

**SCHEDULE 18 (TECHNICAL REQUIREMENTS) – DBFO AGREEMENT
SECTION 5 - INFRASTRUCTURE O&M REQUIREMENTS
EXECUTION VERSION**

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5. INFRASTRUCTURE O&M REQUIREMENTS

5.1 GENERAL

This Section specifies the requirements for the O&M of the Infrastructure.

Notwithstanding the specific requirements of this Section 5, the Contractor shall ensure that the Infrastructure is operated and maintained in a manner that ensures the continuous and uninterrupted delivery of the service to the End-users, and specifically that:

- (a) The Infrastructure is operated at all times in full compliance with the Infrastructure Licenses;
- (b) The Available Capacity of the PWTP, the Potable Water Distribution System, and the WWTP is at all times equal to or greater than the Design Capacity, unless otherwise expressly permitted in the Technical Requirements; and
- (c) The Treated Water and the Treated Wastewater quality meets at all times the quality standards set out in Section 4.5.2.1 and Section 4.6.1.1.

5.2 DESCRIPTION O&M REQUIREMENTS SCOPE LIMITS

The scope of the O&M Requirements are set forth in this Section.

**5.2.1 Evan-Thomas Water and Wastewater Treatment Plants and Associated
Wastewater Collection System and Potable Water Distribution System Scope
Description**

The scope of the O&M Requirements is as follows:

- (a) the PWTP;
- (b) the WWTP;
- (c) the Barrier Lake Lagoons and Sludge Drying Beds;
- (d) the Potable Water Distribution System including the conveyance and storage parts of the waterworks system; service reservoirs; pumping stations; hydrants; valves and valve chambers; all inter-connecting pipe work up to the End-user service and all other appurtenances to deliver and convey Treated Water; and
- (e) the Wastewater Collection Network including gravity sewer mains, sewage manholes, and all other appurtenances to receive and convey untreated wastewater between the End-user sanitary connections to the network and the WWTP. The following assets do not form part of the Infrastructure and are excluded from the scope of the O&M:
 - (i) any existing lift stations located at the following facilities within or adjacent to the Evan-Thomas Provincial Recreation Area:

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- (A) Mount Kidd R.V. Park;
 - (B) Kananaskis Golf Course;
 - (C) Nakiska Ski Hill;
 - (D) Kananaskis Emergency Services Centre; and
 - (E) Boundary Ranch;
- (ii) all existing wastewater collection infrastructure including, but not limited to, pipes, force and gravity mains located upstream of the said existing lift stations that collect and discharge wastewater into the said existing lift stations; and
- (iii) all existing lift station force and gravity mains that carry wastewater from the said existing lift stations to the existing 200 mm polyvinyl chloride sewer trunk main.

5.2.2 Evan-Thomas Water and Wastewater Treatment Plants and Associated Sewage Collection and Water Distribution System(s) Scope Drawings

The Contractor is responsible for the operation, maintenance and renewal of the whole of the Infrastructure including those components of the existing infrastructure and the Existing Facilities that shall form part of the Infrastructure after the Construction Period.

The Infrastructure is located within the Lands (as defined in Schedule 12).

The limits of the existing wastewater collection network referred to in Section 5.2.1 (e), (ii) and (iii) are shown in Schedule 18 Appendix A - Infrastructure and Existing Facilities Limits.

The referenced drawings identify the scope limits of the O&M beyond which the Contractor is no longer responsible for the O&M of the upstream pipes and systems.

All physically connected sewage collection infrastructure located upstream of the identified scope limit(s) shall not form part of the O&M Requirements.

5.3 O&M REPRESENTATIVES

The Contractor shall appoint a representative (the “**Contractor O&M Representative**”) and shall notify the Province of such appointment not less than 10 Business Days before Availability.

The Contractor O&M Representative shall be the person responsible for all communications with the Province regarding the O&M.

The Province shall appoint one or more persons to serve as representatives in connection with the oversight of the O&M (the “**Provincial O&M Representative**”), and shall notify the Contractor of such appointments within 10 Business Days of receipt of the Contractor’s notice of appointment of the Contractor O&M Representative.

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The Provincial O&M Representative(s) shall be the person(s) responsible for all communications with the Contractor O&M Representative.

The Contractor O&M Representative and the Provincial O&M Representative(s) may appoint alternates to serve in addition to, or temporarily in their place, or may delegate some of the functions of their respective representatives.

The Contractor shall not rely upon any acts, omissions, requirements or directions of the Provincial O&M Representative(s) or any other person whatsoever as authority for any departure from the terms of the DBFO Agreement.

5.4 OPERATIONAL AND MAINTENANCE OBJECTIVES

The Contractor shall provide O&M of the Infrastructure in a professional and diligent manner during the Operating Period. The O&M shall be performed in a manner and approach that is consistent with achieving the following O&M objectives:

- Protect the health and welfare of the public and the environment;
- Conform with the Occupational Health and Safety Act and regulations;
- Comply with all regulatory approval, license and permit requirements;
- Ensure at all times that there is a continuous and reliable service delivered to the End-users who are supplied with the Treated Water by the PWTP, connected through the Potable Water Distribution System, or whose sanitary sewer systems are connected to the WWTP through the Wastewater Collection Network;
- Maintain the availability and readiness of the of Potable Water Distribution System, including reservoir storage for the fire-fighting;
- Maximize the asset operational efficiency, including utility usage efficiency;
- Protect and preserve the Infrastructure; and
- Perform all related functions with due regard to the intended use of the facilities and in keeping with Good Industry Practices.

The Contractor shall conduct predictive, preventive, and routine equipment maintenance of the Infrastructure in order to achieve the following overall objectives:

- Preserve the warranty on all equipment while ensuring that the as-installed configuration is within the specifications and consistent with the expected operating conditions;
- Perform predictive and preventive maintenance on all equipment in accordance with recommendations of the manufacturer(s) and designer(s);
- Perform preventive maintenance in such a manner that the condition and functionality of the Infrastructure is maintained in good condition; and

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- Ensure that fully trained and appropriately licensed operators and support staff are assigned to the O&M at all times.

5.5 OPERATION AND MAINTENANCE PLANS

The Operating Period Plan requirements are set out in Section 3.8.

The Contractor shall review the Operating Period Plans regularly, and as a minimum complete formal annual reviews throughout the Operating Period, and shall submit any amendments and updates as required, in accordance with Schedule 5 (Design and Plan Certification Process and Review).

The maximum time period allowed for completing and submitting any Operating Period Plan amendments shall be two months after the event, activity, modification or change in circumstances that has triggered the amendment.

5.5.1 Payment Adjustment

If the Operating Period Plans are not updated by the Contractor and kept in good standing, and any required amendments and updates are not submitted to the Province within the time periods stipulated in Section 5.5 above, a Payment Adjustment of \$1,000 per month or any partial month for each revised Operating Period Plan, including “as-built” drawings, will be assessed until the revised documents are submitted to the Province.

5.5.2 O&M Manuals

The Contractor shall provide O&M Manuals for the Infrastructure.

The Contractor shall develop separate O&M Manuals for each of the following assets and systems that are included in the scope of the O&M:

- (a) the PWTP and the Potable Water Distribution System, including reservoir(s);
- (b) the WWTP and the Wastewater Collection Network; and
- (c) the Barrier Lake Lagoons and Sludge Drying Beds.

All instruction in these manuals shall be in a simple language to guide the O&M staff in the proper operation and maintenance of the Infrastructure.

The O&M Manuals shall contain the following items as they specifically apply to the Infrastructure:

- System design criteria;
- PCS and SCADA System description and functional design specification(s);
- System and controls schematics;

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- Operating instructions, including proprietary equipment manufacturer’s printed instructions describing proper operation;
- Equipment list and equipment identification data including name plate information for each piece of equipment;
- Tag listing identifying the tag number and equipment description and location;
- Spare parts list including proprietary equipment manufacturer’s recommended spare parts listing for all equipment;
- Supplier and contractor listing identifying all of the contractors and suppliers who supplied and installed the equipment, systems, materials or finishes, and including the supplier’s and contractor’s name, address, and telephone number;
- Drawing list of the Infrastructure as-built drawings;
- Complete set of the final approved shop drawings;
- Product data including equipment manufacturer’s product data for proprietary equipment, systems, materials and finishes;
- Copies of inspection reports, test reports, and other certificates required by the DBFO Agreement;
- Copies of manufacturer’s warranties, maintenance bonds and service contracts;
- Construction completion and testing reports documenting the performance and the results of the tests required by the DBFO Agreement; and
- Any other documentation or information required by the DBFO Agreement.

The O&M Manuals shall be reviewed in accordance with Schedule 5 (Design and Plan Certification Process and Review Procedure) to the DBFO Agreement prior to and as a condition of Availability.

