

Appendix F

Burloak Water Purification Plant – Existing Permits and Approvals



DRINKING WATER WORKS PERMIT

Permit Number: 004-204

Issue Number: 2

Pursuant to the *Safe Drinking Water Act*, 2002, S.O. 2002, c. 32, and the regulations made thereunder and subject to the limitations thereof, this drinking water works permit is issued under Part V of the *Safe Drinking Water Act*, 2002, S.O. 2002, c. 32 to:

The Regional Municipality of Halton

**1151 Bronte Road
Oakville ON L6M 3L1**

For the following municipal residential drinking water system:

South Halton Drinking Water System

This drinking water works permit includes the following:

Schedule	Description
Schedule A	Drinking Water System Description
Schedule B	General
Schedule C	All documents issued as Schedule C to this drinking water works permit which authorize alterations to the drinking water system

DATED at TORONTO this 13th day of July, 2009

Signature

A handwritten signature in black ink that reads "Aziz Ahmed". The signature is written in a cursive style and is underlined with a single horizontal stroke.

Aziz Ahmed, P.Eng.
Director
Part V, *Safe Drinking Water Act*, 2002

Schedule A: Drinking Water System Description

System Owner	The Regional Municipality of Halton
Permit Number	004-204
Drinking Water System Name	South Halton Drinking Water System
Schedule A Issue Date	July 13, 2009

1.0 System Description

- 1.1 The following is a summary description of the works comprising the above drinking water system:

Overview

The **South Halton Drinking Water System** consists of four (4) drinking water treatment plants, three (3) booster pumping stations, five (5) storage reservoirs, nine (9) storage reservoirs and pumping stations, two (2) elevated storage tanks, one (1) surge tank and approximately 1,563 kilometers of trunk watermains and 193 kilometers of distribution watermains.

Oakville Treatment and Distribution Subsystem

Drinking Water Treatment Plant

- Oakville Water Purification Plant

Booster Pumping Stations

- Eighth Line Booster Pumping Station
- Davis Road Booster Station

Storage Reservoirs

- McCraney Reservoir
- Moore Reservoir

Storage Reservoirs and Pumping Stations

- Bruce Kitchen Reservoir and Zone 3 and Zone 5 Booster Stations
- Eighth Line Reservoir and Zone 4 Booster Station

Elevated Storage Tanks

- Zone 4 Elevated Water Storage Facility (Burnhamthorpe Tower)
- Zone 5 Elevated Water Storage Facility (Milton Tower)

Burloak Treatment Subsystem

Drinking Water Treatment Plant

- Burloak Water Purification Plant

Burlington Treatment and Distribution Subsystem**Drinking Water Treatment Plant**

- Burlington Water Purification Plant

Booster Pumping Stations

- Kingsway Pumping Station and Rechlorination Facility

Storage Reservoirs

- Appleby Reservoir and Rechlorination Facility
- Headon Reservoir and Rechlorination Facility

Storage Reservoirs and Pumping Stations

- Bailie Reservoir, Pumping Station and Rechlorination Facility
- Beaufort Reservoir and Pump Station
- Brant Street Reservoir and Pump Station
- Mount Forest Reservoir and Pump Station
- Tyandaga Reservoir, Pumping Station and Rechlorination Facility
- Washburn Reservoir, Pumping Station and Rechlorination Facility
- Waterdown Reservoir, Pumping Station and Rechlorination Facility

Milton Treatment and Distribution Subsystem**Drinking Water Treatment Plant**

- Kelso Water Purification Plant

Groundwater Wells

- Kelso Well Field
- Walkers Line Wells

Storage Reservoirs

- Milton Reservoir

Surge Tanks

- Milton Surge Tank

Bridgeview Distribution Subsystem**North Aldershot Distribution Subsystem****Snake Road Distribution Subsystem****South Halton Distribution Subsystem**

Oakville Treatment and Distribution Subsystem

Treatment Plant

Name	Oakville Water Purification Plant
Street Address	21 Kerr Street, Oakville, ON L6K 3Y9
UTM Coordinates	NAD 83, Zone 17, +/- 5 m, Easting 607546.689 m, Northing 4810354.501 m
System Type	Surface water treatment and distribution
Notes	Conventional filtration process with the major components identified below

Surface Water Supply

Intake Pipe

Description	One (1) intake pipe
Dimensions	1,828 mm diameter pipe situated on the east side and extending approximately 458 m into Lake Ontario and then increasing to 2,130 mm diameter for a further 400 m
Notes	

Chemical Feed Line

Description	Chemical feed line for zebra mussel control
Dimensions	A 50 mm diameter HDPE solution feed line located within the intake pipe
Notes	

Chemical Feed Booster Pumps

Description	Two (2) chemical feed booster pumps located within the existing chlorinator room area
Capacity	Each pump rated at approximately 3.16 L/s, 36.6 m TDH
Notes	

Low Lift Works**Travelling Screens**

Description	Two sets of coarse travelling screens located in the low lift pump well
Dimensions	Each housing a 9.5 mm stainless steel mesh screen, with a combined capacity of 137,500 m ³ /d
Notes	

Low Lift Pumps

Description	Four (4) vertical turbine pumps
Capacity	Two (2) vertical turbine pumps rated at 54,500 m ³ /d, 18.29 m TDH
	Two (2) vertical turbine pumps rated at 27,500 m ³ /d, 15.24 m TDH
Notes	Complete with two (2) flow meters located on each leg of the discharge header prior to flash mixing, and a raw water turbidimeter sampling from the low lift pump well

Coagulation, Flocculation and Sedimentation**Ballasted Pretreatment Units**

Description	Two (2) high-rate microsand-ballasted pre-treatment units
Notes	Each unit with 4 cells for injection, coagulation, maturation and settling

Primary Disinfection**Ozone Contact Chambers**

Description	Two (2) ozone contact chambers for primary disinfection and taste and odour control
Dimensions	Total working capacity of 1,840 m ³
Notes	

Filtration**Filters**

Description	Eight (8) dual media filters (anthracite/sand)
Dimensions	Each having a filtration area of 58.25 m ²
Equipment	Turbidimeter and underdrain system
	Air scour system with two (2) blowers each with a capacity of 650 SCFM
	Backwash system complete with filter to waste capabilities
Notes	

Backwash Pumps

Description	Two (2) vertical turbine pumps
Capacity	Each pump rated at 40,260 m ³ /d, 12.3 m TDH
Notes	

Instrumentation and Control**SCADA System**

Description	Facility wide integrated process control system
Notes	Combines system control with data acquisition

Waste Residual Management**Wastewater Holding Tank**

Description	One (1) wastewater holding tank
Dimensions	18.35 m by 41.2 m by 4.55 m (s.w.d.)
Equipment	Two (2) pumps each rated at 55.6 L/s and 13.7 m TDH
Notes	

Thickener

Description	One (1) wastewater gravity thickener
Dimensions	Net clarification area of 232.6 m ² and an effective depth of 5.41 m
Discharges to	Supernatant to Lake Ontario
	Sludge to the sanitary sewer system through a forcemain
Notes	

Wastewater Transfer Pumps

Description	Four (4) submersible wastewater transfer pumps
Capacity	Two (2) submersible sludge transfer pumps (one duty, one standby), each rated at 18.8 L/s, 17.8 m TDH to transfer from the sludge sump to the municipal sewer
	Two (2) submersible sludge transfer pumps (one duty, one standby), each rated at 2.0 L/s, 17.8 m TDH to transfer domestic sanitary waste from the sanitary sump to the municipal sewer
Discharge To	A 150 mm diameter common forcemain discharging to the municipal sewer
Notes	Complete with associated piping, valves, electrical, instrumentation and control systems

On-Site Storage**Clearwells**

Description	Two (2) clearwells
Dimensions	Working capacity of 1,660 m ³
Discharge to	Storage reservoir
Notes	

Reservoir

Description	Storage reservoir
Dimensions	2,000 m ³ capacity
Notes	Inlet and outlet baffle walls with intra-basin serpentine baffling configuration with an anticipated t_{10} /HDT ratio of 0.7

High Lift Works

High Lift Pumps

Description	Four (4) horizontal split case centrifugal high lift pumps
Capacity	Two (2) bottom suction and side discharge pumps rated at 34,000 m ³ /d and 29,500 m ³ /d respectively, 70.4 m TDH Two (2) side suction and side discharge pumps, each rated at 35,000 m ³ /d, 70.4 m TDH
Discharge to	Deliver treated water from the reservoir to the distribution system
Notes	Two (2) flow meters, one on each of the East and West discharge lines

Emergency Power

Backup Power Supply

Description	On-site portable diesel generator rated at 184 KW for administration use
Notes	Contracted full capacity back up power on 4hr response

Chemical Addition

Alum

Description	Alum addition for coagulation
Feed Point	High-rate ballasted settling system
Equipment	Two (2) 30 m ³ storage tanks and one (1) 1,000 L day tank Three (3) chemical metering pumps
Notes	Complete with associated valves, piping, instrumentation and control equipment and appropriate alarm and safety equipment

Calcium Thiosulphate

Description	Calcium thiosulfate addition for dechlorination and ozone quenching
Feed Point #1	Low lift effluent
Feed Point #2	Each ozone contact chamber
Feed Point #3	Backwash water supply
Feed Point #4	Storm sewer
Equipment	Two (2) 15 m ³ storage tanks Six (6) metering pumps
Notes	Complete with associated valves, piping, instrumentation and control equipment and appropriate alarm and safety equipment

Chlorine

Description	Chlorine addition for secondary disinfection and as a back-up for primary disinfection
Feed Point #1	Intake pipe during zebra mussel season
Feed Point #2	Reservoir Inlet
Feed Point #3	High lift Flume
Equipment	Six (6) one tonne cylinders on two (2) weigh scales (one duty, one standby) with an automatic switch over system
	A chlorine scrubber system
	Two (2) exhaust fans located within the storage room
	Three (3) chlorinators with a rated capacity of 460 kg/d
Notes	Chlorine residual analyzers installed throughout the plant for monitoring at the intake, the influent of the high-rate clarification system, at the transfer pipe between the clearwell and the reservoir, at the high lift discharge and at the gravity thickener overflow

Hydrofluosilicic Acid

Description	Hydrofluosilicic acid addition for fluoridation
Feed Point	High lift flume
Equipment	One (1) 19.8 m ³ storage tank
	Two (2) chemical metering pumps
Notes	Complete with associated valves, piping, instrumentation and control equipment and appropriate alarm and safety equipment

Hydrogen Peroxide

Description	Hydrogen peroxide addition to enhance taste and odour control
Feed Point	Ozone contact chambers
Equipment	One (1) 12 m ³ storage tank
	Three (3) metering pumps
Notes	Complete with associated valves, piping, instrumentation and control equipment and appropriate alarm and safety equipment

Oxygen

Description	Oxygen used to generate ozone
Feed Point	Ozone Generator
Equipment	A 80,000 L liquid oxygen (LOX) double wall cryogenic tank located outdoors for the storage of liquid oxygen
	Two (2) evaporators
Notes	Complete with valves, piping, instrumentation, alarms and controls

Ozone

Description	Ozone addition for primary disinfection and taste and odour control
Feed Point	Ozone contact chambers
Equipment	Two (2) ozone trains consisting of two (2) power supply units, two (2) ozone generators with rated capacities of 480 kg/d @ 10 wt% O ₃ /O ₂ and 636 kg/d @ 6 wt% O ₃ /O ₂ , three (3) side-stream injection pumps with a maximum ozone gas flow of 154.3 N.m ³ /h each, and three (3) ozone destruct units
Notes	

Polyelectrolyte (Liquid)

Description	Liquid polyelectrolyte addition to aid filters and waste handling system
Feed Point #1	Prior to the dual media filters
Feed Point #2	Influent to Waste Handling System
Equipment	Two (2) 0.2 m ³ storage drums with containment Two (2) metering pumps
Notes	Complete with associated valves, piping, instrumentation and control equipment and appropriate alarm and safety equipment

Polyelectrolyte (Solid)

Description	Dry polyelectrolyte addition for pre-treatment high rate sedimentation
Feed Point	High-rate ballasted settling system
Equipment	Two (2) 1.8 m ³ storage tanks with a hopper feed system Three (3) metering pumps
Notes	Complete with associated valves, piping, instrumentation and control equipment and appropriate alarm and safety equipment

Potassium Hydroxide

Description	Potassium hydroxide addition for pH adjustment
Feed Point	High lift flume
Equipment	Two (2) 20 m ³ storage tanks Two (2) metering pumps
Notes	Complete with associated valves, piping, instrumentation and control equipment and appropriate alarm and safety equipment

Pumping Stations

Davis Road Booster Station

Location	320 David Road, Oakville ON
UTM Coordinates	NAD 83, Zone 17, +/- 5 m, Easting 606681.870 m, Northing 4812676.560 m
Equipment	Three (3) centrifugal booster pumps each rated at 393.5 L/s, 47.5 m TDH One (1) centrifugal booster pump rated at 695 L/s, 47.5 m TDH
Standby Power	1000 kW stationary diesel generator set
Notes	

Eighth Line Booster Pumping Station

Location	1501 Eighth Line, Oakville ON
UTM Coordinates	NAD 83, Zone 17, +/- 5 m, Easting 605533.313 m, Northing 4815032.500 m
Equipment	One (1) booster pump rated at 82.02 L/s, 36 m TDH One (1) booster pump rated at 82.02 L/s, 39 m TDH Two (2) booster pumps each rated at 289.3 L/s, 36 m TDH Chlorination facilities using sodium hypochlorite and consisting of a 1,500 L solution tank, two (2) chemical metering pumps and a chlorine analyzer with low and high alarms tied to the SCADA system at the Water Purification Plant
Standby Power	400 kW diesel generator set with 4,500 L double-walled above ground diesel storage tank
Notes	

Storage Reservoirs

McCraney Reservoir

Location	1186 Trafalgar Road, Oakville ON
UTM Coordinates	NAD 83, Zone 17, +/- 5 m, Easting 605955.689 m, Northing 4813338.501 m
Description	In-ground reservoir
Dimensions	Total storage volume of 17,000 m ³
Notes	

Moore Reservoir

Location	4115 Sixth Line, Oakville ON
UTM Coordinates	NAD 83, Zone 17, +/- 5 m, Easting 600994.000 m, Northing 4816716.000 m
Description	In-ground three cell reservoir
Dimensions	Total storage volume of 32,000 m ³
Equipment	Chlorination facilities using sodium hypochlorite and consisting of one (1) 4,450 L solution tank equipped with a level indicator and spill containment, three (3) metering pumps (two duty, one standby), two (2) chlorine analyzers tied to the Water Purification Plant SCADA system and two (2) sample pumps
Notes	

Storage Reservoirs and Pumping Stations**Bruce Kitchen Reservoir and Zone 3 and Zone 5 Booster Stations**

Location	3050 Upper Middle Road, Oakville ON
UTM Coordinates	NAD 83, Zone 17, +/- 5 m, Easting 604927.000 m, Northing 4815730.000 m
Description	Ground level storage reservoir and pumping station
Dimensions	Total storage volume of 40,700 m ³
Equipment	Two (2) vertical turbine pumps rated at 289 L/s, 70 m TDH (Zone 3) One (1) vertical turbine pump rated at 173.6 L/s, 140 m TDH (Zone 5) Three (3) vertical turbine pumps rated at 347.2 L/s, 167 m TDH (Zone 5) Flow meter on the pump discharge header tied to the Water Purification Plant SCADA system Chlorination facilities using sodium hypochlorite including one (1) 5,900 L solution tank equipped with a level indicator and spill containment, three (3) chemical metering pumps (2 duty one standby), and four (4) on-line chlorine residual analyzers tied to the plant SCADA system
Standby Power	A 1,500 kW diesel generator housed in a building immediately south of the pumping station with a 22,700 L double-walled diesel storage tank, complete with a surge protection system consisting of two (2) 40 m ³ bladder-type hypopneumatic tanks
Notes	

Eighth Line Reservoir and Zone 4 Booster Station

Location	2217 Eighth Line, Oakville ON
UTM Coordinates	NAD 83, Zone 17, +/- 5 m, Easting 604899.876 m, Northing 4815649.501 m
Description	Ground level storage reservoir, valve house and pump house
Dimensions	Total storage volume of 18 ML
Equipment	Two (2) pumps each rated at 133 L/s, 80 m TDH
	Two (2) pumps each rated at 243 L/s, 80 m TDH
	A flow meter tied to the SCADA system
	Chlorination facilities using sodium hypochlorite solution, including one (1) 450 L double-walled solution tank, two (2) chemical metering pumps and two (2) chlorine analyzers
Standby Power	One 600 kW diesel generator with two (2) 1135 L diesel storage tanks with containment
Notes	

Elevated Storage Tanks**Zone 4 Elevated Water Storage Facility (Burnhamthorpe Tower)**

Location	4040 Trafalgar Road, Oakville ON
UTM Coordinates	NAD 83, Zone 17, +/- 5 m, Easting 601744.000 m, Northing 4817275.000 m
Description	Above ground elevated water storage facility
Dimensions	Available storage volume of approximately 5,680 m ³
Equipment	Drain/overflow c/w rodent screen and freeboard/air gap, discharge to an overflow detention area and subsequently to ditch along Trafalgar Road via an onsite site storm sewer
	Tank inlet and outlet piping c/w check valves
	Two (2) inground valve chambers, an inground drain chamber c/w vents and watertight access hatches
	Pressure activated tank level control system with alarms
	A valve room located at the base of the elevated water storage facility housing piping and valves, sampling lines, circulation pump having a rated capacity of 8.2 L/s at 10.0 m TDH, two (2) online continuous chlorine residual analyzers and alarms, piping and valves, pressure gauges and transmitters, and control panels
	A separate chemical room located at the base of the elevated water storage facility housing a standby chlorine dosing/disinfection system to maintain required chlorine residual consisting of two (2) chlorine metering pumps (one duty, one standby) and one (1) chlorine chemical storage tank
	Site fencing and security systems
Notes	

Zone 5 Elevated Water Storage Facility (Milton Tower)

Location	1180 Steeles Avenue, Milton ON
UTM Coordinates	NAD 83, Zone 17, +/- 5 m, Easting 590870.000 m, Northing 4821120.000 m
Description	One (1) elevated water storage tank and associated appurtenances serving the Zone 5 water distribution system
Dimensions	6,830 m ³ storage capacity
Equipment	Valve room equipped with isolation valves, check valves, pressure gauges, transmitters, sampling lines, a pressure relief valve, a backflow preventer, and one (1) recirculating pump rated at 8.2 L/s, 10 m TDH Chemical room equipped with a sodium hypochlorite tank, two (2) metering pumps (one duty, one stand by), together with two (2) on-line chlorine residual analyzers
Notes	Storage tank constructed on a 14 m diameter x 40.25 m high concrete support shaft

Burloak Treatment Subsystem**Treatment Plant**

Name	Burloak Water Purification Plant
Street Address	3380 Rebecca Street, Oakville, ON L6L 6W2
UTM Coordinates	NAD 83, Zone 17, +/- 5 m, Easting 602698.564 m, Northing 4804381.387 m
System Type	Surface water treatment
Notes	

