7 (2016): 775–90.

[18] *Clean Water Act*, 2006, SO 2006, c 22; see Ontario's localized, multi-stakeholder water committee envisioned by the Honourable Dennis R. O'Connor, *Part Two Report of the Walkerton Inquiry: A Strategy for Safe Drinking Water Ontario*, Ministry of the Attorney General (Toronto: Queen's Park Printer, 2002), Archives of Ontario, https://www.archives.gov.on.ca/en/e_records/walkerton/index.html (hereafter, *Walkerton Report Two*). The participatory and pluralistic aspects are outlined in *Walkerton Report Two*, Chapter 4: "Participation of Affected Groups and the Public," 103–09. In particular, at 103, it was expected that the MOE would consult with the CA authority: "municipalities, environmental groups, and other affected groups to develop a provincial framework for the source protection planning, including guidelines for the form, content, and the development process," and 4.3.6 Participation of Affect Groups and the Public, 107–08: "The involvement of broad range of affected groups in the watershed-based source protection planning process will be key to its success. The process must be seen to be broadly and fairly inclusive of the interests that will be affected."

[19] Ibid.

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highlighted the need to include citizens and First Nations in the SPC, only a few articles discuss the marginalization of both these groups.[20]

In Guelph, the Lake Erie [Water] Source Protection Committee (LEWSPC) has been in place since 2007 (i.e.., via O.Reg. 288/07). Since the enactment of the water legislation and supporting regulations, the government has continued through this committee and the *CWA*'s regulatory regime to discount concerns of local residents. In practice, the water security concerns raised by residents of the City of Guelph have not been effectively addressed in this legal space, raising such questions as: Is the *CWA*'s participatory mode of water governance inclusive of environmental, health and other interests of the public? Within the state-sanctioned water committee, who holds the power to influence the decision-making processes with respect to water management?

While the features of the collaborative water governance model are well documented in the literature, few scholars have examined the issue of social power in the context of the *CWA.* Brisbois and de Loë examined the *CWA*'s collaborative water governance mode by applying Luke's mainstream theory of power and, in particular, the threefold framework of structural, discursive and instrumental aspects of power.[21] Their analysis demonstrated the power of social-economic-political factors where "elitist capture"[22] by the natural resources industry allowed these actors to influence decision-making within the SPC and beyond the committee.[23] While the social-economic-political context was examined through Luke's theory, Brisbois and de Loë concede other issues such as "cultural ideals and values" may need to be examined to further understand power dynamics where industry actors dominant environmental-oriented governance processes.[24]

In the discussion that follows, the "hydrosocial cycle," as defined by Linton and Budds, is applied to pick-up the 'values' and understanding of the socially constructed nature of water as illustrated by the WWW. The WWW's values of environmental protection of water quantity and quality are in contradistinction to the LEWSPC's scientific-technical perspective on water, a perspective that is bounded by the traditional hydrologic cycle concept.[25] In the *CWA*'s planning process, the state depoliticizes water by characterizing it as a quantifiable risk factor confined by the twenty-two legislatively prescribed drinking water threats.[26] Theoretically, we consider and apply to the City of Guelph's contested waterscape the "social nature" of water as understood through a political ecology framework of the hydrosocial cycle.[27]

[20] Hania, "Uncharted Waters," Brisbois and de Loë, "Natural Resource Industry Involvement."
[21] Brisbois and de Loë, "Natural Resource Industry Involvement."
[22] Tadaki et al, "Does Collaborative Governance Increase Public Confidence," 304.
[23] Brisbois and de Loë, "Natural Resource Industry Involvement."
[24] Ibid., 898.
[25] J. Linton and J. Budds, "The Hydrosocial Cycle: Defining and Mobilizing a Relational-Dialectical Approach to Water," *Geoforum* 57 (2014): 170, at 171.
[26] Prescribed drinking water threats: s 1.1 (1) in General, O. Reg. 287/07; see *Clean Water Act*, 2006, SO 2006, c 22.
[27] Linton and Budds, "Hydrosocial Cycle," 170.

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This article offers a perspective on how the power of environmental regulatory law can assiduously shape social relations through a participatory approach. These social relations are revealed through the application of the hydrosocial cycle framework to the City of Guelph's contested waterscape. We argue that the political nature of water within the City of Guelph's waterscape has been structured by the legislatively-produced technical-institutional arrangement under the *CWA*, which has conferred social power upon industry and state actors.[28] In practice, the SPC's institutionalized participatory arrangement represents the social-engineered nature of water that is constructed through the state's water management planning function. The SPC brings together local citizens and other stakeholders to organize within (and, outside) the regulatory water planning process with the goal of protecting their local drinking water sources while also exposing the limits of law in creating equitable and inclusive decision-making spaces for citizens.

Following this introduction, seven sections of this article are presented. Part II introduces Linton and Budds's hydrosocial cycle concept. Part III discusses the historical event of the *Escherichia coli* drinking water contamination incident within the small farming community of Walkerton, Ontario, which spurred a public inquiry and the introduction of a state-sanctioned water management planning process under Ontario's *Clean Water Act*, 2006. Part IV explores the power of regulatory law as practised through the *CWA*. Part V presents the legal construction of social relations through the legislation and as understood through the three-part framework outlined by Linton and Budds's hydrosocial cycle concept. Part VI offers two contrasting case studies (i.e., quarrying activities and the application of road salt). The application of road salt is a prescribed drinking water threat under the legislation, but the extractive water-related quarrying activities are not considered a threat to a drinking water source. Part VII sets out an analysis of the case studies using the three-part hydrosocial cycle framework. In part VIII, a conclusion is offered where recommendations are presented to bolster the *CWA*'s participatory process.

II. What is the hydrosocial cycle concept?

While the hydrosocial cycle concept has been applied to divergent situations (e.g., state power as explored through water infrastructure projects; intersection of water science and water management, including arid physical environments and reliance on desalinization and recycled wastewater in support of economic development situations), few academic articles have yet applied the concept to analyze the technologies and power of regulatory water law as an agent of the state.[29] In particular, few have looked at how the law as a regulatory technique can structure the social construction of a legal space and also create a

[28] *Clean Water Act*, 2006, SO 2006, c 22.

