

Apex River Water Supply 2019-2026

Niaqunguutiup Kuunganik Imiqtarniq 2019-2026

Iqaluit



May 2019

Mai 2019

Introduction / Nalunaijajuti

- The City of Iqaluit has applied to the Nunavut Water Board to take water from the Niaqunguk (Apex) River
- Requires an amendment to the City's type A water licence 3AM-IQA1626
- A technical review is underway by the Nunavut Water Board
- This presentation summarizes the proposed project and main concerns raised
- Nunalipaujait Iqaluit tutsirautilaurtut Nunavut Imalirinirmit Katimajinik imiqtarumallutik Niaqunguutiup kuunganik
- Titirarsimaninginnik asijiigialiit sitikkut imaittumut A imalirijunnautinganut 3AM-IQA1626
- Sunatuinnait aaqisiarsimagiaqarninginnit pijjutilinnit qaujisarpalliaqutut Nunavut Imalirinirmit Katimajingit
- Ukua unikkaatsait pilluatanginik pijjutiqaqtut piliriatsaujumajuup amma isumaaluutiulauqtunik uqausiulauqtunik

The Proposed Project / Piliriatsaujumajurq

- The City of Iqaluit draws potable water from Lake Geraldine reservoir
- The reservoir is the City's primary water source
- Lake Geraldine refills naturally from snowmelt and rain within the watershed – no resupply in winter
- The water stored in the reservoir prior to freeze-up must supply Iqaluit during the winter (November-May)
- Nunalipaujait Iqaluit imiqtapattut imirijauvattumit angirani imiqtavimmit
- Imiqtarvik Iqaluit imiqtarvigivauk
- Imiqtarvik immapatturq aput augaimmat amma silalliraimmat kuuviuvattunilu – ukiukkut immapangittuq
- Imiq imiqtarviup imarivattanga nuatausimavattuq qualaunginingani Iqalummiunut naammagiaqaqpattuq ukiulimaamut (maiminit nuuviipirimut)

The Proposed Project / Piliriatsaujumajurq

- The City's water demands are increasing. Almost 80% of the water in the reservoir is used by end of winter
- In some years (e.g., 2018) the reservoir would not fill up naturally – a shortage of potable water is possible
- The City is applying to use the Apex River as a supplementary water supply
- Pump up to 500,000 cubic metres (132 million gallons) of water from the Apex River each year to “top up” (fill) the reservoir before winter
- Nunalipaujakkut imiqagtigialingit amisuruqpalliatuinnaliqtut. 80%-pusapalua imiup aturqtausimaliqpattuq ukuingujunniiraluqtiillugut
- Ilaannikkut arraaguni (suurlu, 2018-mi) imiqtarvik immagunnalaungittuq imaatuinnaq – imaqarunniirunnaqtuq nalunangilaq
- Nunalipaujakkut tutsirautiliuliqtut aturumallugu Niaqunguutiup kuunga nalliukumaarilugu immavvigivallugu
- Milluatitsivallutik 500,000 kippaarittunik miitanik (132 milijan gaalait) imirmik Niaqunguutiup kuunganik arraagutamaaq “tatapallugu” imiqtarvik ukiulaunginingani

The Proposed Project / Piliriatsaujumajurq

- This is a temporary solution to address potential water shortage (2019 to 2026)
- The City is studying options for a permanent solution to address water supply for the future
- Apex is the preferred option for the short term:
 - Closest source to reservoir
 - Road access
 - Lowest cost to residents
- Taimaak aaqitsimakainnarunaqtuq imikilisimalirniurutta (2019-2026)
- Nunalipaujakkut qausisarqpalliajut naliiraarutitsanit aaqqigutitsaujunnaqtumit imiliriniq pijjutigillugu sivunittinnut
- Niaqunguuti aturqtaujumasimajuq maanauningani:
 - Qanilaanguninga pillugu imiqtarvimmut
 - Aqqutiqatsiarninga
 - Akikilaangugajarninga nunalirnimiutanut



