

**THE CORPORATION OF DELTA
BYLAW NO. 7441**

*A Bylaw to provide for the operation of the water service and
impose charges for the use of water*

Incorporating amendments pursuant to
Bylaw 7631, 7728, 7744, 7824, 7901 & 8009

January 25, 2021

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THIS CONSOLIDATION IS FOR CONVENIENCE AND REFERENCE PURPOSES ONLY.

If there is any discrepancy between this consolidation and the original Bylaw and any amending Bylaws, the original Bylaw and any amending bylaws are correct. For confirmation of the exact terms of the Bylaw, you must consult the original Bylaw and all amending bylaws.

THE CORPORATION OF DELTA

DELTA WATER SERVICE BYLAW NO. 7441, 2016

A Bylaw to provide for the operation of the water service and impose charges for the use of water

WHEREAS the Corporation has established potable and irrigation water services for the benefit of the Municipality and wishes to regulate, prohibit and impose requirements and fees in relation to those services;

NOW THEREFORE the Municipal Council of The Corporation of Delta, in open meeting assembled, ENACTS AS FOLLOWS:

This bylaw may be cited as the “**Delta Water Service Bylaw No. 7441, 2016**”.

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Part 1 Interpretation

1. In this bylaw,

"Assessed Cost"	means the cost of carrying out the work or supervision as calculated by the Corporation.
"Agricultural Water Rate Area"	means the area shown on Schedule "C".
"Corporation"	means The Corporation of Delta.
"Council"	means the Municipal Council of The Corporation of Delta.
"Cross Connection"	means any actual or potential physical connection between the Waterworks System, or any potable water system connected to the Waterworks System, and any auxiliary water source or pipe, vessel, machine or other source that may contain a non-potable fluid or other contaminates, such that it is possible for contaminates to enter the Waterworks System or any potable water system due to backflow.
"Curb Stop"	means the municipally-owned valve on a Water Service in a municipal street or lane or within an easement at or near the consumer's property line or easement line.
"Director"	means the Director of Engineering of the Corporation.
"Drip Irrigation"	means a system using irrigation components which consume less than 20 gallons/acre/hour (187L/ha/hour) and operate at less than 25 PSI (172 kPa) to deliver water to the root zone of the plant material being irrigated.
"Dwelling Unit"	has the same meaning as in Delta Zoning Bylaw No. 2750, 1977.
"Garden Irrigation"	means the sprinkling or pouring of water to irrigate Lawns and landscaping, domestic gardens, plant nurseries, greenhouses, or golf courses by means of any pipe, hose or sprinkling device upon or under the surface of the ground on any premises.

“General Order”	means the water use restriction General Order attached as Schedule “E”.
“Irrigation Water System”	means the system of ditches, flood boxes and related works through which the Corporation provides non-potable water to agricultural land for irrigation purposes.
“Lawn”	includes grass growing at cemeteries.
“Municipality”	means the geographic area governed by the Corporation.
“Newspaper”	means a publication or local periodical that: <ul style="list-style-type: none"> (i) contains items of news and advertising, and (ii) is distributed at least weekly in the Municipality
“Person”	does not include a Municipality, a regional district, or the provincial government.
“Secondary Suite”	has the same meaning as in Delta Zoning Bylaw No. 2750, 1977.
“Secondary Suite Occupancy Permit”	has the same meaning as in Delta Zoning Bylaw No. 2750, 1977.
“Service Connection”	means the connecting pipe and appurtenances between any water main and the property line of the premises served and shall include the necessary valves and meters.
“TFN Lands”	means the Tsawwassen First Nation Lands.
“Water Area”	means the area shown on Schedule “B”.
“Water Meter”	means a device used to measure water consumption.
“Water Meter Setter”	means a device, installed on the water supply line, approved by the Director of Engineering, and to which a Water Meter can be easily connected.

"Water Service" means the supply of potable water from the Waterworks System to any property and all pipes, taps, valves, connections and other things necessary to or actually used for the purposes of such supply.

"Waterworks System" means the municipally-owned or controlled waterworks that distributes potable water, and includes all pipes, fixtures, Water Meters and accessories located on the Corporation's property or designated metering/valving appurtenances that may be on private property within the Corporation property rights-of-way.

Part 2 Potable Water Service

Application for Service

2. A Person may apply for a new Water Service to a premises in the Water Area by making an application to the Director in the form prescribed by the Director for that purpose, which form may be different for different classes of service.
3. Every applicant for a new Water Service must pay the deposit and connection charge set out in Table III of Schedule "A" for the type of Service Connection provided.
4. The approval of a new Water Service Connection shall be subject to the availability of a sufficient supply of water in terms of both volume and pressure, and the Director may refuse a connection in any case where existing water supply facilities are not adequate to supply the volume or pressure required by the applicant, or may limit the dimension of any connection provided.

Connection Standards

5. Each new potable Water Service Connection shall be installed in accordance with standards specified by the Director, which may be adjusted to address unique characteristics of the parcel or the Water Service, and shall include a Water Meter installed in accordance with standards specified by the Director, and be equipped with a radio signal transceiver enabling remote reading of the meter.
6. Each property containing a Secondary Suite shall have a Water Meter installed in accordance with standards specified by the Director, and be equipped with a radio signal transceiver enabling remote reading of the meter.

7. Prior to the provision of water through any new or altered Water Service Connection, the applicant for Water Service must satisfy the Director that all Water Service lines, fittings and fixtures installed on the premises comply with all bylaws, orders and other requirements of the Corporation.
8. The Director may from time to time prescribe standards and specifications, either adopted by bylaw or policy, for Water Meters, radio signal transceivers, Water Meter chambers, Water Meter Setters, Water Meter bypasses, pressure reducing valves and related works connected to the Waterworks System, and shall make available a copy of such standards and specifications to every applicant for a Water Service.
9. If a cross connection control device is required under Part 5, a Backflow Prevention Assembly Test Report must be filled out annually by a qualified Person. Backflow Prevention Assembly Test Reports must be purchased from the Corporation at the rate set out in Table IV of Schedule "A".
10. Where a Water Service provides on-site fire protection by means of hydrant or sprinkler systems, the water supply works shall be branched adjacent to the property line, or in another location as approved by the Director, and the fire protection line shall be equipped with a fire rated Water Meter or detector check meter, and any Water Service line shall be equipped with a Water Meter, all to be located at the property line unless otherwise so approved by the Director.
11. A Water Service for a building subdivided under the *Strata Property Act* shall be a single metered service with a backflow prevention device installed at the external boundary of the strata plan unless approved by the Director, and the strata corporation shall be liable for the water user charges imposed by this bylaw. The Water Meter chamber including all components will belong to the Municipality.
12. A Water Service for lots subdivided under the *Strata Property Act* shall be serviced by a single metered service with a backflow prevention device installed at the external boundary of the strata plan unless approved by the Director, and the strata corporation shall be liable for the water user charges imposed by this bylaw. Individual meter setters are to be provided to each Dwelling Unit in the strata and it will be the responsibility of the strata corporation to install and read the meters and provide individual bills to each strata member, if the strata corporation chooses. The Water Meter chamber including all components at the external boundary of the strata plan will belong to the Municipality.
13. The owner or occupier of any single family residential premises connected to the Waterworks System on the date of adoption of this bylaw and not equipped with a Water Meter may request the installation of such a meter, and if the owner or occupier also requests that the meter be installed at a location other than that

proposed by the Director, the owner or occupier must pay the Assessed Cost of the installation.

14. If in the opinion of the Director, water consumption by any user is excessive, the Director may order the installation of a Water Meter, and effective from that date, the applicable metered rates shall apply.
15. For installation of water lines with a service pipe size equal to or less than nineteen millimetres (19mm or 3/4"), the owner must pay the cost associated with the installation as set out in Table III of Schedule "A".
16. For installation of water lines with a service pipe size greater than nineteen millimetres (19mm or 3/4"), the owner must pay for all costs associated with the installation as set out in Table III of Schedule "A".
17. A meter shall not be located within a sidewalk or vehicular crossing unless approved by the Director.
18. No Person shall cause or permit a meter to be inaccessible for reading or maintenance.
19. If a meter is inaccessible for reading or maintenance, the Director may give written notice allowing the customer 96 hours to make the meter or accessories accessible after which time the Corporation may return to read or maintain the meter and the customer must pay the Return Attendance Fee specified in Table IV of Schedule "A".
20. Where, in the opinion of the Director, a customer-located meter or its accessory is situated in an unsafe area on the premises or where its location creates a dangerous situation to a reader, the meter or accessory shall be deemed to be an "inaccessible meter".
21. Subject to Part 6, the Director may order the Water Service shut off if the meter or accessory thereof remains inaccessible for reading and maintenance for a period longer than 4 months.

Part 3 Irrigation Water Service

22. No Person, unless approved by the Director, shall construct any works that are used or capable of being used to withdraw water from the Irrigation Water System, or place in the Irrigation Water System any pump, hose, or other apparatus capable of withdrawing water, unless:
 - (a) that Person is withdrawing water to irrigate lands assessed as Class 9 (farm) under the *Assessment Act* and its regulations; and,

(b) the Person is liable to pay the irrigation Water Service user charge for the irrigated lands under section 73.

23. Nothing in this bylaw relieves any Person using the Irrigation Water System from obtaining any required approval from the Province of B.C., including any water licence required under the *Water Act*.

Part 4 Water Use Restrictions

24. No Person shall use water supplied by the Waterworks System for any irrigation purpose other than for Garden Irrigation or Drip Irrigation, or as approved by the Director.

25. No Person shall use any water withdrawn from the Irrigation Water System for any purpose other than the irrigation of farm land and gardens, ponds, fire fighting, watering of livestock, or as approved by the Director.