Surface Water Supply**Intake Pipe**

Description	240 ML/day capacity intake pipe
Dimensions	2193 m length, 2.4 m diameter concrete-lined intake tunnel 1067 m length, 1.8 m diameter concrete pressure pipe lake bed pipeline
Notes	3.0 m diameter vertical lakeshore shaft, precast concrete intermediate vertical riser shaft interconnecting the tunnel and lakebed pipeline, diver access points, intake structure at 17 m lake depth

Chemical Feed Line

Description	Two (2) chlorine solution lines
Dimensions	Extending the length of the intake, terminating in a diffuser at the intake structure
Notes	

Sample Lines

Description	Two (2) raw water sampling lines within the intake pipe
Location	One line terminating 0.5 m upstream of the chlorine diffuser to sample unchlorinated raw water, and one line terminating 100 m downstream of the chlorine diffuser to sample free chlorine residual
Equipment	<p>A sampling station on the raw water sampling line complete with online hydrocarbon monitoring equipment and additional equipment for process control monitoring</p> <p>A sampling station on the chlorine sampling line complete with free chlorine residual analyzer, operated when chlorine is added at the intake for zebra mussel control</p>
Notes	

Sampling Pumps

Description	Three (3) raw water sampling pumps, two installed in screen wet well area and one shelf spare
Capacity	Rated at 2 L/s, 31 m TDH
Notes	

Low Lift Works**Travelling Screens**

Description	Four (4) travelling screens
Dimensions	Two (2) screen bays complete with two (2) 240 ML/day travelling screens (1 duty, 1 standby) with provisions to isolate each screen bay through two (2) 2,500 mm isolation gates per bay
Notes	Complete with a pressurized screen backflushing system drawing water from downstream of the low lift pumps and directing the screenings to a collection chamber while recirculating excess water into the raw water pre-screen chamber

Low Lift Well

Description	A two (2) celled interconnected low lift well
Dimensions	20 m diameter, 18 m deep
Notes	Complete with a 2,500 mm isolation gate, sloped floors, a removable sump pump for periodic solids removal, and level monitoring equipment in each wet well cell

Low Lift Pumps

Description	Three (3) raw water pumps
Equipment	Two (2) pumps rated at 32 ML/d, 26 m TDH
	One (1) pump rated at 64 ML/d, 26 m TDH
	Complete with a sample line on the low lift pump discharge header, connected to a free chlorine analyzer
	Two (2) 1,050 mm raw water headers equipped with a single flow meter and provision for a second flowmeter
	Single 1,050 mm raw watermain connecting the low lift pumping station and the flocculation building
Notes	

Coagulation and Flocculation**Rapid Mix Unit**

Description	A sidestream pumped diffusion-type rapid mix unit
Dimensions	1,200 mm diameter by 1,200 mm long
Equipment	Two (2) sidestream pumps (one duty, one standby) each rated at 44 L/s, 8.1 m TDH
	Two (2) two-stage system flocculators (total of four (4) flocculation cells), total storage volume of 416 m ³ and a total retention time of 10 minutes at a flow of 55 ML/d
Notes	

Filtration

Membrane Filters

Description	Four (4) membrane filter trains
Capacity	Each train with a gross (instantaneous) production rate of 31.0 ML/d (net 27.5 ML/d), which for short periods of time can be operated at a gross (instantaneous) production rate of 37.2 ML/d (net 36.7 ML/d)
Equipment	Four (4) variable speed permeate pumps, each pump rated at 37.2 ML/, complete with flow meter and turbidimeter on each train
	Two (2) backpulse pumps (one duty, one standby), each pump rated at 37.2 ML/d, complete with flow meter on the pumped discharge
	Two (2) air scour blowers (one duty, one standby)
	Two (2) air compressors and receivers (one duty, one standby)
	Four (4) vacuum pumps
	Four flow meters
	One (1) particle counter on the combined permeate header
Notes	

Primary Disinfection

Ultraviolet (UV) Reactors

Description	Four (4) UV reactors
Capacity	Each capable of treating 37.2 ML/d at a dose of 12 mJ/cm ²
Notes	

Ozone/Chlorine Contact Chamber

Description	One (1) ozone/chlorine contact chamber
Dimensions	7 m deep by 9 m wide, comprised of eight (8) cells with a total storage volume of 820 m ³ rated for a flow rate of 110 ML/d and effective retention time of 26 minutes
Equipment	Two (2) ozone diffuser systems installed in each of cells 2 and 3 of the ozone contactor
	Piping to allow water to bypass the ozone contactor completely
	Chemical diffuser in cell 7 for quenching purposes
	Four (4) ozone residual analyzers and one (1) free chlorine residual analyzer in the ozone outlet channel
Notes	

Instrumentation and Control

SCADA System

Description	Facility wide integrated process control system
Notes	Combines system control with data acquisition

Waste Residual Management

Membrane Backwash Equalization Tanks

Description	Two (2) membrane backwash equalization tanks
Dimensions	Each tank with a storage capacity of 120 m ³
Equipment	Two (2) backwash transfer pumps rated at 70 L/s, 20.5 m TDH complete with a flow meter on the common discharge header capable of directing waste to either the sanitary sewer or the storm sewer
	Two (2) level instruments, one (1) per tank
	Sampling station on the pumped discharge header for monitoring chlorine and turbidity
Notes	

Wastewater Neutralization Tanks

Description	Two (2) chemical waste neutralization tanks
Dimensions	Each tank approximately 120 m ³
Equipment	Three (3) transfer pumps rated at 110 L/s, 10 m TDH for recirculation of cleaning solutions through membranes and directing contents of tanks to the sanitary or storm sewer
	Two (2) level instruments, one (1) per tank
	A sampling station located on the pumped discharge header for monitoring chlorine, pH, and turbidity
Notes	

On-Site Storage

Clearwell

Description	One (1) clearwell
Dimensions	1,550 m ³ capacity
Notes	Complete with level monitoring equipment

High Lift Works

High Lift Well

Description	One (1) high lift well
Dimensions	Approximately 11 m long by 8.1 m wide
Equipment	Four (4) fixed speed pumps (2 duty, 2 standby)
	Two (2) pumps rated at 19 ML/d, 66 m TDH
	Two (2) pumps rated at 36 ML/d, 66 m TDH
	Two (2) 1,050 mm pump discharge headers, complete with surge/pressure relief valves
	One (1) 1,050 mm discharge main complete with flow meter
Notes	Complete with level monitoring equipment and a sampling station on the discharge of the high lift header for monitoring fluoride, free and total chlorine, and other online analyzers for process control monitoring

Emergency Power

Backup Power Supply

Description	A single 1,600 kW prime rated (1,760 kW standby rated) natural gas/diesel standby generator, complete with fuel and exhaust systems
Notes	

Chemical Addition

Citric Acid

Description	Citric acid addition for cleaning filter membranes
Feed Point	Chemical holding tank
Equipment	One (1) 500 L citric acid storage tank, complete with spill containment
	Two (2) dosing pumps (one duty, one standby) each capable of delivering 681 L/hr
Notes	Complete with valves, piping, instrumentation, alarms and controls

Chlorine

Description	Chlorine addition for pre-chlorination (zebra mussel control) and disinfection
Feed Point #1	Mouth of the intake pipe for zebra mussel control
Feed Point #2	Low lift pumping station pre-screen low lift well
Feed Point #3	Ozone contactor inlet pipe
Feed Point #4	Ozone contactor outlet chamber
Feed Point #5	High lift discharge header
Equipment	Chlorine gas provided in one tonne cylinders and stored in an isolated chlorine storage room
	Two (2) weigh scales designed to hold four (4) one tonne cylinders each
	Automatic switchover system to transfer feed from empty cylinders to full cylinders
	Eight (8) vacuum regulators mounted directly at the cylinder valves
	One (1) pre-disinfection chlorinator with feed capacity of 8 kg/hr
	One (1) ozone contactor/clearwell chlorinator with feed capacity of 10 kg/hr
	One (1) trim chlorinator with feed capacity of 5 kg/hr
	One (1) standby chlorinator with feed capacity of 10 kg/hr
	Six (6) chlorine gas ejectors (3 duty, 3 standby)
	A dry type chlorine gas scrubber capable of neutralizing one (1) complete gas cylinder (1,068 kg of chlorine)
Notes	Complete with valves, piping, instrumentation, alarms and controls

Hydrofluosilicic Acid

Description	Hydrofluosilicic acid addition for fluoridation
Feed Point #1	East high lift discharge header
Feed Point #2	West high lift discharge header
Equipment	One (1) 15,000 L hydrofluosilicic acid storage tank complete with spill containment
	Two (2) dosing pumps (one duty, one standby) each capable of delivering 20 L/hr
Notes	Complete with valves, piping, instrumentation, alarms and controls

Oxygen

Description	Oxygen used to generate ozone
Feed Point	Ozone generator
Equipment	A 20,000 L liquid oxygen (LOX) double wall cryogenic tank located outdoors for the storage of liquid oxygen
	Two (2) evaporators
Notes	Complete with valves, piping, instrumentation, alarms and controls

Ozone

Description	Ozone addition for seasonal taste and odour control
Feed Point	Ozone/chlorine contact chamber
Equipment	One (1) ozone generator capable of producing 185 kg/d at 10-12% wt (or 250 kg/d at 6% wt)
	A supplemental air nitrogen system equipment package complete with air compressor and receiver, prefilters, dryer and post filters, sized to provide 15 L/min of dry compressed air
	Two (2) ozone off gas destructor units (one duty, one standby) to treat the off gas, complete with blower, pre-heater and catalytic destructor
Notes	Complete with valves, piping, instrumentation, alarms and controls

Polyaluminum Chloride

Description	Polyaluminum chloride addition for coagulation
Feed Point	Downstream of the low lift pumps
Equipment	Two (2) 24,000 L coagulant storage tanks, complete with spill containment
	Two (2) dosing pumps (one duty, one standby) each capable of delivering 90 L/hr
Notes	Complete with valves, piping, instrumentation, alarms and controls

Potassium Hydroxide and/or Sodium Hydroxide

Description	Potassium hydroxide and/or sodium hydroxide addition for pH adjustment and for neutralization of membrane waste
Feed Point #1	Neutralization tank
Feed Point #2	High lift pumps, prior to distribution
Equipment	Two (2) 27,000 L tanks complete with spill containment
	Two (2) dosing pumps (one duty, one standby) each capable of delivering 120 L/hr, used for pH adjustment
	Two (2) dosing pumps (one duty, one standby) each capable of delivering 90.8 L/hr, used for neutralization of membrane waste
Notes	Complete with valves, piping, instrumentation, alarms and controls

Sodium Bisulphite and/or Calcium Thiosulphate

Description	Sodium Bisulphite and/or Calcium Thiosulphate addition for ozone quenching and dechlorination of membrane cleaning wastes
Feed Point #1	Ozone contact chamber cell # 7
Feed Point #2	Chemical neutralization tank
Equipment	One (1) 10,000 L sodium bisulphite and/or calcium thiosulphate storage tank complete with spill containment
	Two (2) dosing pumps (one duty, one standby) each capable of delivering 40 L/hr, used for ozone quenching
	Two (2) dosing pumps (one duty, one standby) each capable of delivering 291 L/hr, used for dechlorination of membrane cleaning wastes
Notes	Complete with valves, piping, instrumentation, alarms and controls

Sodium Hypochlorite

Description	Sodium hypochlorite addition for recovery cleaning of membranes
Feed Point	Chemical holding tank
Equipment	Two (2) dosing pumps each capable of delivering 2,400 L/hr
	One (1) 10,000 L storage tank
Notes	Complete with valves, piping, instrumentation, alarms and controls

Burlington Treatment and Distribution Subsystem

Treatment Plant

Name	Burlington Water Purification Plant
Street Address	3249 Lakeshore Road, Burlington ON L7N 1A7
UTM Coordinates	NAD 83, Zone 17, +/- 5 m, Easting 599676.000 m, Northing 4799250.000 m
System Type	Surface water treatment and distribution
Notes	Conventional filtration process with the major components identified below

Surface Water Supply

Intake Pipe #1

Description	One (1) intake pipe
Dimensions	1,500 mm diameter with the intake located 750 m offshore in Lake Ontario
Notes	

Chemical Feed Line

Description	Chemical feed line for zebra mussel control
Dimensions	One (1) 75 mm diameter chlorine solution line
Notes	

Sample Line

Description	Raw Water Sampling Line
Location	One (1) 75 mm diameter sampling line
Notes	

Intake Pipe #2

Description	One (1) concrete pressure pipe
Dimensions	1,800 mm diameter with the intake located 750 m offshore in Lake Ontario
Notes	

Chemical Feed Line

Description	Chemical feed line for zebra mussel control
Dimensions	One (1) 75 mm diameter polyethylene feed line
Notes	Polyethylene line supported at the obvert of the intake pipe

Sample Line

Description	Raw water sampling line
Location	One (1) 50 mm diameter polyethylene line for raw water sampling
Notes	Polyethylene line supported at the obvert of the intake pipe

Gatehouse

Description	A 1,500 mm x 1,500 mm sluice gate for each intake A 2,100 mm x 1,800 mm conduit from the gatehouse to the treatment plant
Notes	

Low Lift Works**Headworks**

Description	Two (2) intake chambers with a 1,500 mm connecting pipe
Notes	

Travelling Screens

Description	Two (2) travelling screen chambers in parallel
Dimensions	Each with 9.5 mm opening stainless steel mesh
Notes	

Low Lift Well

Description	Two (2) wet wells
Dimensions	Combined volume of 1,960 m ³
Notes	

Low Lift Pumps

Description	Six (6) low lift pumps
Capacity	Two (2) variable frequency drive pumps rated at 521 L/s, 17.6 m TDH
	Two (2) fixed speed pumps rated at 752 L/s, 16.2 m TDH
	One (1) fixed speed pump rated at 1053 L/s, 11.6 m TDH
	One (1) fixed speed pump rated at 752 L/s, 16.2 m TDH
Notes	

Coagulation, Flocculation and Sedimentation**Flash Mixer**

Description	Flash mixer equipped with a 0.75 kW motor
Dimensions	1,067 mm diameter
Notes	

High Rate Sedimentation System

Description	Three (3) high rate sedimentation units
Dimensions	Each unit rated at 1,157 L/s with a design total treatment and hydraulic capacity of 3,472 L/s
Notes	Each unit consisting of an inlet flowmeter, coagulation tank, an injection tank and a maturation tank, with associated mixers, clarifier, a microsand recirculation system, a microsand storage and feed system, two (2) settling tanks drain pumps, and associated control systems

Primary Disinfection**Ozone Contact Chambers**

Description	Four (4) ozone contact tanks, complete with ozone dissolution using fine bubble diffusion
Dimensions	Cell #1 and #3 on North side, each 1,853 m ³
	Cell #2 South side 1,553 m ³
	Cell #4 South side 1,853 m ³
Notes	

Filtration

Filters

Description	Ten (10) dual media filters
Capacity	Combined total filtration rate of 3,576 L/s
Equipment	Each filter with a 450 mm anthracite layer, a 300 mm sand layer, and stainless steel underdrain with air/water backwash capability
	Filters No. 8, 9, 10 and 11, each having 81.5 m ² surface area to operate at a filtration rate of up to 12.8 m/h
	Filters No. 12, 13, 14, 15, 16, and 17, each having 113 m ² surface area to operate at a filtration rate of up to 12.8 m/h
	All filters are equipped with electrically actuated influent gates, drain gates (backwash waste), filter effluent valves, air scour valves and filter-to-backwash storage valves with associated valves, piping and controls
Notes	

Backwash System

Description	Filter-to-backwash tank consisting of two (2) backwash water storage cells, each with a volume of 1,200 m ³
Equipment	Two (2) blowers (one duty and one standby) rated at 7,800 m ³ /h at 27 kPa
	Three (3) backwash pumps, each pump rated at 1,070 L/s at 17 m TDH
	One (1) backwash tank drain pump and associated equipment and controls
Notes	

Instrumentation and Control

SCADA System

Description	Facility wide integrated process control system
Notes	Combines system control with data acquisition

Waste Residual Management

Storage Tank

Description	Storage tank for backwash and plant wastewater
Dimensions	Net storage capacity of 2,100 m ³
Equipment	Two(2) mixers
	Three (3) wastewater submersible sludge pumps
	Two (2) high rate sedimentation units, each unit rated at 139 L/s to meet the required process capacity of 185 L/s; with each sedimentation unit consisting of a coagulation tank, an injection tank and a maturation tank, with associated mixers, and a microsand recirculation system
Notes	

On-Site Storage

Clearwells

Description	Three (3) interconnected clearwells
Dimensions	Usable volume of 5,300 m ³
Notes	

High Lift Works

High Lift Pumps

Description	Six (6) high lift pumps in two high lift pump wells
Dimensions	Usable volume of 0.9 m ³ each
Equipment	Two (2) pumps rated at 636 L/s, 70.1 m TDH
	Two (2) pumps rated at 1122 L/s, 70.1 m TDH
	One (1) pump rated at 868 L/s, 70.0 m TDH
	One (1) pump rated at 544 L/s, 67.0 m TDH
Notes	

Emergency Power

Backup Power Supply #1

Description	A 447 kW diesel driven generator set (600 V)
Notes	Used to operate the low lift pumps and various chemical feed equipment during power outages

Backup Power Supply #2

Description	A 2,000 kW diesel driven generator set (4160 V)
Notes	Complete with fuel and exhaust systems, switchgear and transfer switch, associated electrical and mechanical controls and equipment

Chemical Addition**Alum or Polyaluminum Chloride**

Description	Alum or polyaluminum chloride addition for coagulation
Feed Point	Prior to high rate sedimentation system
Equipment	Three (3) storage tanks, each with a capacity of 40 m ³ Four (4) chemical metering pumps (3 duty, one standby)
Notes	Complete with all associated valves, piping, instrumentation and control equipment along with the appropriate alarm and safety equipment

Chlorine

Description	Chlorine addition for zebra mussel control and secondary disinfection
Feed Point #1	Intake Pipe #1
Feed Point #2	Intake Pipe #2
Feed Point #3	After the Clearwells
Equipment	Six (6) one tonne cylinder weigh scales Three (3) 40 kg/hr chlorinators Chlorine residual analyzers for monitoring chlorination, chlorine detectors for sounding an alarm in the event of a chlorine leak and a chlorine scrubber with the capacity to neutralize 1016 kg (1 ton) of chlorine if leaked
Notes	Complete with all associated valves, piping, instrumentation and control equipment along with the appropriate alarm and safety equipment

Hydrofluosilicic Acid

Description	Hydrofluosilicic acid addition for fluoridation
Feed Point	High lift flume
Equipment	One (1) 24 m ³ hydrofluosilicic storage tank Two (2) chemical feed pumps (one duty and one standby)
Notes	Complete with all associated valves, piping, instrumentation and control equipment along with the appropriate alarm and safety equipment

Hydrogen Peroxide

Description	Hydrogen peroxide addition to enhance taste and odour control
Feed Point	Ozone contactor cell # 7
Equipment	One (1) 11,500 L storage tank Three (3) chemical metering pumps
Notes	For seasonal taste and odour control. Complete with all associated valves, piping, instrumentation and control equipment along with the appropriate alarm and safety equipment