[29] K. M. Meehan, "Tool-Power: Water Infrastructure as Wellsprings of State Power," *Geoforum* 57 (2014): 215; R. A. McDonnell, "Circulations and Transformation of Energy and Water in Abu Dhabi's Hydrosocial Cycle," *Geoforum* 57 (2014): 225; P. P. Mollinga, "Canal Irrigation and the Hydrosocial Cycle: The Morphogenesis of Contested Water Control in the Tungabhadra Left Bank Canal, South India," *Geoforum* 57 (2014): 192; see also G. Bouleau, "The Co-Production of Science and Waterscapes:

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particular understanding of water while conferring power upon state and industry actors.

In the political ecology literature, the adoption of the hydrosocial cycle concept of water has broadened the traditional scientific understanding of water flows within urban/rural environments. Traditionally, the scientific-technical and engineering hydrological cycle dominated the field of water management without consideration of the social and political dimensions of water. While the hydrosocial cycle considers the limits and the science gleaned from the hydrological cycle, it further captures the "social-political and biophysical processes that constitute water"[30] leading to a method to unpack the social relations of water as expressed in a participatory approach to water governance. Importantly, as an analytical tool, the concept applies a critical lens to understanding the political ecologies of water; for example, how water law technologies (e.g., governance approaches, regulation, legislation, water permits) can foster both relational conflicts and cooperation as local community members and powerful actors interact in the LEWSPC and create a water plan.

As the leading authors of the hydrosocial cycle concept, Linton and Budds present the "social-natural process" of water to allow for the weaving of society and water together to uncover the spatial and temporal cycles of water that reconstitute social relations in cyclical flows.[31] This notion of "social nature" stems from the work of Swyngedouw as elaborated upon in the text *Social of Power and the Urbanization of Water: Flows of Power*. In examining the circulation of water in a city, Swyngedouw highlights the "material, discursive, and symbolic" aspects of water that are brought forward through the metaphor of a glass of water.[32] The flow of water through the city's water infrastructure, to the tap and to the glass, offers a narrative of power: the political nature of water, community connection, conflict over access and societal change that in the Ontario resulted in the introduction of *CWA*. The social nature of water takes into account the

> social and political actors and the powerful socio-ecological processes that produce urban and regional spaces; of participation and exclusion [...] of chemical, physical, and biological reactions and transformations, of the global hydrological cycle and global warming; of uneven geographical

The Case of the Seine and the Rhône Rivers, France," *Geoforum* 57 (2014): 248; S. Fernandez, "Much Ado About Minimum Flows: Unpacking Indicators to Reveal Water Politics," *Geoforum* 57 (2014): 215–224, at 181–91; J. Barnes, "Mixing Waters: The Reuse of Agricultural Drainage Water in Egypt," *Geoforum* 57 (2014): 181; J. M. Banister, "Are You Wittfogel or Against Him? Geophilosophy, Hydro-Sociality, and the State," *Geoforum* 57 (2014): 205; N. J. Wilson, "Indigenous Water Governance: Insights from the Hydrosocial Relations of the Koyukon Athabascan Village of Ruby, Alaska," *Geoforum* 57 (2014): 1; R. Boelens, "Cultural Politics and the Hydrosocial Cycle: Water, Power and Identity in the Andean Highlands," *Geoforum* 57 (2014): 234.

[30] J. Budds, J. Linton, and R. McDonnell, "Editorial: The Hydrosocial Cycle," *Geoforum* 57 (2014): 167, at 167.

[31] Linton and Budds, "Hydrosocial Cycle," 170–71.

[32] E Swyngedouw, "The City in a Glass of Water: Circulating Water, Circulating Power," in *Social Power and the Urbanization of Water: Flows of Power*, ed. E Swyngedouw (London: Oxford University Press, 2004), 28.

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> development; of political lobbying [...] of knowledge of engineers, and the passage from river to urban reservoir. In sum, my [i.e., Swyngedouw's] glass of water embodies multiple tales of the "city as a hybrid."[33]

From Swyngedouw's hybrid social-physical-political flow of water, Linton and Budds build the idea of the hydrosocial cycle into a three-part analytical framework based on a relational-dialectical approach where social relations are mediated through the dimension of change. Grounded in the definition of "a socio-natural process by which water and society make and remake each other over space and time,"[34] the first aspect of Linton and Budds's framework recognizes that the management of water creates societal arrangements that shape the allocation of water and facilitate social structures often in a cyclical pattern. For example, they provide the example of a water foundation as establishing a relationship between the public and water that grants equal access to water for different publics. The second aspect examines how water internalizes societal arrangements and associated social power structures that result in different and sometimes divergent accounts and norms of water (e.g., different states, qualities and forms of water create different meanings of water).[35] The third aspect identifies how the "material properties" of water can act as either disrupting or connecting social relations (e.g., a flood can disrupt social relations while water in the head pond of a hydroelectric dam can stabilize social relations through recreational social engagement).[36] Taken together, the three-part framework is considered dynamic in nature and opens the analysis to consider Swyngedouw's contribution of the political perspective underpinning water through "the circulation of water—as a physical and social process" and in this article, brings to light the political, social power and legal-policy elements underpinning the LEWSPC's participatory process.[37]

The dynamic and social nature of water management planning within the waterscape of the City of Guelph emerges through the application of Linton and Budds's hydrosocial cycle. The social-legal context of the LEWSPC's planning process where the WWW group is concerned with the environmental conditions of an alleged breach of an aquitard through quarrying activities and the salinization of water sources as a result of the public safety policy to apply road salt to roads during the winter months. These two issues are offered as case studies to illustrate conflicting narratives of water, the technology of regulatory law to shape social relations and the participatory governance's effect of exclusion[38] of a citizen group (i.e., WWW) from the water committee. This exclusion within a localized participatory governance model undermines the theoretical basis of the collaborative mode of governance, which is upheld as a technique to allow for

[33] Ibid.
[34] Linton and Budds, "Hydrosocial Cycle," 170.
[35] Ibid., 170–71, 177.
[36] Ibid., 170–71, 175–78.
[37] Ibid., 170–71, 177.
[38] P. Perkins, "Public Participation in Watershed Management: International Practices for Inclusiveness," *Physics and Chemistry of the Earth* 36 (2011): 204, at 212.