26. The Director may, from time to time, issue water use restriction orders to implement any drinking water conservation plan adopted by the Greater Vancouver Water District, including General and Stage 1 to 4 Restrictions in the General Order, by posting such orders in the public notice posting places, publishing the orders in a Newspaper within 72 hours of the effective date of the orders, and taking such other notification measures as the Director deems appropriate. For certainty, and not so as to limit the powers of the Director under this section, such orders may be General Orders specifying the nature of water use restrictions to be in force generally or when specific orders are made stating that the dates on which such General Orders shall be in force or shall cease to be in force, which specific orders may state that a General Order shall be in force until further order.

Amend BL
7744, 2018

27. No Person shall, except in accordance with a permit issued under this bylaw, contravene any water use restriction order by using water supplied by the City in contravention of any:

Amend BL
7744, 2018

- (a) General Restriction in the General Order;
- (b) Stage 1 Restriction in the General Order;
- (c) Stage 2 Restriction in the General Order;
- (d) Stage 3 Restriction in the General Order;
- (e) Stage 4 Restriction in the General Order; or,
- (f) other restriction on water use;

issued by order of the Director pursuant to this bylaw.

28. Upon application and payment of the fee set out in Table IV of Schedule "A", the Director may issue sprinkling permits for new landscaping, which may be in a form substantially similar to Schedule "D", to authorize the use of water from the

Waterworks System to irrigate a newly seeded Lawn, newly installed turf, or for application of nematodes for a period of up to 21 days, in accordance with Water Use Restrictions.

29. Upon application and payment of the fee for a sprinkling permit, the Director may renew, a permit issued under section 28.
30. The Director may prescribe the form of permit applications and permits for sprinkling permits.
31. No Person shall use water withdrawn in accordance with a permit issued under section 28 unless the permit is conspicuously displayed at the premises in respect of which it was issued.

Hydrants and Standpipes

Amend BL
7744, 2018

32. Upon submission, the Director may approve a Water Management Plan, which may be in a form substantially similar to Schedule "F", to authorize the use of water from the Waterworks System to irrigate land at times other than those set out in the General Order.
33. The Director may terminate or suspend a Water Management Plan by notifying the administrator of the plan in writing.
34. The administrator of a Water Management Plan may terminate the plan by notifying the Director in writing, in which case the Water Management Plan is to terminate on the later of the date specified in the notice or the date on which the Director receives the notice.
35. In the event of termination of a Water Management Plan, the water use restrictions set out in the General Order will apply.
36. No Person shall operate any hydrant or use water drawn from any hydrant or standpipe unless that Person has a permit issued under section 37.
37. The Director may, in writing, permit the use of a hydrant or standpipe for the supply of water for construction or similar purposes, for a specified period of time and in accordance with the conditions of use set out in the permit, upon
 - (a) the Person applying to the Director using the form prescribed by the Director that states:
 - (i) the location of the hydrant/hydrant number
 - (ii) the proposed dates of use;
 - (iii) the purpose of use;

- (iv) the subdivision application or development permit number, if applicable;
 - (v) the name and telephone number of the applicant; and,
- (b) the payment by the applicant of the permit fee, inspection fee and the security in the amounts set out in Table V of Schedule "A".

38. The Corporation may use any security provided by an applicant under section 37 to repair any damage to the Waterworks System caused by a contravention of the permit in respect of which the security was provided, to install or test any cross connection control device required by the permit, or in payment of fees or charges otherwise imposed by this bylaw.

39. A Person operating a hydrant or using a standpipe pursuant to a permit issued under this bylaw must:

- (a) leave one port on the hydrant unencumbered at all times;
- (b) use an approved cross-connection control device;
- (c) protect and secure all equipment attached to the hydrant;
- (d) if equipment is left unsecured, pay the Corporation the Assessed Cost of the Corporation's removal of the equipment and restoring the hydrant or standpipe to its usual condition; and,
- (e) otherwise comply with the terms and conditions of the Permit.

Part 5 Cross Connection Control

40. No Person shall, except as authorized by the Director under section 43, connect or cause or allow to be connected to the water supply facilities on any premises any piping, fixture, fitting, or other appurtenance that would in any circumstances permit water, wastewater, or any other liquid or substance to enter any part of the Waterworks System, including that Person's Water Service.

41. The Director may order the immediate disconnection or removal of any piping, fixture, fitting or appurtenance that contravenes section 40 or the correction of any other condition on private premises that represents a hazard to the water supply, and in the case of an imminent health or safety hazard the Director may disconnect the water supply to the premises in question. Immediate disconnection and piping removal is subject to Part 6.

42. The Director may, in writing require the installation of cross connection control devices on private property or on any Water Service line in conjunction with a Person requesting the installation of piping, fixtures, fittings or other appurtenance otherwise prohibited by section 40, and have a qualified inspector provide certification that the device was properly installed and that the device has been tested and is functioning as intended.

43. The Director may, in writing, authorize the installation of cross connection control devices, require the owner or occupier to provide to the Corporation, at intervals specified by the Director, a certification by a qualified Person that the device has been tested and is functioning as intended. Should a test show that a cross connection control device is not in good working condition, the Director shall give notice to the customer to make repairs or replace the device within 96 hours, or a specified lesser period, and if the customer fails to comply with such notice the Director may shut off the Water Service or services.
44. The Director may at any time require the owner or occupier of premises on which any cross connection control device is installed to provide the certification described in section 43 if the Director has reason to believe that the device may not be functioning as intended.

Part 6 Disconnection of Water Service

45. The Director may disconnect the Water Service to any premises if the owner or occupier fails to make any payment of fees or charges levied under Part 7 of this bylaw, by giving notice in writing at least 30 days before the disconnection.
46. The Director may disconnect the Water Service to any premises if the owner or occupier has contravened a water use restriction order made under Part 4 of this bylaw on more than two occasions.
47. The Director may disconnect the Water Service to any premises if the owner or occupier has failed to provide a cross connection control device test certification required under section 43 or section 44.
48. The Director may inspect, or cause to be inspected, any premises to which water is supplied by the Waterworks System or Irrigation Water System, and may order the owner or occupier, in writing, to repair or replace any defective or leaking pipes, fittings or fixtures. An order under this section may specify that the Water Service is subject to disconnection if the owner or occupier fails to satisfactorily affect the repair or replacement within the time specified in the order, and upon any such failure the Director may disconnect the Water Service to the premises.
49. In the case of a Water Service disconnection under section 19 [*inaccessible meter*], section 43 [*Cross Connection*], section 46 [*contravention of water use restriction order*] or section 48 [*defective works*], the Director must, prior to disconnecting the Water Service, give notice to the owner or occupier in writing at least 10 days before the disconnection of their right to make representations in writing to the Council, and may not disconnect the Water Service unless the Council has considered such representations and confirmed the disconnection order.

50. In the case of any disconnection of a Water Service under section 41 [*imminent hazard*], the Director must at the time of disconnecting the Water Service notify the owner or occupier of their right to make representations in writing to the Council, with respect to the restoration of the connection.
51. Any owner or occupier wishing to discontinue receiving potable Water Service from the Corporation may so advise the Director in writing at least 7 business days in advance of the requested disconnection date and must pay the disconnection charge set out in Table IV of Schedule "A", including any additional charges for locating or repairing a Curb Stop. The owner or occupier remains liable for all charges for Water Service provided prior to the disconnection of the Water Service.
52. No Person shall demolish any building connected to the Waterworks System, or move such a building, without having first requested the disconnection of the Water Service, paid the disconnection charge set out in Table IV of Schedule "A", and allowed for the completion of the disconnection to the satisfaction of the Director.
53. In cases where the Director determines that the safety of the water supply requires that the disconnection of a Water Service under section 51 or section 52 be effected by removal of the Water Service Connection at the watermain, the Director may so order and the work shall be carried out at the expense of the Person requesting the disconnection.
54. The Director may disconnect the Water Service to any premises if there is a leak in the service that in the opinion of the Director will cause wastage of water or damage to property.

Part 7 Fees and Charges

Flat Rate Users

55. The owner or occupier of a premises that has an unmetered Water Service Connection must pay the following annual flat rate charges set out in Schedule "A":
 - (a) for a premises located within the Water Area that does not contain any buildings under construction, the amount specified for the type of premises as set out in Table I(1)-(4);
 - (b) for a premises located within the Water Area that contains a building under construction, the amount calculated in accordance with Table I(6); and,
 - (c) for a premises located outside both the Water Area and the TFN Lands, the flat rate consumption charge specified in Table I(7).

56. An individual who is the only occupant of a Dwelling Unit may qualify for a reduced annual flat rate if that Person:
- (a) lives alone in that Dwelling Unit;
 - (b) the Dwelling Unit is not a Secondary Suite with a valid Secondary Suite Occupancy Permit; and,
 - (c) provides an annual declaration to the Corporation attesting to that fact.

Any Person who makes a false statement or declaration in relation to the occupancy of a Secondary Suite that would result in a reduction in the flat rate charges set out in Table I(1) of Schedule "A" commits an offence under this bylaw.

