

Executive Summary

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Revised January 2025

ᑲᓐᓐᓐᓐᓐᓐᓐᓐ / ᓐᓐᓐᓐᓐᓐᓐᓐᓐᓐᓐ / Jericho Lands is within the unceded traditional territories of the ᓐᓐᓐᓐᓐᓐᓐᓐᓐᓐᓐ (Musqueam), ᓐᓐᓐᓐᓐᓐᓐᓐᓐᓐᓐ (Squamish) and ᓐᓐᓐᓐᓐᓐᓐᓐᓐᓐᓐ (Tsleil-Waututh) Nations (MST Nations) within the city of Vancouver.

The MST Nations in partnership with Canada Lands Company (CLC) have engaged in a comprehensive planning process with the City of Vancouver to guide the redevelopment and environmental restoration for 36-hectares of ᑲᓐᓐᓐᓐᓐᓐᓐᓐᓐ / ᓐᓐᓐᓐᓐᓐᓐᓐᓐᓐᓐ / Jericho Lands. As part of this, a comprehensive One Water Approach was established for this site to manage all types of water within the proposed development - including groundwater, drinking water, surface water, rainwater, and wastewater - as a single, interconnected system in alignment with the natural conditions of the landscape and with the goals listed within the City’s Rain City Strategy report.

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Recent studies indicate that the site’s Northeast corner is exposed to threats of flooding because the sewer network capacity is insufficient to convey significant off-site flows that reach the site. As a result, on-site infrastructure is at an ever increasing risk of flooding and contamination from development upstream.

The MST Nations currently carry and preserve an intimate knowledge of water and land. The development of the ᑲᓐᓐᓐᓐᓐᓐᓐᓐᓐ / ᓐᓐᓐᓐᓐᓐᓐᓐᓐᓐᓐ / Jericho Lands is an opportunity to link the City of Vancouver’s vision for embracing rainwater with the MST Nations’ value of respecting water as life giver. Through the Jericho Lands Policy Statement (2024) and the One Water Strategy water is prioritized as a significant cultural and ecological resource.

The restoration of hydrologic connections to Jericho Beach Park as conceived of in this report will be considered as part of a comprehensive planning process, led by the City of Vancouver’s Board of Parks and Recreation (Parks Board).

Hydrogeological analysis to date has found no confined aquifers nor aquifers with flowing artesian pressures. Overall, the risks identified in the hydrogeological analysis are considered manageable. Further detail on the findings are found in the following pages.

¹ Combined Sewer Network: A subsurface pipe network that collects and conveys stormwater, domestic sewage, and industrial wastewater in the same pipe towards a wastewater treatment plant.

² Combined Sewer Overflows: During large storm events, the amount of stormwater conveying to a Combined Sewer network leads the total volume of water in the pipes to exceed the system’s capacity. To provide capacity, some portion of the water within the sewer is discharged directly into the receiving water body, without prior treatment.