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greater representation of community interests.[39] But, first the social-legal-ecological history of the *CWA* is discussed next.

III. The history: the *E. coli* drinking water contamination event that shaped the *CWA*

Tragically, on a supposedly idyllic long weekend in May 2000, the farming community of Walkerton, Ontario experienced a drinking water crisis. After unknowingly drinking tap water contaminated with the deadly bacteria Escherichia coli O157:H7 (*E. coli*), the residents of Walkerton paid the ultimate price — seven residents died and an additional 2,300 members of the community became seriously ill. This tragedy occurred in a town with a population of less than five thousand.[40]

The drinking water governance crisis that ensued resulted in the establishment of a public inquiry assigned to Justice Dennis O'Connor and is known as the Walkerton Inquiry. This moment in time triggered sweeping regulatory changes, not only in Ontario but also across Canada where the regulatory water governance construct shifted from a centralized command control approach[41] towards a participatory mode where the public is recognized as a key participant. In reaction to the Walkerton drinking water tragedy, Justice O'Connor stressed the importance of the role of the public in local water management decisions because in his view, the process "must involve those who bear the risks (the public) in the decision-making process."[42] After all, in the Walkerton incident and in other water crises the risks of water contamination are often borne by the public.[43]

The Walkerton incident prompted the provincial government to rely upon the power of regulatory law to manage and protect water sources. In support of Justice O'Connor's ninety-three recommendations, the province enacted legislation—the *Safe Drinking Water Act*[44] and the *CWA*—without much debate. The Walkerton Inquiry and Justice O'Connor's recommendations structured the participatory water source protection planning model set out in the *CWA*, which

[39] N. W. Jager, J. Newig, and D. Schulz, "Disentangling Puzzles of Spatial and Participation in Environmental Governance: The Case of Governance Re-Scaling through the European Water Directive," *Environmental Management* 58 (2016): 998.

[40] The Honourable Dennis R. O'Connor, *Walkerton Commission of Inquiry—Part One: A Summary Report of the Walkerton Inquiry: The Events of May 2000 and Related Issues* (Toronto: Queen's Printer for Ontario, 2002), 463, https://www.archives.gov.on.ca/en/e_records/walkerton/index.html. Summary of the Report, at 2, and Chapter 1, Introduction.

[41] A year later, in the spring of 2001, the City of North Battleford, Saskatchewan, experienced a drinking water contamination incident that was attributed to an outbreak of cryptosporidiosis. Together, the Walkerton and North Battleford drinking water incidents signalled a need for regulatory change.

[42] O'Connor, *Walkerton Report Two*, Chapter 3: "A Multi-Barrier Approach to Drinking Water Safety," and Section 3.2, The Goal: Safe Drinking Water, 75.

[43] Hrudey et al, "Editorial: Ensuring Safe Drinking Water: Converting Commitment into Action & Foresight," *Journal of Water and Health*, 22, no. 5 (2024): iii–viii. The authors cite drinking water tragedies in New Zealand and England where citizens died.

[44] 2002, SO, 2002, c 32.

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has become the legal framework to manage twenty-one (in 2006, and now twenty-two) legislatively prescribed drinking water threats through the implementation of a multi-barrier risk approach and the precautionary principle. Justice O'Connor recommended a localized[45] watershed-based SPC for Ontario's nineteen water source protection regions. The idea of inclusivity (i.e., inclusion of "local actors"[46] as stressed by Justice O'Connor) informs the composition of SPC and is legally sanctioned through the *CWA*'s O.Reg. 288/07.

The SPC's primary function is to produce a water source protection plan. The committee is guided by the *CWA*'s legislative purpose of protecting sources of drinking water and the Ministry of Environment's (MOE) technical guidance documents. Justice O'Connor operationalized the legislative purpose by proposing a five step multi-barrier approach with the first step being water source protection.[47] The aim of water source protection is to "keep raw water as clean as possible" from hazards (e.g., "pathogens, chemical contaminants, and radionuclides") and any risks would be managed through the SPC's development of a source protection plan (*CWA*, s.2(1)and s.22) that should take into account the precautionary principle.[48] In Justice O'Connor's view, the premise of uncertainty underpinning the precautionary principle is "inherent in risk management" where there is a "need for precaution" that "rises where uncertainties about specific hazards are expected to persist and where the suspected adverse effects may be serious or irreversible."[49]

Justice O'Connor envisioned a multilevel governance structure where the MOE, through the development of technical directives, is a lead agency and is charged with the review and revision of the water plans.[50] The conservation authority (CA)'s role is to coordinate the participatory water planning process where the water plan is drafted through "an inclusive process of local consultation."[51] Local municipal governments are assigned the implementation of the water plans.

IV. The power of regulatory law: the *CWA* and the risk-oriented nature of water

The *CWA* produces a technical nature of water. The meaning of water in the *CWA*'s administrative water planning process is bounded narrowly by scientific and technological planning concepts where pathways of risk are estimated and established by the flow and timing of water within the vicinity of a municipal water wellhead. Under the legislation, a socioecological watershed perspective is

[45] O'Connor, *Walkerton Report Two*, 1.2 Executive Summary, 1.4.1 Source Protection, Chapter 4: "A Local Planning Process," 9.

[46] Ibid., 1.2 Executive Summary, 1.2.1 Source Protection, 3.

[47] Ibid., 1.2 Executive Summary, 1.2.1 Source Protection, 3.

[48] Ibid., Chapter 3: "A Multi-Barrier Approach to Drinking Water Safety," 3.1 Multiple Barriers in Drinking Water Supply, 72–76.

[49] Ibid., Chapter 3: "A Multi-Barrier Approach to Drinking Water Safety," 3.4 Precautionary Principle, 77.