57. An owner or occupier may have a designation under section 56 continued for another year by submitting a new declaration attesting to that fact.
58. If a Secondary Suite Occupancy Permit is issued during a billing period, the reduced flat rate for a Secondary Suite with a Secondary Suite Occupancy Permit under this bylaw shall be applied as pro-rated credit to the consumer's account calculated from the date the Secondary Suite Occupancy Permit was issued for the Dwelling Unit. Refunds will not be given. A Secondary Suite that does not have a Secondary Suite Occupancy Permit shall be assessed the same flat rate as a regular Dwelling Unit.
59. Flat rate charges shall be due and payable on the first day of the year. A 5% penalty will be applied on any outstanding balance after March 31st. An additional 5% penalty will be applied on any outstanding balance after July 2nd, and further 5% penalty will be applied after September 2nd.
60. Flat rate charges for the year in which approval of a Water Service Connection is granted shall be prorated from the date of approval of Water Service application, and are due and payable in advance.
61. Flat rate charges for the supply of water to premises under construction via meter bypass prior to the installation of a Water Meter shall be prorated from the date of approval of Water Service application, and are due and payable in advance, at the rate set out in Schedule "A".
62. An owner or occupier of a parcel that is outside of the Agricultural Water Rate Area and does not have a Water Service, but is adjacent to the Waterworks System, shall pay the amount set out in Table I(8) of Schedule "A".

Metered Users

63. The owner or occupier of premises that has a metered Water Service must pay quarterly charges calculated using the following rates set out in Schedule "A":

- (a) for water delivered to a premises located within the Water Area, the rates per cubic metre set out in Table II(1);
- (b) for water delivered to a premises located outside the Water Area and outside the TFN Lands, the rate per cubic metre set out in Table II(2)(a); and,
- (c) for water delivered to any other premises located within the TFN Lands, the rates per cubic metre rates set out in Table II(2)(b).

64. Despite section 63, the owner or occupier of a premises that:

- (a) has a metered Water Service;
- (b) is located within the Agricultural Water Rate Area; and,
- (c) is assessed as Class 1 (Residential) or Class 9 (Farm) under the *Assessment Act* and its regulations;

must pay quarterly charges calculated using the rates per cubic metre of water delivered to the premises set out in Table II(3) of Schedule "A".

65. If a quarterly charge under sections 63 or 64 is less than the minimum quarterly charge specified for that type of metered water Service Connection in Table II of Schedule "A", the owner or occupier must pay the minimum quarterly charge instead.

66. Charges for metered water consumption are due and payable quarterly on the last day of the month following the date of billing, and are subject to a 10% penalty where unpaid after the last day of the month following the month of billing.

67. In the event that the Director determines that any Water Meter appears to be malfunctioning, the Corporation may charge the owner or occupier an amount based on the average consumption as determined by the Director.

68. The Director may allow an adjustment of charges for metered consumption charges where the owner or occupier of the premises establishes, to the satisfaction of the Director, that wastage of water occurred during the billing period in question due to accidental damage to the Water Service pipes or fittings on the premises that was beyond the control of the owner or occupier, and that the owner or occupier exercised all reasonable diligence to prevent or minimize the wastage including the repair of the damage within 96 hours of the earlier of the date of discovery or date of notification.

69. Any owner or occupier may request the testing of a Water Meter on their premises by providing the security deposit specified in Schedule "A", which deposit the Corporation may retain if testing indicates that the meter is accurate within 2%, and in the case of greater inaccuracy the Corporation must return the deposit to the owner or occupier and the charges for metered water consumption imposed under this bylaw during the previous twelve month period shall be adjusted to account for the inaccuracy.
70. Any Person requesting the reading of a Water Meter not conducted by the Corporation in its ordinary billing cycle, the inspection of a cross connection control device, or the testing of flow rate or pressure at a hydrant or standpipe, must pay the special meter reading fee set out in Table IV of Schedule "A".

Standpipe Users

71. Every Person who withdraws water from a hydrant or standpipe pursuant to a permit issued under section 37 must pay:
- (a) the flat rate charges if using an unmetered hydrant or standpipes; or,
 - (b) the charge for each cubic metre of water withdrawn if using a metered hydrant or standpipe;

as specified in Table V(3) of Schedule "A".

72. If a quarterly charge under section 71(a) is less than the minimum quarterly charge specified under Table V(3)(a) of Schedule "A", the owner or occupier must pay the minimum quarterly charge instead.

Irrigation Water Service Users

73. The owner or occupier of a parcel that is assessed as Class 9 (farm) under the *Assessment Act* and its regulations, or as approved by the Director, must pay the per folio user charge set out in Table I(5) of Schedule "A".

Curb Stops

74. A Person requesting that a Curb Stop be turned off or turned on must pay the fee specified in Table IV of Schedule "A".
75. The Director may waive the charges for turning off and turning on a Curb Stop if the Curb Stop was turned off, in the Director's opinion, for the purposes of responding to an emergency and the emergency was not the result of the owner or occupier committing a contravention of this bylaw.

76. The Corporation may supply a Curb Stop key on loan to any Person approved by the Director if the security set out in Table IV Schedule "A" has been provided, and the Corporation may retain the security if the key is not returned within 14 days.

Discharge Applications

77. Any Person who requests that the Corporation review its registered interest in a parcel and consider whether it is prepared to discharge a right-of-way, easement or other charge that permits the installation or maintenance of water, on private land, the requestor must pay the fee specified for right-of-way discharge review in Table IV of Schedule "A".

Part 8 Conditions of Supply

78. It is a condition of use of the Water Service or withdrawing water from the Irrigation Water System that each consumer agrees that:
- (a) the Corporation does not guarantee constant water pressure or a continuous supply of water, and the Corporation reserves the right at any and all times, without notice, to change operating conditions for the purposes of making repairs, extensions, alterations or improvements or for any other reason;
 - (b) the Corporation does not guarantee that water will be free of sediment, deposit or other foreign matter;
 - (c) if the consumer requires water for processes which require a guaranteed supply and pressure, or a critical standard of purity, the consumer shall, at their expense, provide such equipment as necessary to provide the required standards and to protect such equipment from damage due to variations in or cessation of the municipal water supply;
 - (d) the Corporation shall not be responsible for the accuracy of records with respect to the location of any works, or for costs incurred by the parties relying on such records; and,
 - (e) the Corporation shall not be liable for any expense in connection with any portion of a Water Service located on the premises of a consumer, except the cost of placing or repairing meters or remote readers.

Part 9 General Provisions, Enforcement and Penalty

79. The owner or occupier of premises to which water is supplied by the Corporation must permit employees and agents of the Corporation to have clear access to the premises at reasonable times for the purpose of maintenance, repair, replacement, monitoring water consumption by means of meter readings, and inspecting the premises in relation to wastage of water or use of water in contravention of water use restriction orders.

80. No Person shall, without the authorization of the Director, alter, repair, tamper with or make any connection to the Waterworks System.
81. No Person shall connect to the water supply system of any premises, apparatus, fitting or fixture that is likely to cause pressure surges, noise or any other disturbance likely to annoy any other user of the Waterworks System or damage the Waterworks System or the water supply works, fittings or fixtures on other premises.
82. No Person shall obstruct any portion of the Waterworks System of the Corporation including the placing of any material on or in the vicinity of any water main, hydrant or Water Service pipe, and the Director may direct the removal of any such obstruction and invoice the Assessed Cost of that removal to the Person who placed it.
83. No Person shall perform any excavation or blasting in proximity to any water main without first ascertaining the location of the water main and obtaining the written permission of the Director.
84. No Person shall sell to any other Person any water supplied by the Corporation through the Waterworks System or the Irrigation Water System.
85. No Person shall provide to any other premises, any water supplied to that Person's premises by the Corporation through the Waterworks System or the Irrigation Water System, unless approved by the Director.
86. Any Person who:
- (a) contravenes, violates, or fails to comply with any provision of this bylaw;
 - (b) suffers or allows any act or thing to be done in contravention of this bylaw; or,
 - (c) fails or neglects to do anything required to be done under this bylaw;
- commits an offence and upon conviction shall be liable to a fine of not more than Ten Thousand Dollars (\$10,000.00), and where the offence is a continuing one, each day that the offence is continued shall constitute a separate offence.
87. This Bylaw may be enforced:
- (a) by a Peace Officer, Bylaw Enforcement Officer, or the Engineer;
 - (b) by means of a ticket in the form prescribed for the purpose under the *Community Charter*, and fines imposed for offences under *The Corporation of Delta Municipal Ticketing Information Bylaw No.6639, 2007*;

- (c) by proceeding brought under the *Offence Act*; or,
- (d) by means of a bylaw notice and penalty imposed by a bylaw of the Municipality under the *Local Government Bylaw Notice Enforcement Act*.

- 88. Under the provisions set out in the *Community Charter*, any fees or penalties assessed by the Corporation that are unpaid by the property owner by December 31 may be collected in the same manner as for property taxes.
- 89. Neither failure to enforce this Bylaw, nor any error, omission, or other neglect in relation to the enforcement of this Bylaw, shall be interpreted as giving rise to a cause of action in favour of any Person.
- 90. No occupier of federal Crown land shall be provided a supply of water from the Waterworks System unless the occupier enters into a written agreement with the Corporation by which the occupier agrees to comply with the provisions of this bylaw, and other provisions (e.g. Limits to the consumption of water to a volume specified in the agreement).
- 91. Delta Waterworks Rates and Regulation Bylaw No. 5781, 2000 and amendments thereto are repealed.
- 92. Annacis Island Water Area Rates and Regulation Bylaw No. 4096, 1987 and amendments there to are repealed.
- 93. Schedules "A" through "E" form part of this bylaw.