Vision and Guiding Principles

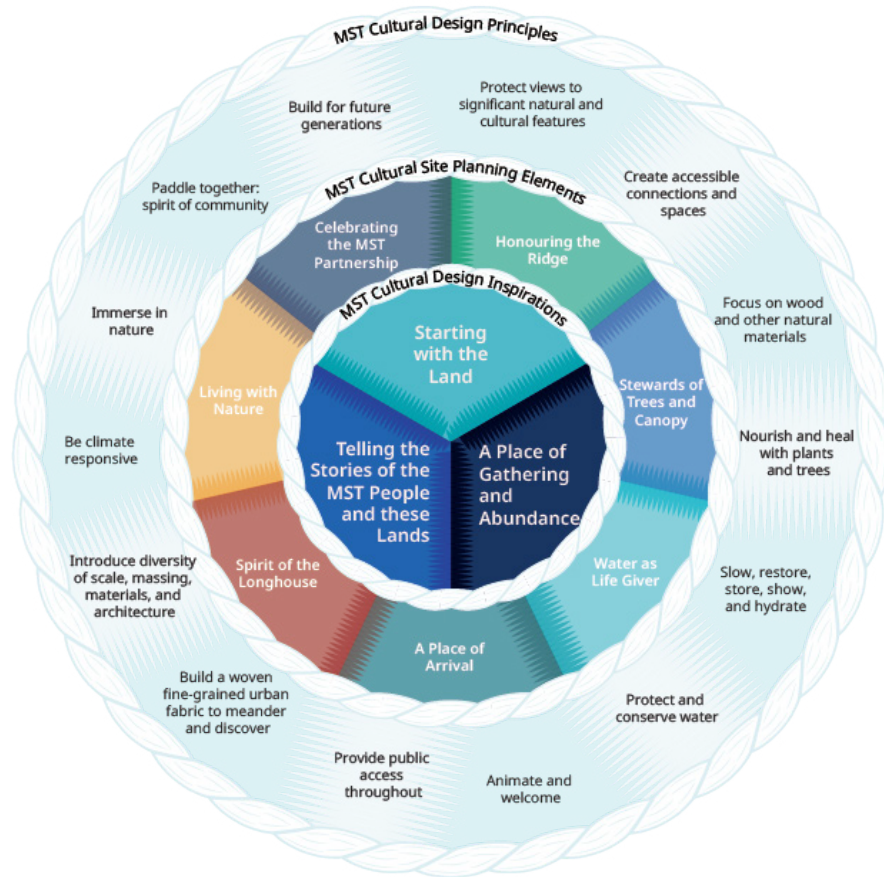
MST Cultural Design Principles

The xʷməθkʷəy̓əm (Musqueam), Skwxwú7mesh (Squamish) and səliłwətaɬ (Tsleil-Waututh) Nations carry and actively preserve an intimate knowledge of water in their relationship with the ʔəyálməxʷ/ Iyálməxw/ Jericho Lands site.

The ʔəyálməxʷ/ Iyálməxw/ Jericho Lands development is guided by the MST Cultural Design Principles and will respect Water as Life Giver - nurturing its movement, naturalization, and its relationship with the site from

the highlands to the lowlands. The design vision to rehabilitate this land, as guided by the MST Nations communities, is to celebrate cultural stewardship of water and begin a journey that may recover habitat through the site to the shoreline.

The development of ʔəyálməxʷ/ Iyálməxw/ Jericho Lands by the MST Nations and CLC is a key contribution to the City of Vancouver's bold vision to become a water sensitive city.



ABOVE: MST Cultural Whorl



ABOVE: Water as Life Giver is highlighted as a critical site planning element to the One Water Approach at ʔəyálməxʷ/ Iyálməxw/ Jericho Lands

Rain City Vision

The Vancouver City Council has approved a series of Council-approved strategies, plans, and policies that underscore the City's rainwater management goals and commitment to green infrastructure including the Green Infrastructure Strategy, the 2016 Integrated Rainwater Management Plan, and the 2018 Rezoning Policy for Sustainable Large Developments (last amended 2024). These policies culminated in the 2019 Rain City Strategy which set out the vision for rainwater to be embraced as a valued resource for the community and natural ecosystems.

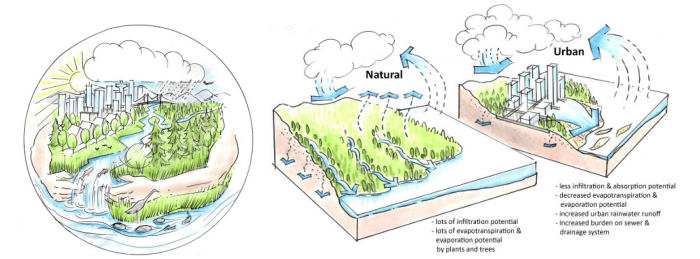
The Rain City Strategy states transformative directions intended to:

- Improve and protect the City of Vancouver's water quality;
- Increase the City of Vancouver's resilience through sustainable water management;
- Enhance the City of Vancouver's livability by improving natural and urban ecosystems.

To achieve this vision, the Rain City Strategy identifies primary actions to achieve sustainable rainwater management, including: volume reduction, release rate reduction, water quality, and flood mitigation.

Historically, urban rainwater management aimed to drain public spaces as quickly as possible, collecting sewage and storm flows in underground pipes that drain directly into downstream water bodies. This leaves water unseen, undervalued, and disconnects a community's relationship with water and natural systems.

With the paradigm shift proposed in the Rain City Strategy, water is no longer seen as a waste product but a multi-layered resource to be managed from roofs to soils, aligning with the Cultural Design Principles set by the MST Nations.



