



Serving
GOVERNMENT,
Serving
CANADIANS.

Engineering Services

TERMS OF REFERENCE

Water and Sewage Treatment Infrastructure

For:
Environment Canada
Eureka, Nunavut
Project. No. R.037261.001



Table of Contents:

1	PROJECT DESCRIPTION	3
1.1	GENERAL.....	3
1.2	BACKGROUND INFORMATION.....	4
1.3	SUMMARY OF DESIGN WORK.....	7
1.4	SUMMARY OF SERVICES AND QUALIFICATIONS.....	10
1.5	CONSTRUCTION COST ESTIMATE.....	11
1.6	SCHEDULE.....	12
1.7	EXISTING DOCUMENTATION.....	13
1.8	CODES, ACTS, STANDARDS, REGULATIONS.....	14
1.9	HEALTH AND SAFETY.....	14
2	REQUIRED SERVICES	14
2.1	GENERAL REQUIREMENTS.....	14
2.2	PROJECT REVIEW AND APPROVAL.....	15
2.3	PRE-DESIGN SERVICE.....	17
2.4	DESIGN SERVICE.....	18
2.5	CONSTRUCTION DOCUMENTATION SERVICE.....	19
2.6	TENDER CALL, BID EVALUATION & CONSTRUCTION CONTRACT AWARD.....	21
2.7	CONSTRUCTION SUPPORT SERVICE.....	22
2.8	RESIDENT CONSTRUCTION SERVICE.....	23
2.9	COMMISSIONING SERVICE.....	25
2.10	POST CONSTRUCTION SERVICE.....	26
3	PROJECT ADMINISTRATION	28
3.1	GENERAL REQUIREMENTS.....	28
3.2	MEETINGS.....	28
3.3	SITE VISITS.....	29

APPENDIX A – EXISTING REFERENCE DOCUMENTATION

- .1 “Consulting Services-Water Reservoir-Eureka Station, Eureka, Nunavut”; Worley Parsons Canada Ltd., dated Feb 27, 2014 (WP 2014)
- .2 “Eureka, NU – Sewage Treatment Infrastructure Feasibility and Code Review” AECOM Engineering, August 2012 (AECOM 2012)
- .3 Eureka Civil Consulting Services”; Worley Parsons Canada Ltd., 2010 (WP 2010) including:
 - .1 Digital Topographic Survey. Nunasi Geomatics, prepared 2010
 - .2 Geotechnical Investigation Report
- .4 Eureka Weather Station User Charges April 2014-March 2015



I PROJECT DESCRIPTION

I.1 GENERAL

I.1.1 SERVICES

- .1 Environment Canada (EC) has identified a need to upgrade: 1) the water supply and treatment system including construction of a new above grade reservoir, and 2) the sewage and wastewater treatment system including provision of a new chemical/physical treatment system and upgrades to the existing sewage lagoon at the High Arctic Weather Station in Eureka, Nunavut.
- .2 Environment Canada has identified a need to remediate all contaminated soil at the High Arctic Weather Station in Eureka, Nunavut.

Public Works and Government Services Canada (PWGSC) requires a Civil / Municipal Engineering firm, acting in the capacity of prime consultant as the coordinating engineer of record, together with a multi-disciplinary team of sub-consultants for the provision of services required for this project. The Consultant Team must include the following:

- .1 Civil Municipal Engineer (with expertise in drinking water and wastewater process treatment),
 - .2 Civil Geotechnical Engineer (with expertise in permafrost)
 - .3 Resident (On-site) Civil Engineer (minimum 5 years professional experience)
 - .4 Mechanical Engineer,
 - .5 Electrical Engineer,
 - .6 Environmental Specialist (with expertise in soil remediation in the arctic)
 - .7 Commissioning Specialist (minimum 5 years professional experience)
 - .8 Cost Estimator
 - .9 Architectural technologist
- .3 The work included in this TOR shall be carried out as two separate Construction Contracts, as follows:
 - .1 Contract 1: Work related to water supply including: new Water Reservoir, upgrades to the Water Treatment Plant, new emergency water supply system, and decommissioning of the existing Water Reservoir and existing obsolete related infrastructure.
 - .2 Contract 2: Work related to the Sewage and Wastewater system upgrades including new chemical/physical treatment system and upgrading the existing sewage lagoon and decommissioning of the existing obsolete related infrastructure.
- However, PWGSC reserves the right to carry out the work as one construction project.
- .4 Bulk goods including construction materials are only delivered to Eureka by sealift only one time per year. Depending on a number of factors, it is expected that there will be a 2 year



gap between completion of construction documents and when construction can commence on site.

- .5 Environment Canada is currently planning to carry out a major reconstruction/upgrade of the Eureka runway, which will precede this project. Runway Construction contract to be awarded in Sep 2015. Construction to commence summer 2016. As part of the runway project, PWGSC intends to secure and set aside approximately 75,000m³ of quality granular material, for use in the construction of the new water reservoir and for ongoing maintenance. The runway upgrade project will involve the shipping of heavy construction equipment (i.e bulldozers, dump trucks, etc) to Eureka. Co-ordination with both PWGSC and the Consultant for the runway project will be required to confirm availability of granular material and equipment on site.

1.1.2 THE PWGSC GENERAL PROCEDURES AND STANDARDS DOCUMENT (GP&S)

- .1 The TOR document must be used in conjunction with the GP&S, as the two documents are complimentary.
- .2 The TOR describes project-specific requirements, services and deliverables while the GP&S document outlines the minimum standards and procedures common to all projects.
- .3 Where specific requirements in the TOR conflict with the GP&S, the requirements of the TOR override the GP&S Document.

1.1.3 PROJECT INFORMATION

Project Information	
Project Title:	Water and Sewage Treatment Infrastructure
Project Address:	Eureka, Nunavut
Solicitation Number:	
Contract Number:	
PWGSC Project Number:	R.037261.001
PWGSC Contracting Officer:	TBD
PWGSC Project Manager:	James Hutchings

1.2 BACKGROUND INFORMATION

1.2.1 EXISTING WATER SUPPLY

- .1 The existing water supply for the Station comes from Station Creek located west of the existing water reservoir. Water is pumped from Station Creek between July and August when the turbidity of the water is lower than during thawing.
- .2 The existing water reservoir is operating at capacity and there is concern that the station may have a shortage of water in the near future with an anticipated population increase. Currently the water usage is restricted during high population periods.
- .3 The existing water reservoir is located at an elevation approximately 8 meter below the main Station buildings. It has approximately 2100 cubic meter active storage capacity. Seepage, slumping and instability were observed during 2010 site reconnaissance. The current reservoir has never been dredged to remove accumulated silt. The capacity of the



reservoir has decreased significantly due to silting. The reservoir was reportedly excavated by Department of National Defense using dynamite.