Oxygen

Description	Oxygen used to generate ozone
Feed Point	Ozone generator
Equipment	One (1) 40,000L liquid oxygen (LOX) cryogenic tank, located outside complete with two evaporators Oxygen used to generate ozone
Notes	Complete with all associated valves, piping, instrumentation and control equipment along with the appropriate alarm and safety equipment

Ozone

Description	Ozone addition for primary disinfection and taste and odour control, providing a total available ozone contact volume of 7,112 m ³ at a flow rate of 3,472 L/s
Feed Point	Contact chamber cells 2, 7 and 11
Equipment	Two (2) (one duty and one standby) ozone generators, each having a production capacity of 550 kilograms ozone per day at 10 percent ozone in oxygen concentration (by weight) at 28 °C cooling water temperature Two (2) power supply units, each dedicated to each ozone generator, with electric power supply equipment, controls and two (2) control panels including all local instrumentation and controls Two (2) (one duty and one standby) feed gas pressure regulator filtering systems for oxygen supply to the ozone generators Four (4) ozone off-gas destruct/blower units Two (2) cooling water systems for the ozone generating system (one dedicated for each ozone generator and power supply unit pair) each with two (2) heat exchangers, two (2) cooling water pumps and a deionized water polishing system One (1) liquid oxygen (LOX) storage system One (1) supplemental air system Twelve (12) ozonated water sample pumps Two (2) ozone contactor drain pumps, associated equipment and controls, one each for north and south side Demisters, air/vacuum relief valves and all electric actuated valves, component parts, instrumentation and controls
Notes	Complete with all associated valves, piping, instrumentation and control equipment along with the appropriate alarm and safety equipment

Polymer #1 (Solid)

Description	Polymer addition for pre-treatment high rate sedimentation
Feed Point	Prior to high rate sedimentation system
Equipment	Dry polymer feeder
	Two (2) 5,700 L mixing/aging tanks
	Four (4) 1200 L/h metering pumps
Notes	Complete with all associated valves, piping, instrumentation and control equipment along with the appropriate alarm and safety equipment

Polymer #2 (Solid)

Description	Polymer addition for waste treatment high rate sedimentation, a dry polymer preparation system with a capacity of 416 L/h
Feed Point	Influent to high rate sedimentation waste treatment system
Equipment	One (1) 454 L mixing tank
	One (1) 568 L solution storage tank
	Three (3) metering pumps
Notes	Complete with all associated valves, piping, instrumentation and control equipment along with the appropriate alarm and safety equipment

Potassium Hydroxide

Description	Potassium hydroxide addition for pH control
Feed Point	High lift discharge
Equipment	Four (4) 30,000 L chemical storage tanks
	Three (3) chemical metering pumps
Notes	Complete with all associated valves, piping, instrumentation and control equipment along with the appropriate alarm and safety equipment

Sodium Bisulphite

Description	Sodium bisulphite addition for dechlorination and ozone quenching
Feed Point#1	Contact chamber cells 10, 12 and 14
Feed Point#2	Low lift pump discharge
Equipment	Two (2) 14,000 L storage tanks
	Five (5) chemical metering pumps for ozone quenching
	Two (2) chemical metering pumps for dechlorination prior to ozonation
Notes	Complete with all associated valves, piping, instrumentation and control equipment along with the appropriate alarm and safety equipment

Sodium Metabisulphite (Solid)

Description	Sodium metabisulphite for dechlorinating supernatant from the process wastewater treatment system prior to discharge to Lake Ontario
Feed Point	Out flow chamber from the process wastewater treatment system
Equipment	One (1) 900 L storage tank Two (2) chemical feed pumps (one duty and one standby)
Notes	Complete with all associated valves, piping, instrumentation and control equipment along with the appropriate alarm and safety equipment

Sulphuric Acid

Description	Sulphuric acid addition for pH control
Feed Point	Prior to high rate sedimentation system
Equipment	Two (2) 25,000 L sulphuric acid storage tanks Four (4) chemical metering pumps
Notes	Complete with all associated valves, piping, instrumentation and control equipment along with the appropriate alarm and safety equipment

Pumping Stations**Kingsway Pumping Station and Rechlorination Facility**

Location	926 Kingsway Drive, Burlington ON
UTM Coordinates	NAD 83, Zone 17, +/- 5 m, Easting 594698.024 m, Northing 4796848.986 m
Equipment	Two (2) pumps rated at 185 L/s, 21.3 m TDH One (1) pump rated at 171.30 L/s, 21.0 m TDH A chlorination system consisting of two (2) 750 L sodium hypochlorite storage tanks (duty and spare) equipped with level gauges and two (2) metering pumps (duty and standby) flow paced based on total water flow and chlorine residual complete with automatic switchover controls One (1) free chlorine residual analyzer monitoring booster station discharge (rechlorinated); and one (1) free chlorine residual analyzer monitoring station inlet (not-rechlorinated) Approximately 24 m length of 600 mm diameter suction header connecting the regional watermain and pumping station complete with 350 mm diameter suction branches and one (1) magnetic flow meter installed inside a concrete chamber Including appurtenances, electrical, mechanical and instrumentation
Standby Power	A diesel engine driven power generator rated at 111.9 kW with a 1,100 L fuel tank within the existing curb containment area on main floor
Notes	

Storage Reservoirs

Appleby Reservoir and Rechlorination Facility

Location	3321 Appleby Line, Burlington ON
UTM Coordinates	NAD 83, Zone 17, +/- 5 m, Easting 595767.251 m, Northing 4807744.001 m
Description	Ground level storage reservoir
Dimensions	Total storage capacity of 31,500 m ³
Equipment	Rechlorination system consisting of one (1) 1,300 L sodium hypochlorite storage tank and two (2) metering pumps Two (2) free chlorine residual analyzers, one monitoring reservoir inlet (rechlorinated) and one monitoring reservoir outlet
Notes	

Headon Reservoir and Rechlorination Facility

Location	3200 Guelph Line, Burlington ON
UTM Coordinates	NAD 83, Zone 17, +/- 5 m, Easting 593114.485 m, Northing 4804105.175 m
Description	Ground level storage reservoir
Dimensions	Total storage capacity of 18,000 m ³
Equipment	Two (2) chemical solution tanks each 790 L usable volume, two (2) chemical metering pumps (one duty and one standby), complete with an automatic switch-over system with feed lines discharging sodium hypochlorite solution to either of the two reservoir cell feed lines Two (2) free chlorine residual analyzers, one monitoring reservoir inlet (rechlorinated) and one monitoring reservoir outlet (not rechlorinated)
Notes	

Storage Reservoirs and Pumping Stations

Bailie Reservoir, Pumping Station and Rechlorination Facility

Location	2267 Guelph Line, Burlington ON
UTM Coordinates	NAD 83, Zone 17, +/- 5 m, Easting 594800.188 m, Northing 4802777.500 m
Description	Ground level storage reservoir and pumping station
Dimensions	Total storage capacity of 17,500 m ³
Equipment	Two (2) pumps rated at 125.0 L/s, 79.9 m TDH One (1) pump rated at 63.66 L/s, 79.9 m TDH A chlorination system consisting of one (1) 1,300 L sodium hypochlorite storage tank and two (2) metering pumps, one (1) free chlorine analyzer monitoring Booster Station Discharge (rechlorinated), and one (1) free chlorine residual analyzer monitoring the reservoir outlet (not-rechlorinated)
Standby Power	A diesel engine standby power generator rated at 618.9 kW
Notes	

Beaufort Reservoir and Pump Station

Location	1322 Highway #5, Burlington ON
UTM Coordinates	NAD 83, Zone 17, +/- 5 m, Easting 592512.938 m, Northing 4801504.000 m
Description	Ground level storage reservoir and pumping station
Dimensions	Total volume 3,000 m ³ , usable volume 750 m ³
Equipment	Two (2) vertical turbine pumps rated at 50.00 L/s, 60 m TDH One (1) vertical turbine pump rated at 250.00 L/s, 60 m TDH One (1) free chlorine residual analyzer monitoring booster station discharge (not-rechlorinated)
Standby Power	A diesel engine standby power generator rated at 55 kW
Notes	

Brant Street Reservoir and Pump Station

Location	1458 Brant Street, Burlington ON
UTM Coordinates	NAD 83, Zone 17, +/- 5 m, Easting 594562.188 m, Northing 4800245.500 m
Description	Ground level storage reservoir and pumping station
Dimensions	Total volume 11,500 m ³ , usable volume 4,715 m ³
Equipment	One (1) vertical turbine pump rated at 75.00 L/s, 76.2 m TDH One (1) free chlorine residual analyzer monitoring reservoir cell (not-rechlorinated)
Standby Power	None
Notes	

Mount Forest Reservoir and Pump Station

Location	1340 Brant Street, Burlington ON
UTM Coordinates	NAD 83, Zone 17, +/- 5 m, Easting 594900.000 m, Northing 4799887.000 m
Description	Ground level storage reservoir and pumping station
Dimensions	Total volume 5,500 m ³ , usable volume 825 m ³
Equipment	One (1) vertical turbine pump rated at 53.00 L/s, 67 m TDH One (1) vertical turbine pump rated at 60.00 L/s, 67 m TDH
Standby Power	None
Notes	

Tyandaga Reservoir, Pumping Station and Rechlorination Facility

Location	2190 Kearns Road, Burlington ON
UTM Coordinates	NAD 83, Zone 17, +/- 5 m, Easting 592832.210 m, Northing 4800059.403 m
Description	Ground level storage reservoir and pumping station
Dimensions	Total storage capacity of 4,500 m ³
Equipment	One (1) pump rated at 45.14 L/s, 48.8 m TDH One (1) pump rated at 23.15 L/s, 41.1 m TDH A chlorination system consisting of one (1) 550 L sodium hypochlorite storage tank and two (2) metering pumps One (1) free chlorine residual analyzer monitoring Booster Station discharge (rechlorinated) and one (1) free chlorine residual analyzer monitoring the reservoir cell (not-rechlorinated)
Standby Power	None
Notes	

Washburn Reservoir, Pumping Station and Rechlorination Facility

Location	3207 Heathfield Drive, Burlington ON
UTM Coordinates	NAD 83, Zone 17, +/- 5 m, Easting 596448.251 m, Northing 4802237.501 m
Description	Ground level storage reservoir and pumping station
Dimensions	Total storage capacity of 13,500 m ³
Equipment	Eight (8) pumps with a total rated capacity of 2,248.83 L/s, with a firm capacity of 1,936.33 L/s
	One (1) pump rated at 266.20 L/s, 76.2 m TDH
	One (1) pump rated at 262.73 L/s, 76.2 m TDH
	One (1) pump rated at 157.40 L/s, 75.6 m TDH
	One (1) pump rated at 312.50 L/s, 41.8 m TDH
	Four (4) pumps rated at 312.50 L/s, 44.0 m TDH
	Two chlorination systems: one (1) system serving Pressure Zone No. 2 consisting of one (1) 1,300 L sodium hypochlorite storage tank and two (2) metering pumps; and the other serving Pressure Zone No. 3, consisting of one (1) 1,300 L sodium hypochlorite storage tank and two (2) metering pumps and one (1) 2,250 L sodium hypochlorite supplemental storage tank serving either Pressure Zone No. 2 or No. 3
	Two (2) free chlorine residual analyzers, one monitoring Zone II discharge (rechlorinated), and one monitoring Zone III discharge (rechlorinated)
	One (1) free chlorine residual analyzer monitoring the reservoir cell (not-rechlorinated).
Standby Power	A diesel engine standby power generator rated at 1,043.98 kW
Notes	

Waterdown Reservoir, Pumping Station and Rechlorination Facility

Location	1376 Waterdown Road
UTM Coordinates	NAD 83, Zone 17, +/- 5 m, Easting 591975.716 m, Northing 4796440.187 m
Description	Ground level storage reservoir and pumping station
Dimensions	Total storage capacity of 7,500 m ³
Equipment	Two (2) pumps, each with a rated capacity of 26.62 L/s, 158.5 m TDH
	A chlorination system consisting of one (1) 450 L sodium hypochlorite storage tank and two (2) metering pumps; together with all associated piping, electrical and mechanical equipment, ventilation, monitoring, control, metering and alarm systems and instrumentation
	One (1) total and one (1) free chlorine residual analyzer monitoring Booster Station discharge (rechlorinated)
	One (1) free chlorine residual analyzer monitoring the reservoir cell (not-rechlorinated)
Standby Power	None
Notes	

Milton Treatment and Distribution Subsystem

Kelso Well Field

KW3-Well #3

Location	Lot 5, Concession 7, in Township of Milton approximately 270 m south of Highway 401 and 1290 m west of Road 22 (Tremaine Road)
UTM Coordinates	NAD 27, Zone 17, +/- 5 m, Easting 585372.313 m, Northing 4818488.500 m
Description	A drilled groundwater production well
Source Type	Groundwater (not GUDI)
Dimensions	400 mm diameter, 60.4 to 67.0 m deep
Equipment	One (1) vertical turbine well pump, rated at 53 L/sec A 200 mm diameter discharge line and flow meter connected to the common raw water header in an underground chamber located adjacent to the pumphouse
Notes	

KW4-Well #4

Location	Lot 5, Concession 7, in the Township of Milton approximately 260 m south of Highway 401 and 1300 m west of Road 22 (Tremaine Road)
UTM Coordinates	NAD 27, Zone 17, +/- 5 m, Easting 585375.750 m, Northing 4818509.000 m
Description	A drilled groundwater production well
Source Type	Groundwater (not GUDI)
Dimensions	400 mm diameter, 57.9 to 65.9 m deep
Equipment	One (1) vertical turbine well pump, rated at 106 L/sec A 250 mm diameter discharge line and flow meter connected to the common raw water header in an underground chamber located adjacent to the pumphouse
Notes	

KW5-Well #5

Location	Lot 5, Concession 7, in the Township of Milton approximately 260 m south of Highway 401 and 1330 m west of Road 22 (Tremaine Road)
UTM Coordinates	NAD 27, Zone 17, +/- 5 m, Easting 585344.813 m, Northing 4818515.000 m
Description	A drilled groundwater production well
Source Type	Groundwater (not GUDI)
Dimensions	450 mm diameter, 49.7 to 60.7 m deep
Equipment	One (1) vertical turbine well pump, rated at 135 L/sec, 52 m TDH A 200 mm diameter discharge line and flow meter connected to the common raw water header in an underground chamber located adjacent to the pumphouse
Notes	

KW6-Well #6

Location	Lots 5, Concession 7, in the Township of Milton approximately 260 m south of Highway 401 and 1340m west of Road 22 (Tremaine Road)
UTM Coordinates	NAD 27, Zone 17, +/- 5 m, Easting 585360.625 m, Northing 4818489.000 m
Description	A drilled groundwater stand-by well
Source Type	Groundwater (not GUDI)
Dimensions	400 mm diameter, 37.8 to 68.9 m deep
Equipment	One (1) vertical turbine well pump, rated at 106 L/sec, 43 m TDH A magnetic flow meter connected to the common raw water header in an underground chamber located adjacent to the pumphouse
Notes	

Water Treatment Plant

Name	Kelso Water Purification Plant
Location	5234 Kelso Road, Milton ON
UTM Coordinates	NAD 27, Zone 17, +/- 5 m, Easting 585375.012, Northing 4818506.436
Description	A treatment building consisting of a separate chemical room, a mechanical room, an electrical room, a pump room, a diesel generator room, the Well No. 4 room and housing an ion-exchange/filter system, a chlorine contact tank, a supernatant tank, a waste water holding tank, a backwash water holding tank and associated systems
Notes	

Filtration

Filters

Description	Four (4) manganese greensand filters
Capacity	Each filter having a 20 metres squared surface area with total surface area of 80 metres squared
Equipment	Each filter comprised of anthracite, greensand and gravel, with two (2) wash troughs per filter and underdrains, having a total design flow rate of 22,730.40 m ³ per day with three (3) filters in operation Backwash system consisting of one backwash supply tank with a capacity of 225 m ³ and two (2) vertical turbine pumps each rated at 122.5 L/s, 17 m TDH
Notes	

Primary Disinfection

Chlorine Contact Tank

Description	One (1) chlorine contact tank
Dimensions	476 m ³ available volume
Notes	Complete with intrabasin baffles, piping and equipment, and with all associated pumps, air blower(s), piping, valves, controls, instrumentation and equipment

Waste Residual Management

Settling Tank

Description	One (1) settling tank
Dimensions	700 m ³ capacity
Equipment	A decanting system Two (2) submersible pumps each rated at 5.5 L/s, 15 m TDH
Notes	

Supernatant Tank

Description	One (1) supernatant tank
Dimensions	450 m ³ capacity
Equipment	Two (2) submersible pumps each rated at 31.2 L/s, 40 m TDH
Notes	

Pumphouse

Location	On top of KW3-Well #3 and KW3-Well #6 approximately 35 m southeast of KW5-Well #5
UTM Coordinates	NAD 27, Zone 17, +/- 5 m, Easting 585590.000 m, Northing 4818270.000 m
Description	A well pumphouse housing clearwells, stand-by power, and treatment and control facilities including a 500 mm diameter pump header and appurtenances connected to a feeder watermain
Notes	

On-Site Storage

Clearwells

Description	Two (2) non-baffled clearwells
Dimensions	Clearwell #1 – approximately 7.48 m long by 8.00 m wide by 3.03 m deep, houses high lift pumps No. 1 and 2 with interconnecting valving
	Clearwell #2 – approximately 7.48 m long by 4.30 m wide and 3.03 m deep, houses high lift pump No. 3
Notes	

High Lift Works

High Lift Pumps

Description	Three (3) high lift pumps (2-duty, 1-stand-by)
Equipment	One (1) vertical turbine pump rated at 158L/sec, 32 m TDH
	One (1) vertical turbine pump rated at 106 L/sec, 32 m TDH
	One (1) stand-by vertical turbine pump rated at 150 L/sec, 32 m TDH
	Suction pipes installed in the end section of the clearwells, and a magnetic flow meter installed on the discharge main from the pumphouse to the distribution system
Notes	

Emergency Power

Backup Power Supply

Description	A 450 kW diesel engine stand-by power generator set and associated equipment located in a separate room in the pumphouse with access from the outside only
Notes	

Chemical Addition

Chlorine

Description	Chlorine addition for primary and secondary disinfection
Feed Point	After filters, common discharge
Equipment	A chlorine gas system consisting of nine (9) 68 kg cylinders of which two (2) cylinders are located on the weigh scale and are hooked up to the system
	Each of the two (2) cylinders (one duty and one standby) which are hooked up to the system are equipped with vacuum regulators and automatic cylinder switch-over system
	One (1) 227 kg/day capacity chlorinator
	Complete with the associated equipment, instrumentation and controls, including gas detector and alarm system, located in a separate room of the pump house with access from the outside only, and chlorine solution feed lines and chlorine residual analyzer on the common pump header pipe
Notes	

Potassium Permanganate

Description	Potassium permanganate addition for manganese removal
Feed Point	Prior to filters
Equipment	Two (2) mixing tanks with a storage capacity of 2,000 L each
	Two (2) potassium permanganate metering pumps
	Two (2) booster pumps rated for 2 L/s, 41 m TDH
	Two (2) control panels
	Two (2) eductors and associated equipment
Notes	A water softener package for the potassium permanganate system having a maximum flow capacity of 160 Litres per minute, with brine tank and associated equipment