The Contractor shall during the Operating Period, monitor and update as required the O&M Manuals.

5.5.2.1 Payment Adjustment

The O&M Manuals including “as-built” drawings shall be updated, as required, to reflect any modifications that change the physical dimensions or characteristics of the Infrastructure, the replacement of any equipment with a different make or model, or any other material changes to the way in which the Infrastructure is operated.

The maximum time for completing and submitting such updated “as-built” drawings and updated O&M Manuals to the Province shall be two months after completion of the triggering repair, O&M activity or modification.

If the updated O&M Manuals including as-built drawings are not submitted to the Province for review in accordance with Schedule 5 (Design and Plan Certification Process and Review

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Procedure) to the DBFO Agreement within the time stipulated, a Payment Adjustment of \$500 per month or any partial month for each outstanding O&M Manual revision, including “as-built” drawings requiring revision, will be assessed until the revised documents are submitted to the Province.

5.6 O&M REQUIREMENTS

This Section summarizes the ongoing O&M Requirements for the Infrastructure.

The Contractor shall implement a system of operation consistent with the Contractor’s Designs and the Detailed Designs to ensure the reliable and effective function of the Infrastructure.

The Contractor’s operating regime shall be designed to ensure the delivery of the following operational objectives:

- Delivery of wholesome Treated Water to all of the End-users served by the PWTP and the Potable Water Distribution System in the quantities and at the pressures specified at all times;
- The availability of the fire-fighting water stocks and readiness to deliver the fire-fighting flows through the Potable Water Distribution System at all times;
- The operation of the WWTP to receive and treat wastewater collected by the Wastewater Collection Network to the specified standards at all times; and
- The operation of the residuals disposal systems included in the Contractor’s Designs and the Detailed Designs in full compliance with the applicable licenses and the requirements of any Governmental Authority.

The Contractor shall develop and perform routine, preventive, and predictive maintenance procedures for the Infrastructure, including mechanical, electrical and instrumentation/control equipment. Preventive maintenance procedures shall also be developed for all water and wastewater process units, buildings and housekeeping activities, distribution system assets, collection system assets, and landscaping activities.

Preventive maintenance procedures shall be developed for each piece of equipment that identifies frequency, a step-by-step description, applicability, and any warranty issues. All required maintenance, frequencies of activities, materials, parts, and tools shall be included in the preventive maintenance procedures.

5.6.1 Infrastructure Performance Failure Payment Adjustment

The Contractor shall be assessed the following Payment Adjustments for Infrastructure Performance Failures during the Operating Period:

- (a) a Payment Adjustment of \$10,000 per Service Area, per day or part thereof, will be assessed for the interruption of the delivery of Treated Water to the End-users in the Service Area(s) until Treated Water service is restored to the Service Area(s);

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- (b) a Payment Adjustment of \$10,000 per Service Area, per day or part thereof, will be assessed for sewer flooding or sewer back-up(s) due to the failure of the Wastewater Collection Network to receive wastewater flows from the End-users' sewer pipe connections until the uninhibited receipt of wastewater from the Service Area(s) is restored;
- (c) a Payment Adjustment of \$1,000 per day or part thereof will be assessed for low pressure in the Potable Water Distribution System until the pressure in the Potable Water Distribution System is restored to meet the Technical Requirements for system pressure;
- (d) a Payment Adjustment of \$5,000 per fire hydrant, per day or part thereof, will be assessed for any hydrant(s) within the Potable Water Distribution System that is out of service or not operable until the hydrant is repaired and made available for firefighting purposes;
- (e) a Payment Adjustment of \$5,000 per occurrence, per day or part thereof, will be assessed for a failure to maintain the minimum fire-fighting storage volumes in the Potable Water Distribution System as set out in the Contractor's Designs and the Detailed Designs until the minimum fire-fighting storage volumes are restored in the Potable Water Distribution System. The Payment Adjustment will not be applied to the extent that it has been demonstrated to the reasonable satisfaction of the Province that the failure is a direct result of:
 - (i) the use of the hydrants for a fire event(s);
 - (ii) activities pursuant to and in accordance with the Approved Planned Maintenance;
or
 - (iii) fire flow capacity testing approved by the Province and the Local Authority;in the event the failure is a direct result of the use of the hydrants for a fire event(s), the Payment Adjustment set out above will be assessed if the minimum fire-fighting storage volumes are not restored in the Potable Water Distribution System within seven days after the fire event(s) (or such longer period as may be agreed by the Province, acting reasonably); and
- (f) a Payment Adjustment of \$1,000 per complaint, per Service Area, will be assessed for Treated Water taste or odour complaints logged by the Call Centre in a rolling 24 hour period. If the Contractor considers a complaint to be false or spurious, it may notify the Province with reasonable details. If the Province acting reasonably, does not consider the complaint to be false or spurious, then the Payment Adjustment shall apply.

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5.6.2 Water and Wastewater Measurement and Testing Minimum Requirements

5.6.2.1 Introduction

This Section sets out the minimum requirements for measurement, sampling, testing and analysis during the Operating Period. The Contractor shall carry out, at its own expense, all measurement and testing required under the DBFO Agreement and to comply with the requirements of the Infrastructure Licenses.

It is the Contractor's responsibility to demonstrate to the Province and to the Governmental Authority having jurisdiction over the Infrastructure Licenses, that they are meeting the requirements, respectively, of the DBFO Agreement and the Infrastructure Licenses.

**5.6.2.2 Measurement of Raw Water Quantity, Treated Water Quantity,
Influent Wastewater Quantity, and Treated Wastewater Quantity**

5.6.2.2.1 Flow Meters

The Contractor shall provide and maintain the Flow Meters as set forth in Section 4.7.3.1 at the locations identified in Contractor's Designs and the Detailed Designs.

The Contractor shall inspect, calibrate and test each Flow Meter:

- When it is installed; and
- At least once every three months after Availability.

The inspection, calibration and testing shall be capable of determining whether each Flow Meter is providing flow information within the specified accuracy identified in Section 4.7.3.1.

The Contractor shall include details of the proposed inspection, calibration and testing equipment and methodology to be followed for the Flow Meter calibration within the Water and Wastewater Sampling and Analysis Plan.

Either the Province or the Contractor may at any time, by written notice to the other party, request further inspection, calibration or test of a Flow Meter.

The party making the request shall pay the cost and expense of that inspection, calibration or test, unless the outcome of the inspection, calibration or test shows that the relevant Flow Meter is operating outside of the specified accuracy limit identified in Section 4.7.3.1, in which case the Contractor shall pay the cost and expense of the inspection, calibration or test.

The Contractor shall:

- Record the results of each scheduled and unscheduled inspection, calibration or test of the Flow Meter;
- Provide a copy of the results to the Province; and

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- Immediately repair or replace any Flow Meter which is shown to be malfunctioning or operating outside the specified accuracy limits as set forth in Section 4.7.3.1 in accordance with the procedures set out in the Water and Wastewater Sampling and Analysis Plan.

5.6.2.2.2 Payment Adjustment

For the following Flow Meter failure events the Payment Adjustments set out below will apply:

- (a) failure of any of the Flow Meter(s), a Payment Adjustment of \$200 per day or any partial day, per Flow Meter, shall be assessed until the Flow Meter is repaired and calibrated in accordance with the procedures set out in the Water and Wastewater Sampling and Analysis Plan; and
- (b) failure to successfully calibrate the Flow Meter(s) at the frequency set out in Section 5.6.2.2.1, in accordance with the procedures set out in the Water and Wastewater Sampling and Analysis Plan, then a Payment Adjustment of \$200 per day or any partial day, per Flow Meter, shall be assessed until the Contractor provides evidence that the calibration has been successfully completed and that the Flow Meter is providing information within the accuracy parameters as set out in Section 4.7.3.1.

5.6.2.2.3 Level Monitors

The Contractor shall provide and maintain the Level Monitors as set forth in Section 4.7.3.3 at the locations identified in Contractor's Designs and the Detailed Designs.

The Contractor shall inspect, calibrate and test each Level Monitor:

- When it is installed; and
- At least once every six months after Availability.

The inspection, calibration and testing shall be capable of determining whether each Level Monitor is providing information within the specified accuracy identified in Section 4.7.3.3.

The Contractor shall include details of the proposed inspection, calibration and testing equipment and methodology to be followed for the Level Monitor calibration within the Water and Wastewater Sampling and Analysis Plan.

Either the Province or the Contractor may at any time, by written notice to the other party, request further inspection, calibration or test of a Level Monitor.

The party making the request shall pay the cost and expense of that inspection, calibration or test, unless the outcome of the inspection, calibration or test shows that the relevant Level Monitor is operating outside the specified accuracy limit identified in Section 4.7.3.3, in which case the Contractor shall pay the cost and expense of the inspection, calibration or test.