READ A FIRST TIME the 7th day of **March, 2016.**

READ A SECOND TIME the 7th day of **March, 2016.**

READ A THIRD TIME the 7th day of **March, 2016.**

FINALLY CONSIDERED AND ADOPTED the 4th day of **April, 2016.**

"Lois E. Jackson"

Lois E. Jackson
Mayor

"Robyn Anderson"

Robyn Anderson
Municipal Clerk

Amend BL
8009, 2021

**SCHEDULE "A"(1)
CITY OF DELTA
WATER USER RATES**

I. FLAT RATES (ANNUAL)	\$
1) Dwelling Units For each un-metered Dwelling Unit For each un-metered Dwelling Unit (other than a Secondary Suite with a Secondary Suite Occupancy Permit) occupied by no more than one Person (established by an annual declaration of the fact). For each un-metered Secondary Suite with a Secondary Suite Occupancy Permit.	589.00 489.00 389.00
2) Business, Industrial and Other For each business, industrial or other non-domestic use For each business combined with un-metered domestic use	619.00 619.00 plus rate applicable to domestic premises
3) Church For each church building (including church hall)	589.00
4) School For each classroom	589.00
5) Farm Irrigation For each folio assessed as Class 9 (farm) under the <i>Assessment Act</i>	500.00
6) Buildings Under Construction For all buildings under construction	Rate applicable to the building once constructed
7) All users outside Water Area and outside TFN Lands (Tsawwassen First Nation) Per Parcel	1,294.00
8) All parcels outside of the Agricultural Water Rate Area, without a Water Service, but adjacent to the Waterworks System, Per Parcel	100.00

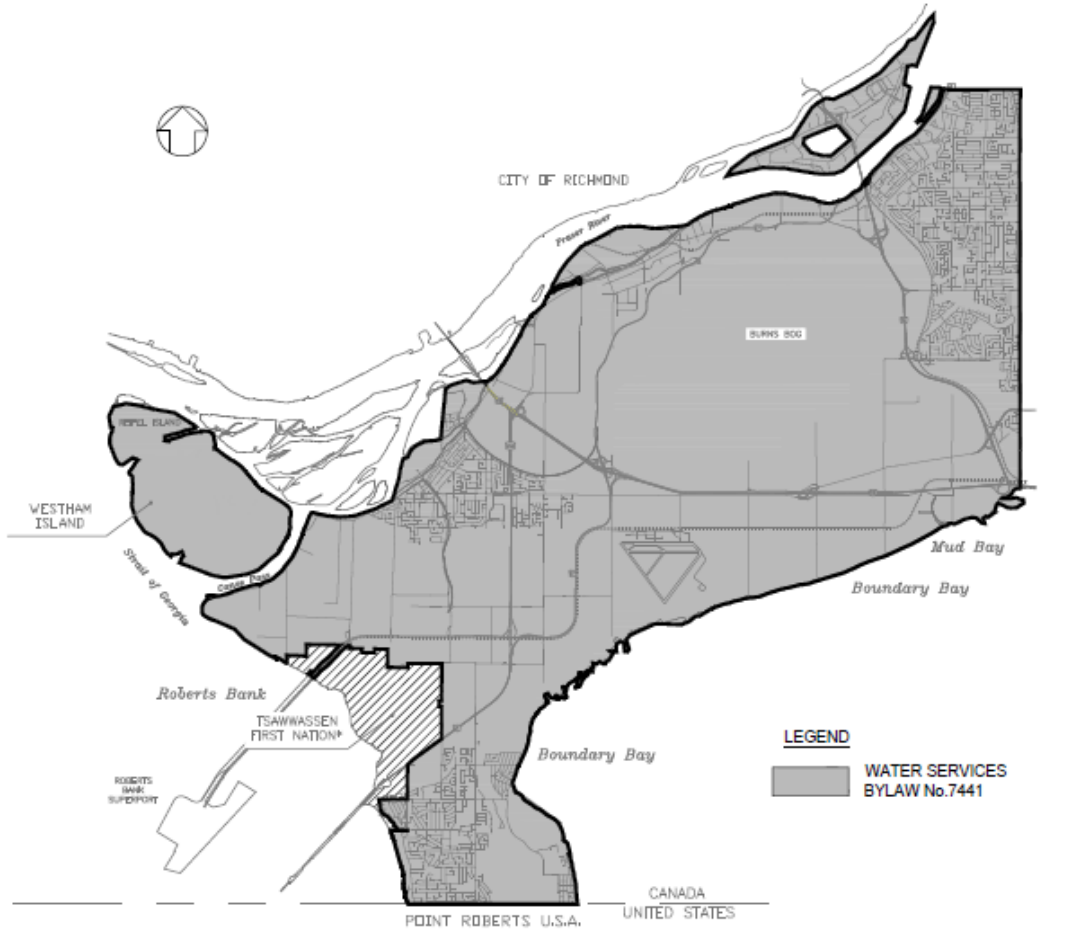
**SCHEDULE "A"(2)
CITY OF DELTA
WATER USER RATES**

II. METERED CONSUMPTION RATES	\$
1) Consumers in Water Area Per cubic metre (first 125 cubic metres per quarter) Per cubic metre (per each cubic metre thereafter) Minimum quarterly charge	1.08 1.48 25.00
2) Consumers Outside Water Area a) Consumers outside Water Area and outside TFN Lands (Tsawwassen First Nation) Per cubic metre Minimum quarterly charge b) Consumers in TFN Lands Per cubic metre (first 125 cubic metres per quarter) Per cubic metre (per each cubic metre thereafter) Minimum quarterly charge	2.55 319.00 1.08 1.48 25.00
3) Agricultural Consumers (Agricultural Water Rate Area) Per cubic metre (first 8,000 cubic metres per quarter) Per cubic metre (per each cubic metre thereafter) Minimum quarterly charge	0.96 1.48 25.00

Amend BL
8009, 2021

**SCHEDULE "A"(3)
CITY OF DELTA
WATER USER RATES**

III. WATER SERVICE CONNECTION FEES	DEPOSIT	\$
Water Service Connection that is 19mm or less installed at property line for a serviced lot, including meter chamber and components	N/A	4,547.00
Installation of a meter for a serviced lot (19mm or less), where the existing Service Connection is less than twenty-five years old	2,100.00	Assessed Cost
All other Water Service Connections	100% of Estimate	Assessed Cost
IV. SERVICE AND DISCONNECTION FEES		\$
Disconnection of Water Service Connection (capped at Curb Stop)	100% of Estimate	Assessed Cost
Discontinuance of Water Service Connection (capped at main)	100% of Estimate	Assessed Cost
Reactivation of Water Service Connection	100% of Estimate	Assessed Cost
Locating and repairing Curb Stop	100% of Estimate	Assessed Cost
Turn off and turn on Curb Stop	100% of Estimate	Assessed Cost
Loan of Curb Stop key (refundable deposit) (deposit forfeited after 14 days)		140.00
Deposit for testing a meter		430.00
Test flow rate and pressure at hydrant or standpipe		310.00
Test flow rate and pressure at hydrant or standpipe where more than two pressure readings are required		465.00
Special meter reading		87.00
Return attendance Fee		104.00
Sprinkling permit for new landscaping		56.00
Backflow Prevention Assembly Test Reports		25.00
Any service or work not otherwise specified in this schedule		Assessed Cost
RIGHT OF WAY DISCHARGE APPLICATIONS		
Offset fee for review of municipal right of way discharge application		335.00
V. FEES FOR USE OF HYDRANTS AND STANDPIPES		\$
1) Security Deposit Refundable subject to cost of any required repairs, which will be billed at Assessed Cost		
a) Double Check Valve Assembly (DCVA)		1,000.00
b) Meter		1,600.00
2) Inspection fee Non-refundable		245.00
3) Charge for water		
a) Flat Rate		
For first day		212.00
For each subsequent day		120.00
b) Metered		
Per cubic metre		2.55
Minimum quarterly charge		816.00
4) Permit Fee		44.00



FILE: C:\drafting\Bylaw Drafting\Water Bylaw 7441 2020.dwg

* TFN WATER SERVICE CHARGES AS PER THE WATER SERVICES AGREEMENT DATED APRIL 2, 2018

REFERENCE:

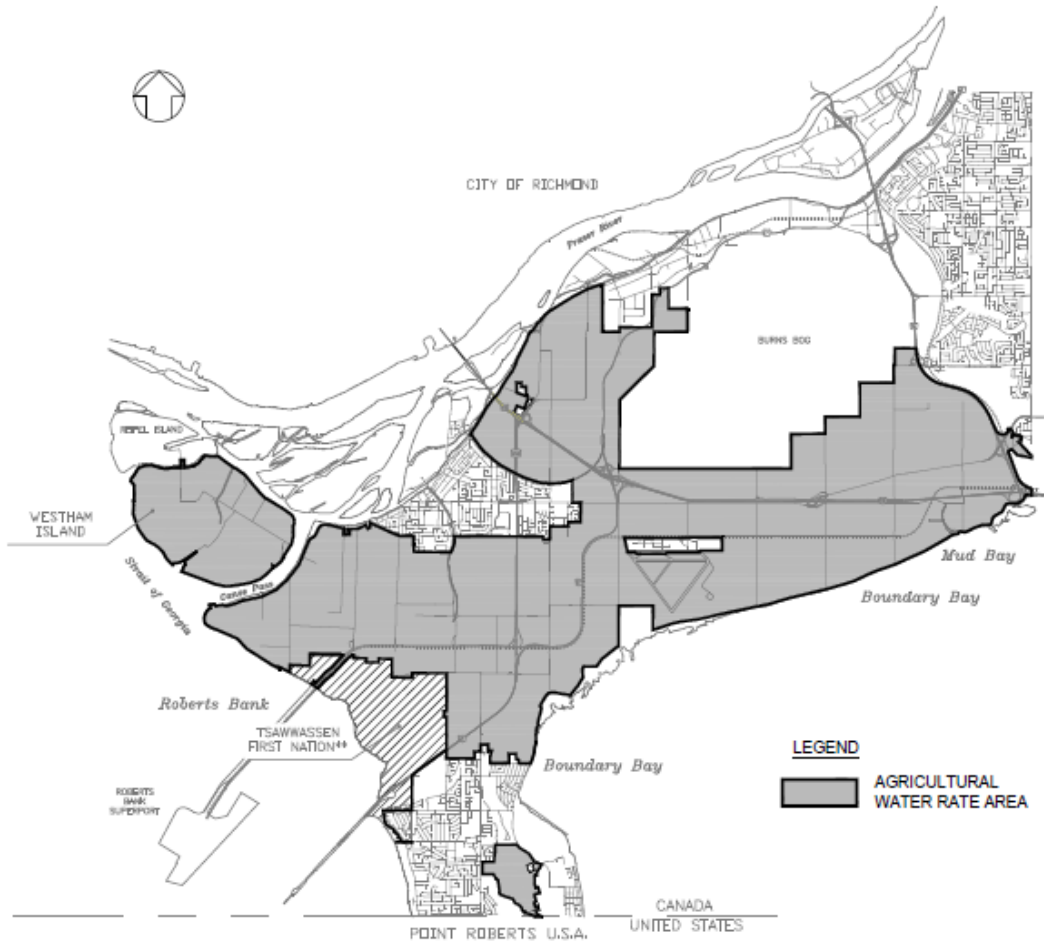
SCHEDULE B, BYLAW 7441

DATE: DEC 22/2020

Bylaw No. 7441

CITY OF DELTA
AGRICULTURAL WATER
RATES MAP

Schedule "C"



