

Executive Summary

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November 2023

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

In the last three years, 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 ᑲᓗᓗᓐᓂᓗᓐ/ ᓴᓗᓐᓂᓗᓐ/ Jericho Lands. This report summarizes the site’s proposed One Water Approach that exceeds the goals listed within the City’s Rain City Strategy Report through a holistic water mangagement framework that considers water in all forms.

ᑲᓗᓗᓐᓂᓗᓐ/ ᓴᓗᓐᓂᓗᓐ/ Jericho Lands are bounded by West 4th Ave to the north, West 8th Ave to the south, West Point Grey Park to the west, and Highbury Street to the east. Over years of urban development, the historic stream connection that once carried rainwater through the site and across West 4th Ave towards the wetlands within what is now Jericho Beach Park, has been replaced with piped infrastructure.

ᑲᓗᓗᓐᓂᓗᓐ/ ᓴᓗᓐᓂᓗᓐ/ Jericho Lands has transformed through stages of urbanization, which have significantly degraded the land’s ecosystems. The flow of rainfall has increasingly been restricted from reaching critical habitats that once thrived. Impervious surfaces inhibit water from infiltrating into soils and runoff is quickly directed to underground sewer systems. Ecosystems downstream from Jericho Lands are reliant on freshwater as a resource and have also been deteriorated by the effects of development.

ᑲᓗᓗᓐᓂᓗᓐ/ ᓴᓗᓐᓂᓗᓐ/ Jericho Lands sits near the outlet of the Point Grey Watershed. A portion of the watershed, including the site, is conveyed to the combined sewer network.

In large storm events, when the network is at capacity, combined sewer overflow (CSO) events¹ occur, resulting in polluted stormwater and sometimes raw sewage draining to the Salish Sea.

Recent studies indicate that the Northeast corner of this site is expected to experience impacts from major off-site flooding, yielding infrastructure within the site at an ever increasing risk of flooding and contamination from development upstream.

The MST Nations carry and preserve an intimate knowledge of water and land. The development of the ᑲᓗᓗᓐᓂᓗᓐ/ ᓴᓗᓐᓂᓗᓐ/ Jericho Lands is an opportunity to synergize the City of Vancouver’s vision for embracing rainwater with the MST Nations’ value of respecting water as life giver.

Throughout the comprehensive planning process, special consideration has been made to highlighting water as a significant cultural and ecological resource to leverage towards designing a water-sensitive City within the unceded lands of the MST Nations.

Disclaimer: Any references to restoring hydrologic connections to Jericho Beah Park that are mentioned in this report will be considered through a future comprehensive planning process for the Park, led by the Vancouver Board of Parks and Recreation (Park Board) with the MST Nations’ governments. The planning process will include stakeholder and public engagement.

