

CHART # 1

NARWHAL ARCTIC SERVICES 1996

ANS STAFF HOUSE 1996

JAN	27,962	28,192	230	JAN	126,846	127,144	298	528	422
FEB	28,192	28,379	187	FEB	127,144	127,438	294	481	385
MAR	28,379	28,437	58	MAR	127,438	127,767	329	387	310
APR	28,437	28,519	82	APR	127,767	128,114	347	429	343
MAY	28,519	28,591	72	MAY	128,114	128,392	278	350	280
JUNE	28,591	28,693	102	JUNE	128,392	128,781	389	491	393
JULY	28,693	28,823	130	JULY	128,781	129,331	550	680	544
AUG	28,823	28,911	88	AUG	129,331	129,755	424	512	410
SEPT	28,911	28,969	58	SEPT	129,755	130,182	427	485	388
OCT	28,969	29,033	64	OCT	130,182	130,534	352	416	333
NOV	29,033	29,107	74	NOV	130,534	130,833	299	373	298
DEC	29,107	29,172	65	DEC	130,833	131,069	236	301	241
CONSUMPTION YTD			1,210	CONSUMPTION YTD			4,223	5,433	4,346

* ALL WATER CONSUMPTION & WASTE DISCHARGE IS SHOWN IN CUBIC METERS

SURVEILLANCE NETWORK PROGRAM

Licence No. N4L3-1561

PARAMETER	Station: 1561-1 Date: Aug. 29/96	Station: 1561-2 Date: Aug. 29/96	Station: 1561-3 Date: Aug. 29/96	Station: 1561-4 Date: Aug. 28/96
Alkalinity	89.3 mg/L	101.0 mg/L		
Calcium	27.1 mg/L	30.6 mg/L		
T.Cadmium ICP-MS	L0.1 ug/L	L0.1 ug/L		
Chloride	4.25 mg/L	7.99 mg/L		
Colour	L5 colour	L5 colour		
Conductivity	190.0 uS/cm	227.0 uS/cm		
T.Cobalt ICP-MS	L0.1 ug/L	L0.1 ug/L		
T.Chromium ICP-MS	1.7 ug/L	1.8 ug/L		
T.Copper ICP-MS	6.0 ug/L	39.5 ug/L		
Filt. Residue	91 mg/L	104 mg/L		
Pottasium	0.56 mg/L	0.80 mg/L		
Magnesium	4.72 mg/L	5.35 mg/L		
T.Manganese ICP-MS	0.5 mg/L	1.4 mg/L		
Sodium	3.33 mg/L	5.95 mg/L		
Non Filt. Residue	3 mg/L	3 mg/L		
T. Nickel	0.4 ug/L	0.5 ug/L		
T. Lead ICP-MS	L0.2 ug/L	1.1 ug/L		
pH	8.12 pH	8.13 pH		
T.Arsenic (Hydride)	L0.3 ug/L	L0.3 ug/L		
T. Iron	17 ug/L	37 ug/L		
Turbidity	0.9NTU	0.7NTU		
T. Zinc ICP-MS	5.6 ug/L	52.7 ug/L		
Bio.Oxy.Demand			67 mg/L	88 mg/L
Faecal Coliform			7500 CFU/dL	L10 CFU/dL
Filt. Residue			216 mg/L	
Non Filt. Residue			4 mg/L	L3 mg/L
Ammonia			0.521 mg/L	
Tot. Coliforms			9500 CFU/dL	
Turbidity			3.6 NTU	
pH				8.16 pH

Indian and Northern
Affairs CanadaAffaires indiennes
et du Nord Canada

DIAND Nunavut District
Box 100
Iqaluit, NT
XOA OHO

CANADA REMEMBERS
LE CANADA SE SOUVIENT

Your file Votre référence

Our file Notre référence

October 15, 1996

B9545-5-N4L3-1561

Mr. Dave Rayko
Airport Manager
Arctic Airports
Resolute Bay, NT
XOA OHO

Dear Mr. Rayko:

Water Licence Inspection Report and Analytical Results: August 29, 1996 Inspection.

1. Attached is a copy of the inspection report prepared as a result of the above noted August 29, 1996 inspection.
2. There are a few minor issues that must be addressed. Please provide this office an update related to the water supply situation as it relates to both source and treatment method and to the status of the warning sign at SNP Station 1561-3.
3. Please also note that the O+M plan required by Part H, Item 1 is due for submission to the Nunavut Water Board on or by November 1, 1996.
4. With regard to the analytical results collected at SNP Station 1561-1 and -2, all parameters tested for are within the Health and Welfare Canada *Guidelines for Drinking Water Quality*. Also included are the sample results of sewage discharge from SNP Station 1563-3. These results are quite good (being composed primarily of the liquid fraction of those buildings on the utilidor system) and should be compared to the results that your contractor collected at SNP Station 1561-4.
5. As also discussed during our wrap-up meeting, the future necessity of the licence for the base area is a matter that will have to be brought to the attention of the Nunavut Water Board. It is not an acceptable situation if each user is considered in isolation as each user uses water and disposes of wastes from common locations.