[50] Ibid., Chapter 1: "An Overview," 1.7 List of Part 2 Recommendations—Recommendation 3, 18.

[51] Ibid., Chapter 1: "An Overview," 1.7 List of Part 2 Recommendations—Recommendation 2, 18.

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countered by the consideration of only twenty-two activity-based prescribed drinking water threats.[52] These threats address a range of human activities (e.g., no. 13—the handling and storage of road salt) and the planning process relies upon a desktop-engineered approach to determining expected risk of the prescribed drinking water threats. Risk is assigned to known land use activities that may potentially produce chemicals or pathogens that could contaminate a municipal drinking water source.

Within the committee's legally bounded jurisdiction of a watershed, the social-natural value of drinking water is transformed into a risk of contamination perspective. In the committee, the participants take into account the ministry's risk-management science-based information processes, which include the identification of: drinking water sources, legislatively prescribed threats including the establishment of a vulnerability analysis and hazard ratings. The twenty-two prescribed threats are first mapped within the watershed. Each threat is assigned a hazard rating based upon the movement of water and transport pathways as calculated within the vicinity of a municipal wellhead intake. The threats take into account both surface and groundwater sources and are mapped onto four vulnerable areas:[53] (i) highly vulnerable aquifers, (ii) significant groundwater recharge areas, (iii) wellhead protection areas (WHPA[54]) and (iv) intake protection zones (IPZ).[55] The mapping exercise results in a highly technical and expert approach to water management.

In sum, the provincial government's narrow, technocratic, calculated engineering planning approach to risk management is anthropocentric and activity-oriented. The risk assessment underpins the water planning process and where water is characterized as a potential public health risk to human health, as informed by the Walkerton contaminated drinking water event. In the SPC, participants' use of technical language (e.g., red, yellow or blue zones) results in a techno-engineered discussion of the water that is bounded by a calculated risk formula:

> Risk = vulnerability analysis + prescribe threat + water source (at the well head re: groundwater or intake for surface water) + travel pathway zone *
>
> * red zone = 100 metres from the water source; or yellow zone = two-year time travel from water source; or blue zone = five-year travel from the water source.

[52] O. Reg. 287/07, General; see s 1.1 (1), *Clean Water Act*, 2006, SO 2006, c 22.

[53] *Clean Water Act*, 2006, SO 2006, c 22; see s 2(1), Definition Section: "vulnerable area" means, (a) a significant groundwater recharge area, (b) a highly vulnerable aquifer, (c) a surface water intake protection zone or (d) a wellhead protection area.

[54] Ontario Government, "2021 Technical Rules under the Clean Water Act, Part V. III—Vulnerability: Surface Water Intake Zones, Ontario," https://www.ontario.ca/page/2021-technical-rules-under-clean-water-act#section-4.

[55] Ontario Government "2021 Technical Rules under the Clean Water Act, Part V. 3—Delineation of WellHead Protection Areas, Type 1 Systems Rule 47, Ontario," https://www.ontario.ca/page/2021-technical-rules-under-clean-water-act#section-4.

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This risk formula then structures the SPC's deliberative process where these decision-makers assess the potential risk to existing and future sources of drinking water by identifying drinking water sources in the high-risk red zone —i.e., red zone is WHPA-A: 100 metres from the drinking water source.

V. The legal construction of social relations through the co-production of a water plan under the *CWA*

The legal framework of the *CWA* combined with the regulations organizes the social relations of the SPC. Under the legal framework, the Source Protection Authority[56] (i.e., SPA) holds the power to appoint members to the committee.[57] Specifically, O. *Reg.* 288/07 constructs the composition of the localized, stakeholder-driven water committee. During the drafting of the first water plan, the composition of the LEWSPC was comprised of twenty-six seats. Together, the LEWSPC included the Chair, the Ontario MOE liaison representative, Conservation Authority (CA) representative, seven municipal representatives, seven business interests, seven "general public" representatives and three First Nation representatives.[58] The municipal representatives were included because of their role as urban water service providers. The agriculture and aggregate industry representatives were selected as key business sectors because of their dominant land use position within the Lake Erie Region. The SPA's (i.e., CA) selection of the general public representatives was guided by the *CWA* and a background document that directs "individuals" rather "associations"[59] should be chosen, and where three nonvoting members could participate in the committee.[60]

The bureaucratic administration of the overall planning process is premised on a tightly coordinated partnership approach where the MOE, the CA and committee members share planning activities. In essence, the state via a regulatory instrument (i.e., the *CWA*) crafted a water governance model where the bureaucracy (i.e., CA under O.Reg. 288/07, s 2) selects the SPC members and manages the SPC committee and the MOE develops technical guidance documents. Together these administrative bodies share decision-making with

[56] *Clean Water Act*, 2006, SO 2006, s 2(1). Definition Section—The Source Protection Authority: "source protection authority" means a conservation authority or other person or body that, under subsection 4(2) or section 5, is required to exercise and perform the powers and duties of a drinking water source protection authority under this Act.

[57] *Clean Water Act*, 2006, SO 2006, s 7(1); O. Reg. 288/07, ss 2, 3, 4, 6.

[58] Background Reports: Lake Erie Region Source Protection Committee Final Composition and Rationale, LESPR, http://www.sourcewater.ca/index/document.cfm?Sec=5&Sub1=0&sub2=0.

[59] *CWA*, *Ibid.* s. 7(2)(3). The composition and membership of the SPC is prescribed in the regulations. Refer to: O/Reg 288/07. s. 2 and s. 3 and s. 6. Also refer to Ontario, Drinking Water Source Protection, "Source Protection Committee", online: <https://www.sourcewater.ca/who-we-are/source-protection-committee>.

[60] Lake Erie Source Protection Committee (LESPC), Source Protection Committee, Members and Composition, https://www.sourcewater.ca/who-we-are/source-protection-committee/. Three nonvoting liaison representatives also participate in committee meetings: 1) a provincial liaison named by the Ministry of the Environment, Conservation and Parks; 2) a representative of the health units in the Lake Erie Source Protection Region; and 3) a representative of the four source protection authorities in the Lake Erie Source Protection Region.