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

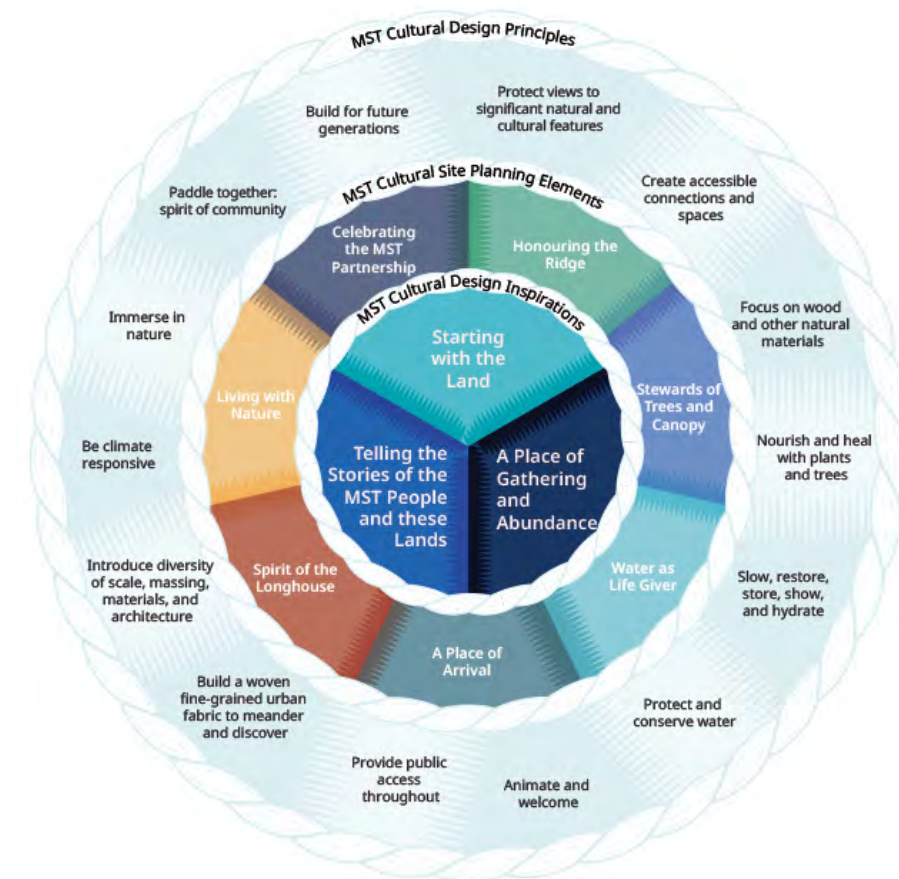
MST Cultural Design Principles

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

Redevelopment of ʔəyálməxʷ/ Iyálməxʷ/ Jericho Lands will seek to align with MST Cultural Design Principles principles and respect the spiritual connection to water as life giver - nurturing movement, naturalization, and service to the land as a whole 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 City of Vancouver has published a series of Council-approved strategies, plans, and policies that underscore the city's rainwater management goals and commitment to green infrastructure including the 2016 Rainwater Management Plan and Green Infrastructure Strategy, the 2016 Integrated Rainwater Management Plan, and the 2017 Rezoning Policy for Sustainable Large Developments. 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.

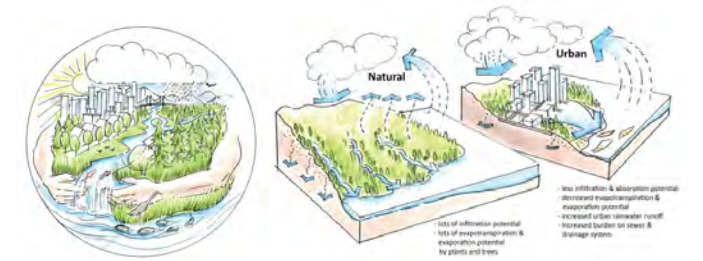
The Rain City Strategy states transformative directions intended to:

- 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

Scientists project that the city of Vancouver will experience increased annual precipitation and temperatures, with hotter, drier summers.¹ 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 facilitate resilience against 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 is curation of infrastructure recommendations that build resilience into everyday operations through short and long-term infrastructure investments.

¹ Metro Vancouver. (2016). Climate Projections for Metro Vancouver Report.

Water as a Connective Tissue

The One Water Approach for ʔəyálməxʷ/ Iyálməxw/ Jericho Lands presented herein 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.

