

Onsite Sewerage Systems in the BC Watershed Security Strategy

2023-04-15

EXECUTIVE SUMMARY

This memo summarizes our initial comments and suggestions related to onsite and decentralized sewerage systems (onsite systems) and their management in the context of watershed management, and is intended to inform further discussion as part of the BC Watershed Security Strategy.

Watershed management concepts and onsite

We applaud the Province's commitment to a One Water approach and the Watershed Security Strategy.

We believe that it is important to recognize and publicise (through both passive and active public education) the ways in which onsite systems contribute to recycling of water and nutrients within the watershed, as an essential part of human occupancy.

We recommend that the Province establish clearly articulated environmental and health risk management objectives for both watersheds and waste to resource cycling within watersheds. The Province can utilize both existing monitoring data and new data to provide analysis of risk within watersheds, and to support public, government agency and Authorized Person, Qualified Professional and EOCP operator education.

Selected short term opportunities to support strategy development

Certain issues and actions are likely to require province wide regulatory or policy changes. However, many are amenable to implementation within one watershed to pilot and develop approaches, and some province wide actions could be taken in the short term.

We recommend two areas of action; pilot programs in selected watersheds and more general province wide actions, with a summary of the ways in which specific actions within those two categories can address key issues relating to onsite systems in the watershed context.

Training and certification

We identify the need for improved training for all those working in the onsite field, including specific education related to environmental protection as part of design and maintenance of systems.

We recommend that a multi agency working group be formed, with the objective of improving education and training for all those working in the areas of site evaluation, design, environmental impact assessment, construction, operation, maintenance and monitoring of onsite systems under the SSR (Sewerage System Regulation), MWR (Municipal Wastewater Regulation) and WDR (Waste Discharge Regulation and codes).

We recognize the need for capacity building support to regulatory agencies and registration bodies.

Given the need for maintenance programs for onsite systems, we recommend targeted capacity development and incentives to build maintenance provider capacity, in coordination with ASTTBC and EOCP.

A. Introduction

We have been asked by Natalya Melnychuk of BC Ministry of Water, Land and Resource Stewardship to participate in discussion and provide comment and suggestions related to the Watershed Security Strategy and watershed based drinking water protection, from the context of the role of onsite and decentralized sewerage systems and their management. This memo summarizes key outcomes from our discussions to date.

We have separated this memo into three parts, relating to onsite and decentralized sewerage systems: Overarching watershed management concepts; specific issues and short term actions, presented in the context of case studies, and; matters relating to training and the PGA. For this memo we have kept our comments brief, with the assumption that they can be expanded upon if a particular direction is of interest to the Province.

In this memo we refer to “onsite and decentralized sewerage systems” as “onsite” or “onsite systems” for brevity. We intend this term to include all small, medium and large sewerage systems that discharge to ground, under the SSR, MWR or WDR, including those intended for managed aquifer recharge.

B. Watershed management concepts and onsite

We have briefly reviewed discussion papers, directives and reports relating to the Province’s new watershed management focused strategies. While onsite is mentioned, the role of onsite is not strongly acknowledged in these documents. We encourage greater inclusion of the role of onsite in future reporting.

We applaud the Province’s commitment to a One Water approach. For this approach to succeed, we believe that it is important to recognize and publicise the ways in which onsite systems contribute to recycling of water and nutrients within the watershed, as an essential part of human occupancy.

While this recycling currently occurs without intent, we recommend that public education and watershed management planning support intentionally acknowledging the role of onsite, and couple this with watershed based monitoring and management strategies for onsite systems.

We recommend that the Province establish clearly articulated risk management objectives for both watersheds and waste to resource cycling within watersheds, and link this with monitoring of risk indicators relating to management of onsite systems. We believe that the Province can utilize both existing monitoring data and new data to provide analysis of risk within watersheds, and to support public and AP, QP education.

We believe that onsite systems, properly implemented and managed following a performance based, risk management approach, can contribute to watershed sustainability in ways that may be preferable to larger centralized sewerage systems. We recommend that the Province utilize monitoring data and risk analysis to identify **real versus perceived** impacts related to onsite (and other activities), and to focus on watersheds where measurable impact can be addressed with measurable results. We do not believe that a “one size fits all” approach will be effective.

We hope that implementation of the watershed management strategies will successfully include First Nations’ understanding of watershed processes and instantiate a new way of seeing for the general public, including in the area of onsite systems and the importance of their proper management.

We see that the Province has identified the barriers resulting from overlapping regulation and policy, and look forward to the development of a unified, One Water, approach to simplify and clarify the regulatory and policy environment.

We consider that improved performance of onsite systems as part of water and nutrient cycling in the watershed will be favorably received by the public when environmental impact is the focus, rather than only human health, and so applaud the focus on overall impact within the watershed context.

C. Selected short term opportunities to support strategy development

Analysis of all issues and potential actions related to onsite in the watershed management context would, in our opinion, result in an excessive level of detail at this stage.