.../2

INDIAN & NORTHERN AFFAIRS
WATER RESOURCES LABORATORY
Box 1500
Yellowknife, NT. X1A 2K3
Tel. (403) 920-8129
Fax. (403) 873-9300

To: Indian & Northern Affairs Canada
Water Resources/NAP
Baffin District Office
Box 100
Iqaluit NT X0A 0H0
Paul Smith

RECEIVED

SEP 23 1996

D.I.A.N.D.

Iqaluit, NT

N4L4-1561

SAMPLE INFORMATION

Our Lab # : 961448
Your Sample ID: 1561-1
Sample Matrix : grab water

Account No.: Baffin

Collection:

Location: Res. Bay-Arctic Airport
Date: 08/29/96
By: PS

Report Date: 09/19/96

Approved by: W. C. C.

- SAMPLE ANALYSIS REPORT -

Lab#	Parameter	Result Units	Detect Limit	Method Code
961448	Alkalinity	89.3 mg/L	0.300	10101
	Calcium	27.10 mg/L	0.040	20103
	T.Cadmium ICP-MS	LO.1 ug/L	0.100	100133
	Chloride	4.25 mg/L	0.080	17206
	Colour	15 Colour	5.000	02021
	Conductivity	190.0 uS/cm	0.100	02041
	T.Cobalt ICP-MS	LO.1 ug/L	0.100	100115
	T.Chromium ICP-MS	1.7 ug/L	0.200	100111
	T.Copper ICP-MS	6.0 ug/L	0.100	100119
	Filt. Residue	91 mg/L	10.000	10451
	Potassium	0.58 mg/L	0.050	19106
	Magnesium	4.72 mg/L	0.010	12102
	T.Manganese TCP-MS	0.5 ug/L	0.100	100113
	Sodium	3.33 mg/L	0.040	11102
	Non Filt. Residue	3 mg/L	3.000	10406
	T.Nickel ICP-MS	0.4 ug/L	0.100	100117
	T.Lead ICP-MS	LO.2 ug/L	0.200	100145
	pH	8.12 pH	0.050	10301
	T.Arsenic (Hydride)	LO.3 ug/L	0.300	33011
	T.Iron	17 ug/L	3.000	26002
	Turbidity	0.9 NTU	0.100	02081
	T.Zinc ICP-MS	5.6 ug/L	0.500	100121

SEP 23 1996

INDIAN & NORTHERN AFFAIRS
WATER RESOURCES LABORATORY
Box 1500
Yellowknife, NT. X1A 2R3
Tel. (403) 920-8129
Fax. (403) 873-9300

To: Indian & Northern Affairs Canada
Water Resources/NAP
Baffin District Office
Box 100
==> Iqaluit NT X0A 0H0
Paul Smith

SAMPLE INFORMATION

Our Lab # : 961449
Your Sample ID: 1561-2
Sample Matrix : grab water

Account No.: Baffin

Collection:
Location: Res. Bay-Arctic Airport
Date: 08/29/96
By: PS

Report Date: 09/19/96

Approved by: W. Smith

- SAMPLE ANALYSIS REPORT -

Lab#	Parameter	Result Units	Detect Limit	Method Code
961449	Alkalinity	101.0 mg/L	0.300	10101
	Calcium	30.60 mg/L	0.040	20103
	T.Cadmium ICP-MS	10.1 ug/L	0.100	100133
	Chloride	7.99 mg/L	0.080	17206
	Colour	15 Colour	5.000	02021
	Conductivity	227.0 uS/cm	0.100	02041
	T.Cobalt ICP-MS	10.1 ug/L	0.100	100115
	T.Chromium ICP-MS	1.8 ug/L	0.200	100111
	T.Copper ICP-MS	39.5 ug/L	0.100	100119
	Filt. Residue	104 mg/L	10.000	10451
	Potassium	0.80 mg/L	0.050	19106
	Magnesium	5.35 mg/L	0.010	12102
	T.Manganese ICP-MS	1.4 ug/L	0.100	100113
	Sodium	5.95 mg/L	0.040	11102
	Non Filt. Residue	3 mg/L	3.000	10406
	T.Nickel ICP-MS	0.5 ug/L	0.100	100117
	T.Lead ICP-MS	1.1 ug/L	0.200	100145
	pH	8.13 pH	0.050	10301
	T.Arsenic(Hydride)	10.3 ug/L	0.300	33011
	T.Iron	37 ug/L	3.000	26002
	Turbidity	0.7 NTU	0.100	02081
	T.Zinc ICP-MS	52.7 ug/L	0.500	100121



