



Interim Draft Liquid Waste Management Plan

For Discussion at October 30, 2024
Liquid Waste Committee Workshop

October 2024

Goals

The overarching aim of the plan is to protect public health and the environment by effectively managing liquid waste. The plan also seeks to honour Metro Vancouver's commitment to reconciliation with Indigenous Peoples by actively involving First Nations in regional liquid waste management. This is achieved through five goals:

Prevent pollution

Preventing pollution from entering the environment involves collecting and treating wastewater. Wastewater treatment plants are designed to remove certain substances from sewage. For other substances that would pass through treatment systems, preventing their introduction at the source – i.e., drains and toilets – is the only practical solution. Reliable pollution prevention requires liquid waste infrastructure that is resilient and prepared for climate change and evolving regulatory requirements.

Reduce demands

Reducing the inputs into the wastewater system – both volume of flow and loading of organic material – enables smaller infrastructure to serve a growing population. Lowering the demands on the system can defer expansions, which saves money in the long run and keeps the system affordable.

Recover resources

Recovering valuable resources from wastewater such as biogas, heat, biosolids, nutrients, and reclaimed water supports the return to a cyclical approach to natural resource management. Turning waste into valuable products as part of a circular water economy can reduce dependence on fossil fuels and extraction of raw materials, and improve economic resilience.

Restore ecological systems

Restoring ecological systems involves revitalizing and rehabilitating natural environments that have been degraded or damaged, to return these areas to their natural functioning and improve the ability of habitat to support wildlife.

Reflect First Nations' priorities

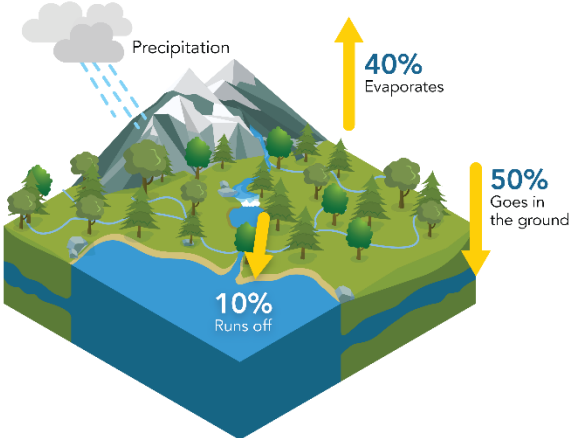
This plan aspires to reflect First Nations' priorities and respect Indigenous Knowledge and the rights of Indigenous Peoples while collaborating on areas of shared significance to improve environmental and public health outcomes for all.

Rainwater Management

In urban areas, most rainwater and melting snow go into storm sewers (via the grated drains in streets), which typically empty into rivers, creeks, and adjacent lowland agricultural areas, or directly into the ocean. As rainwater travels along paved and unpaved surfaces to storm sewers, it can pick up pollution along the way. Urban rainwater can carry motor oil, gasoline, animal excrement, garbage, fertilizer, and other contaminants directly into the nearest body of water, where these materials can be harmful to plants, wildlife, and humans. Heavy storms can also introduce a lot of rainwater into streams and creeks in a short period of time, causing erosion and stirring up sediment, which makes it hard for fish to breathe.

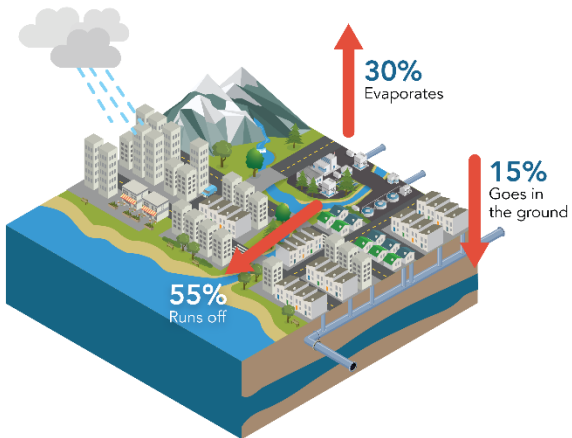
In nature, trees and earth help absorb rain slowly, breaking down pollutants, refilling groundwater and keeping waterways healthy. In urban areas, buildings, roads, and other impervious surfaces do not allow rainwater to soak into the ground. The figure below illustrates the differences in the water cycle.

The water cycle in a natural area



In nature, trees and earth help absorb rain slowly, breaking down pollutants, refilling groundwater aquifers, reducing flooding, and keeping waterways healthy.

The water cycle in an urban area



In urban areas, rainwater travels along paved surfaces to storm sewers rather than sinking into the ground. This means it bypasses groundwater aquifers, creates surges in waterflow that can cause flooding and alter stream channels, and picks up pollutants along the way which are harmful to plants, wildlife, and animals.

*Urban water cycle for areas with 75 – 100% impervious surface, from "Impervious Surface Coverage: The Emergence of a Key Environmental Indicator" Arnold and Gibbons, 1996.