FILE: C:\drafting\Bylaw Drawings\Water Bylaw 7441
2020.dwg

** TPN IRRIGATION LEVY AS PER THE DRAINAGE AND IRRIGATION SERVICING AGREEMENT
DATED APRIL 2, 2018

DATE: DEC 22/2020


REFERENCE:

SCHEDULE C, BYLAW 7441

Amend BL
7744, 2018

SCHEDULE "D"
CITY OF DELTA
SPRINKLING PERMIT FOR A NEW LAWN

PERMIT NO.

<p>THIS NEW LAWN IS</p> <p>EXEMPT FROM CURRENT WATERING RESTRICTIONS</p>  <p>CITY OF DELTA ENGINEERING DEPARTMENT</p> <p>ADDRESS: _____ EXPIRES: _____</p>

FOR FURTHER INFORMATION PLEASE CALL 604-946-3260

PERMIT NO.

SPECIAL CONDITIONS OF THIS PERMIT

This permit is to be posted inside a clear window located on the subject property with the reverse side facing the street, and must be displayed at all times up to and including the expiry date shown.

This permit enables the subject property owner to water their new lawn and landscaping every day for a period of three weeks in accordance with the expiry date noted but is restricted to morning hours between **4:00 A.M. – 9:00 A.M.**

Any violations of this permit will be subject to maximum fine levied against the property owner as issued in accordance with "Delta Water Service Bylaw No. 7441, 2016".

Bylaw Enforcement
City of Delta

FOR FURTHER INFORMATION PLEASE CALL 604-946-3260

SCHEDULE "E"
CITY OF DELTA
Water Use Restriction General Order
CITY OF DELTA

WATER USE RESTRICTION GENERAL ORDER

INTERPRETATION

1. In this Order, unless the context otherwise requires, terms are used as defined in the section entitled 'Glossary and Terms'.
2. The restrictions in this Schedule apply to the use of water supplied by the waterworks system of the City of Delta, whether or not the water is mixed with water from other sources.

GENERAL RESTRICTIONS

3. When General Restrictions are in force, a person must not:
 - (a) use a hose unless the hose is equipped with an automatic shut-off device;
 - (b) allow water to unnecessarily run off on impermeable surfaces such as driveways, curbs, pathways, or gutters when watering lawns and plants;
 - (c) water an artificial playing turf or outdoor track, except for a health and safety reason;
 - (d) allow hoses and taps to run unnecessarily; or
 - (e) allow irrigation systems to be faulty, leaking, or misdirected.

STAGE 1 RESTRICTIONS

4. Subject to section 5 of this Order, when Stage 1 Restrictions are in force, a person must not:
 - (a) water any lawn, except at:
 - (i) residential premises with even numbered civic addresses, on Wednesday and Saturday mornings between the hours of 4:00 a.m. and 9:00 a.m.;
 - (ii) residential premises with odd numbered civic addresses, on Thursday and Sunday mornings between the hours of 4:00 a.m. and 9:00 a.m.;
 - (iii) non-residential premises with even numbered civic addresses, on Monday mornings between the hours of 1:00 a.m. and 6:00 a.m. and Friday mornings between the hours of 4:00 a.m. and 9:00 a.m.; or
 - (iv) non-residential premises with odd numbered civic addresses, on Tuesday mornings between the hours of 1:00 a.m. and 6:00 a.m.

and Friday mornings between the hours of 4:00 a.m. and 9:00 a.m.;

- (b) water any trees, shrubs, and flowers excluding edible plants, except at:
 - (i) residential premises, on any day between the hours of 4:00 a.m. to 9:00 a.m., if using a sprinkler;
 - (ii) residential premises, on any day at any time, if using a handheld hose, soaker hose, water container, or drip irrigation;
 - (iii) non-residential premises, on any day between the hours of 1:00 a.m. to 9:00 a.m., if using a sprinkler; or
 - (iv) non-residential premises, on any day at any time, if using a handheld hose, soaker hose, water container, or drip irrigation;
 - (c) water any playing field, except:
 - (i) soil-based playing fields, on any day between the hours of 7:00 p.m. to 9:00 a.m.; or
 - (ii) sand-based playing fields, on any day between the hours of 7:00 p.m. to 9:00 a.m.
5. Section 4 of this Order does not apply to:
- (a) a person who waters a lawn, a playing field, or landscaping at premises described in a permit authorizing such watering, provided the person is and has been at all times in compliance with the permit;
 - (b) soil or sand-based playing fields operating under an approved Water Management Plan;
 - (c) filling of pools, spas, water parks and foundations, sprinklers actively in use by children; or
 - (d) watering vegetable gardens.

STAGE 2 RESTRICTIONS

6. Subject to section 7 of this Order, when Stage 2 Restrictions are in force, a person must not:
- (a) water any lawn, except at:
 - (i) residential premises with even numbered civic addresses, on Wednesday mornings between the hours of 4:00 a.m. and 9:00 a.m.;
 - (ii) residential premises with odd numbered civic addresses, on Thursday mornings between the hours of 4:00 a.m. and 9:00 a.m.;
 - (iii) non-residential premises with even numbered civic addresses, on Monday mornings between the hours of 1:00 a.m. and 6:00 a.m.; or
 - (iv) non-residential premises with odd numbered civic addresses, on Tuesday mornings between the hours of 1:00 a.m. and 6:00 a.m.;
 - (b) water any trees, shrubs, and flowers excluding edible plants, except at:

- (i) residential premises, on any day between the hours of 4:00 a.m. to 9:00 a.m., if using a sprinkler;
 - (ii) residential premises, on any day at any time, if using a handheld hose, soaker hose, water container, or drip irrigation;
 - (iii) non-residential premises, on any day between the hours of 1:00 a.m. to 9:00 a.m., if using a sprinkler; or
 - (iv) non-residential premises, on any day at any time, if using a handheld hose, soaker hose, water container, or drip irrigation;
- (c) water any playing field, except:
- (i) soil-based playing fields, on no more than 4 days in a 7 day period between the hours of 7:00 p.m. to 9:00 a.m.; or
 - (ii) sand-based playing fields, on any day between the hours of 7:00 p.m. to 9:00 a.m.;
- (d) water the fairway of any golf course, except at any time on any 1 day in a 7 day period;
- (e) wash sidewalks, driveways, walls, roofs or other impermeable outdoor surfaces, unless the purpose of washing the surface is:
- (i) for the health or safety of any person, or to prevent or control fires;
 - (ii) to prepare a surface for painting, or similar treatment; or
 - (iii) aesthetic cleaning by a commercial cleaning operation;
- (f) operate any water park unless the water is activated by user-activated switches;
- (g) use water to top up or fill an aesthetic water feature.
7. Section 6 of this Order does not apply to:
- (a) a person who waters a lawn, a playing field, or landscaping at premises described in a permit authorizing such watering, provided the person is and has been at all times in compliance with the permit;
 - (b) soil or sand-based playing fields operating under an approved Water Management Plan;
 - (c) golf courses operating under an approved Water Management Plan;
 - (d) watering:
 - (i) the tee-off areas and putting greens of golf courses; or
 - (ii) vegetable gardens.

STAGE 3 RESTRICTIONS

8. Subject to section 9 of this Order, when Stage 3 Restrictions are in force, a person must not:
- (a) water any:
 - (i) lawn;

- (ii) trees, shrubs, and flowers, excluding edible plants, unless such watering is carried out using a handheld hose, water container, or drip irrigation;
- (b) water any playing field, except:
 - (i) soil-based playing fields, on no more than 3 days in a 7 day period between the hours of 7:00 p.m. to 9:00 a.m.;
 - (ii) sand-based playing fields, on no more than 5 days in a 7 day period between the hours of 7:00 p.m. to 9:00 a.m.;
- (c) water any golf course fairway
- (d) wash boats or motor vehicles, except to clean windows, lights, mirrors, licence plates, and boat engines for safety;
- (e) wash sidewalks, driveways, walls, roofs or other impermeable outdoor surfaces, unless the purpose of washing the surface is:
 - (i) for the health or safety of any person, or to prevent or control fires; or
 - (ii) to prepare a surface for painting, or similar treatment by a commercial cleaning operation;
- (f) operate a commercial car wash, except if:
 - (i) the facility installed an automatic vehicle wash system before November 1 2017, and is operating on a basic wash and rinse cycle only;
 - (ii) the facility installed an automatic vehicle wash system after November 1 2017, and is operating using a water recycling system that achieves a minimum 60% water recovery rate over the full wash cycle; or
 - (iii) the facility is a hand wash and self-serve facility, and is operating using high-pressure wands or brushes that achieve a maximum flow rate of 11.4 litres per minute;
- (g) operate water parks unless the water is activated by user-activated switches;
- (h) use water to top up or fill aesthetic water features, hot tubs, or swimming pools, except:
 - (i) pools and hot tubs with a permit to operate in accordance with health authorities having jurisdiction over pool and hot tub regulation.