INDIAN & NORTHERN AFFAIRS
WATER RESOURCES LABORATORY
Box 1500
Yellowknife, NT. X1A 2R3
Tel. (403) 920-8129
Fax. (403) 873-9300

To: Indian & Northern Affairs Canada
Water Resources\NAP
Baffin District Office
Box 100
==> Iqaluit NT X0A 0H0
Paul Smith

SAMPLE INFORMATION

Our Lab # : 961450
Your Sample ID: 1561-3
Sample Matrix : grab water

Account No.: Baffin

Collection:
Location: Res. Bay-Arctic Airport
Date: 08/29/96
By: PS

Report Date: 09/11/96

Approved by: W. S. S. S.

- SAMPLE ANALYSIS REPORT -

Lab#	Parameter	Result Units	Detect Limit	analdate	Method
961450	Bio. Oxy. Demand	67 mg/L	2.000	08/30/96	08202
	Faecal Coliform	7500 CFU/dL	1.000	08/30/96	36014
	Filt. Residue	216 mg/L	10.000	09/06/96	10451
	Non Filt Residue	4 mg/L	3.000	09/06/96	10406
	Ammonia-N	0.521 mg/L	0.002	09/03/96	07562
	Tot. Coliforms	9500 CFU/dL	1.000	08/30/96	36002
	Turbidity	3.6 NTU	0.100	08/30/96	02081

INDIAN & NORTHERN AFFAIRS
WATER RESOURCES LABORATORY
Box 1500
Yellowknife, NT. X1A 2R3
Tel. (403) 920-8129
Fax. (403) 873-9300

To: Nunavut
Narwhale Arctic Service
Box 88
Resolute Bay NT X0A 0V0
=> Sam Whiting

SAMPLE INFORMATION

Our Lab # : 961435
Your Sample ID: effluent 1561-4
Sample Matrix : effluent

Account No.: Narwhale

Collection:
Location: Resolute Bay
Date: 08/28/96
By: SW

Report Date: 09/06/96

Approved by: W. Coody

- SAMPLE ANALYSIS REPORT -

Lab#	Parameter	Result Units	Detect Limit	analdate	Method
961435	Bio.Oxy.Demand	88 mg/L	2.000	08/28/96	08202
	Faecal Coli	L10 CFU/dL	1.000	08/28/96	36014
	Non-Filt_Res.	L3 mg/L	3.000	08/29/96	10406
	pH	8.16 pH	0.050	08/29/96	10301

SEP 10 1996

DIAN L.



January 21, 1997

Dave Rayko
Airport Manger
Arctic Airports
Resolute Bay, NT
X0A 0V0

**RE: Water License Inspection Report
License # N4L3-1561**

Dear Dave:

Sorry in the delay in providing this information. I hope this hasn't inconvenienced you too much.

The plan for operation and maintenance of the waste disposal facilities in Resolute Bay, NT is as follows:

- a) Dams, Dykes, Lagoons and Drainage courses are inspected daily.
- b) Removal of floating debris from sewage disposal facilities is performed as required, but scheduled annually when the two cell septic tank is inspected, cleaned and sludge hauled to waste disposal site via vacuum truck.
- c) The effluent discharge quality is controlled by the settling and natural decomposition action created in a septic system. The two stage lagoon system the above noted action as well as radiation during the summer months. The run off and drainage flows over land through a series of streams and small ponds where it enters Meratta Lake. Meratta Lake drains into Resolute Lake which ultimately drains into the ocean. The total distance is approximately 5 kilometers. Where the drainage enters Resolute Lake there is a surveillance station (1651-4) at which point samples are taken monthly during the run off period. These samples are sent out and analyzed to monitor water quality.
- d) Annually, during the summer season, all drainage courses, dams, dykes and lagoons are made good from any erosion.



- e) Contaminated drainage is treated as a spill and cleaned up accordingly. Contained, cleaned up and stored for proper disposal. When applicable the incident is reported to the NWT spill line.
- f) Wind blown debris is prevented by burning.
- g) Hazardous waste is handled according to EPA standards
- h) At present there is no segregation of domestic recycling waste nor is there facilities to accommodate such
- i) Burning of domestic waste occurs each time it is deposited to the disposal site. The site is leveled and a lift of pit run is placed over the refuse annually
- j) Alternates to burning haven't been explored. Direct burial could be considered, however would only apply for two to three months per year.