Figure 5 – The water cycle in a natural area vs. an urban area

Approaches that mimic natural processes using green infrastructure, blue infrastructure and thoughtful development patterns allow rainwater to soak into the ground or be released more slowly into local waterways. These approaches are combined with grey infrastructure (sewers and pumps) to help protect against flood risk, especially during higher intensity rain events and in lower elevation areas. Climate change will increase the frequency and intensity of rainfall events, adding stress to the system. From a hydrological perspective, the combined capacity of the green, blue and grey infrastructure needs to be able to absorb the increasing rainfall to avoid flooding.

Metro Vancouver members have been using Integrated Stormwater Management Plans (ISMPs) to manage rainwater with the aim of keeping waterways and lands healthy. Metro Vancouver supports

them by facilitating information sharing, helping develop tools and resources, and liaising with regulators. In collaboration with specific local governments, Metro Vancouver provides drainage services within the Still Creek–Brunette River Drainage Area and the Port Moody–Coquitlam Drainage Area.

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Strategy 10 Manage rainwater and urban development for watershed health

The region contains over 100 watersheds with creeks and rivers of all sizes that provide habitat for fish and wildlife as well as recreation for communities. The health of these watersheds is also integral to First Nations food security and sovereignty. Integrated Watershed Management Plans (IWMPs), considered more holistic than the previously named Integrated Stormwater Management Plans (ISMPs), are tailored to each watershed to guide land use and development while prioritizing watershed and stream health. IWMPs must recognize the role that First Nations play in stewarding the land and water. Developing IWMPs presents an opportunity to build strong, collaborative, and respectful relationships with First Nations based on mutual understanding and shared objectives.

The Stormwater Monitoring and Adaptive Management Framework (AMF) was implemented in 2014 as guidance for monitoring and improving watershed health, and as a tool for evaluation of effectiveness of ISMPs. Integrating the AMF as a core component of IWMPs will establish it as an ongoing dynamic evaluation tool to improve IWMPs and best allocate resources. Using this integrated framework allows for dynamic adaptation: if positive watershed health indicators emerge, IWMP renewal periods can be extended; conversely, if degradation occurs, timely corrective actions can be taken.

A critical aspect of watershed health is groundwater, a vital drinking water source for parts of Metro Vancouver. Green infrastructure solutions mimic natural systems that slowly infiltrate rainwater into the ground, allow plants and soil to filter out pollutants, and replenish aquifers with clean groundwater. The development of standards for green infrastructure reflects our deepening understanding of interconnected environmental systems. By working together through IWMPs and the AMF, we can support healthy watersheds and sustainable groundwater resources.

Supports Goals: Restore ecological systems, Reflect First Nations' priorities

Actions

- 10.1 Members will use the Stormwater Monitoring and Adaptive Management Framework (AMF) to monitor watershed health:
- a) Metro Vancouver will coordinate revising the existing Integrated Watershed Management Plan (IWMP) template, with input from First Nations that have chosen to participate, to incorporate the AMF.
 - b) Members will adopt the revised IWMP template and the associated AMF.
 - c) Members will implement AMF monitoring programs and will use AMF monitoring findings to continuously improve the IWMPs by (i) establishing criteria to define watershed health, (ii) comparing AMF findings against the watershed health criteria to determine the timing of IWMP review, and (iii) updating IWMP actions when review is triggered. The IWMP review period may be extended from 12 years to a maximum of 15 years when monitoring shows a healthy or improving watershed.

Timeline: (a) within two years; (b) within three years; (c) ongoing

Adapted from: C4, C39, 2011 MC6, 2011 MC7, 2011 MC9, 2011 MC10, 3.3.3, 3.5.6, 3.5.9

Aligned with: P25

10.2 Members will continue to develop, review and update Integrated Watershed Management Plans (IWMPs):

- a) Members will prioritize watersheds for IWMP development with First Nations that have chosen to participate, using AMF criteria and additional criteria co-developed with First Nations that consider cultural significance and Aboriginal rights and interests.
- b) First Nations will participate in IWMP development, monitoring, and review, as desired and mutually agreed upon, including sharing information about their respective land use plans as appropriate.
- c) Members will continue to create, review, and update IWMPs for all watersheds with developed area currently above 20 per cent and will begin to create, review and update IWMPs for watersheds planned to have future developed area above 20 per cent, according to the prioritization sequence defined under (a).

Timeline: (a) within five years; (b), (c) ongoing

Adapted from: C17, 2011 MC10, 3.3.3

Aligned with: P25

10.3 Members will ensure IWMPs integrate rainwater and groundwater management, consider agricultural land rainwater runoff, and reflect the provisions of the Province's *Watershed Security Strategy* once it is launched.

Timeline: ongoing

Adapted from: C47, C48, 2011 MC9

Aligned with: P30

10.4 Members will align land-use planning and development with IWMPs to ensure development decisions support watershed health objectives, including protecting riparian areas and agricultural areas.

Timeline: TBD

Adapted from: 2011 MC6, 2011 MC9, 3.4.7

10.5 Members will expand the use of green infrastructure, blue infrastructure, and other practices to mimic natural watersheds, reduce runoff and discharge, improve water quality and increase climate resilience.