The Proposed Project / Piliriatsaujumajurq

- Up to three submersible pumps will be installed in the river to withdraw water at up to 150 litres (40 gallons) per second
- An on-land generator will provide power to the pumps
- A high density polyethylene (HDPE) pipeline will move water from the Apex River to Lake Geraldine
- Pumps and associated equipment will be installed and removed each year
- Pingasuutuinnarialiit milluarutitsait aqqittaugajaqtut kuummi imirmik milluapallutik 150 qallutinguanik qilamimmarialuk
- Nunamiitumut januraituralaamit aturajartut milluarutitut
- Sullulikkirmit aturlutik milluarajaqtut kuummik imiqtarvimmut
- Milluarutiit amma ilangit sunakkutaat aqittauqattarajaqtut amma piqtauvallutik arraagutamaaq



The Proposed Project / Piliriatsaujumajurq

- A decision to implement pumping will be made in late June of each year – dependent on the water levels in the reservoir and the predicted natural recharge
- If supplemental water is needed, the total amount applied for may not be needed each year
- The amount of water taken from the Apex River each year will depend on:
 - The amount needed to fill the reservoir
 - The amount of water available in the Apex River
- Pijatsalianguvanniaqtut milluatitsinirmit Juuniuliraippat arraagutamaaq – malittauvallutik imangata imiqtarviup qanuilluarninga amma nalauttaaqtavulluni silatigut qanuituinnariaqarninga
- Immakanniriaqarniqpat, katitugu qanuilluarninga immaijjutiujumajuq arraguni qangakkut aturqtaungituinnariaqarajarmijug
- qanuilluarninga immaijjutiugajaqturq Niaqunguuti kuunganik arraaguni nallianni maliqattarajaqtuq ukuninga:
 - Tatatauvalluni
 - Malittauluni Niaqunguuti kuungata qanutigi immaviujunnarninga

Environmental Mitigations /nunatigut piluarjairsimaniaqtut qanuigutiujunnaqtunik

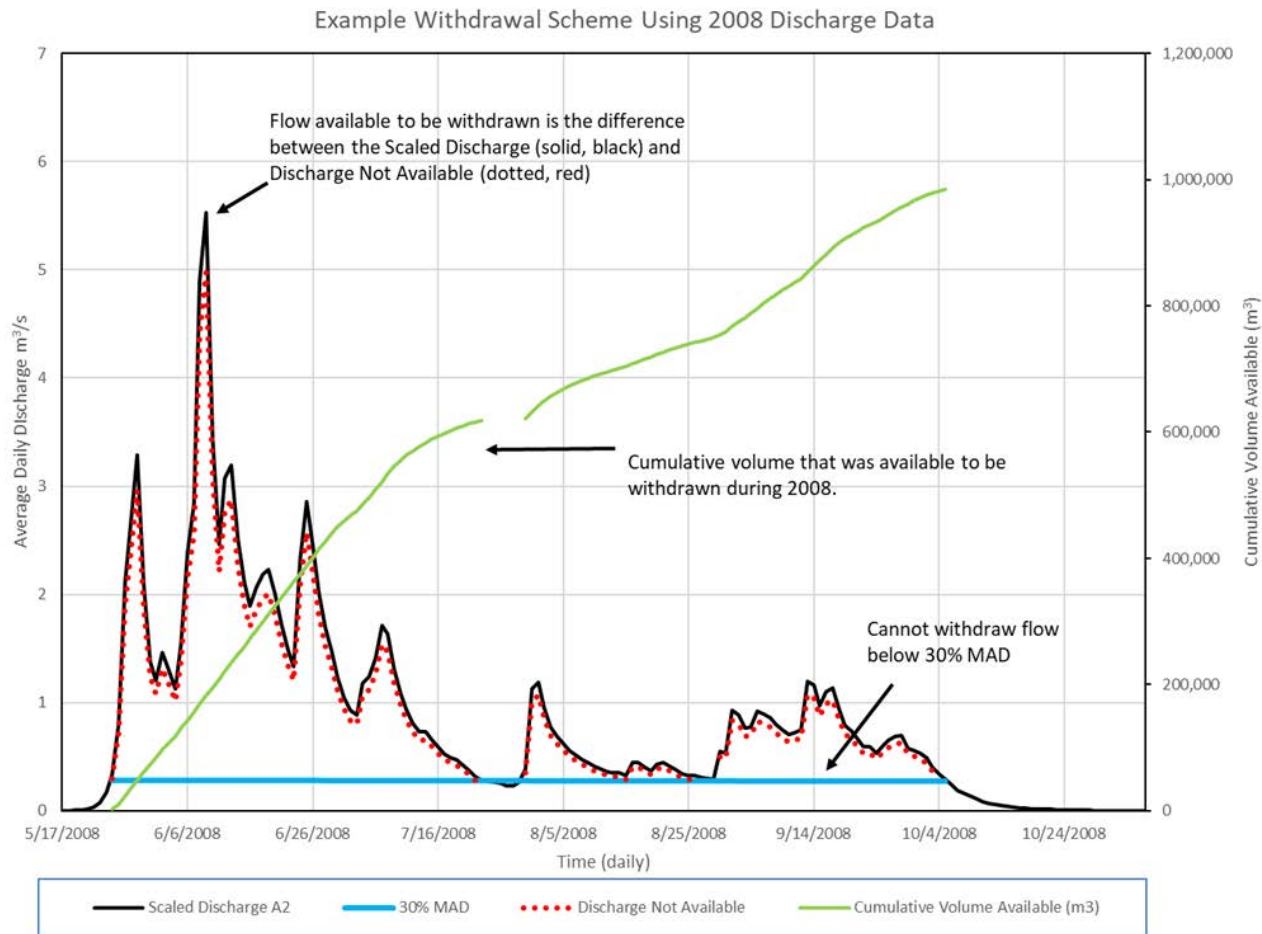
- Resident Arctic char are known to be present downstream of the bridge on the Road to Nowhere
- Withdrawal for this temporary project will be protective of fish and fish habitat in the Apex River by meeting DFO guidelines:
 - Only pump when Apex River flows are more than 30% of mean annual discharge
 - Withdraw less than 10% of the daily flow of the river
- Flows in the Apex River vary from year-to-year and from day-to-day
- Iqaluqarniraqtaujuq ikaarutiup ammuagiangani tasilulariami
- Miluarviuliraiguni sapujjauvanniaqtut qajimagiarjuumiqattarlutik iqalunginnik amma iqalunnut najugauvattunik Niaqunguutiup kunganiitunik malittauvallutik Imalirijikkut maligangit:
 - Miluaqpallutik Niaqunguutiup kunga kuullualiraippat kisiani arraguup iluani 30%-ngulualiraippat kuunninga
 - 10% tungaani milluarivallutik qautamaat kuunningarik
- Kuunirivattanga qanutigi ajjigiipangittuq arraagutamaaq amma qautamaat