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The Contractor shall:

- Record the results of each scheduled and unscheduled inspection, calibration or test of the Level Monitor;
- Provide a copy of the results to the Province; and
- Immediately repair or replace any Level Monitor which is shown to be malfunctioning or operating outside the specified accuracy limits as set forth in Section 4.7.3.3, in accordance with the procedures set out in the Water and Wastewater Sampling and Analysis Plan.

5.6.2.2.4 Payment Adjustment

For the following Level Monitor failure events the Payment Adjustments set out below will apply:

- (a) failure of any of the Level Monitor(s), a Payment Adjustment of \$200 per day or any partial day, per Level Monitor, shall be assessed until the Level Monitor is repaired and calibrated in accordance with the procedures set out in the Water and Wastewater Sampling and Analysis Plan; and
- (b) failure to successfully calibrate the Level Monitor(s) at the frequency set out in Section 5.6.2.2.3, in accordance with the procedures set out in the Water and Wastewater Sampling and Analysis Plan, then a Payment Adjustment of \$200 per day or any partial day, per Level Monitor, shall be assessed until the Contractor provides evidence that the calibration has that been successfully completed to demonstrate the Level Monitor is providing information within the specified accuracy parameters as set forth in Section 4.7.3.3.

5.6.2.3 Testing and Water Quality

5.6.2.3.1 General

The Contractor shall develop a Water and Wastewater Sampling and Analysis Plan (refer to Section 3.8.12) as one of the Operating Period Plans.

The Contractor shall procure the necessary laboratory services to carry out the water quality analysis required under the DBFO Agreement and the Infrastructure Licenses. The taking, handling, transporting, storing and analysis of samples shall be performed in accordance with the AE Standard and Guidelines and the applicable requirements of any Governmental Authority.

5.6.2.3.2 Testing

The Contractor shall determine the quality of the Raw Water, the Treated Water and the Treated Wastewater for the purposes of the DBFO Agreement by means of:

- On-Line testing of the Raw Water and the Treated Water, and the Treated Wastewater;

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and

- Laboratory tests for the Raw Water, the Treated Water and the Treated Wastewater.

5.6.2.3.3 On-Line Tests

The Contractor shall provide and maintain the Quality Monitors as set forth in Section 4.7.3.2 at the locations identified in the Contractor's Designs and the Detailed Designs.

The Contractor shall inspect, calibrate and test each Quality Monitor at least once every month after Availability.

The inspection, calibration and testing shall be capable of determining whether each Quality Monitor is providing information within the specified accuracy requirements as set forth in Section 4.7.3.2.

The Contractor shall include details of the proposed inspection, calibration and testing equipment methodology to be followed for the Quality Monitor calibration within the Water and Wastewater Sampling and Analysis Plan.

Either the Province or the Contractor may at any time, by written notice to the other party, request further inspection, calibration or test of a Quality Monitor.

The party making the request shall pay the cost and expense of that inspection, calibration or test, unless the outcome of the inspection, calibration or test shows that the relevant Quality Monitor is operating outside the specified accuracy requirements in which case the Contractor shall pay the cost and expense of the inspection, calibration or test.

The Contractor shall:

- Record the results of each scheduled and unscheduled inspection, calibration or test of the Quality Monitor;
- Provide a copy of the results to the Province; and
- Immediately repair or replace any Quality Monitor which is shown to be malfunctioning or operating outside the specified accuracy requirements as set forth in Section 4.7.3.2 in accordance with the procedures set out in the Water and Wastewater Sampling and Analysis Plan.

5.6.2.3.4 Laboratory Tests

Laboratory tests will be performed on samples taken from the Raw Water Quality Monitoring Point, the Treated Water Quality Monitoring Points, and the Treated Wastewater Quality Monitoring Points at the frequency set out in the Infrastructure Licenses, Table 5.6.2.4 Treated Water Quality Parameters, and in Table 5.6.2.5 Treated Wastewater Quality Parameters, whichever stipulates the more stringent applicable frequency.

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5.6.2.3.5 Payment Adjustment

For the following Quality Monitor failure events the Payment Adjustments set out below will apply:

- (a) for the failure of any of the Quality Monitors, a Payment Adjustment of \$500 per day or any partial day, per Quality Monitor, shall be assessed until the Quality Monitor is repaired and calibrated in accordance with the procedures set out in the Water and Wastewater Sampling and Analysis Plan; and
- (b) for the failure to successfully calibrate the Quality Monitor(s) at the frequency defined in Section 5.6.2.3.3, and in accordance with the procedures set out in the Water and Treated Wastewater Sampling and Analysis Plan, then a Payment Adjustment of \$500 per day or any partial day, per Quality Monitor, shall be assessed until the Contractor provides evidence that the calibration has that been successfully completed to demonstrate the Quality Monitor is providing information within the specified accuracy parameters as set forth in Section 4.7.3.2.

5.6.2.4 Treated Water Quality Parameters

Table 5.6.2.4 – Treated Water Quality Parameters

Table 5.6.2.4 – Treated Water Quality Parameters					
Parameter	Sample Location	Major Failure Level	Minor Failure Level	Monitoring Frequency	Sample Type
<i>Escherichia Coli:</i> (“ E.coli ”) in distribution	Potable Water Distribution System: Random Locations (3 locations)	> 0 organisms per 100 mL	Not Applied	Weekly	Grab Sample
Total Coliforms	Potable Water Distribution System: Random Locations (3 locations)	> 0 organisms per 100 mL	Not Applied	Weekly	Grab Sample
<i>Giardia lamblia</i> cysts	Treated Water Quality Monitoring Point	Log Reduction process equipment failure (No UV treatment)	Log Reduction process equipment failure (No standby UV treatment)	Recorded Daily	

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Table 5.6.2.4 – Treated Water Quality Parameters					
Parameter	Sample Location	Major Failure Level	Minor Failure Level	Monitoring Frequency	Sample Type
		systems in service)	systems in service*)		
<i>Cryptosporidium oocysts</i>	Treated Water Quality Monitoring Point	Log Reduction process equipment failure (No UV treatment systems in service)	Log Reduction process equipment failure (No standby UV treatment systems in service*)	Recorded Daily	
Viruses by Chlorination	Location where Chlorine Contact Time is calculated	< 4 Log Reduction of Viruses	Not Applied	Calculated Daily	Calculated Once per Day
Turbidity (with conventional or direct filtration)	Treated Water Quality Monitoring Point	> 0.3 NTU	> 30% above background	Continuous	On-Line (at PWTP)
Turbidity (with Membrane Filtration)	Treated Water Quality Monitoring Point	> 0.1 NTU	> 30% above background	Continuous	On-Line (at PWTP)
Turbidity (no Filtration)	Treated Water Quality Monitoring Point	> 0.5 NTU	> 30% above Raw Water turbidity	Continuous	On-Line (at PWTP)
Turbidity in distribution	Potable Water Distribution System: 3 Random Locations (extreme ends)	> 1.0 NTU	> 0.8 NTU	2 days per week (equally spaced)	Grab Sample
Chlorine Residual	Treated Water Quality	< 0.1 mg/L	< 0.2 mg/L or > 2.0 mg/L	Continuous	On-Line (at PWTP)

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Table 5.6.2.4 – Treated Water Quality Parameters					
Parameter	Sample Location	Major Failure Level	Minor Failure Level	Monitoring Frequency	Sample Type
	Monitoring Point				
Chlorine Residual	At the Snowmaking Building	< 0.1 mg/L	< 0.2 mg/L or > 2.0 mg/L	Continuous	On-Line
Chlorine Residual	Entering Mount Kidd R.V. Park service area	< 0.1 mg/L	< 0.2 mg/L or > 2.0 mg/L	Continuous	On-Line
Chlorine Residual	In the Evan-Thomas storage reservoirs	< 0.1 mg/L	< 0.2 mg/L or > 2.0 mg/L	Continuous	On-Line
Chlorine Residual	Potable Water Distribution System: Random Locations (3 locations, include extreme end)	< 0.1 mg/L	< 0.2 mg/L or > 2.0 mg/L	2 days per week (equally spaced)	Grab Sample
pH	Potable Water Distribution System: Random Locations (3 locations, include extreme end)	< 6.5 or > 8.5	Not Applied	2 days per week (equally spaced)	Grab Sample
Total Trihalomethanes	Potable Water Distribution System: Random Locations (3 locations, extreme ends)	< 0.1 mg/L	< 0.08 mg/L	1 sample per month	Grab Sample

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Table 5.6.2.4 – Treated Water Quality Parameters					
Parameter	Sample Location	Major Failure Level	Minor Failure Level	Monitoring Frequency	Sample Type
Total Trihalomethanes	Potable Water Distribution System: Random Locations (3 locations, extreme ends)	<0.1 mg/L	<0.08 mg/L	1 sample per month	Grab Sample
Any parameters with health based and aesthetic guidelines for chemical/physical parameters in the GCDWQ (the edition current as of the then relevant time of application)	- Raw Water Well #1 - Raw Water Well#2 - Distribution System (extreme end)	> MAC values published in the GCDWQ in the treated water	> AO values published in the GCDWQ in the treated water	4 Samples per year (equally spaced throughout the year)	Grab Sample
	- Raw Water Well #1 - Raw Water Well#2 - Potable Distribution System (extreme end)	> MAC values published in the GCDWQ in the treated water	> AO values published in the GCDWQ in the treated water	4 Samples per year (equally spaced throughout the year)	Grab Sample

* Standby UV equipment availability means that the equipment must be working in automatic such that the standby unit will start if a failure of the duty unit is detected by the control system.

