



CITY OF IQALUIT REQUEST FOR PROPOSAL
FOR THE DEVELOPMENT OF A SUPPLEMENTARY WATER SUPPLY
PLAN AND PRELIMINARY DESIGN



4.0 TERMS OF PAYMENT

The consultant shall be reimbursed on a monthly basis for works completed. Monthly invoices shall include backup for all disbursements (time sheets will not be required but may be requested).

The invoice shall include the project title, **the Service Contract number**, a description of the work completed, and a billing summary. The summary shall include the tasks as set forth in the costing submission, the proposed costs, costs to date, percentage invoiced to date and the percentage of work completed to date for each task.

No payment will be made for the cost of work incurred to remedy errors or omissions for which the consultant is responsible.

5.0 TERMS OF REFERENCE

5.1 Background

City water supply needs are currently met by runoff from the watershed to Lake Geraldine.

In 2004, a Raw Water Supply and Storage Review (see Appendix D) was completed for the City of Iqaluit. The objective of this report was to determine if the water needs of the City can be reliably met over a 20-year design horizon especially during the over-winter period when no alternative water source is available.

This review developed an estimate of watershed yield for a 1 in 100 year return low precipitation conditions. Under these conditions, an annual volume of 485,000 m³ is estimated to be available. This would represent a sufficient water supply to support a population of 8,287. Based on the medium-range population forecast, a population of 8,300 could be reached by 2014 (City of Iqaluit General Plan).

The report recommends proceeding with preliminary design works to address reservoir refill immediately. Based on the analysis of several source and withdrawal point options, a withdrawal point on Niaqunguk River (Apex River) located approximately 270m south-east of the Road to Nowhere was selected as the preferred withdrawal point to address long-term refill needs. The report also recommends that until the issue of reservoir refill is addressed, the City establish a monitoring protocol to forecast the impact of yearly precipitation trends on water supply.



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Since the Raw Water Supply and Storage Review, there have been some land-use changes in the vicinity of the preferred extraction point. In 2010, the City leased the old sand extraction area on the Road to Nowhere to the Iqaluit Shooting Association for ten years to build a shooting range. The shooting range is located 350 meters northeast from the Apex River and is used throughout the summer months. In 2010, the City also started construction of a new Cemetery on Road to Nowhere. This site is located approximately 80 meters southwest and 190 meters west of Apex River. Please see Appendix E for a figure identifying the locations of the Shooting Range and Cemetery. The preferred withdrawal location identified in the Water Supply and Storage Review is now downstream of both the Shooting Range and the new Cemetery site.

Based on the 2004 Raw Water Supply and Storage Review recommendations, the City of Iqaluit 2010 General Plan identifies the Niaqunguk River (Apex River) as a potential supplementary water source. The General Plan also contains policies to designate the Lake Geraldine and Niaqunguk River watersheds as Watershed Protection Areas. Furthermore, the General Plan states that the City will undertake a feasibility study of Niaqunguk River to determine its suitability as a future water source.

The City would like to undertake this feasibility study. Once the suitability of the river is confirmed, the City would like to complete a Supplementary Water Supply Plan and preliminary design, and obtain all required regulatory approvals, so that it can proceed with installing the required infrastructure.

Finally, the City would like to develop a Contingency Plan with a monitoring protocol to help staff identify when emergency refill action is required (until permanent reservoir refill infrastructure is in place).

5.2 Objectives

The objectives of this project are to:

- Confirm the suitability of Niaqunguk River as a future water source and meet the related policy requirements of the City's 2010 General Plan;
- Identify all regulatory requirements that will impact project approval, design and construction;
- Complete a Supplementary Water Supply Plan that determines the water supply, the location, timing and conditions of withdrawal;
- Complete a preliminary design and Class C cost estimate that provides all the information needed to advance this project to the detailed design and construction phase;



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- Develop a Contingency Plan with a monitoring protocol to help city staff identify when emergency refill action is required at Lake Geraldine (until permanent reservoir refill infrastructure is in place); and,
- Obtain all required regulatory agency approvals to proceed with design and construction.