Distribution System

Description	Twinned 500 mm and 300 mm diameter feeder watermains with fire hydrants and appurtenances, and a length of 700 m between the chlorine dosage point and the first customer providing a contact time before the first consumer of approximately 12 minutes at the approved peak flow of 15.8 m ³ /min (263.1 L/sec)
Notes	

Walkers Line Wells

WW1-Well #1

Location	Lot 13, Concession 4, in Township of Milton approximately 1200 m north of Derry Road, 35 m west of Walkers Line
UTM Coordinates	NAD 27, Zone 17, +/- 5 m, Easting 586770.000 m, Northing 4812830.000 m
Description	A drilled groundwater production well
Source Type	Groundwater (not GUDI)
Dimensions	300 mm diameter, 21.6 to 24.7 m deep
Equipment	A vertical turbine well pump rated at 33.0 L/sec, 72 m TDH Complete with a motor and a 150 mm diameter discharge line, flow meter, connected to the common well pump header in the pumphouse
Notes	

WW2-Well #2

Location	Lot 13, Concession 4, in the Township of Milton approximately 1200 m north of Derry Road, 85 m west of Walkers Line
UTM Coordinates	NAD 27, Zone 17, +/- 5 m, Easting 586710.000 m, Northing 4812820.000 m
Description	A drilled groundwater production well
Source Type	Groundwater (not GUDI)
Dimensions	300 mm diameter, 18.6 to 27.7 m deep
Equipment	A vertical turbine well pump rated at 38.0 L/sec, 67 m TDH Complete with a motor and a 150 mm diameter discharge line, flow meter, connected to the common well pump header in the pumphouse
Notes	

Pumphouse

Location	Lot 13, Concession 4, in the Township of Milton approximately 1,200 m north of Derry Road, 85 m west of Walkers Line
UTM Coordinates	NAD 27, Zone 17, +/- 5 m, Easting 586710.000 m, Northing 4812820.000 m
Description	Three (3) buildings are located on the well site. Two (2) small buildings are located over the wells and house the well pumps, motors and flow meters. The third building, located at the site of WW1-Well #1 and WW2-Well #2 (Approximately 10 m south of WW1 and 80 m east of WW2), houses the treatment and control facilities
Notes	

Chemical Addition

Chlorine

Description	Chlorine addition for primary and secondary disinfection
Feed Point	Well discharge pipe
Equipment	<p>A chlorine gas system consisting of two (2) 67.5 kg cylinders and weight scales with vacuum regulators and automatic cylinder switch-over system</p> <p>One (1) 10 kg/ day capacity chlorinator</p> <p>Complete with associated equipment, instrumentation and controls, including gas detector and alarm system, and chlorine solution feed lines to the common pump header pipe</p>
Notes	

Feeder Watermain

Description	A 300 mm diameter feeder watermain with fire hydrants and appurtenances and a length of 1,435 m between the chlorine dosage point and the first customer, providing a contact time before the first consumer of approximately 27 minutes at the approved peak flow of 3.6 m ³ /min (60.6 L/sec)
Notes	

Storage Reservoirs

Milton Reservoir

Location	5433 No. 14 Side Road, Milton ON
UTM Coordinates	NAD 83, Zone 17, Easting 588297.939 m and Northing 4816180.001 m
Description	Ground level storage reservoir
Dimensions	Total storage capacity of 14,800 m ³ , useable volume 3,700 m ³
Notes	

Surge Tanks

Milton Surge Tank

Location	4200 No. 12 Side Road, Milton ON
UTM Coordinates	NAD 83, Zone 17, +/- 5 m, Easting 587779.126 m, Northing 4813154.001 m
Description	Ground level storage reservoir
Dimensions	Total storage capacity of 14,800 m ³ , useable volume 3,700 m ³
Notes	

Bridgeview Distribution Subsystem

Name	Bridgeview Distribution Subsystem
Source Type	Receives treated water from the City of Hamilton DWS 220003118
Notes	

North Aldershot Distribution Subsystem

Name	North Aldershot Distribution Subsystem
Source Type	Receives treated water from the City of Hamilton DWS 220003118
Notes	

Snake Road Distribution Subsystem

Name	Snake Road Distribution Subsystem
Source Type	Receives treated water from the City of Hamilton DWS 220003118
Notes	

South Halton Distribution Subsystem

Name	South Halton Distribution Subsystem
Source Type	Receives treated water from the Burlington Water Purification Plant DWS 220001664, the Burloak Water Purification Plant DWS 260085436, the Oakville Water Purification Plant DWS 220001637 with connections that are normally closed to the Milton Groundwater and Distribution System DWS 220001646, the South Peel Water System DWS 210001317, and the North Aldershot System DWS 260086762
Notes	

Watermains**1.2** Watermains within the distribution system comprise:**1.2.1** Watermains that have been set out in each document or file identified in column 1 of Table 1.

Table 1: Watermains	
Column 1 Document or File Name	Column 2 Date
South Halton Distribution System	Spring, 2008

1.2.2 Watermains that have been added, modified, replaced or extended further to the provisions of Schedule C of this drinking water works permit on or after the date identified in column 2 of Table 1 for each document or file identified in column 1.**1.2.3** Watermains that have been added, modified, replaced or extended further to an authorization by the Director on or after the date identified in column 2 of Table 1 for each document or file identified in column 1.

Schedule B: General

System Owner	The Regional Municipality of Halton
Permit Number	004-204
Drinking Water System Name	South Halton Drinking Water System
Schedule B Issue Date	July 13, 2009

1.0 Applicability

- 1.1** In addition to any other requirements, the drinking water system identified above shall be altered and operated in accordance with the conditions of this drinking water works permit and the licence.
- 1.2** The definitions and conditions of the licence shall also apply to this drinking water works permit.

2.0 Alterations to the Drinking Water System

- 2.1** Any document issued by the Director as a Schedule C to this drinking water works permit shall provide authority to alter the drinking water system in accordance, where applicable, with the conditions of this drinking water works permit and the licence.
- 2.2** All Schedule C documents issued by the Director for the drinking water system shall form part of this drinking water works permit.
- 2.3** All parts of the drinking water system in contact with drinking water which are:
 - 2.3.1** Added, modified, replaced, extended; or
 - 2.3.2** Taken out of service for inspection, repair or other activities that may lead to contamination,shall be disinfected before being put into service in accordance with the provisions of the AWWA C651 – Standard for Disinfecting Water Mains; AWWA C652 – Standard for Disinfection of Water-Storage Facilities; AWWA C653 – Standard for Disinfection of Water Treatment Plants; or AWWA C654 – Standard for Disinfection of Wells; or an equivalent procedure.
- 2.4** The owner shall notify the Director within thirty (30) days of the placing into service or the completion of any addition, modification, replacement or extension of the drinking water system which had been authorized through:
 - 2.4.1** Schedule B to this drinking water works permit which would require an alteration of the description of a drinking water system component described in Schedule A of this drinking water works permit;
 - 2.4.2** Any Schedule C to this drinking water works permit respecting works other than watermains; or

- 2.4.3 Any approval issued prior to the issue date of the first drinking water works permit respecting works other than watermain which were not in service at the time of the issuance of the first drinking water works permit.
- 2.5 For greater certainty, the notification requirements set out in condition 2.4 do not apply to any addition, modification, replacement or extension in respect of the drinking water system which:
- 2.5.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03;
- 2.5.2 Constitutes maintenance or repair of the drinking water system; or
- 2.5.3 Is a watermain authorized by condition 3.1 of Schedule B of this drinking water works permit.
- 2.6 The owner shall notify the legal owner of any part of the drinking water system that is prescribed as a municipal drinking water system by section 2 of O. Reg. 172/03 of the requirements of the licence and this drinking water works permit as applicable to the prescribed system.
- 2.7 For greater certainty, any alteration to the drinking water system made in accordance with this drinking water works permit may only be carried out after other legal obligations have been complied with including those arising from the *Environmental Assessment Act*, *Niagara Escarpment Planning and Development Act*, *Oak Ridges Moraine Conservation Act*, 2001 and *Greenbelt Act*, 2005.

3.0 Watermain Additions, Modifications, Replacements and Extensions

- 3.1 The drinking water system may be altered by adding, modifying, replacing or extending a watermain within the distribution system subject to the following conditions:
- 3.1.1 The design of the watermain addition, modification, replacement or extension:
- a) Has been prepared by a Professional Engineer;
 - b) Has been designed only to transmit water and has not been designed to treat water;
 - c) Satisfies the design criteria set out in the Ministry of the Environment publication "Watermain Design Criteria for Future Alterations Authorized under a Drinking Water Works Permit – March 2009", as amended from time to time; and
 - d) Is consistent with or otherwise addresses, the design objectives contained within the Ministry of the Environment publication "Design Guidelines for Drinking Water Systems, 2008", as amended from time to time.
- 3.1.2 The maximum demand for water exerted by consumers who are serviced by the addition, modification, replacement or extension of the watermain will not result in an exceedance of the rated capacity of a treatment subsystem or the maximum flow rate for a treatment subsystem component as specified in the licence, or the creation of adverse conditions within the drinking water system.

- 3.1.3 The watermain addition, modification, replacement or extension will not adversely affect the distribution system's ability to maintain a minimum pressure of 140 kPa at ground level at all points in the distribution system under maximum day demand plus fire flow conditions.
- 3.1.4 Secondary disinfection will be provided to water within the added, modified, replaced or extended watermain to meet the requirements of O. Reg. 170/03.
- 3.1.5 The watermain addition, modification, replacement or extension is wholly located within the municipal boundary over which the owner has jurisdiction.
- 3.1.6 The owner of the drinking water system consents to the watermain addition, modification, replacement or extension.
- 3.1.7 A Professional Engineer has verified in writing that the watermain addition, modification, replacement or extension meets the requirements of condition 3.1.1.
- 3.1.8 The owner of the drinking water system has verified in writing that the watermain addition, modification, replacement or extension meets the requirements of conditions 3.1.2 to 3.1.6.
- 3.2 The authorization for the addition, modification, replacement or extension of a watermain provided for in condition 3.1 does not include the addition, modification, replacement or extension of a watermain that:
 - 3.2.1 Passes under or through a body of surface water, unless trenchless construction methods are used;
 - 3.2.2 Has a nominal diameter greater than 750 mm;
 - 3.2.3 Connects to another drinking water system; or
 - 3.2.4 Results in the fragmentation of the drinking water system.
- 3.3 The verifications required in conditions 3.1.7 and 3.1.8 shall be:
 - 3.3.1 Recorded on "Form 1 – Record of Watermains Authorized as a Future Alteration" as published by the Ministry of the Environment; and
 - 3.3.2 Retained for a period of ten (10) years by the owner.
- 3.4 For greater certainty, the verification requirements set out in condition 3.3 do not apply to any addition, modification, replacement or extension in respect of the drinking water system which:
 - 3.4.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03; or
 - 3.4.2 Constitutes maintenance or repair of the drinking water system.

- 3.5 The document or file referenced in Column 1 of Table 1 of Schedule A of this drinking water works permit that sets out watermain shall be retained by the owner and shall be updated to include watermain additions, modifications, replacements and extensions within 12 months of the addition, modification, replacement or extension.
- 3.6 The updates required by condition 3.5 shall include watermain location relative to named streets or easements and watermain diameter.

4.0 Minor Modifications to the Drinking Water System

- 4.1 The drinking water system may be altered by modifying or replacing the following components:
 - 4.1.1 Raw water, treatment process or treated water pumps;
 - 4.1.2 Chemical metering or chemical handling pumps;
 - 4.1.3 Valves;
 - 4.1.4 Instrumentation and controls;
 - 4.1.5 Cathodic corrosion protection; or
 - 4.1.6 Spill containment works.
- 4.2 The drinking water system may be altered by replacing the following:
 - 4.2.1 Raw water, treatment process or treated water piping within the treatment subsystem.
- 4.3 The modification or replacement of a drinking water system component set out in condition 4.1 or the replacement of a drinking water system component set out in condition 4.2 must not result in:
 - 4.3.1 An exceedance of a treatment subsystem rated capacity or a treatment subsystem component maximum flow rate as specified in the licence;
 - 4.3.2 The bypassing of any unit process within a treatment subsystem;
 - 4.3.3 A deterioration in the quality of drinking water provided to consumers;
 - 4.3.4 A reduction in the reliability or redundancy of any component of the drinking water system;
 - 4.3.5 An negative impact on the ability to undertake compliance and other monitoring;
or
 - 4.3.6 An adverse effect on the environment.
- 4.4 The owner shall verify in writing that the modification or replacement of drinking water system components in accordance with conditions 4.1 and 4.2 has met the requirements of the conditions listed in condition 4.3.

- 4.5** The verifications required in condition 4.4 shall be:
- 4.5.1 Recorded on "Form 2 – Record of Minor Modifications or Replacements to the Drinking Water System" as published by the Ministry of the Environment; and
 - 4.5.2 Retained for a period of ten (10) years by the owner.
- 4.6** For greater certainty, the verification requirements set out in conditions 4.4 and 4.5 do not apply to any modification or replacement in respect of the drinking water system which:
- 4.6.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03; or
 - 4.6.2 Constitutes maintenance or repair of the drinking water system.
- 4.7** The owner shall update any drawings maintained for the drinking water system to reflect the modification or replacement of the works, where applicable.

5.0 Equipment with Emissions to the Air

- 5.1** The drinking water system may be altered by adding, modifying or replacing any of the following drinking water system components that may discharge or alter the rate or manner of a discharge of a compound of concern to the atmosphere:
- 5.1.1 Any equipment, apparatus, mechanism or thing that is used for the transfer of outdoor air into a building or structure that is not a cooling tower;
 - 5.1.2 Any equipment, apparatus, mechanism or thing that is used for the transfer of indoor air out of a space used for the production, processing, repair, maintenance or storage of goods or materials, including chemical storage;
 - 5.1.3 Laboratory fume hoods used for drinking water testing, quality control and quality assurance purposes;
 - 5.1.4 Low temperature handling of compounds with a vapor pressure of less than 1 kilopascal;
 - 5.1.5 Maintenance welding stations;
 - 5.1.6 Minor painting operations used for maintenance purposes;
 - 5.1.7 Parts washers for maintenance shops;
 - 5.1.8 Emergency chlorine and ammonia gas scrubbers;
 - 5.1.9 Venting for activated carbon units for drinking water taste and odour control;
 - 5.1.10 Venting for a stripping unit for methane removal from a groundwater supply;
 - 5.1.11 Natural gas or propane fired boilers, water heaters, space heaters and make-up air units with a total facility-wide heat input rating of less than 20 million kilojoules per hour, and with an individual fuel energy input of less than or equal to 10.5 gigajoules per hour; and

- 5.1.12 Emergency generators that fire No. 2 fuel oil (diesel fuel) with a sulphur content of 0.5 per cent or less measured by weight, natural gas, propane, gasoline or biofuel, and that are used for emergency duty only with periodic testing.
- 5.2 The owner shall not add, modify or replace a drinking water system component set out in condition 5.1 for an activity that is not directly related to the treatment and distribution of drinking water.
- 5.3 The emergency generators identified in condition 5.1.12 shall not be used for non-emergency purposes including the generation of electricity for sale or for peak shaving purposes.
- 5.4 The owner shall prepare an emission summary table for nitrogen oxide emissions only, for each addition, modification or replacement of emergency generators identified in condition 5.1.12.

Performance Limits

- 5.5 The owner shall ensure that a drinking water system component identified in conditions 5.1.1 to 5.1.12 is operated at all times to comply with the following limits:
- 5.5.1 For equipment other than emergency generators, the maximum concentration of any compound of concern at a point of impingement shall not exceed the corresponding point of impingement limit;
- 5.5.2 For emergency generators, the maximum concentration of nitrogen oxides at sensitive populations shall not exceed the applicable point of impingement limit, and at non-sensitive populations shall not exceed the Ministry of the Environment half-hourly screening level of 1880 ug/m³ as amended;
- 5.5.3 The noise emissions comply at all times with the limits set out in publication NPC-205 and/or publication NPC-232, as applicable; and
- 5.5.4 The vibration emissions comply at all times with the limits set out in publication NPC-207.
- 5.6 The owner shall verify in writing that any addition, modification or replacement of works in accordance with condition 5.1 has met the requirements of the conditions listed in condition 5.5.
- 5.7 The owner shall document how compliance with the performance limits outlined in 5.5.3 and 5.5.4 is being achieved, through noise abatement equipment and/or operational procedures.
- 5.8 The verifications required in condition 5.6 shall be:
- 5.8.1 Recorded on "Form 3 – Record of Addition, Modification or Replacement of Equipment Discharging a Contaminant of Concern to the Atmosphere" as published by the Ministry of the Environment.
- 5.8.2 Retained for a period of ten (10) years by the owner.

5.9 For greater certainty, the verification requirements set out in conditions 5.6 and 5.8 do not apply to any addition, modification or replacement in respect of the drinking water system which:

5.9.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03; or

5.9.2 Constitutes maintenance or repair of the drinking water system.

5.10 The owner shall update any drawings maintained for the works to reflect the addition, modification or replacement of the works, where applicable.

6.0 Previously Approved Works

6.1 The owner may add, modify, replace or extend, and operate part of a municipal drinking water system if:

6.1.1 An approval was issued after January 1, 2004 under section 36 of the SDWA in respect of the addition, modification replacement or extension and operation of that part of the municipal drinking water system;

6.1.2 The approval expired by virtue of subsection 36(4) of the SDWA; and

6.1.3 The addition, modification, replacement or extension commenced within five years of the date that activity was approved by the expired approval.

7.0 System-Specific Conditions

7.1 The following are authorized under this permit:

Burloak Water Purification Plant – Operational Performance Monitoring

7.1.1 The temporary installation of analyzers for the occasional testing and monitoring of parameters as per O. Reg. 248/03, Section 4.

Form 1 – Record of Watermains Authorized as a Future Alteration
Part 1 – Drinking Water Works Permit Number: _____

(Insert the Drinking Water Works Permit number authorizing the addition, modification, replacement or extension of watermains)
Part 2 – Description of watermain addition, modification, replacement or extension (Use attachments if required)

The description shall include:

- 1) A brief description above of the undertaking (e.g. street name(s); subdivision name; project name); and
- 2) An attachment including a plan view drawing identifying at a minimum:
 - a) location(s) of the undertaking (e.g. showing street names, easements, etc.); and
 - b) nominal diameter of the watermain(s) associated with the addition, modification, replacement or extension.

Part 3 – Verification by Professional Engineer

I hereby verify that I am a Professional Engineer who is licensed to practice in the Province of Ontario and the design of the watermain addition, modification, replacement or extension:

- 1) Has been prepared by a Professional Engineer who is licensed to practice in the Province of Ontario;
- 2) Has been designed only to transmit water and has not been designed to treat water;
- 3) Satisfies the design criteria set out in the Ministry of the Environment publication "Watermain Design Criteria for Future Alterations Authorized under a Drinking Water Works Permit – March 2009", as amended from time to time; and
- 4) Is consistent with or otherwise addresses, the design objectives contained within the Ministry of the Environment publication "Design Guidelines for Drinking Water Systems, 2008", as amended from time to time.