- .4 Currently the reservoir is filled each summer by pumping water from Station Creek. The volume of available water from the creek depends upon the previous winter snow fall and the amount of permafrost melt/runoff. Some years, it is possible to top up the reservoir again before freeze-up; however, during dry years there is only one opportunity. If sufficient water is not captured during this window of opportunity there is a water shortage until the next runoff occurs. There are two pumps on site that are used to pump water from Station Creek to the reservoir. The water from the reservoir is pumped intermittently to storage tanks located in the tank building adjoining the maintenance garage. Water is then pumped into tanks located in the Station Building.
- .5 The existing water treatment system produces two water qualities- potable and utility water. Utility water is chlorinated, filtered and softened. Drinking water is further treated with additional filters, Granular Activated Carbon (GAC), a Reverse Osmosis (RO) unit, and disinfected using Ultraviolet Disinfection (UV). The existing system has 170 l/day potable water capacity and does not meet increased demand of the Station. Water Quality results indicate that the drinking water is of good quality.

1.2.2 EXISTING SEWAGE LAGOON AND WASTEWATER TREATMENT

- .1 The wastewater facilities consist of a storage holding tank, a pump house and 2230m³ facultative single celled lagoon that discharges effluent twice a year during the summer into Slidre Fjord. Wastewater in the holding tank inside the weather station building is discharged to the sewage lagoon by a 150 mm heat traced pipeline.

1.2.3 USER DEPARTMENT

- .1 The User Department referred to throughout the TOR is Environment Canada (EC)
- .2 Environment Canada's Mission is protecting the environment, conserving the country's natural heritage, and providing weather and meteorological information to keep Canadians informed and safe.

1.2.4 EXISTING CONDITIONS

- .1 Eureka, Nunavut is located on Slidre Fjord, midway up on Ellesmere in the Canadian Arctic (see previous consultant reports). The site is the second-most northerly permanently inhabited site on Earth. The site has Environment Canada's High Arctic Weather Station (HAWS) network, and also supports ongoing atmospheric research as well as Canadian Forces activities. The facilities at Eureka include the Main Weather Station Complex (including nearby water reservoir, sewage lagoon), the Polar Environment atmospheric Research Laboratory (PEARL) located approx 10km west of the weather complex and, Fort Eureka (DND) located adjacent to the airstrip located approx 1km west of the Main Weather Station complex.
- .2 The site is in the High Arctic and has an extreme climate with very long cold winters and a short summer construction period. The entire site is underlain by permafrost which presumably extends to great depth. The seasonal thaw ranges from 1 to 1.5m below existing grade. The station is located in a low-lying plain between higher ridges in the west (Skull Point) and east (Black Top ridge), and is bound to the west by Station Creek, flowing North-South immediately west of the station.



I.2.5 CONSTRAINTS, CHALLENGES AND RESTRICTIONS

- .1 Several challenges are presented by Eureka's High Arctic location:
 - .1 Extremely cold temperatures: Measures are necessary to prevent freezing of water, wastewater and equipment.
 - .2 A relatively short construction period: Extended darkness and extreme cold limit length of construction period.
 - .3 Shipment of Construction materials: The sealift arrives in Eureka only one time per year, making it vitally important that all bulk goods are identified and shipped when required.
 - .4 Sealift capacity (weight and volume): the capacity of off-loading equipment imposes restrictions on shipped goods and equipment.
 - .5 Absence of skilled trades for maintenance: Although Eureka does have maintenance personnel on site, bringing specialized skilled trades to Eureka requires several days advance notice (to confirm accommodation availability) and is very expensive. For these reasons it is critical that systems are as robust as possible and do not require maintenance by special crews and/or equipment. Also the absence of available communications/bandwidth for data communications making remote dial-in assessments or evaluation of equipment functions impossible.
 - .6 Demolition: The landfill site at Eureka is not an engineered landfill site. Therefore hazardous substances require shipping/removal or alternatively, the construction of an approved engineered landfill site.
 - .7 Permafrost: The site is in a continuous permafrost region with 10-20% ground ice content. Specialized design and construction knowledge is required. Blasting may be more efficient than excavation.
- .2 Environment Canada personnel both live and work at the Eureka Weather Station. Continuous operation of sewer and water facilities must be maintained. Although there is extensive sunlight during the short construction season, construction noise cannot interfere with staff's ability to sleep.
- .3 Environmental conditions must be kept under control during all phases of the work.
- .4 Project phasing must be planned to ensure that disruption to the daily operation of the facilities is kept to a minimum and all water and sewer services are maintained.
- .5 The project scope must be tailored to meet Environment Canada's overall construction budget. Diligent cost estimating and cost control is required. The contract deliverables for the project components must be provided to meet the overall schedule identified in Section I.6.
- .6 The Consultant and Contractor is required to obtain 'reliability' status security clearances for all his/her firm's personnel.

I.2.6 HAZARDOUS MATERIALS

- .1 Estimated volumes of hydrocarbon soil and sediment:
 - .1 9480 m3 of PHC F2 impacted soil
 - .2 1030 m3 of PHC F3 impacted soil
- .2 The Consultant is responsible for identifying and describing the hazardous material abatement work to be carried out by the Contractor.

I.2.7 PROJECT DELIVERY APPROACH



- .1 PWGSC reserves the right to determine whether the construction work described in this TOR may be tendered and awarded as either one or two construction contracts. The project(s) will use a design-bid-build approach.

I.3 SUMMARY OF DESIGN WORK

I.3.1 GENERAL

- .1 The design intent of the project is to provide new water supply and waste water systems that:
 - .1 Are effective, efficient and for intended use ;
 - .2 Meet current Codes, Standards and guidelines;
 - .3 Optimizes performance of the system;
 - .4 Are designed for ease of maintenance;
 - .5 Minimize long-term maintenance costs through provision of suitable corrosion prevention and durability features;
 - .6 Meet Sustainable Development requirements
 - .7 Use industry proven materials and avoidance of experimental materials; and
 - .8 Is cost effective considering both initial cost and operation & maintenance costs over a life cycle of 25 years.

I.3.2 NEW WATER RESERVOIR AND WATER TREATMENT PLANT

- .1 A new above ground 26,400m³ water reservoir and water treatment system, including Station Creek intake, new pumps and pump house, and water conveyance pipes and all appurtenances. Reservoir to be filled annually from Station Creek and provide sufficient supply for a maximum of 60 people
 - .1 Use the reservoir location previously recommended and defined as Option 3 in WP 2010.
 - .2 Utilize recommendations made in WP 2014 as basis for design.
 - .3 Carry out pre-design tasks outlined in WP 2014 Item 10.Recomendations.
 - .4 Investigate, analyse, recommend and design appropriate measures for water conservation.
- .2 Remediate petroleum hydrocarbon contaminated soil (PHC) within the footprint of the proposed water reservoir and related infrastructure. The volume of PHC within the footprint of the proposed reservoir is a relatively small amount of the PHC that has been identified at HAWS. The remediation method/strategy for this project must take into consideration and allow for future remediation of remaining contaminated soil at HAWS.
- .3 Water supply shall be maintained during construction with minimum approved disruption.
- .4 Potable water shall meet Canadian Water Quality Guidelines and Nunavut requirements including "Guidelines for Effluent Quality and Wastewater Treatment at Federal Establishments".
- .5 New reservoir to be lined to prevent the potential contamination from groundwater or adjacent petroleum contaminated soil. The liner shall be of low permeability, chemically



resistant to petroleum and suitable for the climate. The liner shall be protected both sides with sand or geotextile to prevent damage during construction or due to ice movement.