Environmental Mitigations / nunatigut piluarjairsimaniaqtut qanuigutiujunnaqtunik

- Flows in the Apex River are recorded daily at WSC station 10UH002: 1973 to 2018 (mouth of river)
- A new flow meter will be installed upstream of the pumping site and flows will be recorded daily
- Withdrawal rate can be adjusted daily based on flow in the river, and as compared with MAD
- Kuunnirivattangit Niaqunguutiup kungata titiraqtauvattut arraagutamaaq WSC pilirivvimmi 10UH002: 1973 - 2018 (isuanit kuup)
- Nutaamik kuuninganut qaujisautimit aaqiijuqalaaqtuq qulaani milluarviup kuup amma qanutigi kuummangaq titiqtauvalluni qautamaat
- Qanitigi milluarninginnut qautamaat aaqigiaqtauvakkajaqtuq malittauluni kuunnga qanutigi, amma qaujisaqtauvallutit qanutigi ajjigiinginniqaqpammangaata qangakut arraagumi



Environmental Mitigations / nunatigut piluarjairsimaniaqtut qanuigutiujunnaqtunik



Environmental Mitigations / nunatigut piluarjairsimaniaqtut qanuigutiujunnaqtunik

- Environmental protection plans specify measures to additionally protect the environment and the health and safety of workers:
 - Sedimentation and Erosion Control Plan
 - Spill Contingency Plan
- Daily recording of:
 - river flows as measured
 - withdrawal rates
 - volumes
- Summary to be included in water licence annual report
- Nunaup avvatianit sapummitsijjutitsanit parnautiliangusimajut nalunaijaisimajut sapummitsijjutitsakannirnik qanukkanniq nunaup avvatianit amma qanuiqunagit timingigut amma attanajjairsimagiaqaqpanningit iqqanaijaqtiit:
 - Imaup iluani saniruluujanginnut amma nunaup sinnata surappallianinganut parnautigut
 - Tamaungatuinnaq kuvijuqarniqpat parnautigut
- Qautamaat titiqtauvallutik ukua:
 - Kuunninga qanutigi uuttuutigut
 - Qanutigi immajaijjutiujug
 - Qanutigi immiup milluaqtauninga
- Pilluatangit titiraqtaugajarqtut imilirijjutiup laisatigut arraagutamaarsiutimi unikkaalani