Name: (Print) _____ Signature: _____

PEO Licence Number: _____ Date: _____

Part 4 – Verification by Owner

I hereby verify that:

- 1) The maximum demand for water exerted by consumers who are serviced by the addition, modification, replacement or extension of the watermain will not result in an exceedance of the rated capacity of a treatment subsystem or the maximum flow rate for a treatment subsystem component as specified in the licence, or the creation of adverse conditions within the drinking water system;
- 2) The watermain addition, modification, replacement or extension will not adversely affect the distribution system's ability to maintain a minimum pressure of 140 kPa at ground level at all points in the distribution system under maximum day demand plus fire flow conditions.
- 3) Secondary disinfection will be provided to water within the added, modified, replaced or extended watermain to meet the requirements of O. Reg. 170/03;
- 4) The watermain addition, modification, replacement or extension is wholly located within the municipal boundary over which the owner has jurisdiction;
- 5) The owner consents to the watermain addition, modification, replacement or extension; and
- 6) I am authorized by the owner to complete this verification.

Name of Owner: (Print) _____

Name: (Print) _____ Signature: _____
Owner Representative

Date: _____

Form 2 – Record of Minor Modifications or Replacements to the Drinking Water System**Part 1 – Drinking Water Works Permit Number:** _____*(Insert the Drinking Water Works Permit number authorizing minor modifications or replacements to the Drinking Water System)***Part 2 – Description of Minor Modifications or Replacements (Use attachments if required)**

The description shall include:

- 1) An identification of the system component being modified or replaced;
- 2) The location of the works being modified or replaced; and
- 3) A brief description of the modification or replacement.

Part 3 – Verification by Owner

I hereby verify that:

- 1) The minor modifications or replacements described in Part 2 of this form meets the requirements of the conditions of the Drinking Water Works Permit identified in Part 1 of this form which authorizes the minor modifications or replacements; and
- 2) I am authorized by the owner to complete this verification.

Name of Owner: (Print) _____

Name: (Print) _____
Owner Representative

Signature: _____

Date: _____

**Form 3 – Record of Addition, Modification or Replacement of Equipment
Discharging a Contaminant of Concern to the Atmosphere****Part 1 – Drinking Water Works Permit Number:** _____*(Insert the Drinking Water Works Permit number authorizing the addition, modification or replacement of equipment discharging a contaminant of concern to the atmosphere)***Part 2 – Description of Equipment Added, Modified or Replaced (Use attachments if required)***The description shall include:*

- 1) *A brief description of the undertaking; and*
- 2) *An attachment including a plan view drawing identifying at a minimum the location of the undertaking and the location of the stack or vent discharging to the atmosphere*

Part 3 – Verification by Owner

I hereby verify that:

- 1) The addition, modification or replacement of equipment discharging a contaminant of concern to the atmosphere described in Part 2 of this form meets the requirements of the conditions of the Drinking Water Works Permit identified in Part 1 which authorizes the addition, modification or replacement;
- 2) Where required, an Emission Summary Table was prepared by a Professional Engineer who is licensed to practice in the Province of Ontario; and
- 3) I am authorized by the owner to complete this verification.

Name of Owner: (Print) _____

Name: (Print) _____ Signature: _____
Owner Representative

Date: _____



Ontario

Ministry of
the Environment

Form 2 - Record of Minor Modifications or Replacements to the Drinking Water System

RETAIN COMPLETED FORM - DO NOT SEND TO MOE

Part 1 - Drinking Water Works Permit Number

(Insert the Drinking Water Works Permit number authorizing minor modifications or replacements to the Drinking Water System)

DWWP 004- 204 (2)

Part 2 - Description of Minor Modifications or Replacements (Use attachments if required)

The following analyzers were added to the Burloak Water Purification Plant in order to better facilitate process control. The need for the analyzers was highlighted during the commissioning phase of the Burloak Plant, by operations staff.

One Free Chlorine Analyzer for the Treated Water Clearwell Inlet.
One Free Chlorine Analyzer for the Treated Water Clearwell Outlet.
One Free Chlorine Analyzer for the High Lift Pumping Discharge West Header
One Fluoride Analyzer for the High Lift Pumping Discharge Header West.

The description shall include:

- 1) An identification of the system component being modified or replaced;
- 2) The location of the works being modified or replaced; and
- 3) A brief description of the modification or replacement

Part 3 - Verification by Owner

I hereby verify that

- 1) The minor modifications or replacements described in Part 2 of this form meets the requirements of the conditions of the Drinking Water Works Permit identified in Part 1 of this form which authorizes the minor modifications or replacements; and
- 2) I am authorized by the owner to complete this verification.

Name of Owner (Print)

REGION OF HALTON

Signature

George Trencs

Name of Owner Representative (Print)

GEORGE TRENCs

Date (yyyy/mm/dd)

Apr. 27, 2010



MUNICIPAL DRINKING WATER LICENCE

Licence Number: 004-104

Issue Number: 2

Pursuant to the *Safe Drinking Water Act*, 2002, S.O. 2002, c. 32, and the regulations made thereunder and subject to the limitations thereof, this municipal drinking water licence is issued under Part V of the *Safe Drinking Water Act*, 2002, S.O. 2002, c. 32 to:

The Regional Municipality of Halton

**1151 Bronte Road
Oakville ON L6M 3L1**

For the following municipal residential drinking water system:

South Halton Drinking Water System

This municipal drinking water licence includes the following:

Schedule	Description
Schedule A	Drinking Water System Information
Schedule B	General Conditions
Schedule C	System-Specific Conditions
Schedule D	Conditions for Relief from Regulatory Requirements

DATED at TORONTO this 13th day of July, 2009

Signature

A handwritten signature in black ink that reads "A. Ahmed". The signature is written in a cursive style and is underlined with a single horizontal line.

Aziz Ahmed, P.Eng.
Director

Part V, *Safe Drinking Water Act*, 2002

Schedule A: Drinking Water System Information

System Owner	The Regional Municipality of Halton
Licence Number	004-104
Drinking Water System Name	South Halton Drinking Water System
Schedule A Issue Date	July 13, 2009

The following information is applicable to the above drinking water system and forms part of this licence:

Licence

First Licence Issue Date	June 17, 2009
Licence Expiry Date	June 16, 2014
Application for Licence Renewal Date	December 15, 2013

Drinking Water Works Permit

Drinking Water System Name	Permit Number	Issue Date
South Halton Drinking Water System	004-204	July 13, 2009

Permits to Take Water

Water Taking Location	Permit Number	Issue Date
Burlington Water Purification Plant	01-P-3043	January 9, 2002
Burloak Water Purification Plant	0835-6GBQKB	February 7, 2006
Kelso Well Field	87-P-3046	February 16, 1996
Oakville Water Purification Plant	0688-6Q9NXA	April 18, 2006
Walkers Line Wells	87-P-3046	February 16, 1996

Financial Plans

The Financial Plan Number for the Financial Plan required to be developed for this drinking water system in accordance with O. Reg. 453/07 shall be:	004-304
Alternately, if one Financial Plan is developed for all drinking water systems owned by the owner, the Financial Plan Number shall be:	004-301A

Accredited Operating Authority

Drinking Water System or Operational Subsystems	Accredited Operating Authority	Operational Plan Number
South Halton Drinking Water System	The Regional Municipality of Halton	004-404

Schedule B: General Conditions

System Owner	The Regional Municipality of Halton
Licence Number	004-104
Drinking Water System Name	South Halton Drinking Water System
Schedule B Issue Date	July 13, 2009

1.0 Definitions

1.1 Words and phrases not defined in this licence and the associated drinking water works permit shall be given the same meaning as those set out in the SDWA and any regulations made in accordance with that act, unless the context requires otherwise.

1.2 In this licence and the associated drinking water works permit:

"adverse effect", "contaminant" and "natural environment" shall have the same meanings as in the EPA;

"alteration" may include the following in respect of this drinking water system:

- (a) An addition to the system,
- (b) A modification of the system,
- (c) A replacement of part of the system, and
- (d) An extension of the system;

"compound of concern" means a contaminant that, based on generally available information, may be emitted from a component of the drinking water system to the atmosphere in a quantity that is significant either in comparison to the relevant point of impingement limit or if a point of impingement limit is not available for the compound, then based on generally available toxicological information, the compound has the potential to cause an adverse effect as defined by the EPA at a point of impingement;

"Director" means a Director appointed pursuant to section 6 of the SDWA for the purposes of Part V of the SDWA;

"drinking water works permit" means the drinking water works permit for the drinking water system as identified in Schedule A of this licence;

"emission summary table" means the table that was prepared by a Professional Engineer in accordance with O. Reg. 419/05 and the procedure document listing the appropriate point of impingement concentrations of each compound of concern emitted from a component of the drinking water system and providing comparison to the corresponding point of impingement limit;

"EPA" means the *Environmental Protection Act*, R.S.O. 1990, c. E.19;

"financial plan" means the financial plan required by O. Reg. 453/07 and the conditions of this licence;

"licence" means this municipal drinking water licence for the municipal drinking water system identified in Schedule A of this licence;

"operational plan" means an operational plan developed in accordance with the Director's Directions – Minimum Requirements for Operational Plans made under the authority of subsection 15(1) of the SDWA;

"owner" means the owner of the drinking water system as identified in Schedule A of this licence;

"point of impingement" means any point in the natural environment that is not on the same property as the source of the contaminant and as defined by section 2 of O. Reg. 419/05;

"point of impingement limit" means the appropriate standard from Schedule 1, 2 or 3 of O. Reg. 419/05 and if a standard is not provided for a compound of concern, the appropriate criteria listed in the Ministry of the Environment publication titled "Summary of Standards and Guidelines to support Ontario Regulation 419: Air Pollution – Local Air Quality (including Schedule 6 of O. Reg. 419 on Upper Risk Thresholds)", dated February 2008, as amended;

"procedure document" means the Ministry of the Environment procedure titled "Procedure for Preparing an Emission Summary and Dispersion Modelling Report" dated July 2005, as amended;

"Professional Engineer" means a Professional Engineer who has been licenced to practice in the Province of Ontario;

"provincial officer" means a provincial officer appointed pursuant to section 8 of the SDWA;

"publication NPC-205" means the Ministry of the Environment publication titled "Sound Level Limits for Stationary Sources in Class 1 & 2 Areas (Urban)" dated October 1995, as amended;

"publication NPC-207" means the Ministry of the Environment draft technical publication titled "Impulse Vibration in Residential Buildings" dated November 1983, supplementing the Ministry of the Environment "Model Municipal Noise Control By-law, Final Report" dated August 1978;

"publication NPC-232" means the Ministry of the Environment publication titled "Sound Level Limits for Stationary Sources in Class 3 Areas (Rural)" dated October 1995, as amended;

"SDWA" means the *Safe Drinking Water Act*, 2002, S.O. 2002, c. 32;

"sensitive populations" means any one or a combination of the following locations where the health effects of nitrogen oxides emissions from emergency generator(s) shall be considered using the point of impingement limit instead of the Ministry of the Environment screening level for emergency generator(s):

- (a) health care units (e.g., hospitals and nursing homes),
- (b) primary/junior public schools,
- (c) day-care facilities, and
- (d) playgrounds;

2.0 Applicability

- 2.1** In addition to any other requirements, the drinking water system identified above shall be established, altered and operated in accordance with the conditions of the drinking water works permit and this licence.

3.0 Licence Expiry

- 3.1** This licence expires on the date identified as the licence expiry date in Schedule A of this licence.

4.0 Licence Renewal

- 4.1** Any application to renew this licence shall be made on or before the date identified as the application for licence renewal date set out in Schedule A of this licence.

5.0 Compliance

- 5.1** The owner and operating authority shall ensure that any person authorized to carry out work on or to operate any aspect of the drinking water system has been informed of the SDWA, all applicable regulations made in accordance with that act, the drinking water works permit and this licence and shall take all reasonable measures to ensure any such person complies with the same.

6.0 Licence and Drinking Water Works Permit Availability

- 6.1** At least one copy of this licence and the drinking water works permit shall be stored in such a manner that they are readily viewable by all persons involved in the operation of the drinking water system.

7.0 Permits to Take Water

- 7.1** A permit to take water identified in Schedule A of this licence is associated with the taking of water for purposes of the operation of the drinking water system and is the applicable permit on the date identified as the Schedule A Issue Date.

8.0 Financial Plan

- 8.1 The owner of the drinking water system, by the later of July 1, 2010 and the date that is six months after the date the first licence for the system is issued, shall prepare and approve financial plans for the system that satisfy the requirements prescribed under section 3 of O. Reg. 453/07.
- 8.2 The owner of the drinking water system shall ensure that every financial plan prepared in accordance with subsections 2 (1) and 3 (1) of O. Reg. 453/07 contains on the front page of the financial plan, the appropriate financial plan number as set out in Schedule A of this licence.

9.0 Interpretation

- 9.1 Where there is a conflict between the provisions of this licence and any other document, the following hierarchy shall be used to determine the provision that takes precedence:
- 9.1.1 The SDWA;
 - 9.1.2 A condition imposed in this licence that explicitly overrides a prescribed regulatory requirement;
 - 9.1.3 A condition imposed in the drinking water works permit that explicitly overrides a prescribed regulatory requirement;
 - 9.1.4 Any regulation made under the SDWA;
 - 9.1.5 Any provision of this licence that does not explicitly override a prescribed regulatory requirement;
 - 9.1.6 Any provision of the drinking water works permit that does not explicitly override a prescribed regulatory requirement;
 - 9.1.7 Any application documents listed in this licence, or the drinking water works permit from the most recent to the earliest; and
 - 9.1.8 All other documents listed in this licence, or the drinking water works permit from the most recent to the earliest.
- 9.2 If any requirement of this licence or the drinking water works permit is found to be invalid by a court of competent jurisdiction, the remaining requirements of this licence and the drinking water works permit shall continue to apply.
- 9.3 The issuance of and compliance with the conditions of this licence and the drinking water works permit does not:
- 9.3.1 Relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement, including the *Environmental Assessment Act*, R.S.O. 1990, c. E.18; and

9.3.2 Limit in any way the authority of the appointed Directors and provincial officers of the Ministry of the Environment to require certain steps be taken or to require the owner to furnish any further information related to compliance with the conditions of this licence or the drinking water works permit.

9.4 For greater certainty, nothing in this licence or the drinking water works permit shall be read to provide relief from regulatory requirements in accordance with section 46 of the SDWA, except as expressly provided in the licence or the drinking water works permit.

10.0 Adverse Effects

10.1 Nothing in this licence or the drinking water works permit shall be read as to permit:

10.1.1 The discharge of a contaminant into the natural environment that causes or is likely to cause an adverse effect; or

10.1.2 The discharge of any material of any kind into or in any waters or on any shore or bank thereof or into or in any place that may impair the quality of the water of any waters.

10.2 All reasonable steps shall be taken to minimize and ameliorate any adverse effect on the natural environment or impairment of the quality of water of any waters resulting from the operation of the drinking water system including such accelerated or additional monitoring as may be necessary to determine the nature and extent of the effect or impairment.

10.3 Fulfillment of one or more conditions imposed by this licence or the drinking water works permit does not eliminate the requirement to fulfill any other condition of this licence or the drinking water works permit.

11.0 Change of Owner or Operating Authority

11.1 This licence is not transferable without the prior written consent of the Director.

11.2 The owner shall notify the Director in writing of a change of any operating authority identified in Schedule A of this licence.

12.0 Information to be Provided

12.1 Any information requested by a Director or a provincial officer concerning the drinking water system and its operation, including but not limited to any records required to be kept by this licence or the drinking water works permit, shall be provided upon request.

13.0 Records Retention

13.1 Except as otherwise required in this licence or the drinking water works permit, any records required by or created in accordance with this licence or the drinking water works permit, other than the records specifically subject to the records retention requirements of section 12 of O. Reg. 170/03, shall be retained for at least 5 years and made available for inspection by a provincial officer, upon request.

14.0 Chemicals and Materials

- 14.1** All chemicals and materials used in the alteration or operation of the drinking water system that come into contact with water within the system shall meet all applicable standards set by both the American Water Works Association ("AWWA") and the American National Standards Institute ("ANSI") safety criteria standards NSF/60 and NSF/61.
- 14.2** The most current chemical and material product registration documentation from a testing institution accredited by either the Standards Council of Canada or by the American National Standards Institution ("ANSI") shall be available at all times for each chemical and material used in the operation of the drinking water system that comes into contact with water within the system.
- 14.3** Conditions 14.1 and 14.2 do not apply in the case of the following:
- 14.3.1 Water pipe and pipe fittings meeting AWWA specifications made from ductile iron, cast iron, PVC, fibre and/or steel wire reinforced cement pipe or high density polyethylene (HDPE);
 - 14.3.2 Articles made from stainless steel, glass, HDPE or Teflon®;
 - 14.3.3 Cement mortar for watermain lining and for water contacting surfaces of concrete structures made from washed aggregates and Portland cement;
 - 14.3.4 Food grade oils and lubricants; or
 - 14.3.5 Any particular chemical or material where the owner has written documentation signed by the Director that indicates that the Ministry of the Environment is satisfied that the chemical or material is acceptable for use within the drinking water system and the chemical or material is only used as permitted by the documentation.

15.0 Drawings

- 15.1** All drawings and diagrams in the possession of the owner that show any treatment subsystem as constructed shall be retained by the owner unless the drawings and diagrams are replaced by a revised or updated version showing the subsystem as constructed subsequent to the alteration.
- 15.2** Any alteration to any treatment subsystem shall be incorporated into process flow diagrams, process and instrumentation diagrams, and record drawings and diagrams within one year of the substantial completion of the alteration.
- 15.3** Process flow diagrams and process and instrumentation diagrams for any treatment subsystem shall be kept in a place, or made available in such a manner, that they may be readily viewed by all persons responsible for all or part of the operation of the drinking water system.

16.0 Operations and Maintenance Manual

- 16.1** An up-to-date operations and maintenance manual or manuals shall be maintained and applicable parts of the manual or manuals shall be made available for reference by all persons responsible for all or part of the operation or maintenance of the drinking water system.
- 16.2** The operations and maintenance manual or manuals, shall include at a minimum:
 - 16.2.1 The requirements of this licence and associated procedures;
 - 16.2.2 The requirements of the drinking water works permit for the drinking water system;
 - 16.2.3 Procedures for monitoring and recording the in-process parameters necessary for the control of any treatment subsystem and for assessing the performance of the drinking water system;
 - 16.2.4 Procedures for the operation and maintenance of monitoring equipment;
 - 16.2.5 Contingency plans and procedures for the provision of adequate equipment and material to deal with emergencies, upset conditions and equipment breakdown;
 - 16.2.6 Procedures for dealing with complaints related to the drinking water system, including the recording of the nature of the complaint and any investigation and corrective action taken in respect of the complaint;
 - 16.2.7 An inspection schedule for all wells associated with the drinking water system, including all production wells, standby wells, test wells and monitoring wells;
 - 16.2.8 Well inspection and maintenance procedures for the entire well structure of each well including all above and below grade well components; and
 - 16.2.9 Remedial action plans for situations where an inspection indicates non-compliance with respect to regulatory requirements and/or risk to raw well water quality.
- 16.3** Procedures necessary for the operation and maintenance of any alterations to the drinking water system shall be incorporated into the operations and maintenance manual or manuals prior to those alterations coming into operation.