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non-state actors in the SPC where the committee members collaborate on tasks that result in the co-production of the water plan.[61] Under the legislation, the plan is developed by considering the qualities of water as defined by technical-science-based terms of reference,[62] including a "science-based"[63] risk-assessment report;[64] and provincial government policy directives, including the presence of the MOE liaison representative at the meeting. This legislative design provides for provincial control over the committee's activities and consultation with the committee members concerning specific prescribed drinking water threats within a local watershed.

In the SPC, the role of the non-state actors is to offer information on how the prescribed drinking water threats affect their particular interests. In effect, the decision-making function of these committee members is transformed from a decision-maker to an information provider. This information function combined with the co-production of administrative tasks builds the social capacity to coordinate activities and structures a networked knowledge base in the waterscape. In the social exchange between the committee members, soft relational skills are key to fostering the necessary trust and social capital to ensure the completion of the administrative tasks.

Overall, the composition of an SPC establishes a heterogeneous decision-making body steered by the power of the state through administrative bureaucratic roles of oversight of the committee's activities and review of the co-produced water plan that is approved at the ministerial level. Within the LEWSPC, the committee's local watershed planning exercise is overseen by powerful state actors (i.e., the bureaucracy - provincial authorities, who manage the legislative tasks) where social relations are influenced by dominant business interests (quarrying) raising concerns whether Justice O'Connor's recommendation to give voice to local citizens is an achievable legislative goal.

VI. Case studies

1. WWW transformed by the politics of quarrying activities

During the development of the first water plan, it was the state actors (i.e., the MOE and the local CA) and the industry representative—on the side of aggregate extraction—not the local citizens, who together were the voices

[61] *Clean Water Act*, 2006, SO 2006; see also General, O. Reg. 287/07, Preparation, Approval and Amendment of Source Protection Plans, ss 19–39.

[62] Ibid., s 8(1). For the content of terms of reference, also see General, O. Reg. 287/07, Preparation, Approval, and Amendment of Terms of Reference, ss 2–10.

[63] Environmental Registry of Ontario, "Source Protection Plans under the Clean Water Act, 2006: A Discussion Paper on Requirements for the Content and Preparation of Source Protection Plans," (loaded to EBR: June 25, 2009) EBR Registry #010-6726, EBR Archive, https://ero.ontario.ca/archive/010-6726. In the discussion paper, it states: "A key focus of the legislation is the preparation of locally developed, science-based assessment reports and source protection plans."

[64] *Clean Water Act*, 2006, SO 2006, s 15; see also O. Reg. 287/07, Preparation, Approval and Updating of Assessment Reports, ss 11–18.

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of influence at the decision-making table.[65] Within the committee, the WWW citizen group's representative brought forward the contentious issue of the protection of groundwater from quarrying activities without success: quarries were not added to the prescribed drinking water threat list. At the time, the WWW representative was well-equipped as a toxicologist to engage in the issues surrounding the potential chemical contamination of an aquifer as a result of the quarrying activities at the local Dolime Quarry.

Collectively, the LEWSPC was constrained by the legal structure of the *CWA*'s prescribed drinking water threats and by provincial directives that did not recognize quarrying activities as a drinking water threat. The SPC heard from a local municipal official—Dave Belanger, the water supply manager for the City of Guelph—who had informed the committee of a breach of aquitard at the Dolime Quarry.[66] However, the committee's decision-making was controlled by a centralized state-sanctioned approach carried out by bureaucrats (CA and MOE) where the "techno-institutional" legislative structure of the planning process weakened the viewpoints of both local municipal officials and citizens.[67] The state-controlled decision resulted in the province quashing the LEWSPC's recommendation to add aggregate extraction to the local drinking water threat list, which reinforced the aggregate representative's power within the committee and reinforced the industry's sector's influence[68] within the waterscape.

Frustrated by their lack of access to decision-making and an inability to bring forward concerns of the public to the committee, the WWW regrouped and withdrew their participation from the LEWSPC. Even though the WWW's group continued to advocate on behalf of their community members concerned with water issues related to quarrying activities, the group was excluded from participating in the subsequent mediation proceeding (2019) that oversaw the ongoing dispute over the quarrying activities at the Dolime Quarry.[69] The mediation proceeding was limited to government officials, quarry representatives and politicians.

Even though the WWW continued to lack access and influence in the committee's water decision-making process over quarrying activities, other community groups contacted the WWW requesting assistance in navigating the legal permit process for quarry approvals, including the procedural process for seeking an objection. As a result of these consistent and continuous calls for assistance and the inability to affect policy change, WWW morphed into a separate nonprofit now called the Reform Quarry Coalition.

[65] P. Hania, "Governing Water in Canada".

[66] Ibid.

[67] E. Swyngedouw, M. Kaiika, and E. Castro, "Urban Water: A Political-Ecology Perspective," *Built Environment* 28, no. 2 (2002): 124.

[68] Brisbois and de Loë, "Natural Resource Industry Involvement."

[69] City of Guelph, "Our Community, Our Water Engagement Report," 14 February 2020, 2,4,7,8,19, https://guelph.ca/wp-content/uploads/Our-Community-Our-Water-engagement-report-February-2020.pdf. In the report, it states that the Dolime Quarry will be closed and repurposed into a housing development. The dispute stems back to 2002.

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2. WWW's exclusion from water decision-making concerning road salt

Under the *CWA*, road salt is a prescribed drinking water threat.[70] Road salt as a drinking water issue has been an ongoing concern within the Grand River Source Protection Area. The issue was reviewed in the *Approved Assessment Report* (2022), which serves as a risk-management tool to inform the LEWSPC's planning process. In the report, it was documented that sodium and chloride concentrations in groundwater had increased resulting in high sodium levels in the city's the drinking water sources. In some wells, the sodium concentrations were recorded above the Medical Advisory Level of 20 mg/L, pointing to a public health problem for citizens with high blood pressure and reduced sodium diets. In the 2022 report, however, road salt was not documented as a drinking water issue of concern.[71] Instead, the findings of the report recommended monitoring of the affected municipal groundwater wells. Given this finding that road salt was not an issue, the salinization of the city's groundwater was not raised at the LEWSPC level.