- .6 New reservoir to have a perforated sub-drain system to collect groundwater. Groundwater to be treated before discharging to the Station Creek (downstream side of raw water intake). Due to the proximity to PHC contaminated soil, subsurface contamination migration routes must be considered in the design of groundwater collection system.
- .7 A berm and collection swale along east side of the reservoir to intercept potential contaminated surface water.
- .8 Overhead truck fill spout at Pump House building to serve as backup source location in case the water piping freezes.
- .9 Mechanical systems for new ancillary buildings shall include:
 - .1 Heating (electrical recommended however Consultant to confirm). Heating to be controlled by thermostat with low temperature alarm.
 - .2 Ventilation as required.
 - .3 Plumbing as required.
 - .4 Fire protection as required.
 - .5 Controls including system monitoring.
- .10 Existing water reservoir to be decommissioned including obsolete related infrastructure after the new reservoir is in operation. Significant PHC contamination exists within the drainage channel adjacent to the east side of the current reservoir. Decommissioning must include remediation of the PHC contaminated soil and sediment in the vicinity.

I.3.3 NEW WASTEWATER TREATMENT SYSTEM

- .1 New sequencing batch reactor and upgrades to sewage lagoon (as outlined in AECOM I2 report as basis for design) including wastewater force main or gravity pipes and pumps and pumphouse.
 - .1 Utilize recommendations made in WP 2010 and AECOM Sewage Treatment Infrastructure Feasibility and Code Review as basis for design, including upgrades to existing sewage lagoon.
 - .2 Assess suitability of existing infrastructure including wastewater storage holding tank, with the goal of salvaging as much of the existing infrastructure as possible. Identify potential upgrades to the system.
 - .3 Confirm the size of holding tank required for most efficient operation.
 - .4 Confirm that the existing building can accommodate all new system components or design building addition if required.
 - .5 Provide modelling of the proposed design to determine size and performance.
- .2 Sewage lagoon and wastewater treatment system will be designed to carry all of the wastewater including any reject water.
- .3 All obsolete infrastructure to be decommissioned and disposed in an environmentally friendly manner after the new sewage treatment system is in operation.
- .4 Assess options for servicing of the sewage treatment plant. Make recommendation for servicing of plant. Incorporate into construction documents as necessary



I.3.4 EMERGENCY WATER SUPPLY

- .1 Utilize recommendations made in WP 2014 as basis for design for emergency water supply.
- .2 New Portable desalination treatment including water conveyance and distribution system and storage tanks. Refer to Article 7.3.4 in WP 2014.

I.3.5 CIVIL/MUNICIPAL REQUIREMENTS

- .1 New access roads shall be designed specifically for a permafrost conditions.
- .2 Roads are required to provide access to new infrastructure facilities
- .3 Indicate on drawings the location of aggregate sources sites available for construction.
- .4 Incorporate appropriate measures such as heat trace to prevent freezing of all water and waste water pipes and related infrastructure.
- .5 New utilidors as required.

I.3.6 ELECTRICAL REQUIREMENTS

- .1 Assess and confirm capacity of existing power 600volt services to support the operation of all equipment associated with this project. If there is insufficient capacity, make recommendations to upgrade or add to the existing power generation system.
- .2 If the existing power generation system has capacity to support this project, provide all necessary electrical systems as required including:
 - .1 Essential and non-essential power.
 - .2 Essential and non-essential main electrical distributions, panel boards and transformers (dry type).
 - .3 Power distribution including overhead cable routes.
 - .4 Equipment and feeder route location, conduit routes, grounding.
 - .5 Lightning protection.
 - .6 Local and remote systems monitoring.
- .3 Electrical systems include service, power, lighting (including night lights), controls, monitoring (non-essential and essential sources) and environmental equipment requirements. Remote systems monitoring to be annunciated in Operations Complex building in the weather office room and in the powerhouse. Electrical service, distribution and panel boards and equipment and wiring methods to meet environment requirements and to include for future growth plus 25% spare capacity.

I.3.7 ARCHITECTURAL REQUIREMENTS

- .1 General
 - .1 New enclosures and/or modifications or additions to existing buildings as required to accommodate new water treatment system and wastewater treatment system.
- .2 Ancillary Buildings
 - .1 New ancillary buildings as required to house mechanical equipment. Buildings shall be fully insulated, non-combustible construction, steel framed building on a concrete pad. Buildings are to be equipped with freezer doors.



- .3 Existing Station Building (Main Operations Building)
 - .1 Modifications or new extension to the existing Station Building as required for new water treatment System and wastewater system.
 - .2 Signage as required (interior and exterior).

I.3.8 SERVICE CONTRACT REQUIREMENTS

- .1 Develop the Service Contract Requirements for the operation and Maintenance (O&M) of the Sewage Treatment system.
- .2 The Service contract shall be for three (3) years with the option to renew for another three (3) years,
- .3 In consultation with EC, define and establish complete parameters & associated activities for the Service Contract Requirements. The Service Contract Requirements shall include:
 - Number of Service Trips per year
 - Response time (phone) to Emergencies:
 - Response time (on site) for emergencies
 - Mechanical Parts & Repair
 - Scheduled maintenance and operational checks
 - Emergency procedures
 - Inventory of Replacement Parts & consumables
 - Sludge /Condensate Handling
 - Chemicals
 - Remote Monitoring
- .4 The Consultant shall incorporate the O&M Service Contract requirements in the contract documents.

I.4 SUMMARY OF SERVICES AND QUALIFICATIONS

I.4.1 SUMMARY

The consultant team for this project must be capable of providing the following services:

Civil engineering	Commissioning
Municipal engineering	Project scheduling
Process engineering	Cost estimating and cost control
Structural engineering	Risk management
Geotechnical engineering	Contaminated site management
Mechanical engineering	Sustainable development
Electrical engineering	Hazardous waste management
Architectural technology	Resident Construction Services



The Consultant shall provide on-site resident construction service.