Schedule C: System-Specific Conditions

System Owner	The Regional Municipality of Halton
Licence Number	004-104
Drinking Water System Name	South Halton Drinking Water System
Schedule C Issue Date	July 13, 2009

1.0 Performance Limits

Rated Capacity

- 1.1 For each treatment subsystem listed in column 1 of Table 1, the maximum daily volume of treated water that flows from the treatment subsystem to the distribution system shall not exceed the value identified as the rated capacity in column 2 of the same row.

Table 1: Rated Capacity	
Column 1 Treatment Subsystem Name	Column 2 Rated Capacity (m ³ /day)
Burlington Water Purification Plant	263,000
Burloak Water Purification Plant	55,000
Kelso Water Purification Plant	22,670
Oakville Water Purification Plant	109,000
Walker's Line Pumphouse	5,240

- 1.2 Despite condition 1.1, a treatment subsystem may be operated temporarily at a daily volume above the value set out in column 2 of Table 1 for the purposes of fighting a large fire or for the maintenance of the drinking water system.
- 1.3 Condition 1.2 does not authorize the discharge into the distribution system of any water that does not otherwise meet all of the requirements of this licence and all other regulatory requirements, including compliance with the Ontario Drinking Water Quality Standards.

Maximum Flow Rates

- 1.4 For each treatment subsystem listed in column 1 of Table 2, the maximum flow rate of water that flows into a treatment subsystem component listed in column 2 shall not exceed the value listed in column 3 of the same row.

Table 2: Maximum Flow Rates		
Column 1 Treatment Subsystem Name	Column 2 Treatment Subsystem Component	Column 3 Maximum Flow Rate (L/s)
Burlington Water Purification Plant	Low Lift Pumping Station	3,472
	Settling System	3,472
	Ozone System	3,472
	Filters	3,576
Burloak Water Purification Plant	Membrane Filtration	431 (per membrane tank)
	UV Treatment	431 (per UV reactor)
	Ozone Contactor (Phase I)	862

Residue Management

1.5 In respect of an effluent discharged into the natural environment from a treatment subsystem or treatment subsystem component listed in column 1 of Table 3:

1.5.1 The annual average concentration of a test parameter identified in column 2 shall not exceed the value in column 3 of the same row; and

1.5.2 The maximum concentration of a test parameter identified in column 2 shall not exceed the value in column 4 of the same row.

Table 3: Residue Management			
Column 1 Treatment Subsystem or Treatment Subsystem Component Name	Column 2 Test Parameter	Column 3 Annual Average Concentration (mg/L)	Column 4 Maximum Concentration (mg/L)
Burlington Water Purification Plant ¹	Total Suspended Solids	15	Not Applicable
Burloak Water Purification Plant ²	Total Suspended Solids	15	Not Applicable
Oakville Water Purification Plant ¹	Total Suspended Solids	25	Not Applicable

¹ Backwash Wastewater Facilities

² Backwash Wastewater Facilities or Waste Neutralization Tanks

UV Disinfection Equipment Performance

1.6 For each treatment subsystem or treatment subsystem component listed in column 1 of Table 4, the UV disinfection equipment shall be operated such that a continuous pass-through UV dose is maintained throughout the life time of the UV lamp(s) that is at least the minimum continuous pass-through UV dose set out in column 2 of the same row.

Table 4: UV Disinfection Equipment Performance	
Column 1 Treatment Subsystem or Treatment Subsystem Component Name	Column 2 Minimum Continuous Pass-Through UV Dose (mJ/cm ²)
Burloak Water Purification Plant	12

2.0 Flow Measurement and Recording Requirements

2.1 For each treatment subsystem identified in column 1 of Table 1 and in addition to any other flow measurement and recording that may be required, continuous flow measurement and recording shall be undertaken for:

2.1.1 The flow rate and daily volume of treated water that flows from the treatment subsystem to the distribution system.

2.1.2 The flow rate and daily volume of water that flows into the treatment subsystem.

2.2 For each treatment subsystem component identified in column 2 of Table 2 and in addition to any other flow measurement and recording that may be required, continuous flow measurement and recording shall be undertaken for the flow rate and daily volume of water that flows into the treatment subsystem component.

2.3 Where a rated capacity from Table 1 or a maximum flow rate from Table 2 is exceeded, the following shall be recorded:

2.3.1 The difference between the measured amount and the applicable rated capacity or maximum flow rate specified in Table 1 or Table 2;

2.3.2 The time and date of the measurement;

2.3.3 The reason for the exceedance; and

2.3.4 The duration of time that lapses between the applicable rated capacity or maximum flow rate first being exceeded and the next measurement where the applicable rated capacity or maximum flow rate is no longer exceeded.

3.0 Calibration of Flow Measuring Devices

3.1 All flow measuring devices must be checked and calibrated in accordance with the manufacturer's instructions.

3.2 If the manufacturer's instructions do not indicate how often to check and calibrate a flow measuring device, the equipment must be checked and calibrated at least once every year during which the drinking water system is in operation.

4.0 Additional Sampling, Testing and Monitoring

Drinking Water Health and Non-Health Related Parameters

- 4.1** For each treatment subsystem or treatment subsystem component identified in column 1 of Tables 5 and 6 and in addition to any other sampling, testing and monitoring that may be required, sampling, testing and monitoring shall be undertaken for a test parameter listed in column 2 at the sampling frequency listed in column 3 and at the monitoring location listed in column 4 of the same row.

Table 5: Drinking Water Health Related Parameters			
Column 1 Treatment Subsystem or Treatment Subsystem Component Name	Column 2 Test Parameter	Column 3 Sampling Frequency	Column 4 Monitoring Location
Burloak Water Purification Plant	Hydrocarbons ¹	Continuous	Raw water intake
	Trihalomethanes	Monthly ²	Point of entrance to the distribution system

¹ Hydrocarbons refers to the detection of 'oil in water' and not to a specific list of hydrocarbons.

² Monthly sampling for trihalomethanes only required for the first twelve (12) months of initial plant operation. Sampling for trihalomethanes will be as per O. Reg. 170/03 after this period.

Table 6: Drinking Water Non-Health Related Parameters			
Column 1 Treatment Subsystem or Treatment Subsystem Component Name	Column 2 Test Parameter	Column 3 Sampling Frequency	Column 4 Monitoring Location
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Environmental Discharge Parameters

- 4.2** For each treatment subsystem or treatment subsystem component identified in column 1 of Table 7 and in addition to any other sampling, testing and monitoring that may be required, sampling, testing and monitoring shall be undertaken for a test parameter listed in column 2 using the sample type identified in column 3 at the sampling frequency listed in column 4 and at the monitoring location listed in column 5 of the same row.

- 4.3** For the purposes of Table 7:

- 4.3.1** Manual Composite means the mean of at least three grab samples taken during a discharge event, with one sample being taken immediately following the commencement of the discharge event, one sample being taken approximately at the mid-point of the discharge event and one sample being taken immediately before the end of the discharge event; and

4.3.2 Automated Composite means samples must be taken during a discharge event by an automated sampler at a minimum sampling frequency of once per hour.

4.4 Any sampling, testing and monitoring for the test parameter Total Suspended Solids shall be performed in accordance with the requirements set out in the publication "Standard Methods for the Examination of Water and Wastewater", 21st Edition, 2005, or as amended from time to time by more recently published editions.

Table 7: Environmental Discharge Parameters				
Column 1 Treatment Subsystem or Treatment Subsystem Component Name	Column 2 Test Parameter	Column 3 Sample Type	Column 4 Sampling Frequency	Column 5 Monitoring Location
Burlington Water Purification Plant	Total Suspended Solids	Manual Composite	Monthly	Point of Discharge
Burloak Water Purification Plant	Total Suspended Solids	Manual Composite	Monthly	Point of discharge from the backwash equalization and waste neutralization tanks
	Free Chlorine Residual	Online Analyzer	Continuous ¹	Point of discharge from the backwash equalization and waste neutralization tanks
	Aluminum ²	Grab Sample	Monthly	Point of discharge from the backwash equalization and waste neutralization tanks
Oakville Water Purification Plant	Total Suspended Solids	Manual Composite	Monthly	Point of Discharge

¹ Continuous sampling only required when waste is being discharged to the storm sewer.

² Sampling only required for first six (6) months plant is in operation.

UV Disinfection Equipment

4.5 For each treatment subsystem or treatment subsystem component listed in column 1 of Table 8 and in addition to any other sampling, analysis and recording that may be required, continuous monitoring and recording with a minimum testing/reading and recording frequency of every four (4) hours shall be carried out for the test parameters set out in column 3 of the same row.

Table 8: UV Disinfection Equipment		
Column 1 Treatment Subsystem or Treatment Subsystem Component Name	Column 2 Control Strategy	Column 3 Test Parameter
Burloak Water Purification Plant	UVT and UV Intensity Set Point	Flow Rate
		UV Intensity
		UV Transmittance
		UV Lamp Status
		Calculated log inactivation (based on intensity, transmittance and flow rate)

Schedule D: Conditions for Relief from Regulatory Requirements

System Owner	The Regional Municipality of Halton
Licence Number	004-104
Drinking Water System Name	South Halton Drinking Water System
Schedule D Issue Date	July 13, 2009

1.0 Lead Regulatory Relief

- 1.1** For a drinking water system or drinking water subsystem identified by columns 1 and 2 of Table 1 and notwithstanding the provisions of Schedule 15.1 of O. Reg. 170/03, the owner is not required to comply with the sampling requirements of columns 3, 4 and 5 of the same row.

Table 1: Number of Sampling Points Required for Compliance with Schedule 15.1 of O. Reg. 170/03				
Column 1 Drinking Water System or Drinking Water Subsystem Name	Column 2 DWS Number	Column 3 Number of Sampling Points in Plumbing that Serves Private Residences	Column 4 Number of Sampling Points in Plumbing that Does Not Serve Private Residences	Column 5 Number of Sampling Points in Distribution System
Bridgeview Distribution System	260068419	10	1	2
Milton Groundwater and Distribution	220001646	60	6	12
North Aldershot Distribution System	260086762	10	1	2
Snake Road Distribution System	260086775	10	0	2
South Halton Water System	260085462	100	10	20

- 1.2** For a drinking water system or drinking water subsystem identified by columns 1 and 2 of Table 2 and in exchange for any relief from regulatory requirements granted in condition 1.1 and subject to any other applicable conditions of this licence and drinking water works permit, the owner is required to comply with the sampling requirements of columns 3, 4 and 5 of the same row.

Table 2: Number of Sampling Points Required for Relief from Regulatory Requirements

Column 1 Drinking Water System or Drinking Water Subsystem Name	Column 2 DWS Number	Column 3 Number of Sampling Points in Plumbing that Serves Private Residences	Column 4 Number of Sampling Points in Plumbing that Does Not Serve Private Residences	Column 5 Number of Sampling Points in Distribution System
Bridgeview Distribution System	260068419	0	1	1
Milton Groundwater and Distribution	220001646	30	6	12
North Aldershot Distribution System	260086762	2	1	2
Snake Road Distribution System	260086775	2	0	1
South Halton Water System	260085462	96	10	20

- 1.3** For a drinking water system or drinking water subsystem identified by columns 1 and 2 of Table 3, the relief from regulatory requirements granted in condition 1.1 is in effect for the sampling period identified in column 3 of the same row.

Table 3: Sampling Periods

Column 1 Drinking Water System or Drinking Water Subsystem Name	Column 2 DWS Number	Column 3 Sampling Period
Bridgeview Distribution System	260068419	December 15, 2007 to April 15, 2008
Milton Groundwater and Distribution	220001646	June 15, 2008 to October 15, 2008
North Aldershot Distribution System	260086762	December 15, 2007 to April 15, 2008
Snake Road Distribution System	260086775	December 15, 2007 to April 15, 2008
South Halton Water System	260085462	December 15, 2007 to April 15, 2008

- 1.4** For a drinking water system or drinking water subsystem identified by columns 1 and 2 of Table 4 and notwithstanding condition 1.3, the relief from regulatory requirements granted in condition 1.1 is also in effect for the sampling periods identified in column 3 of the same row.

Table 4: Sampling Periods		
Column 1 Drinking Water System or Drinking Water Subsystem Name	Column 2 DWS Number	Column 3 Sampling Period
Bridgeview Distribution System	260068419	June 15, 2008 to October 15, 2008 December 15, 2008 to April 15, 2009 June 15, 2009 to October 15, 2009
Milton Groundwater and Distribution	220001646	December 15, 2008 to April 15, 2009 June 15, 2009 to October 15, 2009 December 15, 2009 to April 15, 2010
North Aldershot Distribution System	260086762	June 15, 2008 to October 15, 2008 December 15, 2008 to April 15, 2009 June 15, 2009 to October 15, 2009
Snake Road Distribution System	260086775	June 15, 2008 to October 15, 2008 December 15, 2008 to April 15, 2009 June 15, 2009 to October 15, 2009
South Halton Water System	260085462	June 15, 2008 to October 15, 2008 December 15, 2008 to April 15, 2009 June 15, 2009 to October 15, 2009

1.5 The relief from regulatory requirements granted in condition 1.1 is conditional upon the owner submitting to the Director the following documentation prior to the end of each sampling period:

- 1.5.1 A copy of the documents sent to each residential and non-residential building within the area of service of the drinking water system or drinking water subsystem, requesting volunteers to provide sampling locations as required under Schedule 15.1 of O. Reg. 170/03;
- 1.5.2 A copy of newspaper or other media advertisements requesting volunteers;
- 1.5.3 Logs of direct contacts made with occupants of residential and non-residential buildings requesting volunteers, including phone calls or home visits. For greater certainty, this clause does not impose a requirement to contact each private residence within the area of service, but the owner should make reasonable efforts to directly contact private residences to request volunteers;
- 1.5.4 Documentation of any other steps taken to secure volunteers to provide sampling locations as required under Schedule 15.1 of O. Reg. 170/03;
- 1.5.5 A statement from the owner confirming that reasonable efforts were made to contact occupants of all residential and non-residential buildings within the service area to secure volunteers; and
- 1.5.6 A statement from the owner confirming the number of volunteers for both residential and non-residential locations.

-
- 1.6** The relief from regulatory requirements granted in accordance with condition 1.1 will not apply to a sampling periods identified in Table 4 if the owner does not comply with condition 1.5.
- 1.7** In the event that the owner secures a larger number of volunteers for sampling in any one sampling period than is required in Table 2, the owner shall increase the number of samples collected during any sampling period identified in Tables 3 and 4 to include the additional volunteers, up to the minimum required under Schedule 15.1 of O. Reg. 170/03. Regardless of the number of additional samples collected during that sampling period, the relief granted in accordance with condition 1.1 will remain in effect for the other sampling periods listed in Table 4.
- 1.8** In the event O. Reg. 170/03 is amended to require fewer sampling locations than specified under the relief granted in accordance with condition 1.1, then the regulation shall prevail.
- 1.9** Subsection 15.1 – 5 (Reduced Sampling) of O. Reg. 170/03 does not apply to the drinking water system or drinking water subsystems identified in this licence as long as the relief from regulatory requirements granted in accordance with condition 1.1 remains in effect.

2.0 Other Regulatory Relief

- 2.1** Notwithstanding the provisions of O. Reg. 170/03, the owner is not required to comply with the following:
- 2.1.1** Report daily instantaneous peak flow rates of water supplied during the period covered by the report, in accordance with O. Reg. 170/03, Schedule 22, Section 22-2 (3) paragraph 1; and
- 2.1.2** Comparison of instantaneous peak flows referred to in paragraph 1 to the rated capacity and flow rates in the system's approval in accordance with O. Reg. 170/03, Schedule 22, Section 22-2 (3) paragraph 2.

Ministry of the Environment

Central Region
Technical Support Section
Water Resources
8th Floor
5775 Yonge St
Toronto ON M2M 4J1
Fax: (416)325-6347
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Ministère de l'Environnement

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Téléphone: (416) 326-6414



*copies to: Vaughan Martin
Danielle Mardant ✓
Gord Devine*

February 7, 2006

The Regional Municipality of Halton
1151 Bronte Road
Oakville, Ontario, L6M 3L1

RE: Permit to Take Water

Burloak Water Purification Plant
3380 Rebecca Street
Oakville, Regional Municipality of Halton
Reference Number 8135-6ALKJD

RECEIVED
FEB - 9 2006
CENTRAL REGION
WATER AND
POLYMER DEPT.

Dear Ms. Jacqueline Weston,

Please find attached Permit No. **0835-6GBQKB** issued to **The Regional Municipality of Halton** which authorizes the withdrawal of water in accordance with the application for this Permit to Take Water, and Schedule "A" which is attached to and forms part of this Permit.

This Permit is valid until **January 31, 2016** and shall be kept available for inspection by Ontario Ministry of the Environment staff.

Take notice that in issuing this Permit to Take Water, terms and conditions pertaining to the taking of water and to the results of the taking have been imposed on **The Regional Municipality of Halton**. The terms and conditions have been designed to allow for the development of water resources for beneficial purposes, while providing reasonable protection to existing water uses and users.

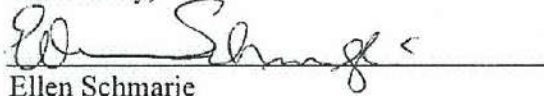
Our main concern is that the taking of water under the authority of this Permit does not cause negative impacts to the environment or other water supplies which were in use prior to the date of this Permit. If the taking of water should result in any negative impacts, the Permit Holder will be required to restore the water supplies of those affected in a manner acceptable to the Ontario Ministry of the Environment or to reduce the rate and amount of taking until any negative impacts are eliminated.

Any change of address or ownership of the property for which this Permit is issued must be reported immediately to the Director.

It is the responsibility of **The Regional Municipality of Halton** to ensure that any person taking water under the authority of this Permit is familiar with and complies with the terms and

conditions. The issuance of this Permit to Take Water does not relieve you from compliance with the legislative requirements of this or any other agencies. This Permit does not authorize the use of the water for human consumption. You must ensure that all legislated requirements relating to any use that may be made of this water have been met.

Yours truly,

A handwritten signature in dark ink, appearing to read "Ellen Schmarje", is written over a horizontal line.

Ellen Schmarje
Director, Section 34, OWRA
Central Region

File Storage Number: SI-HP-OA-220
MB

c. John Budz (District Manager, Halton-Peel District Office MOE)



Ministry of the
Environment
Ministère de
l'Environnement

PERMIT TO TAKE WATER
Surface Water
NUMBER 0835-6GBQKB

Pursuant to Section 34 of the Ontario Water Resources Act, R.S.O. 1990 this Permit To Take Water is hereby issued to:

The Regional Municipality of Halton
1151 Bronte Road
Oakville, Ontario, L6M 3L1
Canada

For the water taking from: Lake Ontario
Burloak Water Purification Plant

Located at: 3380 Rebecca Street
Oakville, Regional Municipality of Halton

For the purposes of this Permit, and the terms and conditions specified below, the following definitions apply:

DEFINITIONS

- (a) "Director" means any person appointed in writing as a Director pursuant to section 5 of the OWRA for the purposes of section 34, OWRA.
- (b) "Provincial Officer" means any person designated in writing by the Minister as a Provincial Officer pursuant to section 5 of the OWRA.
- (c) "Ministry" means Ontario Ministry of the Environment.
- (d) "District Office" means the Halton-Peel District Office.
- (e) "Permit" means this Permit to Take Water No. 0835-6GBQKB including its Schedules, if any, issued in accordance with Section 34 of the OWRA.
- (f) "Permit Holder" means The Regional Municipality of Halton.
- (g) "OWRA " means the *Ontario Water Resources Act*, R.S.O. 1990, c. O. 40, as amended.