5.6.2.4.1 Payment Adjustment

In the event of a Treated Water quality parameter failure as set out in Table 5.6.2.4, the following Payment Adjustments will be assessed. The definitions of “**Major Failure Level**” and “**Minor Failure Level**” are shown in the third and fourth columns of Table 5.6.2.4. The Payment Adjustments specified below shall apply separately to every failure recorded, including successive failures of the same quality parameters:

- (a) Major Failure Level for E.coli: \$5,000 per day or any partial day shall be assessed until all samples are no longer at the Major Failure Level;
- (b) Major Failure Level for Total Coliforms: \$5,000 per day or any partial day shall be assessed until all samples are no longer at the Major Failure Level;

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- (c) Major Failure Levels for *Giardia lamblia* cysts: \$5,000 per day or any partial day shall be assessed;
- (d) Minor Failure Level for *Giardia lamblia* cysts: \$500 per day or any partial day shall be assessed;
- (e) Major Failure Level for *Cryptosporidium* oocysts: \$5,000 per day or any partial day shall be assessed;
- (f) Minor Failure Level for *Cryptosporidium* oocysts: \$500 per day or any partial day shall be assessed;
- (g) Major Failure Level for Viruses by Chlorination: \$5,000 per day or any partial day shall be assessed;
- (h) Major Failure Level for Turbidity: \$2,000 per day or any partial day shall be assessed until all samples are no longer at the Major Failure Level;
- (i) Minor Failure Level for Turbidity: \$500 per day or any partial day shall be assessed until all samples are no longer at the Minor Failure Level;
- (j) Major Failure Level for Chlorine Residual: \$3,000 per day or any partial day shall be assessed until all samples are no longer at the Major Failure Level;
- (k) Minor Failure Level for Chlorine Residual: \$500 per day or any partial day shall be assessed until all samples are no longer at the Minor Failure Level;
- (l) Major Failure Level for pH: \$500 per day or any partial day shall be assessed until all samples are no longer at the Major Failure Level;
- (m) Major Failure Level for Total Trihalomethanes: \$2,500 per day or any partial day shall be assessed until all samples are no longer at the Major Failure Level;
- (n) Minor Failure Level for Total Trihalomethanes: \$1,000 per day or any partial day shall be assessed until all samples are no longer at the Minor Failure Level;
- (o) Major Failure Level for Any Parameter With Health-based and Aesthetic Guidelines for Chemical or Physical Parameters in the GCDWQ: \$2,500 per day or any partial day shall be assessed until all samples are no longer at the Major Failure Level; and
- (p) Minor Failure Level for Any Parameter With Health-based and Aesthetic Guidelines for Chemical or Physical Parameters in the GCDWQ: \$1,250 per day or any partial day or any partial day shall be assessed until all samples are no longer at the Minor Failure Level.

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5.6.2.5 Treated Wastewater Quality Parameters

Table 5.6.2.5 – Treated Wastewater Quality Parameters

Table 5.6.2.5 – Treated Wastewater Quality Parameters					
Parameter	Sample Location	Major Failure Level	Minor Failure Level	Monitoring Frequency	Sample Type
Total Phosphorous	Treated Wastewater Quality Monitoring Point	> 0.5 mg/L (monthly arithmetic mean of daily samples)	> 0.20 mg/L (monthly arithmetic mean of daily samples)	Daily	Composite Sample
Total Ammonia Nitrogen	Treated Wastewater Quality Monitoring Point	> 5 mg/L (monthly arithmetic mean of daily samples)	> 1.5 mg/L (monthly arithmetic mean of daily samples)	Daily	Composite Sample
cBOD5	Treated Wastewater Quality Monitoring Point	> 20 mg/L (monthly arithmetic mean of daily samples)	> 5 mg/L (monthly arithmetic mean of daily samples)	Daily	Composite Sample
Total Suspended Solids	Treated Wastewater Quality Monitoring Point	> 20 mg/L (monthly arithmetic mean of daily samples)	> 5 mg/L (monthly arithmetic mean of daily samples)	Daily	Composite Sample
Fecal Coliforms	Treated Wastewater Quality Monitoring Point	> 200 fecal coliforms per 100 mL (monthly	> 200 fecal coliforms per 100 mL (any	5 samples per month (equally spaced)	Grab Sample

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Table 5.6.2.5 – Treated Wastewater Quality Parameters					
Parameter	Sample Location	Major Failure Level	Minor Failure Level	Monitoring Frequency	Sample Type
		geometric mean)	sample)		
Total Coliforms	Treated Wastewater Quality Monitoring Point	> 1,000 TC per 100 mL (monthly geometric mean)	> 1,000 TC per 100 mL (any sample)	5 samples per month (equally spaced)	Grab Sample

5.6.2.5.1 Payment Adjustment

In the event of a Treated Wastewater quality parameter failure as set out in Table 5.6.2.5, the following Payment Adjustments will be assessed. The definitions of “**Major Failure Level**” and “**Minor Failure Level**” are shown in the third and fourth columns of Table 5.6.2.5. The Payments Adjustments specified below shall apply separately to every failure recorded, including successive failures of the same quality parameters, as follows:

- (a) Major Failure Level for Total Phosphorous: \$5,000 per incident shall be assessed until the total phosphorous is no longer at the Major Failure Level;
- (b) Minor Failure Level for Total Phosphorous: \$5,000 per incident shall be assessed until the total phosphorous is no longer at the Minor Failure Level;
- (c) Major Failure Level for Total Ammonia Nitrogen: \$5,000 per incident shall be assessed until the total ammonia nitrogen is no longer at the Major Failure Level;
- (d) Minor Failure Level for Total Ammonia Nitrogen: \$1,000 per incident shall be assessed until the total ammonia nitrogen is no longer at the Minor Failure Level;
- (e) Major Failure Level for cBOD5: \$5,000 per incident shall be assessed until the cBOD5 is no longer at the Major Failure Level;
- (f) Minor Failure Level for cBOD5: \$2,000 per incident shall be assessed until the cBOD5 is no longer at the Minor Failure Level;
- (g) Major Failure Level for Total Suspended Solids: \$5,000 per incident shall be assessed until the total suspended solids are no longer at the Major Failure Level;
- (h) Minor Failure Level for Total Suspended Solids: \$2,000 per incident shall be assessed until the total suspended solids are no longer at the Minor Failure Level;

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- (i) Major Failure Level for Fecal Coliforms: \$5,000 per incident shall be assessed until the fecal coliforms are no longer at the Major Failure Level;
- (j) Minor Failure Level for Fecal Coliforms: \$1,000 per incident shall be assessed until the fecal coliforms are no longer at the Minor Failure Level;
- (k) Major Failure Level for Total Coliforms: \$5,000 per incident shall be assessed until the total coliforms are no longer at the Major Failure Level; and
- (l) Minor Failure Level for Total Coliforms: \$1,000 per incident shall be assessed until the total coliforms are no longer at the Minor Failure Level.

5.6.2.6 Monthly Water and Treated Wastewater Quality Report

The Contractor shall prepare and deliver monthly water and wastewater quality reports (the “**Water and Wastewater Quality Reports**”) to the Province on the 15th day of each month. The Water and Wastewater Quality Reports shall include a summary of all the quality testing performed during the previous month.

If required by the Province, the Contractor shall direct that the laboratory undertaking the analysis of the samples shall send the results of the analysis to the Province and the Contractor at the same time.

5.6.2.6.1 Payment Adjustment

If the Contractor fails to submit the Water and Wastewater Quality Reports or submits incomplete Water and Wastewater Quality Reports to the Province as per Section 5.6.2.6 on or before the 15th day of each month, a Payment Adjustment of \$500 will be assessed for each day or part thereof until the complete Water and Wastewater Quality Report is submitted.

If the results of any of the specified test are omitted then the Water and Wastewater Quality Report will be considered incomplete and the Payment Adjustment will be applied until complete Water and Wastewater Quality Report is submitted.