Concerns Raised / isumaaluutiujut uqausiulaurqtut

- Reviewers have asked questions about the proposed project:
 - Can the Apex River reliably provide enough water?
 - What are the alternatives to the Apex 2019-2026 project?
 - What are the City's long-term plans for supplying the growing population?
 - Why is the City applying to pump from Apex for seven years?
- Qaujisaqtiit apiqqutiqaqpalaugtut piliriatsaq pillugu:
 - Niaqunnguutiup kuunga tatigijatsauvaa immavvigiqattarumaniarlugu?
 - Sunauvat asigijunnaqtangit Niaqunnguutimut 2019-2026 piliriatsamut?
 - Sunauvat sitikkut arraagugasanut parnautingit imaqaqtitsiniarnikkut inugiatsivalliatuinnatillugu nunalik?
 - Qanuimmat sitikkut tutsirautiluqpat milluarsigumaqattaqtutik Niaqunnguutiup kuunganik arraagunut 7-nut?



Can the Apex River reliably provide enough water? / Niaqunnguutiup kuunga tatigijarniqpa nammattumit imaiviujunarniarningagut?

- 35 years of data available for WSC 10UH002 (near the outlet of the Apex River) were reviewed.
- Flows were scaled to the project location (76% of total Apex flow) and the DFO criteria applied
- Based on this review:
 - 500,000 m³ was available in 29/35 years
 - 400,000 m³ was available in 31/35 years
 - 300,000 m³ was available 34/35 years
 - 200,000 m³ was available in all 35 years
- 35 arraagunut pilirijjutiminirnik nuatausimajunik pitalik qaujisarvimmut WSC 10UH002 (sanianiittuq paangata kuup) qaujisaqtaulaqtut.
- Malitugit qaujisautiulaqtut:
 - 500,000 sanimut tukimut itininganut imaqautiulaqtuq 29-ni arraaguni ilunginni 35 arraaguit
 - 400,000 sanimut tukimut itininganut imaqautiulaqtuq 31-ni arraaguni ilunginni 35 arraaguit
 - 300,000 sanimut tukimut itininganut imaqautiulaqtuq 34-ni arraaguni ilunginni 35 arraaguit
 - 200,000 sanimut tukimut itininganut imaqautiulaqtuq iluunanginni 35 arraaguni

Can the Apex River reliably provide enough water? / Niaqunnguutiup kuunga tatigijarniqpa nammattumit imaiviujunarniarningagut?

- Apex is not considered a reliable source for the long term if DFO criteria for protection of fish are maintained
- Supplementing from Apex River is a temporary solution until a permanent additional supply to Lake Geraldine is designed and constructed.
- Niaqunnguutiup kuunga isumagijaujuq tatigijatsaungininganik arraagugasanut imalirijikkut maligangit iqaluunik sapummitsijjutingit malittaunginnarniarutik
- Immaqattarniq Niaqunnguutiup kuunganik aturqtaukainnatuinnartuq asianik immaivitsarsiurninginni imiqtarvitsamit sanagasuarninginni.



What are the alternatives to temporary pumping from Apex River? / Sunauvat asigijunnaqtangit miluarsingingaarluni Niaqunguutiup kuunganik?

Supply:

- Other sources of water have not been studied enough to confirm a 7-year supply
- Desalination of seawater is costly to implement as an alternative, but could be used as a contingency

Demand:

- Mandatory water conservation measures directly affect residents and businesses but could be implemented as a contingency

Imaqautitsaq:

- Asingit imaivitsaujunnarajaqtut qaujisaqtausimangiluarmata nalunairviujunnangittut arraagunut 7-nut immaiviujuunnarajarmangaata
- Tariungijainiq tariurmik imaliurniarluni akitujukallaumat aturqtaungaarniaruni, kisianittauq nalliukkumaanguluni aturqtaujunnarajaqtuq

Imaqarialiit:

- Aturqtaugiaqaqpattut imirmik piursuarniarluni attuijuti qarunnarmata nunalirmiutanit amma nammini qarqtinik kisianittauq nalliukkumaangujunarmijuq

What else is the City doing? / sitikkut qanuiliukkanirqpat?