You are hereby notified that this Permit is issued subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. Compliance with Permit

- 1.1 Except where modified by this Permit, the water taking shall be in accordance with the application for this Permit To Take Water, dated February 25, 2005 and signed by Peter Crockett (Commissioner of Planning & Public Works, The Regional Municipality of Halton), and all Schedules included in this Permit.
- 1.2 The Permit Holder shall ensure that any person authorized by the Permit Holder to take water under this Permit is provided with a copy of this Permit and shall take all reasonable measures to ensure that any such person complies with the conditions of this Permit.
- 1.3 Any person authorized by the Permit Holder to take water under this Permit shall comply with the conditions of this Permit.
- 1.4 This Permit is not transferable to another person.
- 1.5 This Permit provides the Permit Holder with permission to take water in accordance with the conditions of this Permit, up to the date of the expiry of this Permit. This Permit does not constitute a legal right, vested or otherwise, to a water allocation, and the issuance of this Permit does not guarantee that, upon its expiry, it will be renewed.
- 1.6 The Permit Holder shall keep this Permit available at all times at or near the site of the taking, and shall produce this Permit immediately for inspection by a Provincial Officer upon his or her request.
- 1.7 The Permit Holder shall report any changes of address to the Director within thirty days of any such change. The Permit Holder shall report any change of ownership of the property for which this Permit is issued within thirty days of any such change. A change in ownership in the property shall cause this Permit to be cancelled.

2. General Conditions and Interpretation

- 2.1 **Inspections**
The Permit Holder must forthwith, upon presentation of credentials, permit a Provincial Officer to carry out any and all inspections authorized by the OWRA, the *Environmental Protection Act*, R.S.O. 1990, the *Pesticides Act*, R.S.O. 1990, or the *Safe Drinking Water Act*, S. O. 2002.

2.2 Other Approvals

The issuance of, and compliance with this Permit, does not:

- (a) relieve the Permit Holder or any other person from any obligation to comply with any other applicable legal requirements, including the provisions of the *Ontario Water Resources Act*, and the *Environmental Protection Act*, and any regulations made thereunder; or
- (b) limit in any way the authority of the Director or a Provincial Officer to require certain steps be taken or to require the Permit Holder to furnish any further information related to this Permit.

2.3 Information

The receipt of any information by the Ministry, the failure of the Ministry to take any action or require any person to take any action in relation to the information, or the failure of a Provincial Officer to prosecute any person in relation to the information, shall not be construed as:

- (a) an approval, waiver or justification by the Ministry of any act or omission of any person that contravenes this Permit or other legal requirement; or
- (b) acceptance by the Ministry of the information's completeness or accuracy.

2.4 Rights of Action

The issuance of, and compliance with this Permit shall not be construed as precluding or limiting any legal claims or rights of action that any person, including the Crown in right of Ontario or any agency thereof, has or may have against the Permit Holder, its officers, employees, agents, and contractors.

2.5 Severability

The requirements of this Permit are severable. If any requirements of this Permit, or the application of any requirements of this Permit to any circumstance, is held invalid or unenforceable, the application of such requirements to other circumstances and the remainder of this Permit shall not be affected thereby.

2.6 Conflicts

Where there is a conflict between a provision of any submitted document referred to in this Permit, including its Schedules, and the conditions of this Permit, the conditions in this Permit shall take precedence.

3. Water Takings Authorized by This Permit

3.1 Expiry

This Permit expires on **January 31, 2016**. No water shall be taken under authority of this Permit after the expiry date.

3.2 Amounts of Taking Permitted

The Permit Holder shall only take water from the source, during the periods and at the rates and amounts of taking specified in Table A. Water takings are authorized only for the purposes specified in Table A.

Table A

	Source Name / Description:	Source: Type:	Taking Specific Purpose:	Taking Major Category:	Max. Taken per Minute (litres):	Max. Num. of Hrs Taken per Day:	Max. Taken per Day (litres):	Max. Num. of Days Taken per Year:	Zone/ Easting/ Northing:
1.	Lake Ontario	Lake	Municipal	Water Supply	88889.00	24.00	64000000.00	365.00	17 602800 4804340
Total Taking:							64000000.00		

4. Monitoring

4.1 The Permit Holder shall maintain a record of all water takings. This record shall include the dates and times of water takings, and the total measured amounts of water pumped per day for each day that water is taken under the authorization of this Permit. The Permit Holder shall keep all required records up to date and available at or near the site of the taking and shall produce the records immediately for inspection by a Provincial Officer upon his or her request.

4.2 The total amounts of water pumped shall be measured using continuous water metering devices. All flow metering devices must be checked and calibrated in accordance with the manufacturer's instructions. If the manufacturer's instructions do not indicate how often to check and calibrate the flow measuring devices, the equipment must be checked and calibrated at least once every year during which the drinking-water system is in operation.

5. Impacts of the Water Taking

5.1 Notification

The Permit Holder shall immediately notify the local District Office of any complaint arising from the taking of water authorized under this Permit and shall report any action which has been taken or is proposed with regard to such complaint. The Permit Holder shall immediately notify the local District Office if the taking of water is observed to have any significant impact on the surrounding waters. After hours, calls shall be directed to the Ministry's Spills Action Centre at 1-800-268-6060.

5.2 For Surface-Water Takings

The taking of water (including the taking of water into storage and the subsequent or simultaneous withdrawal from storage) shall be carried out in such a manner that streamflow is not stopped and is not reduced to a rate that will cause interference with downstream uses of water or with the natural functions of the stream.

6. Director May Amend Permit

The Director may amend this Permit by letter requiring the Permit Holder to suspend or reduce the taking to an amount or threshold specified by the Director in the letter. The suspension or reduction in taking shall be effective immediately and may be revoked at any time upon notification by the Director. This condition does not affect your right to appeal the suspension or reduction in taking to the Environmental Review Tribunal under the *Ontario Water Resources Act*, Section 100 (3).

The reasons for the imposition of these terms and conditions are as follows:

1. Condition 1 is included to ensure that the conditions in this Permit are complied with and can be enforced.
2. Condition 2 is included to clarify the legal interpretation of aspects of this Permit.
3. Conditions 3 through 6 are included to protect the quality of the natural environment so as to safeguard the ecosystem and human health and foster efficient use and conservation of waters. These conditions allow for the beneficial use of waters while ensuring the fair sharing, conservation and sustainable use of the waters of Ontario. The conditions also specify the water takings that are authorized by this Permit and the scope of this Permit.

In accordance with Section 100 of the Ontario Water Resources Act, R.S.O. 1990, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 101 of the Ontario Water Resources Act, R.S.O. 1990, as amended, provides that the Notice requiring the hearing shall state:

1. The portions of the Permit or each term or condition in the Permit in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

In addition to these legal requirements, the Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Permit to Take Water number;
6. The date of the Permit to Take Water;
7. The name of the Director;
8. The municipality within which the works are located;

And the Notice should be signed and dated by the appellant.

This notice must be served upon:

*The Secretary
Environmental Review Tribunal
2300 Yonge Street, 12th Floor
Toronto, Ontario M4P 1E4*

AND

*The Director, Section 34
Ontario Water Resources Act, RSO 1990,
Ministry of Environment
8th Floor
5775 Yonge St
Toronto ON M2M 4J1
Fax: (416)325-6347*

Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal:

by telephone at (416) 314-4600

by fax at (416) 314-4506

by e-mail at www.ert.gov.on.ca

Dated at Toronto this 7th day of February, 2006.


Ellen Schmarje

Director, Section 34

Ontario Water Resources Act, R.S.O. 1990

Schedule A

This Schedule "A" forms part of Permit To Take Water 0835-6GBQKB, dated February 7, 2006.

1. Permit to Take Water application, dated February 25, 2005, and signed by Peter Crockett (Commissioner of Planning & Public Works, The Regional Municipality of Halton).
2. Report entitled '*Burloak Water Purification Plant Intake Tunnel, Conceptual Design Report*', dated November 2004, and prepared by Acres International Ltd.
3. Letter entitled '*Re: Burloak Water Purification Plant - Revised 'Section F' on PTTW Application*', dated November 11, 2005, and signed by Jacqueline Weston (Special Projects Engineer, The Regional Municipality of Halton).
4. Email entitled '*Re: low lift capacity vs. rated capacity*', dated February 2, 2006, and sent by Jacqueline Weston (Special Projects Engineer, The Regional Municipality of Halton).

JW

File PR-1208A-6

Ministry of the Environment
Environmental Assessment and
Approvals Branch
Floor 12A
2 St Clair Ave W
Toronto ON M4V 1L5
Fax: (416)314-8452
Telephone: (416) 314-4625

Ministère de l'Environnement
Direction des évaluations et des
autorisations environnementales
Étage 12A
2 av St Clair O
Toronto ON M4V 1L5
Télécopieur : (416)314-8452
Téléphone : (416) 314-4625



June 6, 2006

Peter M. Crockett, P. Eng., Commissioner, Planning & Public Works
The Regional Municipality of Halton
1151 Bronte Road
Oakville, Ontario
L6M 3L1

Dear Sir:

**Re: Application for Approval of Municipal Drinking Water Systems
Construction of the Burloak Water Purification Plant
Oakville Town, Regional Municipality of Halton
MOE Reference Number 4054-6JNRR4**

Please find enclosed a new Certificate of Approval (CofA) for the above noted water works, in accordance with Part V of the SDWA. This Certificate revokes and replaces CofA No. 6224-6HSL82 previously issued.

The Drinking-Water System Description portion of the Certificate has been written to enable you to construct the works as proposed in your application dated November 15, 2005. The description of the proposed works was reviewed and agreed upon by the Region, MacViro Consultants Inc., and the Ministry prior to the issuance of this CofA.

In addition, as discussed, the intent of Clause 6.1 is to ensure that treatment chemicals and materials which come into contact with water do not cause it to be unsafe for human consumption. The MOE have reviewed all process equipment identified in the CofA, and they are considered to comply with Clause 6.1. The use of liquid oxygen is approved as the MSDS sheet indicates the product is suitable for Medical Use.

RECEIVED

JUL 13 2006

HALTON REGION
PLANNING AND
PUBLIC WORKS DEPT.

cc. D. Marchant
V. Martin

RECEIVED

JUL 31 2006

HALTON REGION
PLANNING AND
PUBLIC WORKS DEPT.

If you have any questions regarding the above, please contact Greg Zimmer, P.Eng. at (416) 314-7037.

Yours truly,

A handwritten signature in black ink, appearing to read "A. Ahmed", written over a horizontal line.

Aziz Ahmed, P.Eng.
Director, Part V, SDWA

c: District Manager, MOE Halton-Peel
Anita Smith, P. Eng., MacViro Consultants Inc.
Manager, Drinking Water, Wastewater and Watershed Standards Section, Standards
Development Branch



Ontario

Ministry
of the
Environment Ministère
de
l'Environnement

AMENDED CERTIFICATE OF APPROVAL
MUNICIPAL DRINKING WATER SYSTEMS
NUMBER 6168-6MHRVJ
Issue Date: July 10, 2006

The Regional Municipality of Halton
1151 Bronte Road
Oakville, Ontario
L6M 3L1

Site Location: Burloak Water Purification Plant
3380 Rebecca Street
Oakville Town, Regional Municipality of Halton

Pursuant to the Safe Drinking Water Act, 2002, S.O. 2002, c. 32, and the regulations made thereunder and subject to the limitations thereof, this approval is issued under Part V of the Safe Drinking Water Act, 2002, S.O. 2002, c. 32 to:

The Regional Municipality of Halton
1151 Bronte Road
Oakville, Ontario
L6M 3L1

PART 1 - DRINKING-WATER SYSTEM DESCRIPTION

- 1.1 for a drinking-water system serving the Regional Municipality of Halton, rated as set out in Part 4, consisting of the following:

Proposed Water Works

(as per Application for Approval dated November 15, 2005)

Zebra Mussel Control

- A zebra mussel control system utilizing the chlorine gas system described below to inject chlorine at the mouth of the intake, as necessary comprised of the following:
 - two (2) chlorine solution lines extending the length of the intake, terminating in a diffuser at the intake structure.

Intake Sampling System

- Two (2) sample lines within the intake pipe, one line terminating 0.5 m upstream of the chlorine diffuser to sample unchlorinated raw water, and one line terminating 100 m downstream of the chlorine diffuser to sample the free chlorine residual;
- three (3) raw water sampling pumps, two installed in screen wet well area and one shelf spare;
- a sampling station on the raw water sampling line complete with online hydrocarbon monitoring equipment and additional equipment for process control monitoring;
- a sampling station on the chlorine sampling line complete with free chlorine residual analyzer, operated when chlorine is added at the intake for zebra mussel control.

Plant Enclosure Building

- A building housing all of the following facilities, as well as the control room, laboratory, offices, workshop and washrooms.

Low Lift Pumping Station

- A low lift pumping station located in the northwest corner of the site housing the following:
 - a 20 m diameter, 18 m deep wet well;
 - a pumping station which houses the pump motors;
 - a building which houses electrical and mechanical equipment;
 - chlorine application point into the pre-screen low lift well;
 - a sample line on the low lift pump discharge header, connected to a free chlorine analyzer;
 - two (2) screen bays complete with two (2) 240 ML/day travelling screens (1 duty, 1 standby) with provisions to isolate each screen bay through two (2) 2,500 mm isolation gates per bay;
 - a pressurized screen backflushing system drawing water from downstream of the low lift pumps and directing the screenings to a collection chamber while recirculating excess water into the raw water pre-screen chamber;
 - a two (2) celled interconnected low lift well complete with a 2,500 mm isolation gate, complete with sloped floors and removable sump pump for periodic solids removal;
 - level monitoring equipment in each wet well cell;
 - three (3) raw water pumps, two (2) rated at 32 ML/d and one (1) rated at 64 ML/d;
 - two (2) 1,050 mm raw water headers equipped with a single flow meter and provision for a second flowmeter.

Raw Watermain

- A single 1,050 mm raw watermain connecting the low lift pumping station and the flocculation building.

Coagulation/Flocculation

- A sidestream pumped diffusion-type rapid mix unit, 1,200 mm diameter by 1,200 mm long, with two (2) sidestream pumps (one duty, one standby) each rated for 44 L/s at 8.1 m TDH;
- two (2) two-stage system flocculators (total of four (4) flocculation cells), total storage volume of 416 m³ and a total retention time of 10 minutes at a flow of 55 ML/d;

Membrane Filtration

- Four (4) membrane trains each with a gross (instantaneous) production rate of 31.0 ML/d (net 27.5 ML/d), which for short periods of time can be operated at a gross (instantaneous) production rate of 37.2 ML/d (net 36.7 ML/d);
- four (4) variable speed permeate pumps, each with a rating of 37.2 ML/d, complete with flow meter and turbidimeter on each train;
- two (2) backpulse pumps (one duty, one standby) each rated for 37.2 ML/d, complete with flow meter on the pumped discharge;
- two (2) air scour blowers (one duty, one standby);
- two (2) air compressors and receivers (one duty, one standby);
- four (4) vacuum pumps;
- four flow meters;
- one (1) particle counter on the combined permeate header.

Backwash Equalization Tanks

- Two (2) membrane backwash equalization tanks each with a storage capacity of 120 m³, complete with the following:
 - two (2) backwash transfer pumps rated for 70 L/s, complete with a flow meter on the common discharge header capable of directing the waste to either the sanitary or the storm sewer;
 - two (2) level instruments, one (1) per tank;
 - a sampling station on the pumped discharge header for monitoring chlorine and turbidity.

Waste Neutralization Tanks

- Two (2) chemical waste neutralization tanks each approximately 120 m³ in size complete with the following:

- three (3) transfer pumps rated at 110 L/s for recirculation of cleaning solutions through membranes and directing contents of tanks to the sanitary or storm sewer;
- two (2) level instruments, one (1) per tank;
- a sampling station located on the pumped discharge header for monitoring chlorine, pH, and turbidity.

Ultraviolet (UV) Disinfection

- Four (4) UV reactors, each capable of treating 37.2 ML/d at a dose of 12 mJ/cm².

Ozonation

- An ozonation system installed downstream of the membranes comprised of the following equipment:
 - two (2) ozone diffuser systems installed in each of Cells 2 and 3 of the ozone contactor;
 - one (1) contactor, 7 m deep by 9 m wide, comprised of eight (8) cells with a total storage volume of 820 m³ rated for a flow rate of 110 ML/d and effective retention time of 26 minutes;
 - piping to allow water to bypass the ozone contactor completely;
 - chemical diffuser in Cell 7 for quenching purposes;
 - four (4) ozone residual analyzers;
 - one (1) free chlorine residual analyzer in the ozone outlet channel;
 - one (1) ozone generator capable of producing 185 kg/d at 10-12% wt (or 250 kg/d at 6% wt);
 - a supplemental air nitrogen system equipment package complete with air compressor and receiver, prefilters, dryer and post filters, sized to provide 15 L/min. of dry compressed air;
 - two (2) ozone off gas destructor units (one duty, one standby) to treat the off gas, complete with blower, pre-heater and catalytic destructor.

Chlorination System

- A chlorine gas system used for pre-chlorination (zebra mussel control) and disinfection described as follows:
 - chlorine gas will be provided in one tonne cylinders and stored in an isolated chlorine storage room;
 - two (2) weigh scales designed to hold four (4) one tonne chlorine cylinders each;
 - automatic switchover system to transfer feed from empty cylinders to full cylinders;
 - eight (8) vacuum regulators mounted directly at the cylinder valves;
 - one (1) pre-disinfection chlorinator with feed capacity of 8 kg/hr;
 - one (1) ozone contactor/clearwell chlorinator with feed capacity of 10 kg/hr;
 - one (1) trim chlorinator with feed capacity of 5 kg/hr;

- one (1) standby chlorinator with feed capacity of 10 kg/hr;
- six (6) chlorine gas ejectors (3 duty, 3 standby);
- a dry type chlorine gas scrubber capable of neutralizing one (1) complete gas cylinder (1,068 kg of chlorine);
- chlorine injection at following locations: mouth of intake, low lift pumping station pre-screen wet well, ozone contactor inlet pipe, ozone contactor outlet chamber, high lift discharge header.

Treated Water Clearwell

- one (1) 1,550 m³ clearwell;
- level monitoring equipment.

High Lift Pumping Station

- Approximately 11 m long by 8.1 m wide high lift well with a total of four (4) fixed speed pumps (2 duty, 2 standby) two (2) rated at 19 ML/d at 66 m TDH, and two (2) rated at 36 ML/d at 66 m TDH;
- level monitoring equipment;
- two (2) 1,050 mm pump discharge headers, complete with surge/pressure relief valves;
- one (1) 1,050 mm discharge main complete with flow meter;
- a sampling station on the discharge of the high lift header for monitoring fluoride, free and total chlorine, and other online analyzers for process control monitoring.