Certain issues and actions are likely to require province wide regulatory or policy changes. However, many are amenable to implementation within one watershed.

So, for shorter term actions we suggest selecting one or more pilot study watersheds and implementing actions on a trial basis within these watersheds. While at the same time working toward province wide regulatory and policy changes. Given that we understand the Province is aware of the key issues relating to onsite, we have focussed on positive outcomes. We suggest that next steps would include identifying actors responsible for each action.

C- 1 WATERSHED PILOT PROGRAMS

Ideally the watersheds chosen would meet the following criteria:

- Human occupancy thought to, or demonstrated to, be impacting water quality due to poorly managed onsite systems or due to cumulative effects.
- With existing monitoring data and existing studies of watershed hydrology and aquifer hydrogeology.
- Relatively small watershed, without large urban occupancy and with sewerage system servicing by onsite systems.
- Within a single regional district and Health Authority.
- Within a regional district that has indicated willingness to support the pilot study, and with some existing public awareness of issues within the watershed.
- With First Nations communities and local FNHA staff that have indicated interest in participation and partnership in the pilot study.

We understand that funding and other Provincial support for a pilot program may be a possibility. Support will need to include funding to local government, Health Authorities, professional associations, capacity building at those agencies; as well as data analysis, education, research and other implementation directly by the Province.

Funding support to grants and other instruments supporting upgrades to onsite system infrastructure in the watershed will be important to improve adoption and reduce negative impact on residents. We suggest exploring a range of options for funding of maintenance programs, including the utility model, in order to reduce inequitable impact on residents.

We suggest that pilot programs could provide valuable data and guidance for replication (and adjustment) of solutions into other watersheds. And could provide strong support to public education and education of local government.

First Nations in or near the watershed who are considering implementing maintenance programs could have a role in providing capacity for maintenance provision.

The table, below, outlines a selection of potential actions and the outcomes they are intended to address. Given the One Water approach, implementation would need to be integrated with other actions in watershed management, and in partnership with First Nations. In all cases, we recommend ongoing monitoring—both technical and process monitoring, with public reporting and public education as a key component.

Where maintenance bylaws are suggested, these could be replaced by local government, FNHA, First Nation or utility implemented maintenance and inspection programs (centrally managed, tax or fee funded).

Short term action	Key outcomes addressed
Monitoring and analysis of impact indicators	Clarity on real versus perceived impacts and measurable performance, measured in relation to stated risk management objectives. Ideally will feed back to recommended system upgrades, or receiving environment remediation programs.
Public education, watershed processes and role of onsite management	Public buy in to proper onsite management, particularly in support of the program and in understanding risk management.
Technical training of APs, QPs, EOCP operators, First Nations, FNHA, Health Authority and other government staff within the watershed	Buy in and understanding of watershed management and the necessary actions related to onsite systems
Targeted auditing for all new systems within the watershed, and intensive training for APs QPs acting in the watershed (by professional associations)	Improved implementation and management of onsite.
Intensive training and probationary periods for APs & QPs acting in the watershed who are found to be out of compliance (by professional associations and training institutes)	Improved implementation and management of onsite. Allows for feedback from monitoring.
Comprehensive maintenance bylaw for onsite systems within the watershed, including performance based assessments related to dispersal systems	Proper management of systems is critical to performance. Expected to discourage illegal systems, and to trigger system upgrades where needed.
Maintenance bylaw including requirements for inspection prior to development permissions, real estate transactions as well as first maintenance inspection for all systems.	Identifying non compliant systems and mandating correction. Expected to largely prevent illegal systems.
Support to upgrades for onsite systems, including grant funding for low income persons, Support to larger scale receiving environment remediation measures.	Mitigate impact of program on occupants of the watershed, and reduce public resistance to the program. Provide options for responses beyond the individual system level.
Independent oversight of APs, QPs, EOCP operators, including those performing inspections and maintenance	Improve quality of service, and reduce public resistance to the program. Linked to training and auditing.
Ability of professionals to request living filings, where onsite system filings require ongoing permissions similar to certain development permits, with monitoring requirements.	Improved oversight by the Health Authority, improved certainty of monitoring and professional involvement.
For First Nations lands, similar maintenance bylaw or programs as determined by the First Nation	Support to improved performance and sustainability of onsite systems on First Nations lands

C- 2 PROVINCE WIDE MEASURES

While some province wide measures, such as regulatory alignment to better support watershed management, may take longer, there are some actions that could be considered in the shorter term. In general, these shorter term opportunities are related to use of existing regulations and policies, or existing agencies.