5.6.2.7 Influent Wastewater Monitoring and Treatability Analysis Requirements

The Contractor shall make daily measurements of the Sludge Volume Index (“**SVI**”), weekly measurements of the Specific Oxygen Uptake Rates (“**SOUR**”), measured in the secondary biological process at the inlet of the first aerobic zone, and weekly microscopic analysis to quantify the relative abundance of filamentous organisms. The results of these measurements and tests shall be included in the monthly O&M reports and the annual O&M reports.

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5.6.3 Noise Control Procedures

The Contractor shall develop a Noise Control Plan (in accordance with Section 3.8.6) as one of the Operating Period Plans. The Contractor shall minimize noise impacts and use appropriate noise attenuation, noise barriers, and other techniques for reducing noise to meet the permissible sound levels established by the Local Authority and any Governmental Authority.

5.6.3.1 Payment Adjustment

If the Contractor fails to comply with the noise level requirements set forth in Table 4.8.6 a Payment Adjustment of \$500 per incident shall be assessed.

If the Contractor does not perform necessary permanent repairs, adjustments, or remedies within 48 hours of failing to comply with the noise level requirement, a Payment Adjustment of \$500 per day or partial day will be assessed until the permanent repairs are completed.

5.6.4 Odour Management Plan and Response

The Contractor shall develop an Odour Management Plan (in accordance with Section 3.8.5) as one of the Operating Period Plans. The Contractor shall minimize the emission of odorous compounds generated from the WWTP as well as meet the odour criteria set forth in Sections 4.6.1.7 and 4.10.3.16.9, and the applicable requirements of any Governmental Authority.

5.6.4.1 Payment Adjustment

If the Contractor fails to implement all of the odour control measures and procedures set out in the Odour Management Plan, a Payment Adjustment of \$1,000 will be assessed for each day or part thereof until Contractor is in full compliance with the Odour Management Plan.

If the Contractor logs two or more odour complaints at the Call Centre from two or more different End-users (in accordance with Section 5.6.12.1) in a rolling 24 hour period, a Payment Adjustment of \$200 per complaint shall be assessed. If the Contractor considers a complaint to be false or spurious, it may notify the Province with reasonable details. If the Province acting reasonably, does not consider the complaint to be false or spurious, then the Payment Adjustment shall apply.

5.6.5 Laboratory Protocols and Testing Procedures

The Contractor shall develop the Water and Wastewater Sampling and Analysis Plan (refer to Section 3.8.12) as one of the Operating Period Plans.

With respect to any monitoring required pursuant to the DBFO Agreement, the Contractor shall collect, preserve, store, handle, and analyze all sampling in accordance with the *Standard Methods for the Examination of Water and Wastewater*, published by the American Public Health Association, the American Waterworks Association and the Water Environment

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Federation, as amended or replaced from time to time.

The analytical laboratory used for the regulatory reporting requirements must be certified for all analyses performed in accordance with the regulatory requirements of any Governmental Authority. The Contractor may perform these services itself or elect to use a contracted, certified laboratory to perform any or all of the analytical testing.

All laboratory operations shall be set up, audited, and monitored to ensure compliance with the requirements of any Governmental Authority.

The Contractor shall also provide for all sampling, testing, and analytical procedures to demonstrate compliance with the DBFO Agreement. In addition, the Contractor shall perform all sampling and testing related to operational process control at its own expense. Such process control testing shall be described in the Water and Wastewater Sampling and Analysis Plan.

All analysis required to be performed to demonstrate compliance with the DBFO Agreement and regulatory approvals shall be conducted by a laboratory certified by the regulating body with all analyses performed at the certified laboratory in accordance with the regulating body-approval procedures.

The Contractor shall arrange for independent, certified technicians to perform calibration of the analytical instruments according to the manufacturer's instructions and annually thereafter. The Contractor shall be responsible for payment of all associated fees and expenses for the calibration services.

5.6.6 Residuals Management and Disposal/Utilization

The Contractor shall develop the Residuals Management Plan (in accordance with Section 3.8.8) as one of the Operating Period Plans. The Residuals Management Plan shall describe the management of all residuals.

The Contractor shall be responsible for all aspects of residuals management including processing, handling, storage, transport, and the ultimate disposal to landfill of all residuals generated by the Infrastructure.

The collection, transportation, and disposal and/or utilization of all residuals shall be in compliance with all applicable laws. The Contractor shall provide all sampling, analysis, record-keeping, and reporting for all residuals in accordance with all regulations of any Governmental Authority.

The Contractor shall provide documentation from a certified waste disposal facility, previous to the removal and transporting of the residuals certifying that they will accept the product and certification from the receiver that they received the product.

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5.6.6.1 Payment Adjustment

If the Contractor fails to:

- (a) dispose of the residuals to the designated facility named in the Residuals Management Plan, a Payment Adjustment of \$2,000 will be assessed for each failure, for which purpose each separate load or vehicle movement will be classed as a discrete failure; or
- (b) maintain proper records of residuals disposal in accordance with Section 5.6.6 or the requirements of any Governmental Authority, then a Payment Adjustment of \$1,000 per incident will be applied, for which purpose each missing or erroneous document, including bills of lading, movement licenses and other documents relating to residual disposals will be assessed as a discrete failure.

5.6.7 Security

The Contractor shall develop a Security Plan (in accordance with Section 3.8.10) as one of the Operating Period Plans. The Contractor shall implement the security measures, processes and procedures set out in the Security Plan and shall ensure security is in compliance with all applicable laws with respect to guarding against terrorist and security threats.

The Contractor shall maintain a full record of all incidents and implemented measures, processes, and procedures relating to security which occur during the Operating Period. The Contractor shall make these records available for inspection by the Province upon reasonable notice, and shall present a report of them to the Province annually.

5.6.7.1 Payment Adjustment

If the Contractor fails to provide the security report to the Province as per Section 5.6.7 within two weeks of the calendar year end, a Payment Adjustment of \$200 will be assessed for each day or part thereof until the complete report is submitted.

If the Contractor fails to implement any of the Security measures, processes, and procedures set out in the Security Plan, a Payment Adjustment of \$200 will be assessed for each day or part thereof until the security measures, processes and procedures are brought into full compliance with the Security Plan.

5.6.8 Monthly O&M Reporting

The Contractor shall prepare monthly O&M reports in compliance with the Infrastructure Licenses and the requirements of any Governmental Authority. Each monthly O&M report, shall as a minimum, include the following:

- Provide the Province with information reasonably required to assess the adequacy of the delivery of the O&M;

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- Be structured to cover the O&M as a whole and the work at each facility;
- Description of any periods of reduced service capacity of the PWTP or the WWTP, including an explanation of the cause of any reduction in capacity, and a description of the events and actions taken to restore capacity;
- Description of any Treated Water quality sample failures, including copies of the contemporary water quality records from the plant SCADA Systems and operating records, an explanation of the cause, details of the date, time, and duration, and an explanation, if applicable, of how the quality failure was rectified;
- Description of any Treated Wastewater quality sample failures, including copies of the contemporary water quality records from the plant SCADA Systems and operating records, an explanation of the cause, details of the date, time, and duration, and an explanation, if applicable, of how the quality failure was rectified;
- Any material development in relation to the O&M;
- Significant maintenance and renewal activities in the period, including details of any routine or unscheduled maintenance outages;
- Description of any material changes to any of the Operating Period Plans;
- Staffing and resources, including any changes in personnel;
- Health and safety (including accident records);
- Changes in legislation, actual or anticipated;
- Environmental or public relations issues;
- Description of material changes or major maintenance activities planned for the following month, three month and six months ahead; and
- Any other relevant issues.

The Contractor shall prepare and submit to the Province the proposed format and contents for the monthly O&M reports and secure the Province's written acceptance prior to the submission of the first month O&M report.

5.6.8.1 Payment Adjustment

If the Contractor fails to submit the monthly O&M report(s) to the Province, in compliance with the monthly O&M report requirements as per Section 5.6.8 on or before the 7th day of each month, a Payment Adjustment of \$100 will be assessed for each day or part thereof until the complete monthly O&M report is submitted. If the monthly O&M report is incomplete or does not fulfil the requirements of the Infrastructure Licenses and the minimum requirements described in Section 5.6.8, then the Payment Adjustment will be applied until a complete monthly O&M report is submitted.