I.5 CONSTRUCTION COST ESTIMATE

I. Class "D" Construction cost estimate (excluding contingencies) is as follows:

Water Treatment Infrastructure:	\$7.67M (2010 Cdn Dollars)
Sewage Treatment Infrastructure:	\$1.23M (2012 Cdn Dollars)
Total:	\$8.90M



I.6 SCHEDULE

I.6.1 GENERAL

- .1 The project is to be delivered, ready for acceptance in accordance with the project milestones identified below.
- .2 Prepare a Project Schedule, in accordance with the milestone list.

CONTRACT 1:

Water Treatment Infrastructure Project Phase :	Milestone Completion Date
Consultant Contract award	March 2015
Consultant Pre-design Site Visit	July 2015
Complete Construction Documents and Class A estimate	Dec 2015
Tender and Mandatory Bidder Site Visit	March 2016
Award Construction contract	May 2016
Sealift and mobilize	August 2016
Construction	Summer 2017
Construction Completion	October 2017
Project Closeout and Warranty Period	October 2018

CONTRACT 2:

Sewage Treatment Infrastructure Project Phase :	Milestone Completion Date
Consultant Contract award	March 2015
Consultant Pre-design Site Visit	July 2015
Complete Construction Documents and Class A estimate	Dec 2015
Tender and Mandatory Bidder Site Visit	March 2016
Award Construction contract	May 2016
Sealift and mobilize	August 2016
Construction	Summer 2017 & 2018
Construction Completion	October 2018
Project Closeout and Warranty Period	November 2019



I.7 EXISTING DOCUMENTATION

I.7.1 AVAILABLE FOR THE CONSULTANT

- .1 Copies of all pertinent reports will be made available to the Consultant including:
 - .1 Building Condition Report, Eureka Facilities, dated 2006, prepared by PWGSC Ontario Region
 - .2 Building Condition Report, Eureka Facilities, dated 2014, prepared by PWGSC Ontario Region (Note: this report currently being prepared)
 - .3 Environmental Screening – Eureka High Arctic Weather Station Contaminated Soil Remediation, dated July 2000 Prepared by PWGSC Environmental Services
 - .4 2012 Supplemental Investigation Eureka high Arctic Weather Station, Nunavut, dated March 28, 2013, prepared by Franz Environmental Inc and Senes Consultant Ltd.
 - .5 Eureka High Arctic Weather station Long-Term Monitoring Program 2013 – Year 1 dated November 26, 2013 prepared by Franz Environmental Inc and Senes Consultant Ltd.
 - .6 Remediation Planning and Remedial Action Plan – Feasibility Study, Eureka High Arctic Weather Station FY 12/13 dated March 28, 2013 prepared by Franz Environmental Inc and Senes Consultant Ltd.
 - .7 Long-Term Monitoring Plan dated March 28, 2013 prepared by Franz Environmental Inc and Senes Consultant Ltd.
 - .8 Remedial Action Plan, Eureka High Arctic Weather Station FY 12/13 dated March 28, 2013 prepared by Franz Environmental Inc and Senes Consultant Ltd.
- .2 Copies of all pertinent drawings will be made available to the Consultant including:
 - .1 Worley Parsons 2014 Drawings (AutoCad format)
 - .1 Dwg. 1 Site Plan
 - .2 Dwg. 2 Typical Pond Section
 - .3 Dwg. 3 Detail
 - .2 Eureka Operations Complex (Station Building) prepared by PWGSC
 - .1 Dwg WAI- WAI1 (Architectural)
 - .2 Dwg WSI-WSI6 (Structural)
 - .3 Dwg WMI-WM8 (Mechanical)
 - .4 Dwg WEI- WE8 (Electrical)
- .3 Limited as-built drawings and Operation & Maintenance Manuals will be available on the project site and the Consultant will be responsible for verifying the accuracy of the information incorporated into the design.

I.7.2 DISCLAIMER

- .1 Reference information will be available in the language in which it is written.
- .2 The documentation may be unreliable and is offered, “as is” for the information of the Consultant.



I.8 CODES, ACTS, STANDARDS, REGULATIONS

- .1 A listing of Codes, Acts, Standards and Guidelines potentially applicable to this project are contained in the GP&S Document and also include:
 - .1 Guidelines for Effluent Quality and Wastewater Treatment at Federal Establishments.
 - .2 Nunavut Water Board (NWB) license effluent requirements.
 - .3 Canadian Drinking Water Quality Guidelines
 - .4 National Building Code requirements
- .2 The Authorities Having Jurisdiction (AHJ) on this project are:
 - .1 The local AHJs;
 - .2 Treasury Board of Canada.
- .3 The Consultant must identify, analyze and design the project in accordance with the requirements of all AHJs and all applicable Codes, Acts, Standards and Guidelines and Legislation.
 - .1 The applicability of various Codes, Acts, Standards and Guidelines listed in the GP&S document arise out of direct and indirect references in documents which apply to Federal buildings, such as the Canada Labour Code.
 - .2 The consultant team must be fully versed with the legislation and requirements that are unique to:
 - .1 Federal Government buildings and associated infrastructure facilities.
 - .2 Projects in Nunavut, including land claims agreements, water quality guidelines and regulations, CEPA (Canadian Environmental Protection Act), Arctic Waters Pollution Prevention Act, Fisheries Act.
 - .3 Federal Government projects tendered through Public Works & Government Services Canada.

I.9 HEALTH AND SAFETY

- .1 PWGSC recognizes its obligation to protect health and ensure safety of all persons working on projects for which it manages consultant and construction contracts. It also recognizes that federal occupational health and safety legislation places certain specific responsibilities upon PWGSC as the employer and on Other Government Departments as owners of the work place.
- .2 In order to meet those responsibilities, PWGSC insists that their consultants implement due diligence to help ensure that roles and responsibilities assigned under Part II of the Canada Labour Code and the Canada Occupations Health and Safety Regulations are implemented and observed when involving consultant staff to undertake works on federal sites and work places.

2 REQUIRED SERVICES

2.1 GENERAL REQUIREMENTS

2.1.1 SERVICES

- .1 The services to be provided by the Consultant include but not limited to the following:
 - .1 Thoroughly review all existing documentation



- .2 Visit the site (all required disciplines) to record and verify and assess existing site conditions including all utilities and services in proximity to the work areas and prepare up-to-date drawings.
- .3 Review, reconfirm and update project requirements including design period, design population, water demand (including Department of National Defence (DND) requirements and fire protection), creek water availability (average flows and volumes), and waste water quantities.
- .4 Review existing recommendations in previous studies. Confirm if existing recommendations are valid.
- .5 Review existing topographic survey and geotechnical data. Conduct additional topographic and geotechnical survey if required upon authorization from DR.
- .6 Review and confirm that the construction budget cost is adequate. If not adequate, provide options, analysis and recommendations for carrying out work within budget.
- .7 Analyze options for construction sequence and phasing, including commissioning and decommissioning. Include in construction documentation.
- .8 Prepare construction documents, including drawings and specifications. Specifications shall be produced utilizing the most current version of the National Master Specification database.
- .9 Prepare cost estimates at milestones indicated in Required Services section of this document.
- .10 Provide Resident site Representative Services.
- .11 Review as built data submitted by contractor and prepare as built CADD drawings.

