

**PRESENTATION FOR THE TYPE A WATER LICENCE APPLICATION OF THE
RESOLUTE BAY UTILIDOR SYSTEM**

NWB TECHNICAL MEETING AND PRE-HEARING CONFERENCE

OVER PHONE

JULY 14 AND JULY 15, 2020

PRESENTED BY:

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MUNICIPALITY OF RESOLUTE BAY

The early 1970, the settlement was moved to the present location at N 74°43'01" and W 94°58'10". The Relocated Community , Municipality of Resolute Bay, was designed to accommodate 1500 people.

The Current basic Town population in 2020 is 290 . During summer, due to Military presence for training, The population of the Town is raised sometimes to about 800.

The town is divided into two sections:

- The main Town where water is supplied by the Utilidor system
- The Airport area about 7km away where water is supplied by the Truck.

NWB has issued three Water Licences for the three different Environmental facilities of the Community.

- The Water Licence of the Utilidor System #3BM-RUT1012, Type B was issued on March 30, 2015 to the Department of Community Government Services of the Government of Nunavut.
- The Water Licence of the Solid wastes facilities # 3BM-RES 2025, Type B was issued on March 30, 2020 to the Municipality of Resolute Bay.
- The Water Licence of the Airport Sewage Lagoon # 3BM-YRB 1621, Type B was issued on Dec.16, 2016 to the Department of Economic Development and Transportation of the Government of Nunavut.

OPERATIONAL MODE OF THE UTILODOR SYSTEM

The Asset Management section of the Pond Inlet Infrastructure Division of the Government of Nunavut is Responsible for the Utilidor system. This facility was contracted out to ATCO for the day to day operation.

- Char Lake is the Potable water Source and a pump station is existing at the bank of the Lake. A new pump station about 50m away from the existing pump station is under construction at present. The flow meter located at the existing pump station records water extraction volume from the Char Lake. The new Pump station will have its new flow meter.
- The Water Treatment Plant (WTP) is located at the Signal Hill and a Storage Tank is also there next to the Plant.
- The Water Truck is filled directly at the WTP for the distribution to the Airport facilities.
- The Water distribution system must have a circulation pattern that is independent of and unaltered by demands, other than Fire flows. This system is controlled from the WTP.
- Chlorine is only the reagent to disinfect water inside of the WTP prior to distribution.

contd:

OPERATIONAL MODE OF THE UTILIDOR SYSTEM

- The linear length of the Utilidor system is about 4 km.
- The Utilidor system consists of a water line and a sewer line and both lines are buried.
- The Diameter of the water line is 150mm and sewer line is 200mm,
- The Water line is a recirculation process and works under about 100 psi pressure system ; whereas the sewer line is completely under gravity system adding bleeding water.
- The estimated bleeding water is roughly 227 Litres per day or 82,944 litres annually.
- The Utilidor system consists of 37 Access Vaults and 23 Fire hydrants.
- There is a water meter at each building to record water consumption.
- The sewer line passes through the Macerator unit where suspended solids are grinded into smaller particles to discharge into the sea.
- A new wastewater treatment plant (WWTP) is proposed to be built at the side of the existing Macerator unit. This Macerator unit will be decommissioned soon after the new WWTP is commissioned.
- The future WWTP will receive Truck Sewage and the mixture of the both types of sewages will be treated at the new WWTP.
- The CBOD₅ and TSS of the future WWTP effluent are recommended to be 25mg/l and 25mg/L respectively.

TYPE A WATER LICENCE APPLICATION OF THE MUNICIPALITY OF RESOLUTE BAY UTILITOR SYSTEM

STATUS OF THE EXISTING WATER LICENCE:

EXISTING WATER LICENCE # 3BM-RUT 1012

LICENSEE: COMMUNITY GOVERNMENT SERVICES OF THE GOVERNMENT OF NUNAVUT
TYPE: TYPE B

DATE OF ISSUE: MARCH 30,2015

DATE OF EXPIRE: MARCH 29,2020

DURATION: 5 YRS

WATER PERMIT VOLUME:126,020 CUBIC METERS

STATUS OF THE PROPOSED WATER LICENCE

PROPOSED WATER LICENCE # 3AM-RUT-----

LICENSEE: COMMUNITY GOVERNMENT SERVICES OF THE GOVERNMENT OF NUNAVUT

PROPOSED TYPE: TYPE A

PROPOSED DURATION: 10 YEARS

PROPOSED WATER PERMIT VOLUME: 188,192 CUBIC METERS BASED ON POPULATION 318 IN 2030.