We have noted some above, in Section A. Some further potential actions that we suggest be considered are outlined in the following table:

Measure	Key outcomes addressed
Public education, supported by monitoring data and analysis with public use of the data.	Improve public ownership of watershed management, and the role of onsite in sustainable cycling of water and nutrients.
Provincial support to local government and academic monitoring and risk analysis in watersheds.	Supports local management of watersheds and ownership of the program, feeds into overall provincial monitoring and educational programs.
Central filing system for SSR filings. Linked to monitoring data and ready for integration with maintenance and inspection programs.	Improved monitoring, oversight and governance audit possibilities, support to onsite system management programs.
Training on watershed management and the onsite context for regulators, provincial, federal and FNHA EHOs, local government.	Improve understanding of onsite systems and enhance effective management in the One Water context.
Outreach and training to other regulators and stakeholders, including real estate professionals, lenders, building and planning departments.	Improve adoption of maintenance and inspection measures, increase uptake of system upgrades, counter illegal systems.
Support to local stakeholder groups, local government and First Nations (which we assume will form part of the overall strategy), with emphasis on onsite. Including model maintenance bylaws, program outlines, capacity building.	Supports local, watershed focused, management of onsite systems for ongoing sustainable performance.
Improve flexibility for performance based design and management of ground discharge systems under the MWR through policy changes, and increase to staff capacity.	Improve performance of larger decentralized systems with ground discharge.
Education, guideline and standards support to receiving environment remediation measures such as permeable reactive barriers or nutrient capture systems for fresh water environments.	Supports management of nutrients from onsite, agriculture or other sources within the watershed beyond the individual system scale.

In the area of nutrient management, we see a spectrum of approaches that can be supported by Provincial and First Nations policy, standards, guidance, education, training and outreach. This spectrum ranges as follows:

- Individual (per onsite system) actions. Such as design standards and guidance aimed at specific vulnerable locations, maintenance, monitoring and management actions.

- Remediation in the immediate receiving environment, on site. Such as design standards for “edge of field” permeable reactive barriers (PRBs).
- Riparian enhancement in the receiving environment, to manage nutrient loading. Such as design standards and guidelines for harvested vegetated strips, plantings, wetland systems.
- Remediation in the receiving environment to address multiple onsite systems, historical plumes of nutrients and or other sources of nutrients and contaminants. Such as design standards and guidance for larger scale PRBs, algal flow systems, constructed wetland systems.

We consider that, for situations with a high density of existing onsite systems, where nutrient impact is proven then remediation in the receiving environment may be a necessary measure to work hand in hand with ongoing gradual upgrades to onsite systems as they cycle through natural replacement, and with improved management of existing systems. This approach will be similar to that utilized to address input from agricultural uses.

D. Training and certification

Onsite systems in BC are designed by registered onsite wastewater practitioners (ROWPs), who are registered under ASTTBC and professionals, who are typically EGBC registrants. Systems are largely implemented and maintained by ROWPs or, for systems under the MWR, EOCP operators. The quality of work by these professionals, ROWPs and EOCP operators, and their adherence to performance based standards, is therefore of critical importance to the proper performance of onsite systems within watersheds in BC.

D- 1 WATERSHED MANAGEMENT SPECIFIC TRAINING

We recommend that EGBC and ASTTBC require completion of short courses in watershed management and One Water as part of CPD for all practitioners working in the onsite and civil engineering areas of practice.

Further we recommend that EGBC and ASTTBC indigenous awareness training be updated to include education on watershed related issues and concepts.

D- 2 CAPACITY BUILDING FOR IMPROVED SYSTEM PERFORMANCE

For various historical reasons, including rapid implementation of the Sewerage System Regulation and associated low level of training, lack of local government maintenance bylaws, lack of oversight and meaningful CPD, and the impact of the TILMA agreement, the average quality of RWP practice province wide requires improvement.

With the implementation of the PGA, we understand that ASTTBC is considering action on raising the bar on quality of practice among ROWPs. Likewise, professional practice within the onsite area has been identified by EGBC as in need of improvement. EOCP operators are generally not trained in the area of ground discharge systems. Local government, Health Authorities, FNHA and other regulators also experience, and articulate a concern over, a lack of capacity. Local government may need improved capacity and support to implement maintenance programs, and to incorporate onsite effectively in planning.

We recommend that the Province, Health Authorities, FNHA, ASTTBC and EGBC form a multi agency working group with the objective of improving education and training for all those working in the areas of site evaluation, design, environmental impact assessment, construction, operation, maintenance and monitoring of onsite systems under the SSR, MWR and WDR. As part of this, we recommend that this working group takes input from industry and regulators through a process of stakeholder engagement to help identify areas in need of improvement.

Following on outcomes from the working group, we recommend that the Province supports capacity building at ASTTBC, EGBC, Health Authorities, FNHA, EOCP, local government and other bodies to assist them in implementing the necessary improvements to raise the bar for professional, ROWP and EOCP operator practice, to improve capacity for regulators, to support maintenance programs, and to support watershed management.

We believe that cross training opportunities exist for onsite practitioners and professionals with agrologists, hydrogeologists and others involved in watershed and nutrient management.

We recognize that there will be a capacity deficit in maintenance providers and inspectors when maintenance programs are put in place. We recommend pro actively planning for this through training, capacity development and incentives, in coordination with ASTTBC.

We look forward to further discussion, and confirm our support for the watershed management strategy in BC. In that discussion, we hope to contribute ideas and feedback related to longer term strategies and changes.

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