9. Section 8 of this Order does not apply to:

- (a) a person who waters a lawn, a playing field or landscaping at premises described in a permit issued under Stage 1 or 2 restrictions, authorizing such watering, provided the person is and has been at all times in compliance with the permit;

- (b) soil or sand-based playing fields operating under an approved Water Management Plan;
- (c) golf courses operating under an approved Water Management Plan;
- (d) watering:
 - (i) the tee-off areas and putting greens of golf courses; or
 - (ii) vegetable gardens.

STAGE 4 RESTRICTIONS

10. Subject to section 11 of this Order, when Stage 4 Restrictions are in force, no person shall:
 - (a) water, or use drip irrigation on:
 - (i) any lawn or landscaping, including at premises described in a permit issued under Stage 1 or 2 restrictions authorizing such watering;;
 - (ii) residential or commercial flower gardens;
 - (iii) residential or commercial vegetable gardens;
 - (iv) decorative planters;
 - (v) shrubs or trees;
 - (vi) golf courses;
 - (vii) turf farms;
 - (viii) soil and sand-based sports playing fields;
 - (ix) municipal parks;
 - (x) cemeteries;
 - (xi) ornamental lawns;
 - (xii) grassed boulevards;
 - (xiii) school yards;
 - (b) wash boats or motor vehicles, except to clean windows, lights, mirrors, licence plates, and boat engines for safety;
 - (c) use a hose to wash sidewalks, driveways, walls, roofs or other impermeable outdoor surfaces, unless the washing has been ordered by a regulatory authority having jurisdiction for a health or safety reason;
 - (d) operate a water park;
 - (e) use water to fill or refill aesthetic water features, hot tubs, or swimming pools; or
 - (f) operate a commercial car wash.
11. For greater certainty, section 10 of this Order applies to all areas of:
 - (a) golf courses, including those operating under an approved Water Management Plan;

- (b) soil and sand-based playing fields, including those operating under an approved Water Management Plan;
- (c) turf farms;
- (d) municipal and commercial water parks;
- (e) municipal outdoor pools;
- (f) sports playing fields, including those operating under an approved Water Management Plan; and
- (g) school yards.

GLOSSARY AND TERMS

‘Aesthetic cleaning’ means the use of water for cleaning when it is not for a health or safety reason.

‘Aesthetic water feature’ means a fountain, pond, or other water feature that primarily serves an aesthetic purpose. It does not include ponds that contain fish.

‘Automatic shut-off device’ means a device attached to a water hose that shuts off the supply of water automatically unless hand pressure is applied to operate the device.

‘Automatic vehicle wash system’ includes:

‘Conveyor vehicle wash’ a commercial vehicle washing facility where the customer’s vehicle moves through an enclosed conveyance mechanism during the wash.

‘In-bay vehicle wash’ a commercial vehicle washing facility where the customer parks the vehicle inside a bay, and the vehicle remains stationary while a spray mechanism moves over the vehicle to clean it.

‘Basic wash and rinse cycle’ means a process sequence in an automatic vehicle wash system that consists of a single wash stage followed by a single rinse stage and no additional processes or optional stages; typically this is the minimum level of service that a customer can select, where total water usage is less than 200 litres per vehicle.

‘Commercial vehicle washing’ means commercial vehicle washing services offered to the public for a fee, but excludes car dealerships, fleet vehicle washing facilities, and charity car washes.

‘Drip Irrigation’ means an irrigation system that delivers water directly to the root zone of the plant at a low flow rate through individual emission points (emitters) using droplets of water and excludes sprinkler irrigation systems, micro-spray systems, misting systems, and soaker hoses.

‘Edible plant’ means a plant grown for the purpose of human consumption.

‘Golf course’ means the greens, tee areas, and fairways that are designed and maintained as playing surfaces for golf, but does not include rough areas or lawns that are not maintained as playing surfaces.

‘Hand wash and self-service facility’ a commercial vehicle washing facility where the facility’s staff wash the customer’s vehicle, or the customer wash their own vehicles with spray wands and brushes.

‘Health and safety reason’ means a precaution necessary to protect health and safety, including the removal of contaminants, bodily fluids, slip and fall hazards, controlling pests, and suppressing and controlling dust.

‘Impermeable surface’ means a material added to the surface of the ground, or on the exterior of a building or structure that is impermeable to water, including but not limited to glass, wood, concrete, asphalt, paving stones, and other similar materials.

‘Lawn’ means a cultivated area surrounding or adjacent to a building that is covered by grass, turf, or a ground cover plant such as clover, including areas such as boulevards, parks, school yards and cemeteries, but excluding golf courses, soil-based playing fields, and sand-based playing fields.

‘Non-residential’ includes properties zoned for a permitted use other than a residential use, including commercial, industrial, institutional, mixed residential and non-residential uses, local government, provincial, or federal uses including road rights of way and school, college and university uses.

‘Odd-numbered civic address’ or **‘Even-numbered civic address’** means the numerical portion of the street address of a property, and in the case of multi-unit commercial or residential complex such as townhouses, condominiums or other strata-titled properties, means the numerical portion of the street address that is assigned to the entire complex, and not the individual unit number.

‘Sand-based playing field’ means a playing field that is constructed with a highly permeable sand-based root zone typically 30 to 40 centimetres deep over a drainage system with drain pipes bedded in gravel, and is designed and maintained to be playable year-round. 17

‘Soaker hose’ means a garden hose or pipe with small holes that allow water to seep into the ground, to the roots of plants, discharging water through the entire length of its porous surface.

‘Soil-based playing field’ means a playing field that is covered with grass, sod or turf that is designed and maintained to be played upon, or that is used for sporting or other community events and activities, but does not include lawns, golf courses, or sand-based playing fields.

‘Water Management Plan’ a plan proposed by the owner or operator of a golf course, soil-based playing field, and sand-based playing field operators and approved by the local government having jurisdiction. The plan sets out terms such as water use targets during the different stages of Metro Vancouver’s Drinking Water Conservation Plan, restrictions to reduce water use, and reporting requirements for the owner or operator.

‘Water play park’ a recreational facility that is primarily outdoors, including spray pools and wading pools, spray parks, splash pads, and water slides.

‘Watering lawn’ means applying water to a lawn with any device or tool including but not limited to a sprinkler, hose, mister, or drip irrigation.

SCHEDULE "F"
CITY OF DELTA
Draft Golf Course Water Management Plan

PART 1 – OVERVIEW

INTRODUCTION:

This Water Management Plan (the Plan) is being submitted for review and approval by Director of Engineering, as permitted in Section 32 of the Delta Water Service Bylaw No. 7441, 2016 and in alignment with Metro Vancouver’s Drinking Water Conservation Plan (DWCP).

In submitting this Plan, the golf course acknowledges its responsibility to manage its irrigation water use for maximum efficiency and to eliminate water wastage in the maintenance of turf and their operations.

The Plan applies to the use of drinking water supplied by your local government from the Greater Vancouver Water District (GVWD) water system. This Plan uses a volume-based approach to watering golf courses in order to provide the golf course operator flexibility in irrigation scheduling for asset management, while striving for increased efficiency and water conservation.

The Plan is effective during the period of **May 1 to October 15** (the “Restriction Period”), and subject to review and updates according to best management practices.

GOLF COURSE:

LOCATION:

(Address, City)

CONTACT:

Superintendent or GM

(Name, E-mail, Phone)

ALTERNATE CONTACT:

(Name, E-mail, Phone)

DATE OF SUBMISSION:

PART 2 - GOLF FACILITY INFORMATION

1. a) Area characteristics

	Irrigated Area <i>Please circle: acres / sq. ft. / ha / m²</i>	Turf Type <i>(e.g. bent grass, poa annua, perennial rye, fescue, bluegrass, other)</i>	Soil Type <i>(e.g. sand, soil, other)</i>
Green			
Tees			
Fairwa			
Rough			
Drivin			
Lawns			
Flower beds			
Other			
Total			

b) Adjustment factor for under-irrigation of roughs

What is the average irrigation intensity for roughs, as a percentage of fairways?
_____ %

Adjusted area = total area – (100% – rough adjustment factor) x area of roughs
= _____ acres / sq. ft. / ha / m²

2. Method of calculating irrigated areas

- Physical measurement
- Calculations from scaled air photos
- GPS Survey
- Other: _____

3. Description of irrigation system

Please describe the type of irrigation system used in each area (e.g. computerized/automatic systems, electric/hydraulic heads, head control, weather station, block system, operating program etc.) *(Attach irrigation plan if available)*

- a. Greens & Tee Boxes: _____
- b. Fairways: _____
- c. Roughs: _____
- d. Other (landscaping etc.): _____

PART 3 - WATER USE INFORMATION

4. Seasonal historic water use: May 1 – October 15 of the past five years

Date	Drinking Water	Other Water Sources	Total Water Use	Notes (e.g. drivers, restriction stages)
	<i>please circle: m³ / US gal. / imp. gal. / cu. ft.</i>			
2013				
2014				
2015				
2016				
2017				
Baseline (average)				
Total irrigated area (from Question 1)				
Baseline per unit of area				See Attachment 2

5. Method of measuring water use (e.g. meter, pump flow rate and run time):

a. Drinking water: _____

Frequency: _____ (e.g. monthly)

b. Other water source: _____

Frequency: _____ (e.g. monthly)

6. Other water sources

Please describe other sources of supply _____

PART 4 - MEASURES TO CONSERVE AND REDUCE WATER USE

During the Restriction Period, the following water use targets are agreed upon with escalating water conservation measures and volumes corresponding to stages of the Delta Water Service Bylaw 7441, 2016 and Metro Vancouver’s DWCP. Escalation of stages is in response to declarations made by Metro Vancouver, through the GVWD Commissioner who has the authority to activate or deactivate stages of the DWCP at any time in response to water shortages, or emergencies.

