



July 5, 2017

MEMO TO : Park Board Commissioners

FROM : Dave Hutch, Manager, Planning and Research

SUBJECT : **Water Conservation in Parks - Progress Update and Next Steps**

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Dear Commissioners,

The purpose of this memo is to summarize the progress on water conservation in parks in 2016, and outline the initiatives undertaken for reducing potable water use in 2017.

### Key Points

- In 2016, staff focused on reducing or eliminating the largest water uses in the park system including Trout Lake, Zoo Stream, Stanley Park Train Ponds, and Stanley Park Water Park.
- In comparison to the 2012-2014 average of metered annual water use across the Park Board (1.66 million m<sup>3</sup>), 2016 water use was decreased by 25% to 1.24 million m<sup>3</sup> (Figure 1).
- Conservation measures in parks in 2016 reduced the City of Vancouver bulk water bill by approximately \$310,000 (paid to Metro). This is equivalent to \$480,000 in water use charges for residential customers.
- Water conservation in 2017 will focus on: reducing water use among the remaining large consumers (Charleson Park waterfall, VanDusen Botanical Garden, golf courses); re-using water from the Stanley Park spray park; addressing once-through water systems and features; improving irrigation efficiency in parks; and installing meters for unmetered parks and water features.

### Background

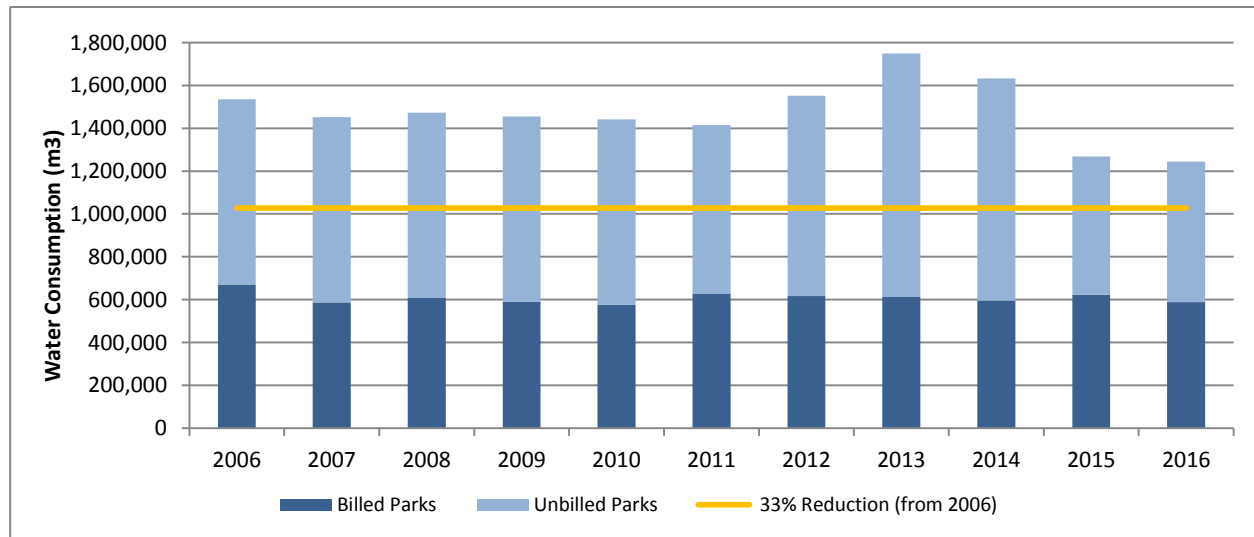
On November 2, 2015, the Board unanimously passed the [Water Conservation Strategy motion](#) directing staff to explore “the costs and benefits of various measures that can be taken to mitigate against future droughts by reducing water use and identifying opportunities to reuse or recycle grey water”.

At a Staff/Board briefing on March 10, 2016, staff provided a presentation on water use in parks and the water conservation projects proposed for summer 2016.

The Corporate Water Reduction Plan, which was approved by the Park Board General Manager, sets a target to reduce civic water use (including parks) by 33% from 2006 levels.

Water conservation is also included within the City of Vancouver’s Greenest City Action Plan 2020 [Clean Water goal](#); which sets a target of reducing per capita water consumption by 33% from 2006 levels by 2020.

A summary of annual metered water use in parks from 2006 to 2016 is provided in Figure 1, and a ranked summary of water use by park or park facility in 2016 is included in Appendix A.