- Communications to facilitate with water conservation measures:
 - Be Waterwise campaign – tips on how to be waterwise
 - Meetings with Top 10 high volume users to implement water conservation/ efficiency means (i.e. implementation of high efficiency fixtures)
 - Public information sessions with community
- Water demand monitoring – weekly monitoring in order to identify high volume usage immediately
- Tusaumatitsijjutitsaliurniq pijariakiligutitsanit imirmik piursuaqujijutitsanit:
 - Imirmik piursuaqujiniq – qanuq imikkut piursuarunnaqtuqarmangaaq
 - Katimaqatigarqpanniq qulinik (10) imirmik angijukallammik aturqpattunik pigiaqtitsijjutiliurumanarluni imirmik piusuarutitsaujunnaqtunik / atutsiarutitsanik (suurlu pigiaqtitsiniq piunirsanik kuvititsijjutinik)
 - Inulimaaqtitsiniq tukisigiarutitsalirilutik
- Immiqtauvattunit qaujisautiqarniq – pinasuarusiup iluani qaujisautiqaqpallutik nalunaijaijjutitsanik tavvasainnaq nalunairsijunnarumallutik imiup qanitigi aturqtaulirninganik

What are the alternatives to pumping from Apex? / sunaummata asigijunnarqtangit miluarniup Niaqunguutiup kuunganik?

- Communications to public and early system repairs have reduced consumption on average by approx. 30% when compared to previous years since start of campaign (August 2018)
- Early identification of leakage in Utilidor water distribution system, in order to reduce losses immediately
- Tusaumatitsivanniq inulimaanik amma qilamiunirsarq pilirijjutiit sanajauvanningit pillugit imiqtunginirsaulirsimajut 30%-nit qaujisaqtaullutik qanitigit arraaguni anigursimajuni imiqtusimaningit pigialaursimammattanik (aagasi 2018)
- Qilamiunirsaq nalunairsivanniq qillaaqtunik sullulikkut imirmut, tavvasainarq qillaaruniiqtitauvallutik



What are the City's long term plans for water supply? / sunauvat sitikkut arraagugasanut parnautingit imilirinirmut?

- Water Supply is within the City's control:
 - Water supply (water source(s))
 - Water storage
 - Water distribution
- Water Demand is not within the City's control, but the City can influence:
 - Water conservation by end users
 - Efficiencies in systems and services
- All of the above work together to meet long term water needs of the City
- Imilirinirq sitikkut aulatangita iluaniittuq:
 - Imiqagtitsinikkut (imiqtavitsasiurniq nakit)
 - Imirmik sanirvaisimanirq
 - Imiqagtitsivanniq
- Imikillisimaniq angirrani iluaniingittuq sitikkut aulagunnaqtangita, kisiani sitikkut ukuninga ajoursuijunnaqtut:
 - Imirmik piursuaqujivallutik aturqpattunik imirmik
 - Piusitigiarpallugit pilirijjutiit amma pijitsirautiit
- Taiguuqtaujuq iluunatik atautsikkut aturqtaujunnaqtut malittaulutik arraagugasanut imiqarunnarniaqullugu nunalipaujait

What are the City's long term plans for water supply? / sunauvat sitikku araaugasanut parnautingit imilirinirmut?

- The City is progressing:
 - Implementation of Reverse Osmosis system to desalinate water from Koojesse Bay and supply through direct connection to utilidor water distribution system.
- Sylvia Grinnell River:
 - Hydrology sufficient for summer supply
 - Concept design completed for two intake site options
 - Concept design for overland pipeline to Lake Geraldine and evaluation of treat at source option
- Engagement with Amaruq HTA
- Sitikku sivumuappalliajut:
 - Pigiaqtitsinikku tariujainirmik imiliurutimut tariup imanganik tariungijaivallutik kuujasi kangirqtukallamik amma imiqautiuvalluni imirmut sullulikkuupallugu.
- Iqaluit kuunga:
 - Iminga naammattuq aujakkut imiriniarlugu
 - Qanuq sanasimagajarninga pijariirsimajut maruunnut miluavitsaujunnaqtuunnik
 - Qanuq sanasimagajarninga nunakku sulluliup imiqtarvimmut amma qaujsaqtausimajuq salumarsaivitsanganut naliiraarutitsaq
 - Piliriqatauningit amaruq angunasuttiit amma mikigiarniaqtiit katujjiqatigiingat

What are the City's long term plans for water supply? / sunauvat sitikkut arraagugasanut parnautingit imilirinirmut?