7. Stage 1 water use target (May 1 – Oct 15)

a. Baseline seasonal total water use (average of past 5 years, from Question 4)

= _____ m³

b. Adjust Stage 1 water use target as required: _____ m³

(See Attachment 2)

8. Water use targets

Maximum total drinking water use per month for entire golf course area:

Stage	Drinking Water Use Target						
	May	Jun	Jul	Aug	Sep	Oct 1-15	Total
Stage 1 ^a							
Stage 2 ^b							
Stage 3 ^c							
Stage 4	No irrigation with drinking water is permitted						

- a. Seasonal total from Question 7
- b. 75% of Stage 1 water targets
- c. 60% of Stage 1 water targets

NOTE: See Attachment 2 for methodology for setting drinking water use targets, including adjustment for availability of non-drinking water in a drought year.

Water efficiency plan

Please select all water efficiency practices that are regularly used by the golf course, and indicate the areas each strategy is applied. Further details may be attached to this Plan (e.g. existing water efficiency plan).

Strategies	Areas Applied (please circle all that apply)
<input type="checkbox"/> Aeration ____ x per year	greens / tees / fairways / roughs
<input type="checkbox"/> Soil wetting agents	greens / tees / fairways /
<input type="checkbox"/> Regular irrigation system maintenance	roughs greens / tees / fairways / roughs
<input type="checkbox"/> Increasing mowing heights	greens / tees / fairways / roughs
<input type="checkbox"/> Water loss monitoring	greens / tees / fairways / roughs
<input type="checkbox"/> Over seeding	greens / tees / fairways / roughs
<input type="checkbox"/> Naturalizing out-of-play areas	
<input type="checkbox"/> Water-free equipment cleaning methods	

Water efficiency infrastructure and strategies

Please describe water efficiency infrastructure currently in use on the golf course (e.g. automatic shut-off valves, moisture sensors, satellite upgrades for head control, increased pipe size, closed loop wash water system, scheduling software, PRVs, sprinkler heads, staff training, customer communication etc.).

Other efficiency initiatives in use

Please describe any changes to golf course operations to meet water reduction targets during restriction periods (*see Question 8*).

Projects planned

Please describe any projects planned in the upcoming years that may have an impact on water use, either in a single year or on an ongoing basis (*e.g. equipment upgrades/repairs, planting etc.*).

PART 5 – REPORTING

9. Annual report

An annual report is to be submitted in writing to the Director of Engineering by January 30 of the year following the year of the plan (Attachment 1).

Annual Report Requirements: Summary of monthly total and drinking water usage (m³/ US gal. / imp. gal. / cu. ft.) during the Restriction Period and an updated map of golf course grounds.

10. Status reports

Status reports will be required more frequently if higher restriction stages are enacted, according to the following schedule:

Status reporting periods: Monthly, Stages 1 and 2
Every two weeks, Stage 3

Status reporting requirements: Water usage per month (m³/ US gal. / imp. gal. / cu. ft.)

In the event of water restriction escalation, the City of Delta will read the local government water meter register on the day of the water restriction escalation to verify consumption to-date. The reduced water use target will be calculated using the verified water meter consumption and provided to the golf course operator in writing.

Delta staff will verify consumption against regular and spot-check local government meter readings and collate results in a monitoring report to be shared with the golf course operator over the period of the Plan.

PART 6 – TERMINATION OF THE PLAN

The Director of Engineering may terminate or suspend the Plan by notifying the golf course owner in writing.

The golf course owner may terminate the Plan by notifying the Director of Engineering in writing, in which case the Plan is to terminate on the later of the date specified in the notice or the date on which the Director of Engineering receives the notice.

In the event of termination of the Plan, the scheduling restrictions set out in Delta Water Service Bylaw No. 7441, 2016 and in alignment with Metro Vancouver's Drinking Water Conservation Plan will apply.

This Plan has been reviewed and is authorized by signatures of the Director of Engineering and [*authorized representative of the Golf Course*].

Name
Title

Date

Name
Title

Date

ATTACHMENT 1 – WATER USE REPORT

Golf Course: _____

Water Management Plan submitted by: _____
(Signature and title) Date

Water Management Plan approved by: _____
(Signature and title) Date

Requirements

Participating golf courses are required to report actual monthly water use to the Appointed Officer, as per the _____ Bylaw.

Date	Restriction Stage	Drinking Water	Other Water Sources	Total Water Use	Notes
		<i>please circle: m³ / US gal. / imp. gal. / cu. ft.</i>			

Please provide a current map of the golf course that clearly shows all irrigated areas, as an attachment to this report.

ATTACHMENT 2

GUIDE FOR ESTABLISHING AND ADMINISTERING GOLF COURSE WATER MANAGEMENT PLANS

Developing a Water Management Plan (the Plan) is optional under Metro Vancouver's DWCP, requiring both the local government and the golf course owner to opt in and agree on terms. This template is intended as a guideline for developing and administering a Plan that complies with the Metro Vancouver DWCP and is tailored to individual golf course and local government needs and priorities.

DEFINITIONS

Evapotranspiration (ET): The combined amount of water that is evaporated from soil and plant surfaces (evaporation) and released through the plant (transpiration); a parameter calculated from weather data, available at <http://www.farmwest.com/climate/et>. ET represents the total amount of water that is required to maximize plant growth.

Moisture deficit (MD): The difference between measured ET and effective precipitation; a parameter calculated from weather data, available at <http://www.farmwest.com/climate/et>. MD represents the component of ET that is not replaced by natural precipitation and therefore relies on irrigation to maximize plant growth.

Reference Evapotranspiration (ET) - The ET rate calculated from weather data for a grass reference crop using a modified Penman Monteith Equation, which is the standard method recommended by the UN Food and Agriculture Organization.

Rough: Playable areas of long grass adjacent to fairways and surrounding greens. Excludes natural or forested areas.

Water use intensity: The amount of water used for irrigation per unit of irrigated land area.

Water use target: The maximum amount of drinking water that the golf course is expected to use in a given month or season while the DWCP is in effect. Although targets may be exceeded from time to time due to hotter and drier than average weather, it is expected that water use on average will be less than the agreed targets.

SETTING BASELINE AND ESCALATION TARGETS

It is recommended that a baseline water use target be established for Stage 1 by comparing historical water use with a calculated water budget based primarily on irrigated area and climate.

Stage 1 (Baseline) Water Use Target

1. Default Stage 1 target is the average water use for the five years prior to establishing the Plan. Target values should include seasonal total water use (May 1 – October 15), and maximum weekly water use. Usage during the season may be estimated from water billing amounts by netting out the daily average inter use, or using golf course water meter readings or irrigation scheduling records.

2. A water use target is established for each month during the irrigation season under Stage 1. Historical water use by the golf course may be used as a baseline. Based on historical average MDs at Vancouver International Airport¹, the following monthly profile may be used to establish or validate monthly water use targets.

Month	Percent of Total Seasonal Moisture Deficit (MD)
May	18%
June	22%
July	26%
August	22%
September	12%
October 1-15	0%
Total	100%

Actual monthly water use may vary widely from the historical average MD, based on variations in weather from year to year, and actual soil moisture capacity at the golf course.

3. The default Stage 1 target should be validated using calculated irrigation requirement based primarily on local climate and irrigated area. The method is as follows:

- a. Adjust the total irrigated area for under-irrigation of roughs (Part 2, Question 1.b). For example, if the roughs are irrigated at 75% of the intensity of fairways on average, reduce the effective irrigated area of roughs by 25%, and adjust the total irrigated area of the golf course accordingly.
- b. Next, convert total water use to water use intensity based on the total irrigated area, and the adjusted total irrigated area, as follows (imperial or metric units):

Water use intensity (inches) = 44.22 x total water use (million imp. gal.) / irrigated area (acres); or

Water use intensity (mm) = 0.1 x total water use (m³) / irrigated area (ha)

On average, golf courses in Metro Vancouver are estimated to use 10.6 inches (270mm) per year of water from all sources, on average for all irrigated areas (including greens, tees, greens collar/apron areas, fairways, roughs, and practice areas)²

- c. The irrigation requirement for individual golf courses varies based on course location, soil conditions, irrigation system efficiency, and the proportions of water intensive areas (greens and tees) to less water intensive areas (fairways and rough) that are included in the irrigated area. The following guidelines may be used for validating historical water use against benchmark water use.³

¹ Farmwest.com, accessed November 28, 2017

² Calculated from 2016 GVRD Golf Course Water Use Survey, Allied Golf Association of BC

³ Adjustment factors are based on data tables in *Turf and Landscape Irrigation Scheduling*, Irrigation Industry Association of BC, 2004. https://www.irrigationbc.com/files/free/Turf_Irrigation_Scheduling_Nov_2004.pdf Adjustments for soil type are conservative estimates based on the varying capacities of different soil types to act as a reservoir to store early season moisture and reduce the irrigation requirement in May and June, and varying losses to deep percolation.

Grass reference ET for local climate (refer to Farmwest.com for historical average for other weather stations. Calculated historical average grass reference ET from a weather station on the golf course may also be used).