ABOVE: Vancouver's Rain City Vision (Source Vancouver Rain City Strategy Report)

Advancing City of Vancouver's Climate Emergency Action Plan

Projections indicate that the City of Vancouver will experience increased annual precipitation and temperatures, with hotter, drier summers.³ More intense and frequent rain and wind storms are anticipated and sea level rise will pose a significant challenge by mid-century. These trends mean an increasing risk of overland and coastal flooding, changes in vegetation patterns, and damage from storms and overheating during summer highs. Without action, these risks threaten a wide spectrum of City goals from economic prosperity to livability.

To mitigate anticipated impacts resulting from the threats of climate change, ʔəyálməxʷ/ Iyálməxw/ Jericho Lands aims to advance the foundational principles for resilience that were outlined in the City's Climate Emergency Action Plan through the proposed One Water Approach, which emphasizes the use of natural climate solutions and intentional land-use planning to facilitate flood resilience and adaptability of natural ecosystems.

³ Metro Vancouver. (2016). Climate Projections for Metro Vancouver Report.

Water as a Connective Tissue

The One Water Approach for ʔə́yalməxʷ/ l̓yálməxw/ Jericho Lands integrates the intentions of the City of Vancouver’s Rain City Strategy and MST Nations’ Cultural Design Principles by honoring water in all forms and rehabilitating the land to mimic natural conditions.

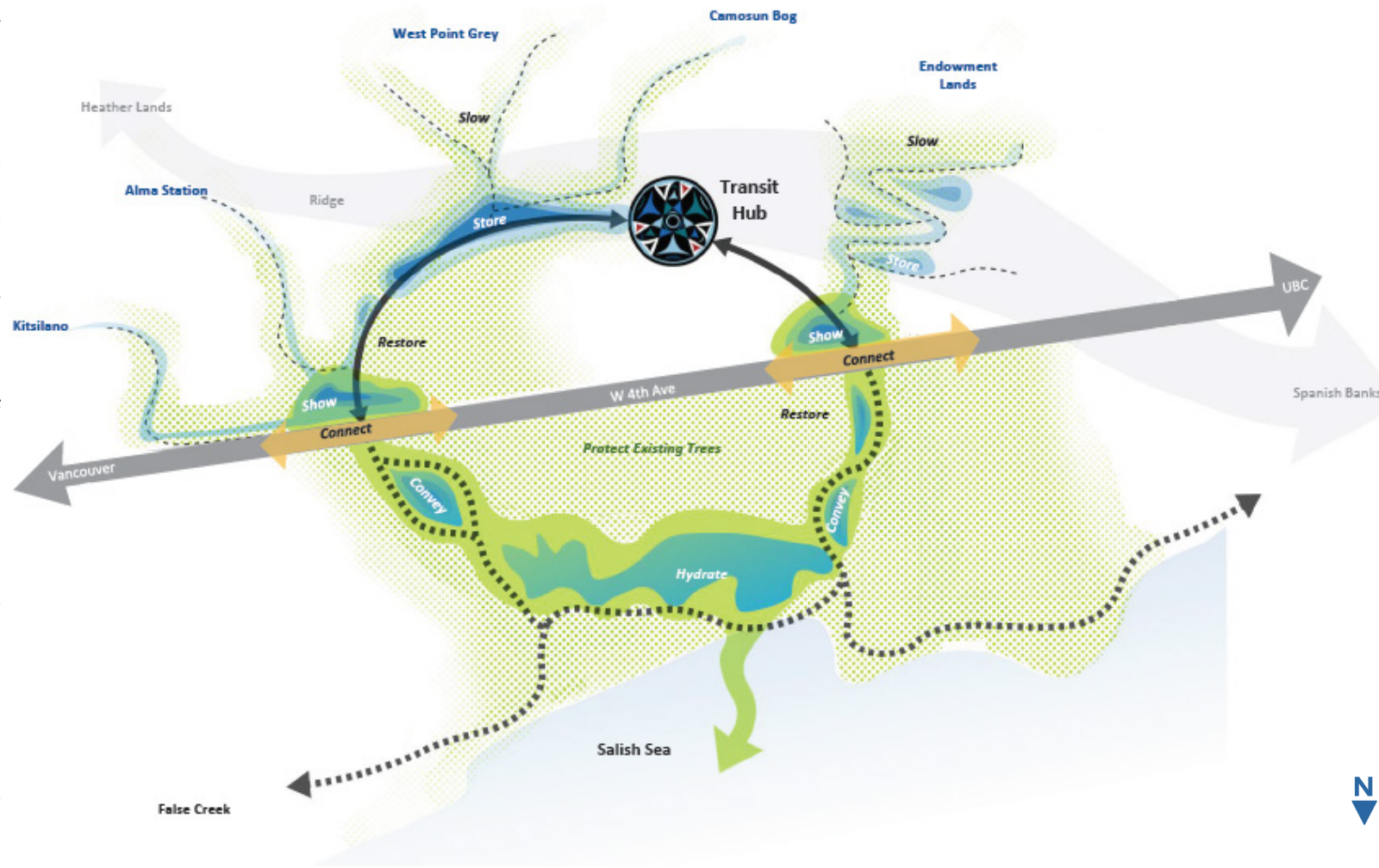
In light of climate change vulnerabilities, the One Water Approach advocates for a holistic strategy, acknowledging groundwater, drinking water, surface water, rainwater, and wastewater all play a role in defining sustainable water resource planning. By synergizing these efforts, a comprehensive and sustainable water management system can be established to address evolving challenges.