Interestingly, in Ontario, the CA is not only a leading administrative authority on the issue of road salt application but also is charged with facilitating the water plan process under the *CWA* where road salt must be managed as a threat. Independent to the LEWSPC, the road salt issue was elevated to an industry-municipal lead working group called the Salt Vulnerable Area Working Group (working group). In 2016, the working group was formed to review the vulnerable areas identified under the *CWA* and to produce a guidance document. The working group's membership was limited to government representatives from all three levels of government (i.e., municipal, provincial and federal) and the

[70] Prescribed drinking water threats: s 1.1 (1) in General, O. Reg. 287/07; see *Clean Water Act*, 2006, SO 2006, c 22; see Drinking water threat #12.

[71] City of Guelph Staff Report (June 7, 2022) Re: 2023 Water Supply Summary Report, 2023, City of Guelph, https://guelph.ca/wp-content/uploads/2023-Water-Services-Summary-Report.pdf. At p.19 of the report: "Guelph Drinking Water System: 'Sodium concentrations in raw water exceeded 20 mg/L. Although there is no health-based standard for sodium in Ontario Drinking Water Quality Standards, the operating authority for the drinking water system must notify the Ministry of Environment, Conservation and Parks and public health unit when tests exceed 20mg/L (the notification is only required once every five years). Public Health uses the information to help keep anyone on a strict-sodium reduced diet informed'." Grand River Source Protection Area, Approved Assessment Report (2022), accessed October 1, 2023, https://www.sourcewater.ca/media/pkvln5xz/grspa_ar_not-updated_s7_city-of-guelph_clean.pdf. Summary of Identified Issues at 7–88 to 7–89, where it states: "While not classified as Issues in this report, trends in sodium and chloride concentrations in groundwater are a concern [in the City of Guelph]. There are increasing sodium and chloride concentrations at a number of wells indicating road salting impacts. Sodium concentrations were either at or above the Medical Advisory Level (20 mg/L) but below the Aesthetic Objective (200 mg/L) at a number of other wells. Although the concentrations in these wells are well below the Aesthetic Objective, the ODWQS require the local Medical Officer of Health be notified when the sodium concentration exceeds 20 mg/L so the City should continue to monitor concentrations at those wells accordingly. Consideration should also be given to how the City of Guelph will handle sodium and chloride levels that exceed the Medical Advisory Level." Also see discussions of sodium levels at 7–9, 7–68 to 70, 7–80.

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Ontario Good Roads Association, an industry and municipal-based association. Missing from the working group was a member of the general public.[72]

While the LEWSPC and the Salt Vulnerable Area Working Group are two distinct groups, these committees are connected through a lead member (i.e., CA) and the *CWA*'s requirement to identify vulnerable drinking water areas affected by a drinking water threat of road salt. The CA's dual organizational role is carried out by serving as the SPA on the SPC and as a lead member on the road salt working group. In drafting the guidance document, the working group examined and commented on the legal structure of *CWA* and integrated the *CWA*'s water plan information discussing vulnerable drinking water areas.[73]

Road salt has long been identified in the literature as an emerging chemical of concern in freshwater within southern Ontario.[74] Road salt is commonly comprised of sodium chloride (NaCl) and its known use on roadways is associated with increased salinization of water bodies and negative adverse effects upon freshwater ecosystems.[75] High concentrations of chloride (Cl) have been found to reduce self-purification processes of water, deteriorate water and soil quality, drive eutrophication in freshwater and decrease biodiversity of aquatic animals and plants.[76] Road salt research documents that Canadians are known to use more than six million tons of road salt every year to support road safety and to manage icy winter road conditions.[77] Missing from this estimate is the application of road salt to commercial and industrial sites, urban areas and private properties suggesting that the six-million-ton estimate is too low.[78]

Freshwater research on the effects of road salt in Ontario communities has examined the deleterious environmental impacts upon the quality of water sources where it has been shown that the application of road salt and resulting chloride water pollution effects can lead to eutrophication. Research on the primary water source in Kitchener, Ontario (known as the Greenbrook wellfield),

[72] Conservation Ontario & Ontario Good Roads Association, "Good Practices for Winter Maintenance in Salt Vulnerable Areas Report," June 2018, https://conservationontario.ca/fileadmin/pdf/conservation_authorities_section/SWP_Good_Practices_Salt_Vulnerable_Areas_2018.pdf, at 4. The report was "developed by a working group comprised of representatives of the Ontario Good Roads Association, Conservation Ontario, the Province of Ontario, and the Government of Canada."

[73] Conservation Ontario & Ontario Good Roads Association, "Good Practices for Winter Maintenance in Salt Vulnerable Areas Report," 5,7, 8.

[74] W. D. Williams, N. E. Williams, and Y. Cao, "Road Salt Contamination of Groundwater in a Major Metropolitan Area and Development of a Biological Index to Monitor Its Impact," *Water Research* 34 no. 1 (2000): 127, 131; S. Szklarek, A. Górecka, and A. Wojtal-Frankiewicz, "The Effects of Road Salt on Freshwater Ecosystems and Solutions for Mitigating Chloride Pollution: A Review," *Science of The Total Environment* 805 (2022): 1–3, https://doi.org/10.1016/j.scitotenv.2021.150289; N. Perera, B. Gharabaghi, and K. Howard, "Groundwater Chloride Response in the Highland Creek Watershed Due to Road Salt Application: A Re-Assessment after 20 Years," *Journal of Hydrology* 479 (2013): 159; J. Radosavljevic and P. Van Cappellen, "Salinization as a Driver of Eutrophication Symptoms in an Urban Lake (Lake Wilcox, Ontario, Canada)," *Science of The Total Environment* 846 (2022): 9, https://doi.org/10.1016/j.scitotenv.2022.157336.