- | | | |
|--------------------------|-----------|---------|
| i. Langley, Pitt Meadows | 9 inches | (230mm) |
| ii. Cloverdale, Ladner | 11 inches | (280mm) |
| iii. Vancouver | 14 inches | (360mm) |

- d. Adjust ET for plant type (typically 0.75 for turfgrass) and allowable stress (assume 0.8 on average for a golf course). Adjusted ET = grass reference ET x 0.75 x 0.8 = ET x 0.6.

Reduce ET by 40%.

- e. Adjust ET for native soil type
- | | |
|----------------------------------|-----------------|
| i. Clay, clay loam, silt loam | reduce by 10% |
| ii. Loam, sandy loam, loamy sand | no adjustment |
| iii. Sand | increase by 10% |

- f. Adjust ET for irrigation system efficiency to determine the irrigation requirement. Newer systems with efficient sprinkler heads, good layout and zone control are typically at least 80% efficient. Older systems with less efficient sprinklers and sub-optimal head layout and zone control may be 70% to 75% efficient.

Irrigation requirement = $ET / \text{efficiency} \times 100\%$

NOTE: An allowance for low system efficiency in the target should be accompanied by a firm plan or commitment by the golf course owner to improve the system efficiency within a specific timeframe (e.g. through capital asset renewal).

4. The local government determines whether the historical average will be used as the Stage 1 target, or if an adjustment should be made based on Step 3 and discussed with the golf course operator. If historical demands are significantly different from the adjusted benchmark, potential reasons for the difference should be discussed, and investigated as needed. These may include error in measurement or estimation of flows or irrigated areas, or high leakage losses in the water distribution system on the golf course.
5. Estimate the drinking water use target by subtracting historical non-drinking water usage from the total water use target.

Stages 2 and 3 Water Use Targets

1. Default Stage 2 targets are 75% of Stage 1 targets. It is expected that this target can be achieved through reducing the application rates for all irrigated areas (stressing turf grasses and/or increasing use of wetting agents), particularly fairways and rough areas.
2. Stage 3 targets are 60% of Stage 1 targets. To achieve this target, irrigation of some rough and fairway areas will likely need to be stopped altogether or reduced to the extent that significant die-off will occur. Increased irrigation will likely be necessary for at least one season following a Stage 3 event to restore healthy and durable turf.
3. Stages 2 and 3 targets are applied only to the irrigation that occurs when the stage is in effect, based on the monthly Stage 1 targets.
4. Where the golf course relies on drinking water as a secondary source, and has a primary source that is vulnerable to drought, municipal water use limits at each stage should be estimated by determining total water use targets, and reducing the totals by the quantity of non-drinking water expected to be available at each stage. A large reduction in the available quantity of water from a pond, aquifer or stream during a drought may result in an increased requirement for drinking water despite a reduction in total water usage of 25% or 40%.
5. No outdoor use of drinking water is permitted under Stage 4.

WATER MANAGEMENT PLAN ADMINISTRATION

Reporting

The Plan typically requires golf courses to report water use monthly during the irrigation season under Stage 1, and more frequently under Stages 2 and 3. Golf courses are also required to submit annual reports at the end of each season. Consideration should be given to reporting protocols that minimize the level of effort needed to prepare, submit and review reports. For example, it may be sufficient to report annually at the end of the irrigation season under Stage 1.

Performance Assessment

The Stage 1 target applies to an average year (average weather). Water use may be greater than the target in a dry year where restrictions are not escalated beyond Stage 1, or less in a wet year. Moisture deficit data for the nearest weather station (Farmwest.com) or at the golf course may be used to adjust targets in each month relative to the historical average. For example, for July 2017 at a golf course near Vancouver Airport:

$$\begin{aligned}\text{July 2017 target} &= \text{July target} \times \text{July 2017 MD} / \text{historical average MD} \\ &= \text{July target} \times 125\text{mm} / 108\text{mm} \\ &= \text{July target} \times 1.16\end{aligned}$$

Some flexibility is necessary in assessing weather-dependent water use against a fixed water efficiency target. Although it would be possible to set a target that varies with weather, managing water use against such a target is technically complex and has relatively high potential for error.

Communication

Although the Plan is an effective water conservation and drought response mechanism, it may be perceived as unfair by residents who are required to adhere to schedule restrictions, and cease lawn irrigation altogether under Stage 3. It is recommended that the structure and overall performance of the Plan be clearly communicated to the public. Elements of a communication program should include:

- Signage and website content that can be displayed by golf courses that includes consistent messaging throughout the region, and includes Metro Vancouver and local government logos.
- Website content and articles in local media, in partnership between Metro Vancouver, local governments and industry organizations that explain the program and its benefits in terms of water conservation, drought response, and continuity of services during a water shortage.

Plan Review and Renewal

It is recommended that Plans be reviewed on a five year cycle, at which time water use targets and water efficiency plans may be adjusted as required. More frequent adjustment of targets, particularly based on historical water use, may introduce “target creep”, reducing the effectiveness and fairness of the Plan.

Where a golf course has consistently exceeded its water use targets, or where actual water use above targets is not consistent with weather or other acceptable causes, the golf course and local government should develop a shorter-term plan (e.g. 1 or 2 years) to achieve targets. If targets cannot be achieved, the Plan should be terminated.

EXAMPLE

The following is a hypothetical example based on data from several actual golf courses operating under water management plans in Metro Vancouver.

A golf course in Vancouver reports its irrigated area as 30 ha, including 15 ha of roughs and 3 ha of greens and tees. The superintendent estimates that roughs are irrigated at 50% of the intensity of fairways on average based on the sprinkler system layout. Native soils are predominantly sandy loam.

In the past five years, the total reported water use has averaged 60,000 m³, including 40,000 m³ from the City and 20,000 m³ of non-drinking water from a large pond on the property that collects and stores runoff from the property and groundwater from a well.

In 2015, the golf course superintendent recognized that the non-drinking water source would only be capable of supplying 10,000 m³ due to the unusually hot, dry weather in late spring that year, and requested permission to use an additional 5,000 m³ from the City, which was purchased in June to top up the pond before Stage 2 and 3 restrictions came into effect.

The golf course has approached the City to request a water management plan be put in place.

Stage 1 Target

1. Based on the historical usage, the default Stage 1 municipal water use target is 40,000 m³/year. It is expected that 20,000 m³/year will be provided from non-drinking water sources.
2. The golf course does not have historical monthly water use data. Based on reference ET for Vancouver Airport and quarterly water billing data, the monthly water use targets are estimated as follows:

Month	Total (m ³)	Drinking Water Target (m ³)	Non-Drinking Water Target (m ³)
May	11,000	6,500	4,500
June	13,000	9,000	4,000
July	16,000	9,000	7,000
August	13,000	9,000	4,000
September	7,000	6,500	500
October 1-15	-	-	-
Total	60,000	40,000	20,000

3. Historical water use is checked against a climate based water budget:
 - a. Roughs are irrigated at 50% of the intensity of fairways, so the effective irrigated area is reduced by 50% of the rough area: 30 ha – (15 ha x 50%) = 22.5 ha.
 - b. The default annual target represents a gross water use intensity of 0.1 x (60,000 m³ / 30 ha) = 200 mm/year over the total irrigated area, which is significantly less than the reported regional average of 270 mm/year. This suggests that the golf course is already likely using water more efficiently than the regional average.
The adjusted intensity is 0.1 x (60,000 m³ / 22.5 ha) = 267 mm/year.
 - c. The reference ET for Vancouver is approximately 360 mm/year.
 - d. The reference ET is adjusted for plant type (assume 0.75 for turfgrass) and allowable stress (assume 0.8 on average for a golf course). Adjusted ET = 360 x 0.6 = 216 mm/year.
 - e. No adjustment is made for soil type (clay loam).
 - f. The irrigation system is assumed to be 80% efficient, typical of a newer golf irrigation system. The irrigation requirement is 216mm / 80% x 100% = 270mm.
4. The calculated irrigation requirement is almost exactly the same as the historical average; therefore the annual target is validated. No adjustment to the annual or monthly targets is necessary.
5. The total water requirement is 60,000 m³, of which **the Stage 1 target drinking water use is 40,000 m³.**

Stages 2 and 3 targets

During the time that Metro Vancouver is under Stage 2, the total water use by the golf course is reduced by 25%, and under Stage 3 it is reduced by 40%. Monthly targets for total water use are shown in the following table.

Stage	Total Water Use Target						
	May	Jun	Jul	Aug	Sep	Oct 1-15	TOTAL
Stage 1	11,000	13,000	16,000	13,000	7,000	-	60,000
Stage 2	8,250	9,750	12,000	9,750	5,250	-	45,000
Stage 3	6,600	7,800	9,600	7,800	4,200	-	36,000
Stage 4	No irrigation with drinking water is permitted						

Drinking water use targets for this golf course must also take into account a potential reduction in the availability of non-drinking water in a drought year. Based on the 2015 scenario, it is assumed that the non-drinking water supply availability would be reduced by 50% in a drought year (under Stages 2 and 3), as follows:

Stage	Non-Drinking Water Availability						
	May	Jun	Jul	Aug	Sep	Oct 1-15	TOTAL
Stage 1	4,500	4,000	7,000	4,000	500	-	20,000
Stage 2	2,250	2,000	3,500	2,000	250	-	10,000
Stage 3	2,250	2,000	3,500	2,000	250	-	10,000

The drinking water use targets are the difference between total water use targets and non-drinking water supply estimates under each stage, and in each month.

Stage	Drinking Water Use Target						
	May	Jun	Jul	Aug	Sep	Oct 1-15	TOTAL
Stage 1	6,500	9,000	9,000	9,000	6,500	-	40,000
Stage 2	6,000	7,750	8,500	7,750	5,000	-	35,000
Stage 3	4,350	5,800	6,100	5,800	3,950	-	26,000
Stage 4	No irrigation with drinking water is permitted						