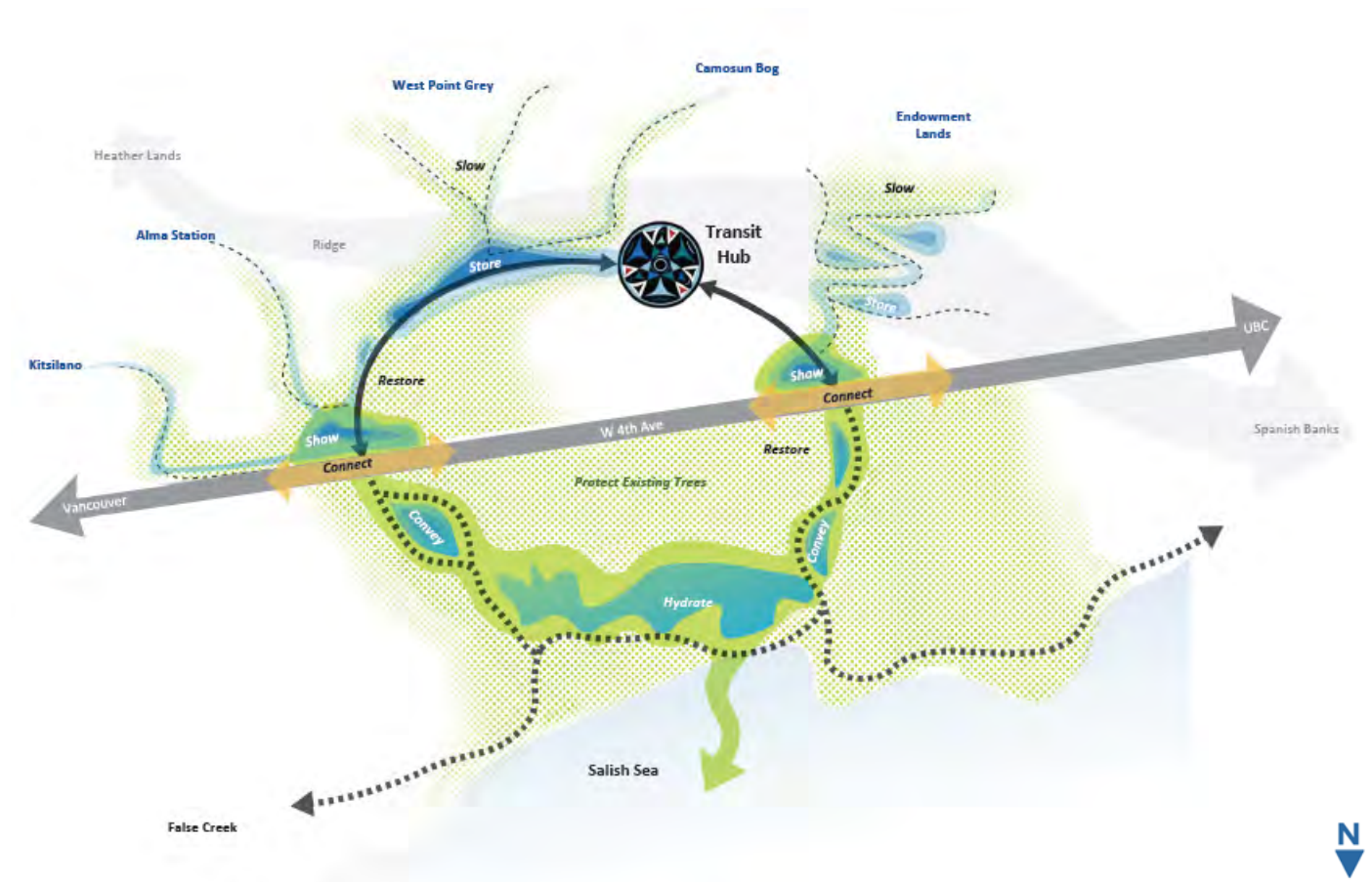
ʔəyálməxʷ/ Iyálməxw/ Jericho Lands lie at the heart of a large hydrologic system with a gradient of ecology that evolves from the highest elevations of the site down to the Salish Sea. As a result, it is understood that this project lies at an intersection of various subsurface interactions with groundwater, the aquifer, and bedrock. This One Water Approach considers how water may be expressed when historic hydrological flows are restored.

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, a summary of proposed strategies are listed as follows:

Summary of One Water Approach Strategies

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

** 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.



ABOVE: High level concept diagram of One Water Approach at ʔəyálməxʷ/ Iyálməxw/ Jericho Lands **

Note: The extents and depths of groundwater on-site are to be determined by future studies and field testing. Substantive groundwater information for the entire site will be required prior to the first rezoning application, as per Policy 9.3.5.3. The detailed findings on groundwater conditions and its interactions, and subsequent analysis may significantly impact various elements of the site development, including: water management systems, ecological functioning (on and off-site), built form and open space design, subsurface parking and circulation, the SkyTrain alignment, upfront and lifecycle costs of the project, and sustainability. The concepts proposed in this approach assume a conservative approach to proposing infrastructure in the presence of groundwater, but any necessary modifications required to mitigate groundwater-related risks will need to be incorporated. Mitigation strategies for risks of groundwater extraction will be expanded upon pending the completion of these hydrogeological studies. into the proposals.

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 honor the path that water would naturally flow towards the shore, infrastructure was considered holistically. An 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 practices that infiltrate and treat stormwater. Overland conveyance through vegetated swales will be prioritized to allow for the expression of natural water patterns

Store

Areas in the midlands will be dedicated to showcasing the flows. Space for detention and retention during storm events will be programmed into lowland landscape and native ecology.

Show

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

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. A more detailed proposal will be provided to the Park Board for consideration as part of a future comprehensive planning process for the Park, led by the Park Board with the MST Nations' governments. If the planning process does not determine this connection conducive, stormwater will be discharged to the City sewer system.