DESCRIPTION OF UTILIDOR SYSTEM

THE COMPONENTS OF THE EXISTING UTILIDOR SYSTEM

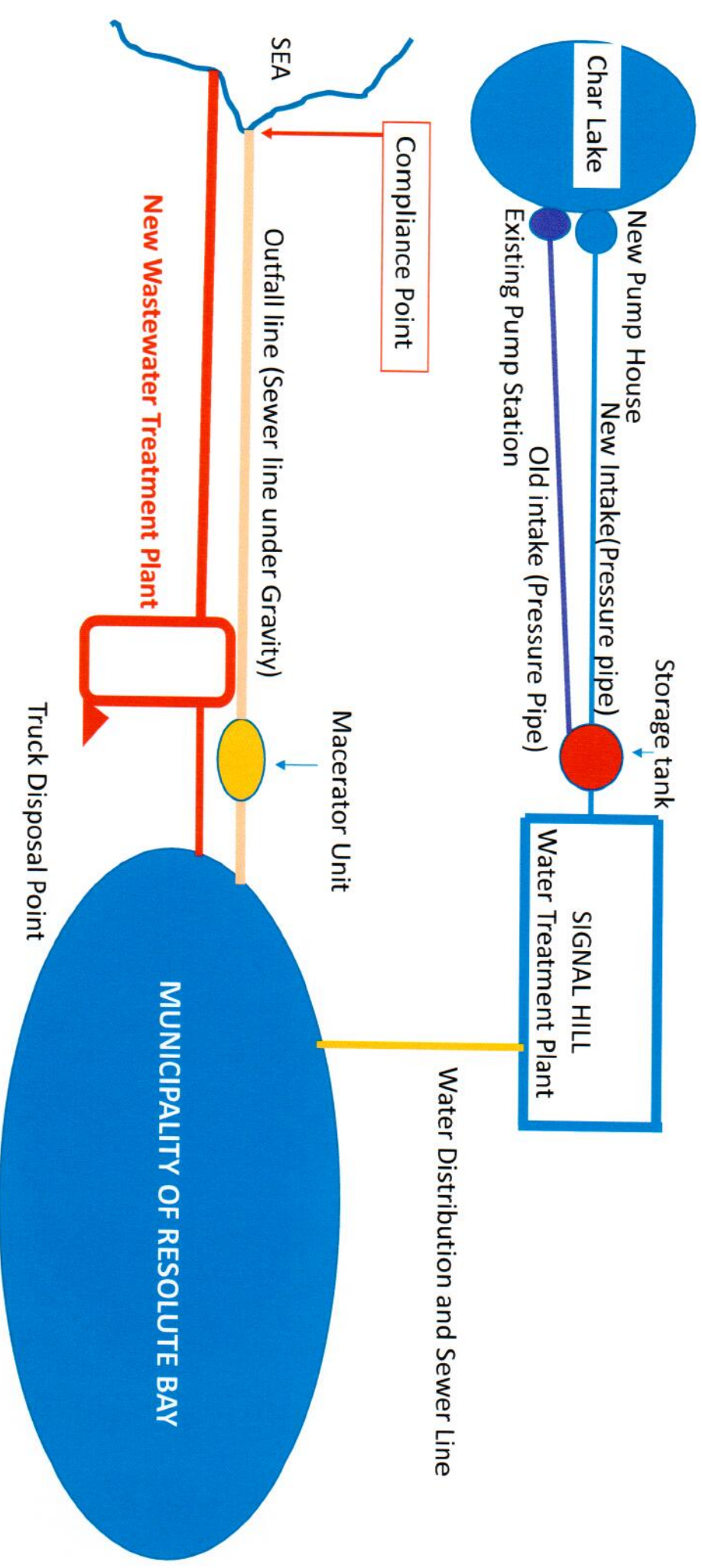
1. THE BURIED WATER AND SEWER LINES: 4KM
2. FIRE HYDRANTS: 23 NOS.
3. ACCESS VAULTS= 37 NOS.
4. A PUMP STATION AT CHAR LAKE
5. A WATER STORAGE TANK AT SIGNAL HILL: 500 CUBIC METRES
6. A WATER TREATMENT PLANT AT SIGNAL HILL
7. MACERATOR UNIT (NO FLOW METER AND GRINDING UNIT EXIST)
8. A 150 MM DIAMETER WATER INTAKE LINE FROM CHARLAKE TO PUMP STATION
9. A 150 MM DIAMETER WATER INTAKE LINE FROM PUMP STATION TO SIGNAL HILL WATER PLANT
10. A 200 MM DIAMETER OUTFALL LINE FROM MACERATOR UNIT TO SEA
11. THE ENTIRE UTILIDOR SYSTEM WAS BUILT IN 1978