ʔə́yalməxʷ/ l̓yálməxw/ Jericho Lands lie at the heart of a large hydrologic system with an ecology that evolves from the highest elevations of the site down to the Salish Sea. This site lies at a junction of subsurface interactions with groundwater, soil, and bedrock.

Extents and depths of groundwater on-site have been assessed via field testing completed on-site and hydro-geological modeling studies. The study findings support the One Water Approach as they confirmed a limited risk of adverse impacts to groundwater, given soil characteristics and added additional detail such as where infiltration should be prioritized.

The One Water Approach assumes a conservative characterization of on-site groundwater for soil infiltration capabilities and designs of underground parking and transit structures. This One Water Approach expresses MST cultural values by integrating historic hydrological flows into site design.

Reducing the volume of water reaching the sewer system through watershed-based planning is a priority for the One Water Approach. To advance regional efforts to mitigate combined sewer overflow events downstream, and further integrate the intentions of the City of Vancouver’s Rain City Strategy and the MST Cultural Design Principles.



ABOVE: High level concept diagram of One Water Approach at ʔə́yalməxʷ/ l̓yálməxw/ Jericho Lands⁴

⁴ Disclaimer: Jericho Beach is under the jurisdiction of the City of Vancouver’s Board of Parks and Recreation and is not within the study area of this report. Conveyance to Jericho Beach Park is pending Park Board approval through a future Park Board-led comprehensive planning process.

Summary of One Water Approach Strategies

- o District-scale Right-of-Way (ROW) planning with streetscape Green Infrastructure to capture and treat stormwater.
- o Phased implementation of infrastructure to balance immediate development with long-term resilience.
- o Integration of green roof technologies to harvest rainwater for non-potable uses.
- o Implementation of low-flow fixtures to reduce per capita potable demand >60%.
- o Added flood resilience features to support during extreme weather events.
- o Increased stormwater storage on-site to reduce discharges to City system and mitigate potential increases to CSO events.
- o Updated storm & sewer connections to City infrastructure, sized and designed to future climate conditions.
- o Incorporation of district-scale subsurface parking to prioritize Green Infrastructure.
- o Restoration of natural drainage paths and natural retention capacity of site to restore downstream hydrologic cycle.
- o Potential to discharge stormwater to Jericho Beach to rehydrate downstream wetlands.
- o Implementation of Green Infrastructure to capture and treat stormwater beyond City requirements.

As the redevelopment plan for the Jericho Lands is refined and additional technical site information is generated, the recommended One Water Approach Strategies will be refined and expanded upon.

Water as Life Giver

The One Water Approach acknowledges the interconnectivity of soils, flora, and fauna to bring back equilibrium among life that once thrived on these lands.

To honour the path that water would naturally flow towards the shore, infrastructure is considered holistically. The approach of Slow - Restore - Store - Show - Hydrate aims to define a framework for managing flow patterns originating from, passing through, and leaving the site towards the Salish Sea.

Slow

Areas in the higher elevations of the site will integrate practices that mitigate overland flows. Vegetated land coverage will reduce the speed of water flowing downstream mitigate storage needs by delaying the runoff conveying downstream.

Restore

Slowed flows will be intercepted and diverted to infiltrate and treat stormwater. Infiltration will be prioritized at the site's higher elevations where local conditions are most suitable given soil composition and depth to water table. Overland flow will be directed through vegetated swales to reflect historic drainage patterns and allow for cultural expression.