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5.6.9 Annual O&M Reporting

The Contractor shall prepare an annual O&M report in compliance with the Infrastructure Licenses and the requirements of any Governmental Authority. Each annual O&M report, shall as a minimum, include the following:

- Provide the Province with information reasonably required to assess the adequacy of the delivery of the O&M;
- Be structured to cover the O&M as a whole and the work at each facility;
- Cover the twelve month period from Availability, and each twelve months thereafter;
- Include all of the information required as part of the monthly O&M report, summarized appropriately to describe the whole year;
- Explain any discernible annual term trends in the Raw Water or the Treated Water quality or Treated Wastewater quality;
- Describe any planned update or changes to any of the Operating Period Plans in the year ahead;
- Summarize health and safety (including accident records) performance for the year;
- Identify any changes in legislation anticipated for the coming year;
- Describe any material changes to the Infrastructure or major maintenance activities planned for the following year;
- Identify any long term O&M improvement plans, initiatives or other service improvements for the coming year;
- Set out detailed information on the current condition of the Infrastructure;
- Describe the residual management and disposal activities completed during the period;
- Set out any information required pertaining to the regulatory approvals; and
- Set out the annual energy consumption for the Infrastructure.

The Contractor shall prepare and submit to the Province the proposed format and contents for the annual O&M report and obtain the Province's written acceptance prior to the submission of the first annual O&M report.

5.6.9.1 Payment Adjustment

If the Contractor fails to submit the annual operating O&M report(s) to the Province, in compliance with the annual O&M report requirements as per Section 5.6.9, a Payment Adjustment of \$500 will be assessed for each day or part thereof until the complete annual O&M report is submitted.

If the annual O&M report is incomplete or does not fulfil the requirements of the Infrastructure

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Licenses, and the minimum requirements described in Section 5.6.9, then the Payment Adjustment will be applied until a complete annual O&M report is submitted.

5.6.9.2 Payment Adjustment for Power Consumption

In this Section, the following expressions shall have the following meanings (and where applicable their plurals have corresponding meanings):

“**Actual Annual Power Consumption**” is the annual amount of power consumed at the Infrastructure as specified in the annual O&M report as per Section 5.6.9;

“**Bid Potable Water Distribution System Power Consumption Rate**” is 700 kWh per ML;

“**Bid PWTP Power Consumption Rate**” is 250 kWh per ML;

“**Bid WWTP Power Consumption Rate**” is 1,900 kWh per ML;

“**Expected Annual Power Consumption**” is the annual amount of power expected to be consumed at the Infrastructure and is calculated as follows:

Bid WWTP Power Consumption Rate (kWh) x Annual Total Treated Wastewater (ML)

plus

Bid PWTP Power Consumption Rate (kWh) x Annual Total Treated Water (ML)

plus

Bid Potable Water Distribution System Power Consumption Rate (kWh) x Annual Total Treated Water (ML) (if applicable in accordance with the Contractor’s Designs); and

“**Power Consumption Rate**” means the amount of power (in kWh) required for the treatment of one ML of Raw Water or wastewater or the amount of power (in kWh) required for the conveyance of one ML of Treated Water and includes base building loads and power consumption from Raw Water or wastewater treatment or the conveyance of Treated Water as applicable.

Where the Actual Annual Power Consumption exceeds the Expected Annual Power Consumption by greater than 10%, a Payment Adjustment as detailed in the below formula will be assessed.

Payment Adjustment = (A – B – C - D) x E

Where:

A= Actual Annual Power Consumption (kWh)

B = Bid WWTP Power Consumption Rate (kWh/ML) x Annual Total Treated Water (ML)

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C = Bid PWTP Power Consumption Rate (kWh/ML) x Annual Total Treated Wastewater (ML)

D = Bid Potable Water Distribution System Power Consumption Rate (kWh) x Annual Total Treated Water (ML) (if applicable in accordance with the Contractor's Designs)

E = \$0.13 per kWh

If the Actual Annual Power Consumption exceeds the Expected Annual Power Consumption by less than 10%, no Payment Adjustment will be made. If the Actual Annual Power Consumption is less than the Expected Annual Power Consumption, no additional payment shall be made by the Province.

5.6.10 O&M Inspections and Meetings

The Contractor shall maintain all records of operating data and information relevant to the Infrastructure and performance of the O&M, including accounting and financial records. The Contractor shall provide the Province access to all such records upon request.

The Contractor shall hold a monthly and annual meeting with the Province to discuss the monthly and annual O&M reports and other issues related to the O&M.

5.6.11 Infrastructure Tours

The Contractor will host and attend tours of the Infrastructure upon reasonable request by the Province. The Contractor may host other tours of the Infrastructure with the prior written permission of the Province.

5.6.12 Call Centre

5.6.12.1 Call Centre Requirements

The Contractor shall implement a Call Centre system including both a telephone contact line and a database for recording all contacts, incidents and events relating to the performance of the O&M. The Contractor shall ensure that the Call Centre database is the central repository for all End-user contacts and for any other information concerning the availability of the Infrastructure as it affects the Province and the End-users. The Contractor shall develop a Call Centre Plan (refer to Section 3.8.11) as one of the Operating Period Plans.

The Contractor shall ensure the Call Centre operates 24 hours per day each day of the year and shall make provisions for backup Call Centre services. The Contractor shall ensure the Call Centre provides the day-to-day notification interface between the Province, the End-users and the Contractor and any of its subcontractors in relation to the following matters:

- All inquiries and repair requests;

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- The notification of any Infrastructure Performance Failures including quantity, capacity or quality failures;
- Notification of Major Incidents to the Province;
- Complaints or compliments;
- Monitoring of security events;
- Notification of accidents or emergencies requiring the assistance of the Contractor;
- Requests for information relating to the operation of the Call Centre; and
- Communications and status updates between the Contractor and the End-users to inform progress and status for the rectification of any Infrastructure Performance Failure or any other service issue pertaining to the function and performance of the PWTP, the WWTP, the Potable Water Distribution System and the Wastewater Collection Network.

The Contractor shall ensure the Call Centre maintains a daily electronic log of all Call Centre contacts, notifications and requests, including calls reporting Infrastructure Performance Failures and Major Incidents.

The Contractor shall ensure the Call Centre records into the electronic log all relevant details, including, but not limited to, the following information:

- Call Centre operator's name;
- Requester's name;
- Date and time;
- Repair or correction required;
- Infrastructure Performance Failures categorization, including allocation to the failure categories set out in Section 5.6.1 and the identification of the affected Service Area(s);
- Full incident description;
- Request response time;
- Unique request reference identifier;
- Subcontractor and contact name to which the request was passed, if applicable;
- Date and time request was passed to the relevant subcontractor, if applicable;
- Action taken and by whom; and
- Rectification time for any Infrastructure Performance Failure, Major Incident or any other repair or rectification action performed in response to a Call Centre contact.

Infrastructure Performance Failures and Major Incidents may be reported to the Call Centre by the Province if the Province becomes aware of the Infrastructure Performance Failure or Major Incident.

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Infrastructure Performance Failures and Major Incidents that are identified by the Contractor or its subcontractors through routine O&M activities, monitoring, inspection or testing shall also be reported promptly to the Call Centre.

The Contractor shall ensure the Call Centre is the central repository and database for all information concerning the End-user interface with the Infrastructure, and for all Infrastructure Performance Failures and Major Incidents howsoever they may be identified.

The Contractor shall not delete or alter any details recorded by the Call Centre unless approved in writing in advance by Province and the following information is recorded:

- The exact nature and impact of the alteration or deletion;
- The reason for the alteration or deletion; and
- The name of the person who authorized the alteration or deletion.

The Contractor shall ensure that the Call Centre has emergency incident support procedures in place for raising alarms, reporting events to internal and external authorities and logging details of emergencies.

5.6.12.2 Call Centre Performance Requirements

The Contractor shall ensure that the Call Centre meets the following performance requirements during the Operating Period:

- All contacts, enquiries, complaints, emergencies, Major Incidents and Infrastructure Performance Failures notified to the Call Centre shall be logged by the Call Centre;
- All response and rectification actions, including timing of events, must be logged by the Call Centre;
- Access to Call Centre records and logs shall be provided to the Province as requested by the Province; and
- The Contractor shall report any Major Incidents to the Province within one hour of occurrence.

5.6.12.3 Monitoring for Compliance

For each month following the first calendar month of the Operating Period, the Contractor shall promptly, and in any event no later than five Business Days before the end of the month, provide the Province a monthly call centre report (“**Monthly Call Centre Report**”) which summarizes all of the Call Centre database records logged in the previous calendar month in sufficient detail to determine compliance with the requirements of Sections 5.6.12.1 and 5.6.12.2.