2.1.2 COST MANAGEMENT

- I. Effective cost estimating and cost control is of prime importance. The construction cost estimate shall be provided in a combined unit price and lump sum format. Where possible, the civil works shall be provided in unit price format.

2.1.3 TIME MANAGEMENT

- .I Effective time control is extremely crucial. Project schedules shall be established and monitored using current project management tools and techniques, such as Critical Path scheduling.

2.1.4 RISK MANAGEMENT

- .1 A Risk Management Strategy is crucial for PWGSC Project Management and integrates project planning into procurement planning. All the Stakeholders of a project will be an integral part of the Risk Management Strategy, culminating into an integrated product team.
- .2 The Consultant is to prepare a Project Risk management Report at Concept Design and Construction Documents stages, include inputs from sub-consultants and submit to Departmental Representative for review.

2.2 PROJECT REVIEW AND APPROVAL

2.2.1 GENERAL

- .I Comply with all applicable laws and regulatory requirements as required by the General Conditions of the Contract.

2.2.2 FEDERAL GOVERNMENT

- .I The federal authorities having jurisdiction over this project are:



- .1 Environment Canada for project program review;
- .2 Environment Canada for conformance with federal environmental regulations
- .3 PWGSC and Environment Canada.

2.2.3 REVIEWS, APPROVALS AND PRESENTATIONS

- .1 Each submission at each stage of the project is subject to reviews by the Departmental Representative, Environment Canada representatives, Environment Canada site personnel, AANDC/NWB Representatives, and PWGSC Architectural Engineering Centre of Expertise (AECOE) group.
- .2 For the AECOE review at each stage:
 - .1 Review submissions to be posted on Buzzsaw in PDF format;
 - .2 Expected turn-around time for reviews is two (2) weeks;
 - .3 The consultant team will receive review comments in the form of an editable MS Word document or MS Excel document;
 - .4 The consultant shall provide a single coordinated written response to the comments.
 - .5 Refer to the Attached Chart of Reviews and Approvals.



Chart of Reviews (R) and Approvals (A)	PWGSC		EC		AANDC/ NWB	
	R	A	R	A	R	A
Pre- Design Concept						
Pre-Design Concept Report Submission	X	X	X	X		
Class 'C' Estimate(s) and cash flow	X	X	X	X		
Schedule	X	X	X	X		
One (I) Formal Submission						
Design Report						
Design Report Submission	X	X	X	X	X	
Class 'B' Estimate(s) and cash flow by multiyear	X	X	X	X		
Schedule	X	X	X	X		
One (I) Formal Submission						
Construction Documents						
33% Design Submission	X	X	X	X	X	
66% Design Submission Drawings ,Specs, Unit Price Table & Updated Class "B"	X	X	X	X	X	
99% Design Submission Drawings ,Specs Unit Price Table	X	X	X	X	X	
Class 'A' Estimate(s) and cash flow by multiyear	X	X	X	X		
Schedule	X	X	X	X		
Final Tender Documents (100%)	X	X	X	X	X	
One (I) Formal Submissions for each of the above						

2.3 PRE-DESIGN SERVICE

2.3.1 GENERAL

- .1 The Consultant Team will review and analyze all available project information, consult with the Departmental Representative, and deliver a comprehensive Pre-design Report.
- .2 The Approved Pre-Design Report will consolidate the Scope of the design and will be utilized as the benchmark project control document to monitor progress of the project.

2.3.2 SCOPE AND ACTIVITIES

- .1 Visit the site to record and verify existing site conditions including all utilities and services in proximity to the work areas and prepare up-to-date drawings.



- .2 Conduct survey as required to confirm that existing topographic survey information is accurate. Conduct additional topographic and geotechnical survey if required upon authorization from DR.
- .3 Review and confirm that the construction budget cost is adequate
- .4 Assess capacity of existing power 600volt services to support the operation of all equipment associated with this project. Confirm capacity of existing services to support the operation of all equipment with this project. If there is insufficient capacity, make recommendations to upgrade or add to the existing power generation system.
- .5 Analyse the project requirements including any amendments.
- .6 Review all other available existing material related to the project including requirements identified in the TOR.
- .7 Identify and verify all Authorities Having Jurisdiction (AHJ) over the codes, regulations and standards that apply to the projects.
- .8 Identify and analyze all Codes, Acts, Standards and Guidelines that apply to this project.
- .9 Identify all additional information that will be needed to deliver the project.
- .10 Assess the scope of work to ensure that all project goals will be met, including verification of the suitability of the recommendations which form the basis of design for this project. Make recommendations and identify options (including capital and operational cost estimates) if other approaches are considered more suitable. However PWGSC reserves the right to maintain the scope of work as laid out in this TOR.
- .11 Establish the sustainability targets.
- .12 Confirm Cx requirements and document and deliver the Cx components of the Owners Project Requirements (OPR) documents. Provide updated cost estimates for recommended option.
- .13 Provide a written assessment/ engineering opinion of the recommended options for the water treatment, sewage treatment, and service contracts for both.

2.3.3 DELIVERABLES

- .1 A Draft Pre-Design Report that will contain at a minimum:
 - .1 An Executive Summary;
 - .2 Necessary sections to document and present the items listed in the Scope and Activities section;
 - .3 Class "C" cost estimate; and
 - .4 An Updated schedule.
 - .5 Cx focused OPR identifying Owner, design consultant Cx requirements.
 - .6 Cx Plan outline, including preliminary outline, refer Cx Plan definition
- .2 Final Pre-Design Report with a written response to comments.

2.4 DESIGN SERVICE

2.4.1 GENERAL

- .1 The Consultant Team will review and analyze all available project information, consult with the Departmental Representative, and deliver a comprehensive Design Report.

2.4.2 SCOPE & ACTIVITIES

- .1 The Consultant shall:



- .1 Identify viable alternative options (for key elements) in the recommendations which form the Basis of Design for the work. Describe and develop the options so that the DR, in consultation with EC, can assess and evaluate the suitability of the options. ;
- .2 Develop a schematic design in sufficient detail to clearly indicate all key elements in the design. Develop the design with regard to the project goals including cost and schedule,
- .3 Review, validate and update the details of the Project requirements,
- .4 Update the sustainable design strategy;
- .5 Update the budget, schedule and risk analysis and identify any conflicts that will need to be addressed with respect to scope, quality, schedule, cost;
 - .1 Prepare a Class 'B' Cost Estimate.