Store

Areas in the midlands will showcase water flows. Space for detention and retention during storm events will be programmed into lowland landscape with native ecology. Reliance on infiltration is limited in these areas given an elevated presence of groundwater.

Show

Areas in the lowlands will have year-round pools that collect and unify the water sources. The pools will allow for cultural connection and integration of native habitat.

** Disclaimer: Diversion of stormwater to Jericho Beach is under the jurisdiction of the Vancouver Board of Parks and Recreation and is not within the study area of this report. Conveyance to Jericho Beach Park will be considered by the Park Board as part of a future Park Board-led comprehensive planning process for the Park.

Hydrate **

The MST Nations propose re-establishing their cultural and physical connections to the Salish Sea and Jericho Beach Park. The interception of rainwater via present day storm drain infrastructure has disrupted the freshwater wetland ecosystem. There is a unique and pivotal opportunity to reestablish the hydrologic connection with downstream wetlands and enhance their ecological systems. It is anticipated that additional detail will be developed with the Park Board. If the planning process does not determine this connection conducive, stormwater will be discharged to the City sewer system.



ABOVE: Approach for Honoring Water as Life Giver at ʔəyálməxʷ/ lʷyálməxʷ/ Jericho Lands

Integrated Water Approach

History Not Forgotten

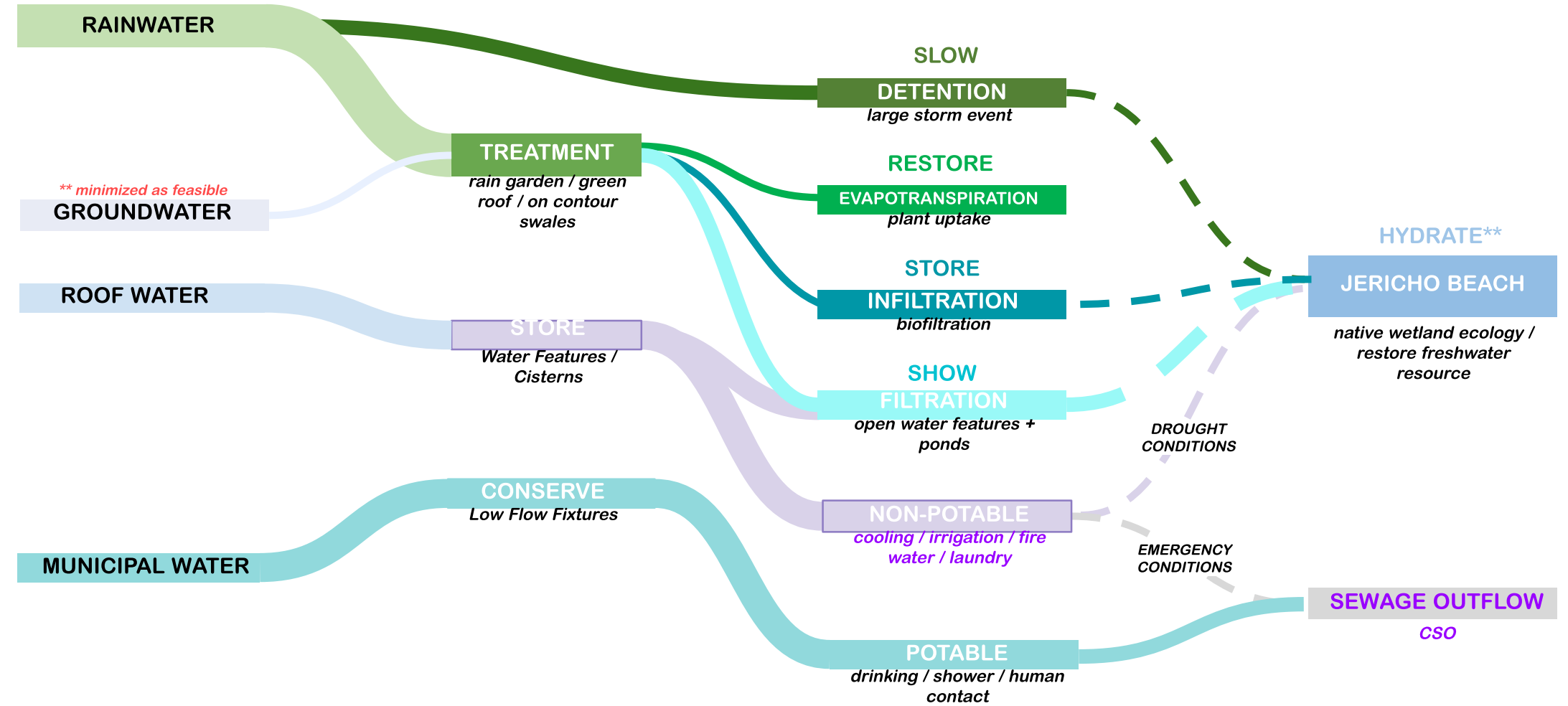
The strategy laid out in this report was informed by a historical understanding of the ʔə́yalməxʷ/ Iyálməxw/ Jericho Lands. For centuries, the MST Nations were stewards of this land – their collective memory recalls an intimate connection to the land and respect for its natural rhythms where water is held in high spiritual and cultural regard. This redevelopment is an opportunity to link the City of Vancouver’s vision for embracing rainwater with the MST Nations’ value of respecting water as a sacred spirit.