HYDRATE**

Discharge Stormwater to Jericho Beach Park**
To restore freshwater resources to disrupted hydrologic flows downstream.

SHOW

Limited Excavation and Underground Parkades
To minimize groundwater interactions in areas of aquifer expression

Integrate open water features
To unify water sources in lowlands with permanent pools for moments of interaction between people and water.

RESTORE

Leverage natural drainage paths as conveyance networks
To mimic the natural headwater systems feeding wetlands downstream through surface conveyance that allows for pretreatment and plant uptake.



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

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Conclusion

History Not Forgotten

The strategy laid out in this report was informed by a historical understanding of the ʔə́yalməxʷ/ l̓yálməxw/ 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 synergize 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/ l̓yálməxw/ 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/ l̓yálməxw/ 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/ l̓yálməxw/ Jericho Lands.

A Path Forward

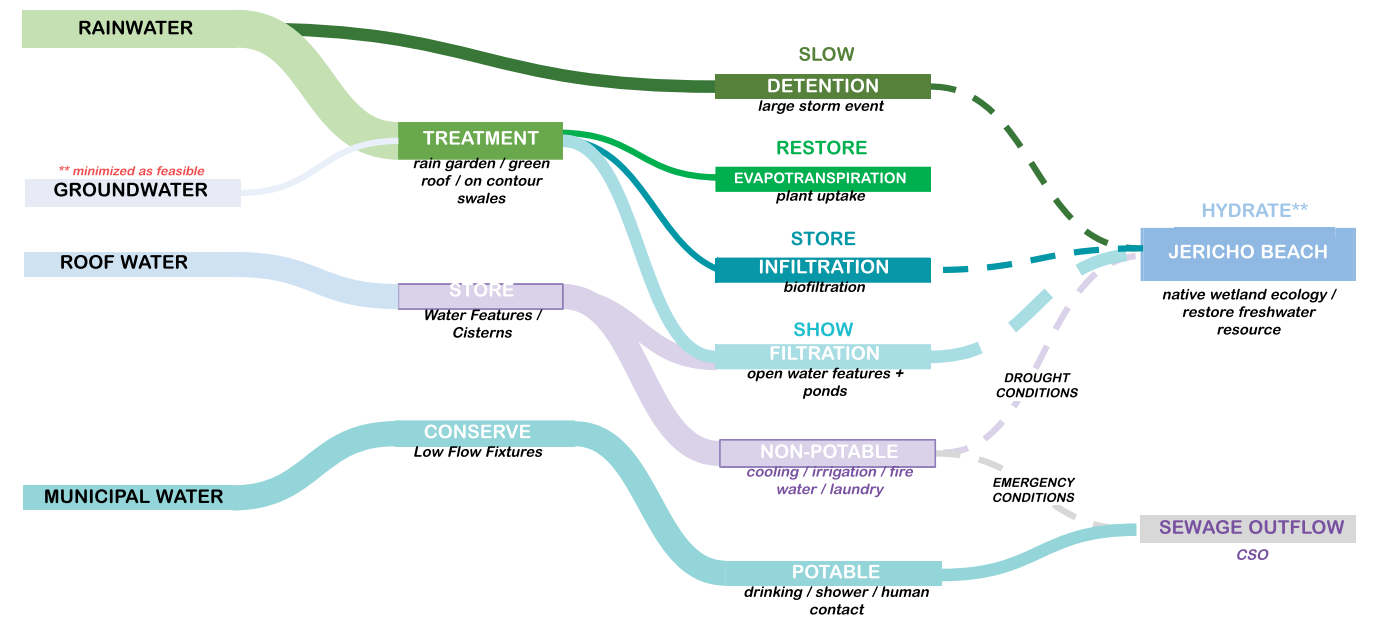
Over the past three years, through this planning process, the MST Nations, the CLC, the City of Vancouver & Park Board, and the design team (Urban Strategies, Sherwood Design Engineers, Aplin & Martin) have formed a strong partnership and appreciation of this land. This collaboration has resulted in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

Acknowledgement 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.

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 ʔə́yalməxʷ/ l̓yálməxw/ Jericho Lands.

ʔə́yalməxʷ/ l̓yálməxw/ Jericho Lands can demonstrate the possibility for innovative approaches to rainwater management. Resilient systems for future generations harvest the benefits of protection from future extreme climatic threats from the seeds of effort sown today.

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