[75] Szklarek et al., "Effects of Road Salt," 2.

[76] Ibid.; Radosavljevic and Cappellen, "Salinization as a Driver," 9.

[77] Ibid.

[78] Ibid.

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during the period of 1970–2000, demonstrated increased chloride concentrations, with some wells exceeding the 250 mg/L drinking water limits.[79] The City of Kitchener is approximately thirty kilometres southeast of Guelph.

The formation of the independent industry-municipal salt working group brings into question the implementation of the "inclusivity" spirit of the *CWA* that is premised on ideas of equal access, creating opportunities for participation of marginalized groups and, as stressed by Justice O'Connor, inclusion of citizens directly impacted by water policy decisions. In carrying out its regulatory obligations, the CA as the lead administrative coordinating body for both committees must uphold the participatory arrangement where the public is provided direct access (O.Reg. 288/07) in the decision-making of the SPC. The CA in leading the industry-municipal based working group considered the *CWA*. Yet the CA overlooked the participation of the public (e.g., WWW) even though road salt research demonstrates the over use of salt by a range of stakeholders, including the public, and high sodium levels in wells as documented in the *Approved Assessment Report* (2022).[80]

In response to the well documented road salt threat[81] and in reaction to the WWW's lack of participation in the 2016 state-sanctioned working group, the WWW arranged and delivered a road salt water campaign independently of both the state-sanctioned LEWSPC and the Salt Vulnerable Area Working Group. In August 2020, the WWW held an educational webinar entitled "Smart About Salts"[82] that focused on the emerging science about road salts as well as local conditions that demonstrated increasing sodium and chloride concentrations in the City of Guelph's groundwater.[83] As a public educational tool, the webinar presented the impacts of road salt, featured experts who explored road salt issues, offered solutions and emphasized restoring environmental protections directed at water security and working towards water justice.

VII. Illuminating the hydrosocial cycle's three-part framework through the case studies

Through the three-part analytical framework constructed by Linton and Budds attention can be directed to the societal tension underpinned by social power

[79] Ibid.

[80] Conservation Ontario & Ontario Good Roads Association, "Good Practices for Winter Maintenance in Salt Vulnerable Areas Report."

[81] M. Evans and C. Frick, "Report No. 02-308—The Effects of Road Salt on Aquatic Ecosystem," August 2001, Environment Canada: Water and Technology Directorate/National Water Research Institute, https://scec.ca/pdf/the_effects_road Science_salts.pdf doi? https://publications.gc.ca/collections/collection_2019/eccc/En13-5-02-308-eng.pdf; City of Guelph: Information Report On Well-being included an Information Report on the Salt Management Plan, Report #PS-17-19 (2005), https://guelph.ca/wp-content/uploads/info_items_071417.pdf#page=17; and Private Salt Management Plan (June 30, 2016 Version 1), https://guelph.ca/wp-content/uploads/SWP_SaltManagementGuidance.pdf.

[82] Wellington Water Watchers, Smart about Salts Webinar, https://www.youtube.com/watch?v=1BirbBMGzOQ.

[83] Ibid.

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relations within a participatory water governance approach. In Guelph's waterscape, the inclusion and exclusion of the public in a legally sanctioned water management process and an industry-led participatory regulatory space was primarily controlled by bureaucratic bodies (i.e., CA and MOE). This control was carried out through "tightly defined problem definitions,"[84] limited participation in developing guidance documents and the strict implementation of government-driven technical documents.

Both the quarrying activities and the application of road salt case studies expose the social and economic power of industry and state actors where the values of economic development and revenue generation through natural resource extraction are upheld.[85] This industry capture of the participatory process reinforced provincial and economic interests over local citizen interests in environmental protection, as illustrated by the WWW's experience. The legal-policy institutional structure established through the *CWA* (and supporting regulations) offered the aggregate industry direct influence at the decision-making table, which was reinforced by access to political interests beyond the table.[86] Even though the industries' quarrying activities were not identified nor considered a prescribed drinking threat under the *CWA*, one is left wondering: Why was the quarry industry offered a seat at the SPC decision-making table?[87]

The aggregate industry's participation marked the emergence of political power reinforced by social power. Political power materialized through the subtle and indirect forms of social power where control over water use ensured the industry's activities were not transformed into a legislatively sanctioned drinking water threat. The industry's political power and control were further demonstrated through the numerous delays to commence mediation with respect to the watering activities at the Dolime Quarry.[88] During the many years of delay, the quarry operator continued to extract water to support quarrying activities even though a city official, many years earlier, had raised a warning in a meeting of the LEWSPC that a breach of aquitard at the Dolime Quarry was suspected and required attention.

In the road salt application case study, the CA's ability to control membership on the Salt Vulnerable Area Working Group strategically ensured that the public's concerns regarding the deleterious effects of road salt upon human and ecological health were overlooked. As an "active agent," the bureaucracy controlled and structured the governance of the city's groundwater.[89] The state managed any potential disruptive public contestation by limiting the committee's membership within the government-industry working group as exhibited

[84] Mcllwain et al, "Understanding the Complex Power Dynamics," 40.

[85] Brisbois and de Loë, "Natural Resource Industry Involvement."

[86] Ibid.

[87] Ibid.

[88] Based on a conversation with an unnamed authority familiar with the mediation. see City of Guelph, "Our Community: Our Water. Quarry Site Revitalization," https://guelph.ca/wp-content/uploads/Our-Community-Our-Water-factsheets.pdf.

[89] Generally see: E. Swyngedouw, "Dispossessing H2O: The Contested Terrain of Water Privatization," *Capitalism Nature Socialism* 16, no. 1 (2005): 81, 91–92.

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by the exclusion of the WWW, a public interest group that was working on the road salt issue.

However, some scholars argue that participation on stakeholder-driven processes should be selective. A participatory approach with a diverse range of participants may not necessarily be the appropriate method for all policy problems. Rather, a controlled government-led committee (e.g., the Salt Vulnerable Areas Working Group) might be an appropriate for this type of water problem where the group's focus was directed at best practices for road salt application.[90] Yet, this selective participation argument overlooks the role of nonprofit organizations as being conduits of environmental information to the broader public.