Today, the majority of the volume from rain events flows off site quickly to piped infrastructure, resulting in CSO events when stormwater volumes exceed the infrastructure’s capacity. These destructive events are a stark contrast to the natural condition where rainwater would flow towards and nourish the Jericho Beach Park wetlands.

To foster connection against the climatic threats associated with climate change, ʔə́yalməxʷ/ Iyálməxw/ Jericho Lands will glean from the knowledge of the MST Nations be a model for integrated water management, and will potentially restore historic water flows including exploring the potential to connect to downstream wetlands and ecologies in Jericho Beach Park, which will be evaluated as part of a broader park vision through a future Park Board-led planning process for the Park. At the same time, water will be slowed, stored, and celebrated so that spiritual and other cultural relationships with water can be restored at ʔə́yalməxʷ/ Iyálməxw/ Jericho Lands.

The aspirational “idealized condition” looks farther back in time to let the historic patterns of the land guide the patterns of development to advance a resilient future on ʔə́yalməxʷ/ Iyálməxw/ Jericho Lands.

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ABOVE: Integrated Water Management Approach for ʔə́yalməxʷ/ Iyálməxw/ Jericho Lands**

Findings

Groundwater Investigation

The hydrogeological analysis completed to date of the Jericho Lands indicates a favorable alignment with the proposed development and the supporting One Water strategy.

Findings of the hydrogeological analysis include:

Aquifers: No confined aquifers nor aquifers with flowing artesian pressures were observed.

Geology: The geology is comprised of largely glacially derived sands, silts, and clay units which are underlain by bedrock.

Water Table: The shape and slope of the water table mirrors the site's topography. Groundwater flows predominantly downward in topographically higher areas, horizontally in the midlands, and upward in topographically lower areas. Groundwater is expected to discharge to the Jericho Beach Park wetlands and Burrard Inlet.

Contaminant Risks: While no contamination was visually detected, further assessments are planned to identify whether contamination is present within site media. If present, mitigation strategies can address these risks and enhance site ecologies

Water Quality and Availability: Drinking water wells and nearby surface water courses are unlikely to be affected by construction activities. This will be monitored as the development plans evolve to ensure that no additional risk is created.

Aquatic Ecosystem: If groundwater discharge is reduced during construction there could be impact on the Jericho Beach Park lagoons. Groundwater management plans can be designed to mitigate this risk.

Groundwater Management: Development plans, including underground parking structures, will require groundwater management plans to manage water seepage.

Overall, the risks identified through the hydrogeological analysis are considered manageable. Mitigation strategies will be further developed as the One Water Approach is refined and expanded in coordination with development plans, and groundwater management plans are prepared for phased development.

Acknowledgment of vulnerabilities to changing climatic conditions while preserving knowledge systems are a testament to the MST Nations' resiliency. The knowledge of the MST Nations is valued as a cultural resource that can continue to inform contemporary regulatory practices.

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The One Water Approach presents a comprehensive and forward-thinking strategy to develop an integrated, sustainable, and resilient stormwater and sanitary servicing system. By addressing climate change, water conservation, and infrastructure optimization, this approach sets the foundation for a water-wise future for ᑲᓄᓐᓂᓄᓐ/ ᓂᓄᓐᓂᓄᓐ/ Jericho Lands.