Timeline: TBD

Adapted from: C17

Performance Indicators

A complete set of performance metrics for this strategy will be presented in Rainwater Dashboards once they are created under Action 11.3.

10A Number of IWMPs completed, the area (hectares) they cover, and status or percentage complete of each IWMP action

Responsibility: Members

Adapted from 2011 performance measure: number and area [hectares] of integrated stormwater management plans completed

Strategy 11 Update and harmonize municipal tools for rainwater management

Long-term success in managing urban watersheds and rainwater systems hinges on three pillars: consistent funding, clear policies, and effective programs.

Dedicated funding specifically tailored to each community's unique needs is crucial. This empowers local authorities to proactively plan for, respond to, and mitigate rainwater challenges. Funding sources can include general tax revenue, utility fees, parcel taxes, or other innovative options.

Watersheds do not respect jurisdictional boundaries. Harmonizing rainwater policies, programs, and bylaws across jurisdictions will create a unified regional direction for managing rainwater and watersheds.

Previously, the LWMP biennial report was the sole method for reporting on Integrated Watershed Management Plans (IWMPs) and the Adaptive Management Framework (AMF). A more dynamic approach is proposed: replacing the report with a rainwater dashboard. This shift towards data transparency and accessibility would enhance accountability by providing continuous access to IWMP progress and data collected through AMF monitoring programs.

Supports Goals: Restore ecological systems

Actions

11.1 Members will each establish dedicated funding to ensure consistent and reliable service delivery for rainwater management.

Timeline: within three years

New action

11.2 Members will update rainwater policies, programs, and bylaws in a harmonized manner:

a) Metro Vancouver will coordinate the development of a guidance document to aid members in harmonizing rainwater policies, programs, and bylaws.

b) Members will then review and update rainwater policies, programs and bylaws.

c) Metro Vancouver and members will coordinate and advocate with other levels of government to resolve rainwater policy conflicts and barriers.

Timeline: (a) within two years; (b) within five years after (a); (c) ongoing.

Adapted from: C38, 1.1.12.b, 1.1.12.e, 1.1.12.f, 1.1.14, 1.1.16, 1.1.20

11.3 Metro Vancouver will coordinate the development of a template for an online rainwater dashboard for members to report on IWMP progress, including contributions to watershed health (e.g., percentage impervious area, length of daylighted waterways, etc.). Members will then implement the online rainwater dashboards.

Timeline: implement dashboards within three years

New action

11.4 Metro Vancouver will coordinate, with members, an approach for seeking to update the Master Municipal Construction Documents such that green infrastructure guidelines become standards.

Timeline: within five years

Adapted from: C20, 1.1.12.f, 1.1.21

Performance Indicators

Performance indicators will be reported by members through the new rainwater dashboards developed in 11.3. Members will select key rainwater indicators to be reported annually in the LWMP dashboard as well (see Monitoring and Reporting section).

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Strategy 12 Enhance interagency collaboration to improve watershed health across the region

Formed in 2002, the Stormwater Interagency Liaison Group has played a valuable role in implementing rainwater management actions outlined in the LWMP. However, to better address evolving environmental challenges, climate change, urban development realities, evolving regulatory roles, and First Nations rights and interests, the group requires a refresh.

Updating the interagency group's terms of reference and mandate will renew its vision and will position the group as a unified voice for the region to engage with provincial authorities on rainwater management. This includes ensuring alignment with diverse mandates and initiatives, particularly in the critical area of balancing plans to increase housing density with the need to protect watershed health. The interagency group will coordinate with participating First Nations to provide feedback on IWMPs to Metro Vancouver and members.

Supports Goals: Restore ecological systems, Reflect First Nations' priorities

Actions

12.1 Metro Vancouver will coordinate a revision of the interagency group's terms of reference, possibly to operate as a sub-committee under the Regional Engineer's Advisory Committee (REAC), to lead local research on rainwater management, to be the primary regional advocate with regulators, to promote education and outreach on rainwater management, and to coordinate region-wide accountability on IWMP actions. Metro Vancouver and members will actively participate in the revitalized interagency group.

Timeline: revise terms of reference within one year

Adapted from: C36, 1.1.12.a, 3.5.2, 3.5.10

12.2 Members and Metro Vancouver, as the interagency group, will conduct a regional study of the impacts of densification on watershed health. Members will use the study results to make informed decisions that balance urban growth and ecological resilience.

Timeline: within two years

Adapted from: 2011 MC6, 2011 MC9.b

12.3 Members and Metro Vancouver, as the interagency group, will conduct a cost-benefit analysis to quantify the benefits of green infrastructure and associated lifecycle costs in the region.

Timeline: within three years

New action

12.4 Members and Metro Vancouver, as the interagency group, will host a forum at regular intervals to report progress on IWMPs and LWMP rainwater actions, and to foster collaboration and knowledge sharing among members, First Nations, and interested parties.

Timeline: at least every three years

Adapted from: C37, 2011 MC10

Performance Indicators

None proposed for this strategy.