- Unnamed Lake (3 km north of Apex River)
 - Not enough information to determine if it is a viable source
 - Water level data collection underway; bathymetry survey planned during summer 2019
 - Water balance analysis to commence Q4-2019/ Q1-2020 to confirm long-term viability
 - Fisheries, water quality assessment and concept design of intake and pipeline - if water balance verified
 - Ongoing engagement with HTA
- Attiqtausimangittuq tasiq (3 kilaamitanik ungasinnilik Niaqunnguuti kuunganik)
 - Tukisimajaungiluqtuq aturatsaummangaaq
 - Qanutigi ima qarunnarninganut qaujisautiminiit nuatauvalliajut; qanutigit ima qarninganik qaujisaqtaulaaqtuq aulangani 2019
 - Imiup qanuinnirivattanga qaujisarniq pigiartaulaaqtuq Q4-2019 / Q1-2020 nalunaiqtaugajarmat arraagugasanut aturatsaummangaaq
 - imalirijikkut, imiup qanuinninganit qaujisarniq amma qanuq sanasimagajarninga miluarvitsaq amma sullulik – imirivattanga qanitigit nalunailauqtillugu
 - Piliriqataunginnarlutik amaruq angunasuttiit katujjiqatigiingit

What are the City's long term plans for water supply? / sunauvat sitiklut arraagugasanut parnautingit imilirinirmut?

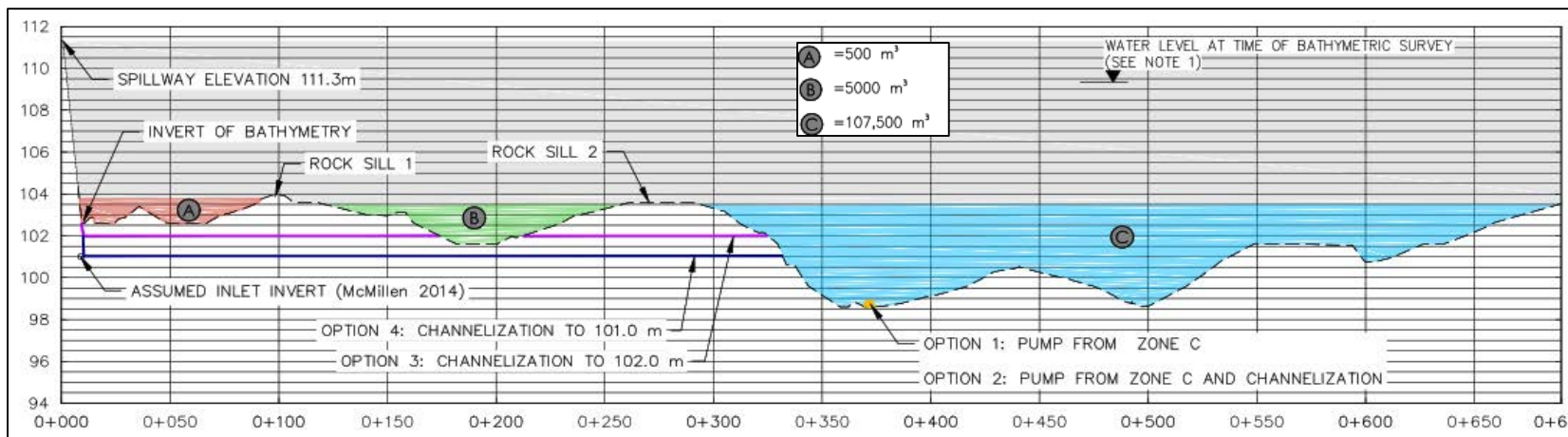


What are the City's long term plans for water supply? / sunauvat sitiklut arraagugasanut parnautingit imilirinirmut?