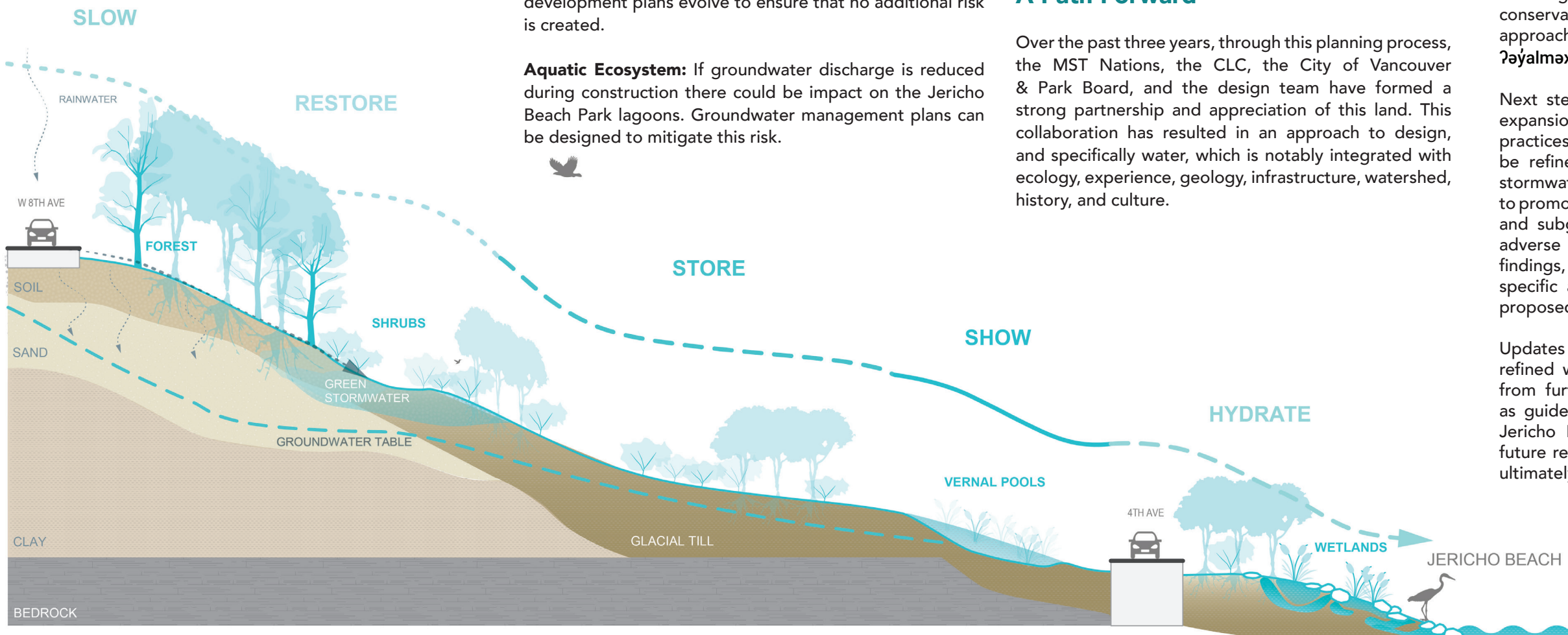
Next steps for the One Water Approach will include expansion and refinement upon the stormwater practices. Amendments to earthwork schemes will be refined to align with observed water tables and stormwater management programming will be adjusted to promote infiltration in suitable soil conditions. Building and subgrade structures are not anticipated to have adverse groundwater interactions given preliminary findings, but additional studies will be conducted in specific areas where deeper subgrade structures are proposed to confirm.

Updates to the One Water Approach will continue to be refined with additional information, including findings from further hydrogeological analysis, and will serve as guidelines for redevelopment as envisioned in the Jericho Lands Policy Statement, informing the site's future rezoning applications and future City approvals, ultimately serving as the basis of detailed design.

Conclusion

A Path Forward

Over the past three years, through this planning process, the MST Nations, the CLC, the City of Vancouver & Park Board, and the design team have formed a strong partnership and appreciation of this land. This collaboration has resulted in an approach to design, and specifically water, which is notably integrated with ecology, experience, geology, infrastructure, watershed, history, and culture.



ABOVE: Profile view of rainwater and groundwater movement for ᑲᓄᓐᓂᓄᓐ/ ᓂᓄᓐᓂᓄᓐ/ Jericho Lands