2.4.3 DELIVERABLES

- .1 The Consultant shall:
 - .1 Prepare and submit the Design Report, for review and acceptance by the Departmental Representative;
 - .1 Refer to the GP&S Document for contents and report content.
 - .2 Prepare a detailed Class 'B' estimate for each option.
 - .3 Schedule
 - .1 Provide updated milestone project schedule including allowances for reviews and approvals for each stage of the project life cycle;
 - .4 Risk Analysis
 - .1 Updated report on any deviations that may affect cost or schedule and recommend corrective measures,
 - .5 Updated Project Log

2.5 CONSTRUCTION DOCUMENTATION SERVICE

2.5.1 GENERAL

- .1 The objective of this stage is to translate the approved design into construction drawings and specifications for the purpose of tendering.
- .2 The Consultant must obtain written authorization from the Departmental Representative before proceeding with Construction Documents.

2.5.2 SCOPE AND ACTIVITIES

- .1 The Consultant shall:
 - .1 Create construction documents in accordance with the General P&S Document;
 - .2 Design according to the budget and schedule;
 - .1 Non-compliances will require revisions to the contract documents.
 - .3 Update the cost estimates;
 - .1 Provide a cost breakdown by unit rate and/or trade for review of bids and comparison with the successful Contractor's cost breakdown.
 - .4 Update the project schedule;
 - .5 Establish a quality control process for the construction and contract administration stage.
 - .6 Incorporate the requirements for the O&M Service Contract Service



2.5.3 DELIVERABLES

- .1 33% complete Construction Documents.
 - .1 An updated project schedule.
 - .2 Basis of Design (BOD) updates for inclusion with the Owners Performance Requirements (OPR)
 - .3 Construction Drawings
 - .1 Drawings shall reflect 33% completeness with all Plan, Elevation, Details, and Sections shown.
 - .4 Specifications
 - .1 Specification Index
 - .2 Division I (draft) including Commissioning Sections.
 - .3 Consultant shall specify requirements for the contractor to verify the quantities and submit a list of material and equipment to prevent delay in construction schedule.
 - .4 Cx Plan as per CSA Z320-11 and PWGSC Commissioning Manual (CP.1) including but not limited to;
 - .1 Procedure, verification procedures and checklists for Field Reviews, Static Verification, Start-up and Functional Performance Testing for each system from construction through to and including post occupancy.
 - .2 Training Plan and Materials
 - .3 Commissioning risk assessment
- .2 66% complete Construction Documents,
 - .1 This submission incorporates all revisions required by the review of the previous submission.
 - .2 The Consultant shall submit documents to the PWGSC Departmental Representative.
 - .3 The submittal shall include:
 - .1 An updated Class "B" Estimate.
 - .2 Unit price tables (if applicable).
 - .3 An updated project schedule.
 - .4 Construction Drawings.
 - .1 Drawings shall reflect 66% completeness
 - .5 Specifications.
 - .1 Specifications shall be 66% complete and coordinated with the Drawings.
 - .6 Revise & Update Cx Plan to 66%
 - .1 Include Sample forms
 - .7 Draft scope for the O&M service contract requirements
 - .8 Response to PWGSC written comments of previous submittal
- .3 99% complete Construction Documents, fully coordinated as if ready for tender.
 - .1 This submission incorporates all revisions required by the review of the previous submission.
 - .2 The Consultant shall submit documents to the PWGSC Departmental Representative.



- .3 The submittal shall include:
 - .1 A Class “A” Estimate.
 - .2 Unit price tables (if applicable).
 - .3 An updated project schedule.
 - .4 Construction Drawings.
 - .1 Drawings shall reflect 99% completeness with a complete design without any unfinished details.
 - .5 Complete Specifications.
 - .1 Specifications shall be complete with all sections and thoroughly coordinated with the Drawings.
 - .6 Revise & Update Cx Plan to 99%
 - .1 Include Sample forms
 - .7 Response to PWGSC written comments of previous submittal.
- .4 Final (100%) Construction Documents ready for tendering.
 - .1 This submission incorporates all revisions required by the review of the previous submission.
 - .2 The Consultant shall submit documents to the Departmental Representative, HRSDC, local municipality, or any other Authority having jurisdiction.
 - .3 The submittal shall include:
 - .1 An updated Class ‘A’ cost estimate.
 - .2 Unit price tables (if applicable).
 - .3 An updated project schedule.
 - .4 Construction Drawings & Specifications
 - .1 As per the General P&S Document..
 - .5 Response to PWGSC written comments of previous submittal.
 - .6 Advise the Departmental Representative of all issues raised by other officials and all Consultants’ responses.
 - .4 The Consultant must confirm in writing that:
 - .1 The documents are ready to be issued for tender;
 - .2 The checklist in the GP&S Document has been reviewed in concert with the requirements of the Consultant Agreement; and
 - .3 A full review and coordination of the Contract Documents are complete and in accordance with professional standard of care.

2.6 TENDER CALL, BID EVALUATION & CONSTRUCTION CONTRACT AWARD

2.6.1 GENERAL

- .1 The object of this phase is to support the Departmental Representative with the tender.
- .2 The Contract Authority for this project is the Real Property Contracting branch (RPC) of PWGSC.

2.6.2 SCOPE AND ACTIVITIES

- .1 When requested, the Consultant will be required to;



- .1 Provide the Departmental Representative with information required by bidders to interpret construction documents.
- .2 Prepare addenda, in response to all questions within two (2) business days during the bidding period and submit to Departmental Representative,
- .3 Attend pre-tender site visits,
- .4 During Bid Review and Analysis, assist the Departmental Representative, as required, by analyzing and reviewing the submitted bid.

2.7 CONSTRUCTION SUPPORT SERVICE

2.7.1 GENERAL

- .1 The object of this phase is to support the Departmental Representative with the construction phase and ensure the quality, budget and schedule of the project.

2.7.2 SCOPE AND ACTIVITIES

- .1 The Consultant shall:
 - .1 Provide field reviews and as required to fulfil the Consultant's professional obligations to monitor the construction activities throughout the construction period and keep Departmental Representative informed of work progress,
 - .1 Reject unsatisfactory work,
 - .2 Provide written reports.
 - .2 Authorize special tests, inspections and minor works that do not impact project cost and schedule,
 - .1 Provide the Departmental Representative with all material specifications, mixes and tests outside the scope of the Contractor.
 - .3 Review shop drawings and provide copies to the Departmental Representative.
 - .4 Review and comment on the Contractor's schedule,
 - .5 Interpret contract documents as required and provide any additional drawings or specifications required to clarify, interpret or supplement Construction Documents,
 - .6 Review, comment and make recommendations on various documents such as Contractor's Progress Claims and updated schedules,
 - .7 Provide timely technical advice,
 - .8 Recommend the amounts owing to the Contractor based on work progress,
 - .9 Assist the Departmental Representative to prepare Certificate of Substantial Completion and provide sign-off,
 - .10 For Changes to the work:
 - .1 Assist the Departmental Representative to prepare CCN's and COs, to be issued by the Departmental Representative.
 - .11 For Cost Estimating Services:
 - .1 Evaluate change orders; claims, work completed and cash flow.
 - .2 After issue of contract provide details for evaluating the project's cost performance
 - .12 For Scheduling Services:
 - .1 Review contractor's monthly schedule report and report findings and recommendations to PWGSC for further discussion with the Contractor.
 - .13 Permits



- .1 Assist the Contractor and provide required documentation in order to obtain the building permit.