COMPONENTS OF THE FUTURE UTILIDOR SYSTEM

STATUS

1. THE MAIN BURIED WATER AND SEWER LINES (Main Utilidor System) : **UPGRADED**
2. VAULTS: **UPGRADED**
3. FIRE HYDRANTS: **UPGRADED**
4. AN INTAKE FROM THE CHAR LAKE TO NEW PUMP STATION: **UNDER CONSTRUCTION**
5. **FISH SCREEN WILL BE PROVIDED AT THE END OF THE INTAKE**
6. A NEW PUMP STATION AT CHAR LAKE: **UNDER CONSTRUCTION**
7. **A STANDARD FLOW METER WILL BE INSTALLED AT THE NEW PUMP STATION AT CHAR LAKE**
8. REHABILITATION OF THE EXISTING WATER TREATMENT PLANT AT SIGNAL HILL: **UNDER CONSTRUCTION**
9. INTAKE FROM NEW PUMP STATION TO SIGNAL HILL WATER TREATMENT PLANT : **CONSTRUCTED**
7. A STORAGE TANK AT SIGNAL HILL: **CONSTRUCTED**
8. A NEW WASTEWATER TREATMENT PLANT: **FUTURE CONSTRUCTION**
9. A NEW OUTFALL FROM WWTP TO THE SEA : **FUTURE CONSTRUCTION**
- 10: A COLLECTION POINT AT WWTP TO RECEIVE TRUCK SEWAGE: **FUTURE CONSTRUCTION**
11. THE OLD PUMP STATION, MACERATOR UNIT, OUTFALL LINE AND OLD WWTP BUILDING: **FUTURE DECOMMISSIONING**

THE UTILIDOR SYSTEM OF THE MUNICIPALITY OF RESOLUTE BAY



HISTORICAL WATER EXTRACTION VOLUME

Year	Utilidor System (litres)	Trucking to Airport Facilities (Litres)	Total Extraction (litres)
2019	191,355,032	5,454,865	197,809,897
2018	152,062,035	5,139,821	157,201,856
2017	127,669,936	5,351,523	123,121,459
2016	326,439,020	5,351,523	331,790,543
2015	424,262,506	4,210,285	428,472,791
2014	110,202,314	4,749,032	114,951,346

Permit Volume in Water Licence annually = 126,020 cubic metres=126,020,000 Litres.
Proposed Volume in the New Water Licence=188,192 cubic metres=188.192,000 Litres
Daily extraction exceeds 300cubic meter per day. Therefore, the type of the new Water Licence is recommended as **TYPE A**.

RESOLUTE BAY POPULATION (Exp's Pre-design Report 2012)

Town site Area:

YEAR	POPULATION
2017	273
2022	288
2027	302
2032	316
2037	330
2042	347
2047	365

Airport Area:

Airport Facilities= 40

Polar Continental Self= about 200

DND Arctic Training Centre= Variable

New hotel= 30

CONSTRUCTION STRATEGY OF THE NEW PUMP STATION

- FOLLOW THE ENVIRONMENTAL MANAGEMENT PLAN
- FOLLOW THE WORKPLACE HEALTH AND SAFETY PROTOCOL
- MAINTAIN THE CHAR LAKE WATER QUALITY SAFE
- SATISFY THE DFO'S REQUIREMENTS FOR FISH SCREEN AT THE END OF THE INTAKE
- INSTALL A NEW FLOW METER TO RECORD THE EXTRACTION VOLUME OF WATER FROM THE CHAR LAKE ON DAILY BASIS.
- HYDRAULIC TEST PRIOR TO COMMISSIONING THE INTAKE
- THE PROVISION OF THE EMERGENCY BYPASS
- A STANDARD ENVIRONMENTAL MANAGEMENT PLAN WILL BE SUBMITTED SOON.