Linton and Budds also contend that water constructs societal arrangements and associated social power structures that bring forth divergent accounts and norms of water. Within the LEWSPC's development of the water plan, the *CWA*'s legal-policy structure carried out through a legislated planning process combined with engineered risk-oriented norms advances a narrow, technical, rational and computed image of water devoid of ecological and social features. This characterization creates a technical narrative of water that is contained and controlled within the SPC by the CA and MOE through the use of technical discourse (e.g., WHPA 1) that had the effect of marginalizing the public health and water security values raised by the citizen-based group the WWW.

The road salt case illustrates the political influence of bureaucrats where the exclusion of the public's interests occurred. The WWW's concerns over the ecological integrity of the groundwater and the related human health risk of the salinization of drinking water sources concerns were overlooked by the lack of discussion of the issue in the first SPC, and the WWW's lack of participation in the salt working group. As outlined earlier in this article, the Grand River Source Protection Area's Approved Assessment Report (2022) noted "increasing sodium and chloride concentra-tions at a number of wells indicating road salting impacts" has been documented. Particularly problematic is the finding that "[s]odium concentrations were either at or above the Medical Advisory Level (20 mg/L)," pointing to a potential human health impact.[91] The road salt issue exposes the danger of a technocratic planning function. Such dangers where regulatory paralysis emerges, powerful participants obfuscate the findings from the science-based reports (re: levels of sodium and chloride concentrations), and the state becomes immobilized in moving forward to protect human health concerns of the public without recognizing the regulatory function of public interest groups.

Complicating the state's rational planning approach was the incubation of the social relations within and outside of the water management planning process. As exhibited by the WWW's response to the application of road salt, the nonprofit group gave voice to public concerns by offering an educational webinar to the public. The advocacy group carries out an annual campaign to

[90] M. Hurlbert and J. Gupta, "The Split Ladder of Participation: A Diagnostic, Strategic, and Evaluation Tool to Assess When Participation Is Necessary," *Environmental Science & Policy* 50 (2015): 100.

[91] Supra, note 71. See Grand River Source Protection Area Report (2022) 7-88 to 7-89.

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educate the public outside of the state-sanctioned road salt committee; such ongoing education may lead to further public calls for protection of groundwater from sodium chloride contamination in a community known for environmental awareness and activism.[92]

Finally, the material property of water scarcity within the City of Guelph has both disrupted and connected social relations. As illustrated by the quarrying activities case study, WWW's organizational form has been cyclical. The grassroots organization has restructured numerous times, resulting in the redistribution of social power via the use of numerous water-oriented campaigns and newly formed, but related nonprofit groups, which together adopt a public advocacy stance to support the public's protection of water. This expansion and contraction of the group's mandate and membership is founded on mutual trust and advocacy, and reflects the water activists' ability in the City of Guelph to influence public opinion with respect to water protection measures.[93]

VIII. Conclusion

In this article, we explored the question: Is the *CWA*'s participatory mode of water governance truly inclusive of environmental, health and other interests of the public? We argued that the technology of law (i.e., the *CWA*) within the contested waterscape of the City of Guelph, a water-stressed municipality in Ontario, shaped the social relations within and outside of the legally-sanctioned LEWSPC raising barriers to the inclusion of environmental, health and other interests of the public. The application of the hydrosocial cycle concept to the quarrying activities and use of road salt case studies exposed the social power dynamics within and outside of state-sanctioned SPC. The analysis further revealed the limiting effects of carrying out the legal technology of the legislation in the practice of water management. The results of the analysis are twofold: the legislation (i) nurtured the emergence of exclusionary legal spaces and (ii) cultivated the identity, including the remaking of a community group (i.e., WWW) to develop alternative environmental campaigns directed at emerging environmental problems (i.e., road salt). The cyclical social transformation of the WWW resulted in changes to the group's organizational form and mandate to allow for a collective response to the changing environmental conditions within the City of Guelph's waterscape.

The hydrosocial cycle concept's relational-dialectical approach illuminated the tension between inclusion and exclusion of the public and the competing values of water: human and ecological health protection in conflict with economic development. Since the enactment of the *CWA* and the development of the first water plan, the provincial government has continued to administer the water management planning process and drinking water threats from a position

[92] N. Gravel and A. Kone, "The Guelph Water Connection: The Contribution of Actor-Network Theory (ANT) to the Study of Water Management in Guelph, Ontario," *Cahiers de géographie du Québec* 61, no. 174 (2017): 489, at 500.

[93] Ibid., 500.

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of control and exclusion. The administration has demonstrated difficulty in moving away from an entrenched command-and-control regulatory institutional culture. The challenge of moving forward illuminates a limited capacity in moving toward the contemporary and widely endorsed participatory mode of water governance.

Taken together, the analysis points to the silencing of the environmental and health interests of the public. The need for public participation in water governance was a key finding and recommendation by Justice O'Connor in the Walkerton Inquiry. A participatory and inclusive water governance mode was the impetus for the enactment of the *CWA*; yet, this article exposes the limits of regulatory techniques to structure participatory approaches with the active participation of public interest groups.

In the spirit of strengthening participatory approaches and encouraging further research on the participatory aspect of collaborative water governance, the following three recommendations are offered below:

1. Participation of non-state actors could begin at the beginning of the water management process, thereby, transforming stakeholders into active participants (e.g., in the bureaucracy's administrative process where the policy and technical directives were designed). Rationale: Establishing legitimacy for the role of public interest groups in the SPC policy cycle may lead to identifying gaps and centring a public interest perspective.
2. The selection of the public interest committee members could be a function assigned to the civil society sector where disputes over membership could be mediated through a three-party panel with the civil society sector as a party to the final selection decision. Rationale: Reinforcing equity and access within the committee through the selection process may equalize the social power and relations between participants.
3. Participation on the SPC could represent only those interests within the local watershed as structured by the prescribed drinking water threats. Rationale: The water planning process is a localized activity that should reflect those individuals representing local interests.

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