2.8 RESIDENT CONSTRUCTION SERVICE

2.8.1 GENERAL

- .1 The purpose of this phase is to ensure the presence of the Consultant's representative on-site to perform the functions described below.
- .2 Provide liaison with the Departmental Representative and other stakeholders involved in the Work.
- .3 Include 300 hours of on-site resident construction service.

2.8.2 SCOPE AND SERVICES

- .1 Provide full time resident inspection, coordination and monitoring during the construction work, to ensure successful completion of the project. This can be done by one or more individuals, depending upon the complexity of the work and skills required to provide the services.
- .2 The Resident Site Representative (RSR) will be required to provide continuous site review (including when construction operations perform multiple shifts per day)
- .3 The RSR must have extensive site experience and previous experience in providing resident site services.
- .4 Contract documents will be interpreted only by the Consultant. However, the RSR may provide the Consultant with information regarding site conditions and may relay instructions from the Consultant to the Contractor
- .5 The RSR shall not authorize or order any change in work
- .6 Maintain daily log of all construction work placed that includes:
 - .1 Weather conditions, particularly unusual weather relative to construction activities in progress,
 - .2 Major material and equipment deliveries,
 - .3 Daily activities and major work done,
 - .4 Start, stop or completion of activities,
 - .5 Presence of inspection and testing firms, tests taken, results,
 - .6 Unusual site conditions experienced,
 - .7 Significant developments, remarks,
 - .8 Special visitors on-site,
 - .9 Authorities given Contractor to undertake certain or hazardous works,
 - .10 Environmental incidents,
 - .11 Reports, instructions from Appropriate Authorities Response Actions,
 - .12 Stop work requests by PWGSC
- .7 Inspect all phases of the work in progress for compliance with the tender documents.
- .8 Identify unsatisfactory work, and after consultation with the Consultant, if necessary, Stop the work, or give orders to protect the safety of the workers or Crown property in Emergencies.
- .9 Verify quantities of materials received
- .10 The Resident Site representatives shall attend all job-site meetings.



- .11 Provide information regarding job conditions to the Departmental Representative that may impact the project scope, schedule or budget.
- .12 Notify the Departmental Representative of any potential change orders.
- .13 Notify the Consultant and DR of any problems that may delay the work.
- .14 Assist the Consultant and DR in evaluation and preparation of of Change Orders.
- .15 Convey the Consultant's instructions regarding the required standards of workmanship to the Contractor
- .16 Communicate formally with the Contractor in writing via memorandum.
- .17 Accompany PWGSC representatives on inspections
- .18 Prepare bi-weekly reports for the Departmental Representative that includes:
 - .1 Daily logs
 - .2 Progress relative to schedule,
 - .3 Major activities commencing or completed during the week; main activities now in progress,
 - .4 Major deliveries of materials and / or equipment,
 - .5 Difficulties which may cause delays in completion,
 - .6 Materials and labour needed immediately,
 - .7 Cost estimates of work completed and materials delivered,
 - .8 Outstanding information or action required by Consultant or PWGSC,
 - .9 Work force,
 - .10 Weather,
 - .11 Remarks,
 - .12 Accidents on-site,
 - .13 Life safety or building hazards caused by the work, the Contractor.
- .19 Maintain Site Records that include:
 - .1 Contract and Tender Documents updated with all changes.
 - .2 Approved Shop Drawings,
 - .3 Approved Samples,
 - .4 Site Instructions,
 - .5 Contemplated Change Orders,
 - .6 Change Orders,
 - .7 Memoranda,
 - .8 Test and Deficiency Reports,
 - .9 Updated Progress schedule
 - .10 Correspondence and Minutes of Meeting,
 - .11 Names, addresses, telephone numbers of PWGSC representatives, Consultant, Contractors, and sub-trades key personnel associated with the contract, including home telephone numbers in case of emergencies.
- .20 Follow approved protocol for the security and protection of documents and information held on-site.
- .21 Review monthly the accuracy of as-built marked up drawings kept by the Contractor and report any discrepancies or deficiencies to the Consultant.



- .22 Report if materials and equipment are being incorporated into the project prior to approval of relative shop drawings or samples.
- .23 Assist in the preparation of all deficiency, interim, preliminary, and final reports in collaboration with PWGSC and Consultant representatives.
- .24 Carry out the measurement of all work to be done on a unit-cost basis.
- .25 Examine all site conditions and methods to be used by the Contractor undertaking hazardous operations
- .26 Inspect the areas where hazardous work is under way to ensure that the Contractor is maintaining the agreed safety standards
- .27 The Resident Site representatives shall not:
 - .1 Authorize deviations from the contract documents,
 - .2 Approve shop drawings or samples,
 - .3 Provide instruction to the contractor in matters which could potentially affect the cost and schedule of the project, without first obtaining approval from Departmental Representative.
 - .4 Accept any work or portions of,
 - .5 Enter into the area of responsibility of the Contractor's Field Superintendent,
 - .6 Stop the work unless convinced that an emergency exists as noted above.

2.8.3 DELIVERABLES

- .1 Bi-weekly written reports (including daily logs)
- .2 Memorandum issued to the Contractor.
- .3 Other reports or surveys as may be requested by the Departmental Representative.

2.9 COMMISSIONING SERVICE

2.9.1 GENERAL

- .1 The objective of the Commissioning Plan is to assist in the delivery of a fully functional water and wastewater treatment facility for both the operational and performance requirements of Environment Canada at the Eureka site.