**Figure 1:** Park Board - Total annual metered water consumption - Some data is extrapolated to enable comparison.

**Billed Use:** Revenue generating facilities charged for water (community centres, golf courses, etc.).

**Unbilled Use:** Water use paid centrally by the City (irrigation, spray parks, fieldhouses, etc.).

## 2016 Projects

The following water conservation measures were undertaken in 2016:

- Trout Lake:** Trout Lake has historically been the largest use of potable water in the park system, using an average of 220,000m<sup>3</sup>/year (2012-2014) and costing the City \$240,000/year in water use costs. A float valve was installed to top-up the lake level only if it falls below a set threshold. This change resulted in Trout Lake using 40,000m<sup>3</sup> of water in 2016 which is less than 1/5<sup>th</sup> what is used historically. This resulted in about \$195,000 in water cost savings.
- Zoo Stream:** The Stanley Park Zoo Stream was turned off completely on May 16, 2016. This is a recirculating system that pumps water from a pond adjacent to the Artist's Circle to the concession stand near the children's zoo. Because of the additional water inputs to the water system, turning this water off led to little effect on the system. The Zoo Stream used 74% less water in 2016 (39,000 m<sup>3</sup>) compared to the historical average (150,000 m<sup>3</sup>), and will use none moving forward. This resulted in \$120,000 in water cost savings.
- Stanley Park Waterwheel and Waterfall:** In 2016, the operation and timing of the waterfall/waterwheel was modified to only run when the train is active. This resulted in a 95% decline in water use in 2016 (2,400 m<sup>3</sup>) compared to the historical average



(56,000 m<sup>3</sup>), with \$55,000 in water cost savings. A recirculating system is planned for 2017 to bring this feature into compliance with current by-laws.

- **Stanley Park Water Park:** A push button activation system was installed during the 2015 drought. This resulted in a 31% reduction in water use in 2016 (62,000 m<sup>3</sup>) compared to the historical average (98,000 m<sup>3</sup>), with \$41,000 in water cost savings. Staff is currently looking into connecting the water park outflow water to the miniature train ponds which flow into Beaver Lake.

## 2017 Projects

Water conservation in 2017 is focussed on:

- **VanDusen Botanical Garden:** VanDusen is the sixth largest user of water in the park system (approx. 51 million liters in 2016). It is a complex water system with irrigation, facilities, and ponds. We are working with Water Design and Sustainability on a consultancy that will review and design a recirculating system for a portion of the pond network. We received bids from several consultants on a broader group of water-related projects in the garden (including the reservoir) but we are adjusting the scope to focus on the recirculating system. Use of the older reservoir for water storage, as recommended in the May 2016 [Water Conservation Measure motion](#) referred to staff, is being considered as a second phase.
- **Charleson Park:** The waterfall in Charleson Park continues to be one of the largest water users in the city, consuming more water than VanDusen Botanical Garden in an average year. The waterfall does not recirculate and in 2017, staff will move forward with the design of a recirculating water system. In the meantime, the waterfall will continue to run for 12 hours each day at a reduced flow rate.
- **Stanley Park Spray Park:** This spray park is the third largest user of water in the park system (approx. 62 million liters in 2016). We are reviewing options for re-using water that currently flows directly to Burrard Inlet by pumping water to the Stanley Park train ponds. From the train ponds, water would flow to Beaver Lake and address our long-term water needs for sustaining ecological values in the lake and stream. Water from the spray park could also be reused for washroom facilities or other water features or facilities in that area of Stanley Park.
- **Golf Courses:** Fraserview and McCleery golf courses are two of the largest water users in the park system. Alternative water sources for irrigation such as groundwater or surface water will be investigated in 2017 and 2018. Langara already uses groundwater for irrigation exclusively (see Appendix A).
- **Once-Through Water Features:** Many water features, ponds, and streams in parks are “once-through” rather than recirculating. An existing COV bylaw (By-Law 4848) prohibits once-through water systems and staff is reviewing options to address these features. Water features in parks are important to the user experience, and therefore any changes need to take this into account while balancing water efficiency and technical/financial feasibility, which has proved challenging for some sites.



- **Irrigation Systems:** Irrigation and Horticulture staff will examine irrigation practices and review conservation opportunities. This may include audits, staff training, technology improvements, elimination of inefficient practices, etc.
- **New Water Meters:** REFM will install water meters on new and unmetered parks.

Staff is currently developing an action plan for potable water conservation in parks, which is scheduled to be presented to the Park Board in fall 2017.

Regards,

A handwritten signature in black ink, appearing to read "D. Hutch". The signature is fluid and cursive, with a long horizontal stroke at the end.

Dave Hutch  
Manager, Planning and Research

/ka/clc

Copy to: PB Senior Management Team  
PB Communications

## APPENDIX A

Selected Largest Park Board Water Users - 2016 (Million Litres/year)