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5.6.12.4 Payment Adjustment

If the Contractor fails to:

- (a) record, with reference to the Monthly Call Centre Report, all contacts, enquiries, complaints, emergencies, and Infrastructure Performance Failures notified to the Call Centre, regardless of time of day such request or report of an Infrastructure Performance Failure occurs, a Payment Adjustment of \$200 per failure will be assessed;
- (b) record, with reference to the Monthly Call Centre Report, all response and rectification actions in response to the contacts, enquiries, complaints, emergencies, and Infrastructure Performance Failures received by the Call Centre, including the timing of events, a Payment Adjustment of \$200 will be assessed;
- (c) provide a complete Monthly Call Centre Report within the time stipulated, a Payment Adjustment of \$200 per day or partial day will be assessed until the Contractor submits a complete Monthly Call Centre Report;
- (d) provide access to Call Centre records and logs as requested in writing from the Province, upon two hours notice, a Payment Adjustment of \$200 per failure will be assessed; or
- (e) if the Contractor fails to report any Major Incidents as per Section 5.6.12.2, a Payment Adjustment of \$500 per hour or partial day thereof until properly reported will be assessed.

5.6.13 Regulatory Compliance Requirements

The Contractor will be responsible for ensuring that the Infrastructure Licenses for the Infrastructure remain valid and in good standing, and that all of the license requirements are adhered to throughout the Operating Period. If the Contractor violates or contravenes any of the requirements of the Infrastructure Licenses, the Contractor shall be subject to a Payment Adjustment in the amount set forth in Table 5.6.13 below.

Table 5.6.13 Regulatory Non-Compliance Payment Adjustments		
Non-compliance event	Monitoring Period	Payment Adjustments for Non-compliance ^a
Violation of any term or condition of a regulatory approval or permit.	The first non-compliance event in a 365 day period	\$1,000
	The second non-compliance event of the same infringement	\$2,500

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Table 5.6.13 Regulatory Non-Compliance Payment Adjustments		
Non-compliance event	Monitoring Period	Payment Adjustments for Non-compliance ^a
	in a 365 day period	
	The third non-compliance event of the same infringement in a 365 day period	\$5,000
	The fourth and each subsequent non-compliance events of the same infringement in a 365 period	\$10,000
Violations Requiring Public Notification ^b	Per event	\$25,000

- (a) The Payment Adjustments stated above do not include any fines or penalties that may be assessed by any Governmental Authority.
- (b) Public notification refers to violations for which the Contractor is required by applicable law or ordered by any Governmental Authority to issue a public notification; e.g. Boil Water Advisories.

5.7 ASSET MANAGEMENT

5.7.1 Preamble

The Contractor is responsible for the asset management of the Infrastructure throughout the Operating Period and shall provide an Asset Management Plan in accordance with Section 3.8.13, and the requirements of this Section.

5.7.2 Objectives

The main objectives of the Contractor’s asset management program shall be as follows:

- Measure and monitor the condition and performance of the assets comprising the Infrastructure;
- Ensure that the assets are managed, operated, maintained, renewed and replaced such that they are fit for their intended purpose and that they are capable of meeting the Technical Requirements and delivering uninterrupted service to the End-users throughout the Operating Period; and
- Ensure the Infrastructure meets the Handback Requirements.

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5.7.3 Asset Records

The Contractor is responsible for developing an asset numbering and tagging system for the Infrastructure, assigning individual identification numbers to each asset including all elements of the Existing Facilities that form part of the Contractor's Designs and the Detailed Designs.

5.7.4 Annual Dependability Tests

No earlier than 90 days before and no later than the first anniversary of Availability and no earlier than 90 days before and no later than each applicable anniversary date of Availability thereafter, the Contractor shall conduct Annual Dependability Tests on the PWTP, the WWTP and the Potable Water Distribution System.

The Annual Dependability Tests shall demonstrate that the PWTP, the WWTP and the Potable Water Distribution System continue to meet the Design Capacity for the Infrastructure.

Unless otherwise agreed to in writing by the Department, the methodology and procedure for the Annual Dependability Tests shall be the same as that set out in the Commissioning and Startup Plan for the Hydraulic Capacity Tests.

The Contractor shall give the Province a minimum of two weeks' notice of the date of the Annual Dependability Tests to afford the Province the opportunity to witness the tests if so desired.

The Province may at its sole discretion waive in writing the requirement to conduct the Annual Dependability Tests, in which case the Infrastructure shall be deemed to have successfully passed the Annual Dependability Test for the following twelve month period. Any such waiver by Province shall not relieve the Contractor of its responsibility to conduct Annual Dependability Tests just before each and every subsequent anniversary date of Availability.

The Annual Dependability Tests shall be documented and reported to the Province in the report format set out in the Commissioning and Startup Plan for the Hydraulic Capacity Tests (set out in Section 3.7.5.).

5.7.4.1 Payment Adjustment

If the Contractor fails to submit the Annual Dependability Test report(s) to the Province in accordance with Section 5.7.4 no later than two weeks after completion of the applicable Annual Dependability Tests(s), a Payment Adjustment of \$500 will be assessed for each day or part thereof until the complete report is submitted. If the report is incomplete then the Payment Adjustment will be applied until a complete report is submitted.

If the results of the Annual Dependability Test(s) show that the capacity of the PWTP, the WWTP or the Potable Water Distribution System is less than the Design Capacity, then the maximum Declared Capacity shall be limited to the capacity recorded by Annual Dependability

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Test(s), and the Payment Adjustments for capacity deductions set out in Section 5.7.5 shall apply until the Contractor rectifies the Infrastructure and repeats the Annual Dependability Test(s) to successfully demonstrate that Available Capacity is equal to or greater than the Design Capacity.

If the Contractor fails to carry out the Annual Dependability Test on or before the first anniversary of Availability and on or before each anniversary date of Availability thereafter then a Payment Adjustment of \$1,000 will be assessed for each day or part thereof until the Annual Dependability Tests are completed.

5.7.5 Capacity Deductions

The Contractor shall monitor and measure the Available Capacity of the Infrastructure at all times through the PCS and SCADA Systems and the Flow Meters and Level Monitors.

The Contractor shall prepare and deliver a monthly invoice (the “**Monthly Invoice**”) to the Department not later than five Business Days prior to the end of each month during the Term.

The Monthly Invoice shall include a summary of the Available Capacity during the previous month.

In the event that the Available Capacity of the Infrastructure is reduced below the Design Capacity for the PWTP, the WWTP, or the Potable Water Distribution System the Contractor shall declare the reduced capacity as the Declared Capacity in the Monthly Invoice and, the Payment Adjustments set out in Section 5.7.5.1 below shall be applied.

5.7.5.1 Payment Adjustment

If the Available Capacity for the PWTP, the WWTP or the Potable Water Distribution System is less than the Design Capacity then the following Payment Adjustments shall apply, unless the reduction in the Available Capacity is authorized as part of the Approved Planned Maintenance:

- (a) The Declared Capacity of the PWTP is $0 \leq 10$ percent less than the PWTP Design Capacity, a Payment Adjustment of \$1,500 will be assessed for each day or part thereof;
- (b) The Declared Capacity of the PWTP is $10 \leq 25$ percent less than the PWTP Design Capacity, a Payment Adjustment of \$3,000 will be assessed for each day or part thereof;
- (c) The Declared Capacity of the PWTP is >25 percent less than the PWTP Design Capacity, a Payment Adjustment of \$5000 will be assessed for each day or part thereof;
- (d) The Declared Capacity of the Potable Water Distribution System reservoir storage volume for fire fighting is less than the volume determined by the Contractor’s Designs and the Detailed Designs by $0 \leq 10$ percent, a Payment Adjustment of \$1,000 per day or part thereof;

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- (e) The Declared Capacity of the Potable Water Distribution System reservoir storage volume for fire fighting is less than the volume determined by the Contractor's Designs and the Detailed Designs by $10 \leq 25$ percent, a Payment Adjustment of \$3,000 per day or part thereof;
- (f) The Declared Capacity of the Potable Water Distribution System reservoir storage volume for fire fighting is less than the volume determined by the Contractor's Designs and the Detailed Designs by > 25 percent, a Payment Adjustment of \$5,000 per day or part thereof;
- (g) The Declared Capacity of the WWTP is $0 \leq 10$ percent less than the WWTP Design Capacity, a Payment Adjustment of \$1,500 will be assessed for each day or part thereof;
- (h) The Declared Capacity of the WWTP is $10 \leq 25$ percent less than the WWTP Design Capacity, a Payment Adjustment of \$3,000 will be assessed for each day or part; or
- (i) The Declared Capacity of the WWTP is > 25 percent less than the WWTP Design Capacity, a Payment Adjustment of \$5,000 will be assessed for each day or part thereof.

The Payment Adjustments set out above shall apply separately to each and every failure day recorded, including successive failures of the same components of the Infrastructure.

If the Contractor fails to self-assess any period of Declared Capacity less than the Design Capacity in the Monthly Invoice, then a Payment Adjustment of \$5,000 will be assessed for each individual reporting failure.