Chemical Storage and Feed Systems

- two (2) 24,000 L coagulant storage tanks, complete with spill containment and two (2) dosing pumps (one duty, one standby) each capable of delivering 90 L/hr;
- two (2) 27,000 L potassium hydroxide and/or sodium hydroxide storage tanks complete with spill containment and two (2) dosing pumps (one duty, one standby) each capable of delivering 120 L/hr, used for pH adjustment, and two (2) dosing pumps (one duty, one standby) each capable of delivering 90.8 L/hr, used for neutralization of the membrane waste;
- a dedicated sodium hypochlorite system used for recovery cleaning of membranes complete with two (2) dosing pumps each capable of delivering 2,400 L/hr and a 10,000 L storage tank;
- one (1) 10,000 L sodium bisulphite and/or calcium thiosulphate storage tank, complete with spill containment and two (2) dosing pumps (one duty, one standby) each capable of delivering 40 L/hr, used for ozone quenching, and two (2) dosing pumps (one duty, one standby) each capable of delivering 291 L/hr, used for dechlorination of membrane cleaning wastes;
- one (1) 500 L citric acid storage tank, complete with spill containment and two (2) dosing pumps (one duty, one standby) each capable of delivering 681 L/hr, used for cleaning of the membranes;
- a 20,000 L liquid oxygen (LOX) double wall cryogenic tank located outdoors for the storage of liquid oxygen, complete with two (2) evaporators;

- one (1) 15,000 L hydrofluosilicic acid storage tank complete with spill containment and two (2) dosing pumps (one duty, one standby) each capable of delivering 20 L/hr;
- all systems complete with valves, piping, instrumentation, alarms and controls.

Standby Power

- A single 1,600 kW prime rated (1,760 kw standby rated) standby bi-fuel generator, complete with fuel and exhaust systems.

Operational Performance Monitoring

- Provisions for temporary installation of analyzers for occasional testing and monitoring of parameters as per O. Reg. 248/03, Section 4.

Additional

- all additional architectural, structural, mechanical, electrical, piping, and control equipment as per the contract drawings and specifications for the proper operation of the above-noted equipment.

Proposed Water Works

(as per Application for Approval dated August 5, 2005, correspondence dated October 4, 2005)

Intake Works

- 240 ML/day capacity intake for the proposed Burloak Water Purification Plant, consisting of the following:
 - 2193 m length, 2.4 m diameter concrete-lined intake tunnel;
 - 1067 m length, 1.8 m diameter concrete pressure pipe lake bed pipeline;
 - 3.0 m diameter vertical lakeshore shaft;
 - precast concrete intermediate vertical riser shaft interconnecting the tunnel and lakebed pipeline;
 - diver access points;
 - two (2) zebra mussel control chlorine lines and diffuser ring;
 - two (2) raw water sampling lines; and
 - intake structure at 17 m lake depth.

- 1.2 all in accordance with the applications and plans and other supporting documents listed in Schedule "A", and all other Schedules, which are attached to, and form part of this approval, except as specified in the conditions contained herein.

PART 2 - DEFINITIONS AND INFORMATION

- 2.1 Words and phrases not defined in this approval shall be given the same meaning as those set out

in the *Safe Drinking Water Act, 2002*, S.O. 2002, c. 32 and any regulations made in accordance with that act, unless the context requires otherwise.

2.2 In this approval

"adverse effect", "contaminant", "impairment" and "natural environment" shall have the same meanings as in the *Environmental Protection Act*, R.S.O.1990, c. E.19 and the *Ontario Water Resources Act*, R.S.O.1990, c. O.40;

"approval" means this entire approval document, issued in accordance with section 36 of the *SDWA*, and includes any schedules to it;

"Director" means a Director appointed pursuant to s. 6 of the *SDWA* for the purposes of Part V of the *SDWA*;

"drinking-water system" includes the works set out in Part 1;

"operating authority" and "owner" mean, in addition to the respective meanings given in the Act, The Regional Municipality of Halton;

"provincial officer" means a provincial officer appointed pursuant to s. 8 of the *SDWA*;

"rated capacity" means the maximum flow rate of water which can be treated when operating the drinking-water system under design conditions;

"*SDWA*" means the *Safe Drinking Water Act, 2002*, S.O. 2002, c. 32, as amended.

PART 3 - GENERAL

Compliance

- 3.1 The owner and operating authority shall operate the drinking-water system in accordance with the *SDWA*, any applicable regulations made thereunder, and this approval.
- 3.2 Despite any condition of this approval to the contrary, the owner and operating authority set out in Part 2 are jointly and severally liable to comply with all conditions of this approval.
- 3.3 The owner and operating authority shall ensure that any person authorized to carry out work on or operate any aspect of the drinking-water system has been informed of the *SDWA*, all applicable regulations made in accordance with that act, and this approval and shall take all reasonable measures to ensure any such person complies with the same.
- 3.4 A copy of this approval shall be kept in a conspicuous place so that it is available for reference by all persons responsible for all or part of the operation of the drinking-water system.

Build, etc. in Accordance

- 3.5 Except as otherwise provided by this approval, the drinking-water system shall be designed, developed, built, operated and maintained in accordance with Part 1 above and the documentation listed in Schedule "A".

Interpretation

- 3.6 Where there is a conflict between the provisions of this approval and any other document, the following hierarchy shall be used to determine the provision that takes precedence:
- i. The *SDWA*;
 - ii. a condition imposed in this approval in accordance with s. 38 of the *SDWA*;
 - iii. any regulation made under the *SDWA*;
 - iv. this approval;
 - v. any application documents listed in Schedule "A" from most recent to earliest; and
 - vi. all other documents listed in Schedule "A" from most recent to earliest.
- 3.7 The requirements of this approval are severable. If any requirement of this approval, or the application of any requirement of this approval to any circumstance, is held invalid or unenforceable, the application of such requirement to other circumstances and the remainder of this approval shall not be affected thereby.
- 3.8 Nothing in this approval shall be read to provide relief from the need for strict compliance with the *Environmental Assessment Act*, R.S.O. 1990, c E.18.

Other Legal Obligations

- 3.9 The issuance of, and compliance with the conditions of, this approval does not:
- i. relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement; or
 - ii. limit in any way the authority of the Ministry to require certain steps be taken or to require the owner to furnish any further information related to compliance with this approval.
- 3.10 For greater clarity, nothing in this approval shall be read to provide relief from regulatory requirements in accordance with section 38 of the *SDWA*, except as provided in Part 9.

Adverse Effects

- 3.11 Nothing in this approval shall be read as to permit: i) the discharge of a contaminant into the natural environment that causes or is likely to cause an adverse effect; or ii) the discharge of any material of any kind into or in any waters or on any shore or bank thereof or into or in any place that may impair the quality of the water of any waters.
- 3.12 All reasonable steps shall be taken to minimize and ameliorate any adverse effect on the natural environment or impairment of the quality of water of any waters resulting from the operation of the drinking-water system including such accelerated or additional monitoring as may be necessary to determine the nature and extent of the effect or impairment.
- 3.13 Fulfillment of one or more conditions imposed by this approval does not eliminate the requirement to fulfill any other condition of this approval or the requirements of any applicable statute, regulation, or other legal requirement resulting from any act or omission that causes or is likely to cause an adverse effect on the natural environment or the impairment of water quality.

Change of Owner

- 3.14 The owner or the operating authority, as the case may be, shall notify the Director, in writing, of any of the following changes within 30 days of the change occurring:
- i. change of owner or operating authority;
 - ii. change of address;
 - iii. change of partners where the owner is or at any time becomes a partnership, and a copy of the most recent declaration filed under the *Business Names Act*, R.S.O. 1990, c. B17; or
 - iv. change of name of the corporation where the owner or operating authority is or at any time becomes a corporation, and a copy of the most current information filed under the *Corporations Information Act*, R.S.O. 1990, c. C.39.
- 3.15 In the event of any change in ownership of the drinking-water system, other than change to a successor municipality, the owner shall notify the successor of and provide the successor with a copy of this approval, and the owner shall provide a copy of the notification to the district manager of the local office of the Ministry and the Director.

Inspections

- 3.16 No person shall hinder or obstruct a provincial officer in the performance of his or her duties, including any and all inspections authorized by the *SDWA*.

Information

- 3.17 Any information requested, by the Ministry, concerning the drinking-water system and its operation under this approval, including but not limited to any records required to be kept by this approval shall be provided to the Ministry, upon request.

- 3.18 Records required by or created in accordance with this approval, unless specifically referenced in s. 12 of O. Reg. 170/03, shall be retained for at least 5 years in a location where a provincial officer who is inspecting the treatment system can conveniently view them.

PART 4 - PERFORMANCE

Rated Capacity

- 4.1 The drinking-water system shall not be operated to exceed the rated capacity for the maximum flow rates into the treatment systems, trains, or stages set out below:

Treatment System/Train/Stage	Instantaneous Maximum Flow Rate (m ³ /s)
Membrane Filtration	0.431 (per membrane tank)
UV	0.431 (per UV reactor)
Ozone Contactor (Phase I)	0.862

Increase to Rated Capacity

- 4.2 Despite condition 4.1, the drinking water system may be operated at a rate above the rated capacity set out in condition 4.1 where necessary for:
- fighting a large fire; or
 - the maintenance of the drinking-water system.
- 4.3 Condition 4.2 shall not be construed to allow drinking-water to be supplied that does not meet all other applicable standards and legal requirements.

Management of Residue

- 4.4 The annual average concentration of suspended solids in the effluent discharged from the backwash wastewater facilities or waste neutralization tanks shall not exceed **15 mg/L**.

Performance of UV Disinfection Equipment

- 4.5 The UV disinfection equipment shall be installed and operated such that a continuous pass-through UV dose of at least **12 mJ/cm²** is maintained throughout the life time of the UV lamp(s).

PART 5 - MONITORING AND RECORDING

Flow measuring devices

- 5.1 Install a sufficient number of flow-measuring devices within the drinking-water system to permit continuous measurement and recording of:
- the flow rate and daily volume of water conveyed into the treatment system; and
 - the flow rate and daily volume of water conveyed from the treatment system to the distribution system.
- 5.2 Records shall be maintained that set out the parameters recorded in accordance with condition 5.1, and where a measured flow rate into a treatment system, train, or stage exceeds the maximum flow rate set out for that treatment system, train, or stage in Part 4, the amount, date, time and duration of the exceedence shall also be recorded.

Calibration of flow measuring devices

- 5.3 All flow measuring devices must be checked and calibrated in accordance with the manufacturer's instructions.
- 5.4 If the manufacturer's instructions do not indicate how often to check and calibrate the flow measuring devices, the equipment must be checked and calibrated at least once every year during which the drinking-water system is in operation.

Additional Sampling - Raw Water

- 5.5 In addition to any other sampling and analysis that may be required, sampling and analysis shall be undertaken for the parameters listed in **Table 5.1**.

Table 5.1 Sampling Parameters

<u>Item</u>	<u>Parameter</u>	<u>Frequency</u>	<u>Location</u>
1.	Hydrocarbons ¹	Continuous	Raw water intake
¹ Hydrocarbons refers to the detection of 'oil in water' and not to a specific list of hydrocarbons.			

Additional Sampling - Treated Water

- 5.6 In addition to any other sampling and analysis that may be required, sampling and analysis shall be undertaken for the health related parameters listed in **Table 5.2**.

Table 5.2 Sampling for Health Related Parameters

<u>Item</u>	<u>Parameter</u>	<u>Frequency</u>	<u>Location</u>
1.	Trihalomethanes	Monthly ¹	Point of entrance to distribution system
¹ Monthly sampling for trihalomethanes only required for the first twelve (12) months of initial plant operation. Sampling for trihalomethanes will be as per O. Reg. 170/03 after this period.			

Additional Sampling - Management of Residue

- 5.7 In addition to any other sampling and analysis that may be required, sampling and analysis shall be undertaken for the parameters listed in **Table 5.3** at the listed frequencies and locations.

Table 5.3 Management of Residue Sampling

<u>Item</u>	<u>Parameter</u>	<u>Frequency</u>	<u>Location</u>
1.	Suspended Solids (composite)	Monthly	Point of discharge from the backwash equalization and waste neutralization tanks
2.	Free Chlorine Residual	Continuous ¹	Point of discharge from the backwash equalization and waste neutralization tanks
3.	Aluminum ² (grab)	Monthly	Point of discharge from the backwash equalization and waste neutralization tanks
¹ Continuous sampling only required when waste is being discharged to the storm sewer.			
² Sampling only required for first six (6) months plant is in operation.			

- 5.8 For the purposes of **Table 5.3**, composite means the mean of three samples taken during the discharge event, with at least one sample taken immediately following the commencement of the discharge, one sample taken approximately at the mid-point of the discharge event and one sample taken immediately before the discharge ceases.

UV Disinfection Equipment

- 5.9 In addition to any other sampling, analysis and recording that may be required, continuous monitoring and recording with a minimum testing/reading and recording frequency of every four (4) hours shall be carried out for the following parameters related to the performance of the UV disinfection equipment:
- Calculated log inactivation (based on intensity, transmittance and flowrate)
 - UV intensity
 - UV transmittance
 - Flow rate
 - UV lamp status

PART 6 - OPERATIONS AND MAINTENANCE

Chemical standards

- 6.1 All chemicals and materials used in the operation of the drinking-water system that come into contact with water within the system shall meet all applicable standards set by both the American Water Works Association ("AWWA") and the American National Standards Institute ("ANSI") safety criteria standards NSF/60 and NSF/61.
- 6.2 The most current chemical and material product registration documentation from a testing institution accredited by either the Standards Council of Canada or by the American National Standards Institution shall be available at all times for each chemical and material used in the operation of the drinking-water system that comes into contact with water within the system.
- 6.3 Conditions 6.1 and 6.2 do not apply in the context of any particular chemical or material where the Owner has written documentation signed by the Director that indicates that the Ministry is satisfied that the chemical or material is acceptable for use within the drinking-water system and that chemical or material is only used as permitted by the documentation.

Operations manual

- 6.4 An up-to-date operations manual shall be maintained and available for reference by all persons responsible for all or part of the operation of the drinking-water system.
- 6.5 The operations manual shall include at a minimum:
 - i. the requirements of this approval and associated procedures;
 - ii. the operation and maintenance recommendations from the most recent engineers' report;
 - iii. procedures for the monitoring and recording of in-process parameters necessary for the control of the treatment system and assessing the performance of the drinking-water system;
 - iv. procedures for the operation and maintenance of monitoring equipment;
 - v. contingency plans and procedures for the provision of adequate equipment and material to deal with emergencies, upset and equipment breakdown including a Spills Contingency Plan developed in cooperation with Petro Canada's Oakville Terminal;
 - vi. procedures for the dealing with complaints related to the drinking-water system, including the recording of the nature of the complaint and any investigation and

corrective action taken in respect of the complaint.

- 6.6 Procedures necessary to the operation of any physical alterations of the drinking-water system shall be incorporated into the operations manual prior to the alterations coming into operation.

Drawings

- 6.7 Up-to-date Process Flow Diagrams (PFD) and Process and Instrumentation Diagrams (P&ID) for the treatment system shall be kept on site at the drinking water system.
- 6.8 All drawings and diagrams in the possession of the owner or operating authority that show the treatment system as constructed shall be retained.
- 6.9 An alteration to the treatment system shall be incorporated into Process Flow Diagrams (PFD), Process and Instrumentation Diagrams (P&ID), and record drawings and diagrams within one year of the substantial completion of the alteration and shall be retained and shall be made readily available for inspection by Ministry staff.

PART 7 - FUTURE ALTERATIONS

Approved future alterations

- 7.1 *Not Applicable*

Certificate of compliance

- 7.2 *Not Applicable*

PART 8 - STUDIES AND UPGRADES REQUIRED

- 8.1 *Not Applicable*

Requirement not an approval

- 8.2 The owner shall not construct any works required by this part until all associated approvals, licenses and permits have been obtained from the Ministry.

PART 9 - RELIEF FROM REGULATORY REQUIREMENTS

Relief from regulatory requirements

- 9.1 *Not Applicable*

Conditions in exchange for relief from regulatory requirements

9.2 *Not Applicable*

SCHEDULE - A

The following supporting documents form part of this approval.

1. Application dated November 15, 2005
 - Design brief, plans and specifications dated January 2006, prepared by MacViro Consultants Inc.
 - Technical memorandum dated March 2006, prepared by MacViro Consultants Inc.
2. Application dated August 5, 2005
 - Correspondence dated October 4, 2005 (R.V. Anderson Associates)
 - Final Plans dated September 12, 2005 (R.V. Anderson Associates)
 - Preliminary Design Report dated April, 2005 (Acres International)
 - Design Basis Report dated October 4, 2005 (C&M McNally/Dean Construction/RVA)
 - Design calculations
 - Environmental Study Report dated May, 2004 (CH2M Hill)
 - Background Documents
 - Geotechnical Report dated January, 2005 (Geo-Canada)
 - Marine Geophysical Report dated July, 2004 (ASI Group)
3. The original applications for approval, including design calculations, engineering drawings and reports, and other supporting documents prepared in support of any previous certificate(s) of approval issued for any works now approved and replaced by this approval, unless this approval states otherwise.

This Certificate of Approval revokes and replaces Certificate(s) of Approval No. 6224-6HSL82 issued on November 18, 2005

All or part of this decision may be reviewable in accordance with the provisions of Part X of the SDWA. In accordance with Section 129(1) of the Safe Drinking Water Act, Chapter 32 Statutes of Ontario, 2002, as amended, you may by written notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this notice, require a hearing by the Tribunal. Section 129(2) sets out a procedure upon which the 15 days may be extended by the Tribunal. Section 129(3) of the Safe Drinking Water Act, Chapter 32 Statutes of Ontario, 2002, provides that the Notice requiring the hearing shall state:

1. The aspect of the decision, including the portion of the permit, licence, approval, order or notice of administrative penalty in respect of which the hearing is required; and
2. The grounds for review to be relied on by the person at the hearing.

Except with leave of the Tribunal, a person requiring a hearing in relation to a reviewable decision is not entitled to,
(a) a review of an aspect of the decision other than that stated in the notice requiring the hearing; or
(b) a review of the decision other than on the grounds stated in the notice

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;
8. The municipality within which the works are located;

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
2300 Yonge St., 12th Floor
P.O. Box 2382
Toronto, Ontario
M4P 1E4

AND

The Director
Part V, *Safe Drinking Water Act, 2002*
Ministry of Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

* Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the

Tribunal at: Tel: (416) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca

The above noted water works are approved under Part V of the Safe Drinking Water Act.

DATED AT TORONTO this 10th day of July, 2006



Aziz Ahmed, P.Eng.
Director
Part V of the *Safe Drinking Water Act*,
2002

GZ/

- c: District Manager, MOE Halton-Peel
Drinking Water Supervisor, MOE Halton-Peel
Manager, Drinking Water, Wastewater and Watershed Standards Section, Standards Development Branch
Anita Smith, P. Eng., MacViro Consultants Inc.