MANAGEMENT OF LATERAL CONNECTIONS

- LATERAL MAIN DOES NOT FALL UNDER THE UTILIDOR CONTRACT
- EACH LATERAL MAIN IS ABOUT 30 TO 35 M LONG
- THE MAINTENANCE OF THE LATERAL MAIN IS THE RESPONSIBILITY OF THE INDIVIDUAL HOUSE OWNER. IN OTHERWORDS HOUSING CORPORATION.
- ANY EMERGENCY OF THE LATERAL MAIN , SHOULD CONTACT:
RESOLUTE BAY HOUSING CORPORATION.
- ATCO OFFICE IN RESOLUTE BAY COULD BE CONSULTED AS WELL.
Phone: 867 252 3737 and e-mail: Philip.chubbs@atco.ca and Richard.gaulton@atco.ca

DESIGN WATER DEMANDS AND SEWAGE GENERATION
Exp's Pre-Design Report 2012

YEAR	DESIGN WATER DEMANDS (Inclusive of bleed water Flows) Community Maximum Hour, L/S	DESIGN SEWAGE FLOWS (Inclusive of Bleed water Flows) Peak Flow , L/S
2017	6.1	6.0
2022	6.7	6.6
2027	7.1	7.0
2032	7.6	7.5
2037	8.0	7.9
2042	8.5	8.4
2047	9.0	8.9

Note: Bleed water requirements are estimated as 1.8L/s, maximum 3.0L/s for the future extension of the sewer lines.

EECCC RECOMMENDED WASTEWATER EFFLUENT COMPLIANCY

- Average Carbonaceous Biochemical Oxygen Demand (CBOD)₅ should be less than or equal to 25mg/L.
- Average concentration of suspended solids should be less than or equal to 25mg/L
- Average Concentration of the Total residual chlorine should be less than or equal to 0.02mg/L
- Maximum concentration of un-ionized ammonia should be less than 1.25mg/L expressed as Nitrogen (N), at 15°C +/- 1°C
- Be non-accurately lethal effluent

SCHEDULING OF THE TECHNICAL MEETING AND PRE- HEARING CONFERENCE

TECHNICAL MEETING:

DATE: JULY 14, 2020

TIME: 8.00AM to 3.00PM (MT)

**VIRTUAL: Toll Free number: 1-888-289-4573 ; Access Code:
7270413**

PRE-HEARING CONFERENCE:

DATE: JULY 15, 2020

TIME: 8.00 AM to 3.00PM (MT)

**VIRTUAL: Toll Free Number: 1-888-289-4573: Access Code:
7270413**

PARTICIPANTS FOR THE TM/PHC OVER PHONE

GN LICENCE REPRESENTATIVE:

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AND RICHARD GAULTON , SUPERINTENDENT OF THE RESOLUTE BAY OPERATION
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MUNICIPALITY OF RESOLUTE BAY:

STEVEN PIERCEY , CAO, Ph: 867 252- 3832 and e mail: sao@resolute.ca

THE CONSULTANT: EXP SERVICES INC:

TONY WHALEN, P.Eng.
DARYL BURKE, P.Eng.

Calculation of annual water extraction from Char Lake

	Year	2020	2030	2047
Population	Persons	290	318	365
Community Per Capita Consumption	L/capita/day	225	232	243.9
Community Consumption	L/day	65,250	73,724	89,000
Airport Consumption (based on approx 140L/c/d)	L/day	38,100	43,248	52,000
Total Consumption	L/day	103,350	116,973	141,000
Total Consumption (based on max day factor 2.75)	L/day	284,213	321,675	387,750
Total Consumption (based on max day factor 2.75)	L/s	3.3	3.7	4.5
Bleedwater	L/day	155,520	193,920	259,200
Bleedwater as % of total water extracted	%	35%	38%	40%
Community Wide Demand	L/day	439,733	515,595	646,950
Community Wide Demand	m ³ /day	440	516	647
Community Wide Demand	L/s	5.1	6.0	7.5
Annual Consumption	Liters	160,502,363	188,192,040	236,136,750
Annual Consumption	m ³	160,502	188,192	236,137



Sewage Lagoon 74°44.387'N 95°00.309'W

Metal Dump 74°44.480'N 95°00.409'W

Strip Lake 74°42.951'N 94°58.012'W

Pump Station Char Lake 74°42.165'N 94°53.388'W

Airport 74°41.638'N 94°56.305'W

WTP Signal Hill 74°42.123'N 94°49.6

Hamlet Office

Maregator 7

Sewer Outfall

Municipal Dump 74°40