- Upgrade and optimize existing Utilidor water distribution system as part of asset management strategy
- Investigate viable alternatives for long-term water supply to supplement Lake Geraldine based on current and projected future demand requirements
- Water storage will be equally critical to supply, as City continues to project increase in demand and development/ population growth
- Sanagiartauvallutik amma piusitigiarlugit sulluliit aturqtauvattut imirmut ilagijauluni piqutinit aulatsijjutitut parnagutimut
- Qaujisaqtaulutik aturqtaujunnarajaqtut asingit imiqautiujunnarajaqtut imirtavimmik malippallutik maanakkut amma sivunirmi nalauttaaqtasimajut imiaqqtitaugiaqarajaqtut
- Qattaqariaqallarinniaqtut imiqatsiarumaniarutta, sitiklut nalauttaarsimammata imaqarumavanniaqtut amisuruqpallianinginnit malillutik amma sanajauvattu amisuruqpallialutik / inungiatsivallialuni nunalik

What are the City's long term plans for water supply? / sunauvat sitikkut arraagugasanut parnautingit imilirinirmut?

- Investigate viable alternatives to additional water storage capacity for a sustainable long-term water supply
 - Supplementary withdrawal from inaccessible portions within Lake Geraldine reservoir (below intake) - Pumping/ channelization
 - Secondary water storage
- Qausaqtaulutik aturqtaujunnarajaqtut asingit imiqautiujunnarajaqtut qanutigi imaqarunnarajarmangaata makimajjutiujunnaraqaqtumik akunikallak imitigut
 - Sanirvattausimajumik immaqattarunnarlutik tikitatsaungittumik iluanik imirtarviup (ataaniq immaiviuvattuup) – miluariniq / kuuviliurniq
 - Asianik qatarsiurniq



What are the City's long term plans for water supply? / sunauvat sitiklut arraagugasanut parnautingit imilirinirmut?

- Desktop assessment of Lake Geraldine storage completed in 2018; Prefeasibility options assessment in 2019-2020
- Qarataujakkut qaujisaqtauninga imiqtarviup sanirvaivitsanga pijariiqtaulauqtuq 2018-mi; sivuniagut makimattitsijjutitsanit qaujisalaarniaqtut 2019-2020



Why is this application being sought for 7 years? / qanuimmat tutsirautiliurqpat arraagunut 7-nut aturqtaujutsamik?

Implementing a long-term solution requires:

- Data collection and analysis to confirm feasibility
- Concept designs and costing
- Decision to proceed to design of one option for each of supply, storage, distribution)
- Preliminary design
- Ongoing engagement
- Detailed design and permitting
- Procurement and construction
- In-service implementation

Pigiaqtitsiniarluni

- Pilirijjutiminirnik nuatsigialik amma qaujisartaulutik nalurnaiqtauqullugit kasujijutitsaummangaata
- Qanuilingaluni sanajauniarmangaaq aaqitsuiniq amma akitsangit
- Sivumuagiarniarmangaaq qanuq sanasimaniarninganut sanagiarniq atausirmik naliiraarutiusimajumik atuni sunakkutaatsanut, sanirvaijaivitsanik, tunijatsanik
- Qanuq sanasimaniarninganut sanagiaruti
- Piliriqatqainnarniq
- Nalunaijainiq qanuq sanasimagajarninganik amma pijunnautiliriniq
- Tigusiniq amma sanagiarniq
- pijitsirautiugiarninga

Why is this application being sought for 7 years? / qanuimmat tutsirautiliurqpat arraagunut 7-nut aturqtaujutsamik?

Estimated timeline:

- Data collection & concept designs
2018-2020
- Preliminary designs and engagement
2020-2021
- Detailed designs
2021-2022
- Permitting
1.5 years
- Procurement and Construction
2024-2025
- In service
2026

Nalauttarsimajut ullursiutiit:

- Pilirijjutiminirnik nuatiniq amma isumagijaujuq sanasimaningagut 2018-2020
- Sivullirpaarsiutiit qanuq sanasimagajarninganut amma piliriqatiqarniq 2020-2021
- Nalunaijarsimajut qanuq sanasimalaarninganit 2021-2022
- pijunnautitaarasunniq arraagumut atausirmut amma nappanganut
- Tigusiniq amma sananiq 2024-2025
- Pijitsirarutiulirninga 2026

Nakurmiik