5.7.6 Semi-Annual Asset Management Reports

The Contractor shall provide the Province with semi-annual asset management reports (the "**Semi-Annual Asset Management Reports**") for the Infrastructure during the Operating Period as part of the asset management program. Thereafter, the Contractor shall finalize the first Semi-Annual Asset Management Report on or before the 7th day of the 7th month following Availability.

The Semi-Annual Asset Management Report shall be updated semi-annually on or before the 7th day of the month ending the relevant semi-annual period.

Each Semi-Annual Asset Management Report shall:

- Provide the Province with information reasonably required to monitor the asset condition;
- Be structured to cover the Infrastructure as a whole and each discrete facility;
- Include information on asset condition;
- Summarize the predictive and preventive maintenance undertaken in the period since the last Semi-Annual Asset Management Report or Annual Asset Management Report;

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- Set-out the asset management program for upcoming asset repairs and renewal for one month, three month and six months ahead;
- Clearly identify any planned maintenance in the next six month period, including the precise timing, duration and extent of the work that is planned; and
- Highlight any other relevant asset management issues.

The Contractor will include supporting information from the CMMS system in the Semi-Annual Asset Management Reports. The Semi-Annual Asset Management Report format shall be set out in the Asset Management Plan.

5.7.6.1 Payment Adjustment

If the Contractor fails to submit the Semi-Annual Asset Management Report(s) to the Province as per Section 5.7.6 on or before the 7th day of the month ending the relevant semi-annual period, a Payment Adjustment of \$100 will be assessed for each day or part thereof until the complete Semi-Annual Asset Management Report is submitted.

If the Semi-Annual Asset Management Report is incomplete then the Payment Adjustment will be applied until a complete report is submitted.

5.7.7 Annual Asset Management Reports

The Contractor shall provide the Province with annual asset management report(s) (the “**Annual Asset Management Reports**”) of the managed assets during the Operating Period as part of the asset management program. The Contractor shall finalize the first Annual Asset Management Report within the first two weeks following the first anniversary of Availability.

The Annual Asset Management Report shall be updated annually within the first two weeks following every subsequent anniversary date of Availability.

Each Annual Asset Management Report shall:

- Provide the Province with information reasonably required to monitor the asset condition;
- Be structured to cover the O&M as a whole and the work at each facility;
- Cover the twelve month period from the Availability date, and each twelve months thereafter;
- Include the same information required as part of the Semi-Annual Asset Management Report, summarized as appropriate to cover the whole year;

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- Include the annual leakage assessment utilizing flow, pressure and other information collected from on-line instrumentation and field data loggers as required to determine the level of leakage in the system, any long term trends in the level and the options to recue or control the levels in future;
- Include the annual Wastewater Collection Network asset condition assessment utilizing records of blockages, repairs, flooding and other asset condition assessment methods such as closed circuit television surveys to determine the level of asset performance, any long term trends and the options to maintain the asset performance at the required level;
- Set out the asset management program for upcoming asset repairs and renewal the following year;
- Clearly identify any planned maintenance in the next six month and twelve periods, including the precise timing, duration and extent of the work that is planned;
- Identify any changes in legislation anticipated for the coming year that will require modification or investment in the assets to maintain legislative compliance;
- Identify any long term asset improvement plans, asset management initiatives or other improvements for the coming year; and
- Highlight any other relevant asset management issues.

The Contractor will include information obtained and managed through the CMMS in the Annual Asset Management Report. The Annual Asset Management Report format shall be set out in the Asset Management Plan.

5.7.7.1 Payment Adjustment

If the Contractor fails to submit the Annual Asset Management Report(s) to the Province as per Section 5.7.7 within the first two weeks following each anniversary date of Availability, a Payment Adjustment of \$200 will be assessed for each day or part thereof until the complete Annual Asset Management Report is submitted.

If the Annual Asset Management Report is incomplete then the Payment Adjustment will be applied until a complete Annual Asset Management Report is submitted.

If the leakage assessment of the Potable Water Distribution System determines an increase of leakage of more than 10 percent over the leakage level recorded in the first full year of the Term, a Payment Adjustment of \$1,000 will be assessed for each day or part thereafter until the Contractor rectifies the Infrastructure to reduce the leakage below 10 percent.

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5.7.8 Computerized Maintenance Management System

The Contractor is responsible for providing, installing and maintaining a new CMMS for the Infrastructure utilizing data management software and platforms that are compatible with plant control system and the SCADA System. The system will be utilized for the following activities at a minimum:

- Record repair, renew and replacement of the Infrastructure on a detailed, item-by-item basis;
- Schedule, monitor, report, and control the Contractor’s predictive, preventive and corrective maintenance programs;
- Schedule, monitor, report, and control consumables and chemicals;
- Create a historical database to be used to track and predict equipment performance and potential equipment failure;
- Monitor and control completion of tasks;
- Maintain and control a spare parts and materials inventory system;
- Manage equipment inventory utilizing an asset numbering system;
- Generate work order reports;
- Generate work completion reports;
- Track repair warranties;
- Track equipment failures by failure type;
- Generate repair priority reports and issue equipment status;
- Integrate into other managed asset functions such as operations, laboratory, administration;
- Generate management summary reports, life cycle costs and personnel utilization reports; and
- Provide personnel training in how to maximize the effectiveness and functionality of the CMMS.

5.7.9 Planned Maintenance

The Contractor shall submit no later than four weeks before Availability and thereafter four weeks before each anniversary date of Availability during the Term to the Department for the Department’s review, the details of any planned maintenance of the Infrastructure planned for the year following Availability or the anniversary date of Availability, as applicable (the “**Proposed Planned Maintenance**”).

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The Proposed Planned Maintenance shall be subject to the Department’s approval, acting reasonably. It shall be reasonable for the Department to withhold its approval of the Proposed Planned Maintenance if:

- The Contractor has not provided in the Proposed Planned Maintenance a detailed supply versus demand analysis and risk assessment to demonstrate that the timing, duration and contingency measures proposed for the planned maintenance, satisfactorily reduces the risk of an Infrastructure Performance Failure from occurring;
- A planned maintenance activity exceeds 12 hours;
- A planned maintenance activity reduces the Available Capacity of any part of the Infrastructure by more than 33% of the Design Capacity; and
- The planned maintenance will reduce the capacity, availability or reliability of the PWTP or the Potable Water Distribution System for fire-fighting purposes to a level that has not received the prior written approval of the Local Authority.

The Proposed Planned Maintenance that has been approved by the Department shall be called the “**Approved Planned Maintenance**”. The Contractor may amend the Approved Planned Maintenance from time to time with the Department’s approval, acting reasonably.

When a planned maintenance activity is being carried out in accordance with the Approved Planned Maintenance, the Available Capacity may be reduced to the extent and duration set out in the Approved Planned Maintenance.

During a planned maintenance activity that is being carried out in accordance with the Approved Planned Maintenance, the capacity deductions as set out in Section 5.7.5 shall not apply. However, if;

- (i) the Available Capacity is reduced by more than the amount set out in the Approved Planned Maintenance; or
- (ii) the duration of the planned maintenance activity exceeds the time set out in the Approved Planned Maintenance, then the planned maintenance activity shall be deemed to be Unplanned Maintenance and the provisions of Section 5.7.10 shall apply.

5.7.10 Unplanned Maintenance

If the Contractor carries out any maintenance activity which reduces the Available Capacity (either to the PWTP, the WWTP or the Potable Water Distribution System (including the storage reservoirs)) below that which is authorised by the Department as Approved Planned Maintenance, then it shall be deemed as Unplanned Maintenance, and subject to the Payment Adjustment set out in Section 5.7.10.1.

Any emergency works carried out by the Contractor to rectify any Infrastructure Performance Failure shall not be deemed to be Unplanned Maintenance provided that the works are performed

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in accordance with the procedures set out in the Operation and Maintenance Plan and the Emergency Response Plan.

5.7.10.1 Payment Adjustment

If the Contractor performs or is deemed to have performed any Unplanned Maintenance then a Payment Adjustment of \$5,000 will be assessed for each day or part thereof until the Unplanned Maintenance is completed and the Available Capacity is restored to the Design Capacity. During any Unplanned Maintenance, the capacity deductions set out in Section 5.7.5 shall apply in addition to the Payment Adjustment in this Section 5.7.10.

5.7.11 Materials and Workmanship

The Contractor shall ensure that all materials, and all repairs, replacements and renewals carried out by the Contractor as part of its operations and maintenance obligations under this Section 5 shall, unless otherwise specified herein, be of the same quality as the standards and criteria set out in the Project Requirements and the Contractor's Designs and the Detailed Designs, taking into account advancements in materials development and Good Industry Practice at the time of replacement or renewal.

Where parts, systems or components need to be replaced, they shall be replaced with new parts, systems or components. No used or reconditioned parts, systems or components shall be used without the prior written consent of the Province.