5.3 Scope of Services

The work to be undertaken shall include but is not limited to the following:

5.3.1 Agency Approvals

This step will include the following:

1. Identify the agencies (e.g. Nunavut Water Board, Department of Fisheries and Oceans, City of Iqaluit Department of Lands and Development, etc.) that must give approval and determine their criteria for approval;
2. Consult with agencies to identify concerns and regulatory requirements.
3. Determine required amendments to the City of Iqaluit Water License and General Plan and assist the City in the amendment process;
4. Prepare all submissions required for all agencies;
5. Provide assistance to the City during any meetings with regulatory agencies or public consultations; and
6. Work with the agencies and the City in order to obtain the necessary approvals.

5.3.2 Feasibility Study

Complete a Feasibility Study to confirm that Niaqunguk River is a suitable raw water source for the City. At minimum, the study should include:

1. Water quality testing of the Niaqunguk River;
2. Detailed mapping of the Niaqunguk River Watershed and analysis of watershed yields;
3. Identification of any developments that currently encroach on the watershed;
4. Identification of remedial or preventative measures required to ensure the protection of the future water supply;



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5. Discussion of potential downstream impacts (environmental, ecosystem, user, etc.) and mitigation measures; and,
6. Any additional items requested by regulatory agencies.

5.3.2 Supplementary Water Supply Plan

Once the feasibility of Niaqunguk River is confirmed, a Supplementary Water Supply Plan will be completed. Building on the work completed in the 2004 Raw Water Supply and Storage Review and considering the recent land use changes, the plan should:

1. Select a preferred withdrawal point, transmission route and access road location;
2. Determine the withdrawal location and the conditions (timing, rates, etc.) that will minimize environmental impact and meet all regulatory agency requirements (should consider issues such as seasonal river flow rates, the volume of water required and the timing of refill requirements);
3. Develop a refill protocol that identifies when and how a refill will be initiated and identify any associated monitoring requirement (e.g. river flow rates, river water quality, Lake Geraldine water levels, etc.);
4. Identify potential mechanisms for water contamination at the withdrawal location and at outlet into Lake Geraldine and provide protection measures; and
5. Address any additional issues requested by regulatory agencies.

5.3.3 Preliminary Design

Building on the Supplementary Water Supply Plan, a preliminary design will be completed that identifies and describes all major design components (e.g. intake pipe, pump, housing unit, transmission pipe, access road, etc.). This design will:

1. Identify the transmission line and access road routes and will identify the associated environmental impacts along with mitigation measures;
2. Identify how the design will address the climate change impacts projected over the design-life of the infrastructure;
3. Identify and address maintenance and operation challenges associated with the potential for long periods of time between operation and the location of the infrastructure (accessibility, etc.); and,



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4. Include the required ground-truthing and will include the surveying of the recommended transmission line and access road routes.

5.3.4 Contingency Plan

A Contingency Plan will be developed in case refill is required before the permanent reservoir refill infrastructure is in place. It should include a monitoring protocol to help city staff identify if emergency refill action is required and should identify the withdrawal location and transmission equipment and staffing requirements. It should also identify the agencies that would require notification if emergency refill action is required.

5.3.5 Deliverables

The following deliverables will be required as part of the Project:

1. One (1) electronic (Microsoft Word) copy of the draft Feasibility Study;
2. One (1) electronic (Microsoft Word) copy and three (3) hard copies of the final Feasibility Study;
3. One (1) electronic (Microsoft Word) copy of the Preliminary Report, including draft:
 - a. Agency requirements,
 - b. Supplementary Water Supply Plan,
 - c. Preliminary design with Class C cost estimate, and
 - d. Contingency Plan.
4. One (1) electronic (Microsoft Word) copy and three (3) hard copies of the Final Report, including final:
 - a. Agency requirements,
 - b. Supplementary Water Supply Plan,
 - c. Preliminary design with Class C cost estimate, and
 - d. Contingency Plan.
5. One (1) electronic (Microsoft Word) copy of the Revised Final Report based on agency feedback.



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5.4 Consultant Responsibility

As described above, the Consultant's responsibilities will include:

1. Completing the Feasibility Study;
2. Completing the Supplementary Water Supply Plan;
3. Completing the preliminary design and Class C cost estimate;
4. Completing a Refill Contingency Plan; and,
5. Assisting the City in obtaining all the agency approvals required to proceed with the project.

5.5 City of Iqaluit's Responsibilities

The City's responsibilities will include:

1. Reviewing proposals and selecting the successful proponent;
2. Entering into negotiations with and executing the contract with the successful proponent;
3. Providing Consultant with existing information and reports, as requested; and
4. Reviewing submissions and providing comments.