2.9.2 SCOPE AND SERVICES

- .1 Integrated and comprehensive commissioning for the project in accordance with the requirements in the P&S document and PWGSC Commissioning Manual (CP.1).
- .2 Provide commissioning services on the basis of CSA Z320-11, Building Commissioning Standard including owner requirements.
 - .1 Refer to Section 4.1.7 Definition of Commissioning OPR (Cx OPR) Owner Project Requirements related to commissioning.
- .3 Provide and update the Basis of Design (BOD) document throughout the Cx Process and is to be evaluated against the OPR performance requirements.
- .4 The OPR and BOD documents serve as constant performance benchmarks throughout the Commissioning Process.
- .5 The project will be accepted and the Certificate of Substantial Completion will be issued only after the Contractor meets the requirements of the GCs and:
 - .1 Successful completion of integrated systems tests, life safety support systems tests to determine if the new facilities function in accordance with the Contract documents



- .2 All test certificates, commissioning reports and commissioning documentation have been approved by the Departmental Representative.
- .6 Identify requirements for spare parts, special tools and maintenance materials and include additional parts as part of the proposed system designs.
- .7 During the Construction Phase:
 - .1 Monitor and report on contract commissioning activities,
 - .2 Review and approve all Performance Verifications (PV) report forms as they are completed by the contractor, instruments to be used, and instrument calibration, and incorporate relevant data to commissioning documentation from reviewed shop drawings and installed component data.
 - .3 Review commissioning schedule,
 - .4 Witness all component, system and integrated systems tests,
 - .5 Review and comment on commissioning test results,
 - .6 Provide advice and recommendations for fine tuning,
 - .7 Assemble all certified test results and incorporate into the O&M Manuals.
 - .8 Finalize the Design Intent Report and Client / Users O&M Manual to reflect as-commissioned operation and maintenance of each system.
 - .9 Approve all Commissioning documentation
 - .10 Assemble all certified test results and incorporate into the O & M manuals.
 - .11 Assessment of staffing and skill requirements to operate and maintain the facility.
 - .12 Assessment of service contracts for both water and wastewater systems

2.9.3 DELIVERABLES

- .1 Provide Commissioning Plan,
- .2 Provide complete documentation on the operations and maintenance requirements
- .3 Provide Performance Verification (PV) report forms in accordance with PWGSC Commissioning Guideline CP.10. These forms shall be completed for all components, sub-systems and systems. This will include all testing and commissioning activities to be recorded on this form.
- .4 Start-up checklists for all equipment, system and assemblies to capture all installation details.
- .5 . Submit Final Commissioning Report at end of commissioning activities (construction and post-construction)
- .6 Prepare Standard Operating Procedures (SOP) Manuals including design intent, sequence of operation, emergency start-up/shut-down procedures, Single Line Diagrams and inventory list for preventative maintenance
- .7 Cost of commissioning throughout all Phases
- .8 Reviewed and Accepted Commissioning (Evaluation) Report.
- 9 Training and training materials for all operations and maintenance staff including method of recording and responding to glitches or malfunction to be in place.

2.10 POST CONSTRUCTION SERVICE

2.10.1 GENERAL



- .1 The purpose of this phase is to support the Departmental Representative in obtaining all final documents required for project close out.

2.10.2 SCOPE AND ACTIVITIES

- .1 Project Close-out Services
 - .1 Make recommended revisions to documentation to reflect all changes, revisions, modifications and adjustments as finally set upon completion of commissioning.
 - .2 Witness completion of post-construction functional Performance Verification.
 - .3 Identify and monitor all deficiencies to be rectified by the contractor prior to the expiration of warranties
 - .4 Prepare record drawings and specifications based on Contractor's as-builts;
 - .5 Assist the Departmental Representative to prepare the Final Certificate of Completion and provide sign-off.
 - .6 Review the Operations and Maintenance Manual.
 - .7 Review the Commissioning Report.
 - .8 Submit Final Commissioning Report.
 - .9 Participate in Lessons Learned workshops if requested.
- .2 Warranty Services
 - .1 Monitor and certify rectification of deficiencies before expiry of warranties
 - .2 Sign off on the Final Completion of the construction contract,
 - .3 Participate in warranty inspections with *Departmental Representative* and Contractor.
 - .4 Provide warranty deficiency list,
 - .5 Provide Final Warranty Review report.

2.10.3 DELIVERABLES

- .1 Warranty Deficiency List.
- .2 Demonstration and Training including training all training materials
- .3 General Commissioning requirements.
- .4 Commissioning Plan
- .5 Commissioning Forms
- .6 Provide complete documentation on the operations and maintenance requirements
- .7 Final Certificate.
- .8 As-Built and Record Drawings and As-Built Specifications.
- .9 Comments to O&M Manual.
- .10 Signed final Commissioning Manual.
- .11 Sign-off on Warranty.



3 PROJECT ADMINISTRATION

3.1 GENERAL REQUIREMENTS

- .1 In addition to adhering to the general project administration requirements contained in section 3 of the GP&S document, the Consultant shall comply with the project specific requirements in this section.

3.2 MEETINGS

- .1 General
 - .1 Except as indicated below, endeavour to hold all meetings as Green Meetings (i.e. teleconferences, video conferences, Electronic copies of documents where possible or double-sided hard copies, etc.)
 - .2 The Consultant must ensure that all key personnel are personally available to attend meetings as required and respond to inquiries promptly.
 - .3 During the project, the Consultant's Key Personnel shall be available to:
 - .1 Attend meetings and respond to inquiries within two (2) working days notice. Seven (7) days if traveling to Eureka.
 - .2 Respond to emergencies within one (1) hour, including those occurring during off-hours and on weekends/holidays
 - .3 Attend additional meetings in Ottawa or Winnipeg within two (2) business day (do not include in fees)
- .2 Pre-Design Meetings:
 - .1 Meetings during the Pre-Design Phase will be as follows:
 - .1 Bi-weekly teleconferences;
 - .2 A one day meeting in Ottawa (to be scheduled shortly after contract award);
- .3 Design Meetings:
 - .1 Meetings during the Design Phase will be as follows:
 - .1 Bi-weekly teleconferences;
 - .2 A one day meeting in Ottawa;
- .4 Construction Meetings:
 - .1 Meetings during the Construction Phase will be arranged monthly through the duration of the two construction projects. Meetings will be as follows:
 - .1 Bi-weekly teleconferences;
 - .2 Two startup meetings in Ottawa (one for the water infrastructure project, one meeting for the sewage infrastructure project);
- .5 The Consultant will be responsible for:
 - .1 Preparing minutes of meetings,
 - .2 Forwarding minutes to the Departmental Representative,
 - .3 These meetings are for the accurate exchange of information,
 - .4 All requests and decisions taken must follow the formal lines of communications.



- .6 If additional meetings involving travel are required, they will be reimbursable for time and travel disbursements; however, any additional trips must be approved in advance by PWGSC. Disbursements will be reimbursed at cost without markup.

3.3 SITE VISITS

- .1 The Price proposal shall be based on Consultant representation at site visits & meetings as follows (includes both the water treatment work and the sewage treatment work):

	Site Visits Eureka	Meetings in Ottawa
Consultant Team		
Pre-Design Phase	1	1
Design Phase	1	1
Construction Phase	6	2
Resident Site Representative		
Construction Phase	3	0

It is the responsibility of the Consultant to determine how many and which consultant team members will be required at site visits and meetings in order to fulfill their professional responsibilities and ensure the quality, budget and schedule of the project.

- .2 All travel-related expenses shall be included in the price proposal including:
- .1 Transportation costs
 - .2 Accommodation expenses
 - .3 Meals and incidentals

Note: While in Eureka accommodation and meals are only available at the Environment Canada facility as per the Eureka 2014/2015 User Costs.