Should you have any questions or concerns please contact me at (819) 252-3925 or fax at (819) 252-3649.

Regards,

NARWHAL ARCTIC SERVICES A DIVISION OF FRONTEC SERVICES LIMITED

A handwritten signature in black ink, appearing to read "S. Whiting", with a long horizontal flourish extending to the right.

Sam Whiting,
Site Superintendent



DIAND Nunavut District
Box 100
Iqaluit, NT
XOA OHO

March 11, 1997

FAXED

Distribution List



Your file: Votre référence

Our file: Notre référence

Licensed Operations

Attn: Senior Administrative Officers

1. Please be advised that the 1996 Annual Report as required under the current water licence issued to the Hamlet is due no later than March 31, 1997.

2. The information that must be reported can be found within Part B (General Conditions) of the water licence. Please consult this section when preparing the report.

3. Completed reports must be sent to the Nunavut Water Board. Their address is:

Nunavut Water Board
Box 119
Gjoa Haven, NT
XOE 1J0

(403)-360-6338 voice
(403)-360-6369 fax

4. If you have any questions or require assistance, please do not hesitate to contact this office at the above address or by phone/fax at (819)-979-4405/-6445.

Sincerely,

Paul Smith
Water Resources Officer
Nunavut District

cc. - Nunavut Water Board, Gjoa Haven
- Water Resources Division, DIAND, YK

Distribution List

Baffin

Hamlet of Pangnirtung	473-8832 ✓	1:47pm	98-3-11	1447
Hamlet of Kimmirut	939-2045 ✓	1:48		1441
Hamlet of Broughton Is.	927-8120 ✓	1:50	0640	
Hamlet of Resolute Bay	252-3749 ✓	1:52	1571	
Resolute Bay, DOT	252-3684 ✓	1:54	1561	
Town of Iqaluit	979-5922 ✓	1:55	0087	

FAXED to all *Chm.*

Kitikmeot

Hamlet of Kugluktuk	40's 982-3060 ✓	1:57	1524	
Hamlet of Cambridge Bay	983-2193 ✓	1:58	1532	
Hamlet of Taloyoak	561-5057 ✓	2:05	1461	

Keewatin

Hamlet of Baker Lake	2509 on Hr Head ✓	2:07		
Hamlet of Chesterfield Inlet	793-2794 27 in #line cut	2:02	1191	
Hamlet of Rankin Inlet	898-9108 ✓	2:03	1538	
	645-2146 ✓	2:05	0779	



Northwest
Territories Transportation

Airport Manager
Arctic Airports Division
P.O. Box 30
RESOLUTE BAY NT XOA OVO

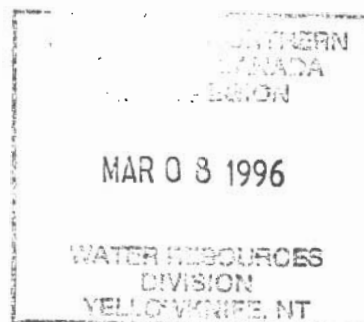
March 01, 1996

Mr. G. Wray
NWT Water Board
P.O. Box 1500
YELLOWKNIFE NT XIA 2R3

ANNUAL REPORT - RESOLUTE BAY AIRPORT - NO: N4L4-1561

Attached for your reference is the 1995 Annual Report as required by Part A, Item 3 of the Water Licence N.;N4L4-1561 for the Resolute Bay Airport, as submitted to me by our airport contractor.

COPY	
BOARD.	7
G.W.	1
E.A.	1
W. REG.	one
File -	1561



1561-1
WB
NUNAI
DIS



D.A. Rayko
Airport Manager



WATER REPORT

WATER CONSUMPTION AND SYSTEM MAINTENANCE

BY

**SAM WHITING
NARWHAL ARCTIC SERVICES**



DATE: FEB. 22, 1996

INTRODUCTION

Resolute Bay Arctic Airport's water lease #N4L4-1561 system in brief is as follows:

Water supply is from Strip Lake and the intake facility is located east of the runway. An under and above ground insulated pipe approximately 635 meters long carried water from the lake to building #48. The total water storage capacity of building #48 is 383,000 liters. Tank 1 holds 306,000 litres of raw chlorinated water of which 24,000 liters are reserved for fire suppression. Tank 2 contained 77,000 litres of softened and chlorinated water used for the heating systems and domestic use. The total resolute airport system with the underground utilidor and Narwhal Arctic Services commercial water delivery uses approximately 30,000 litres of treated water per day. There are approximately 50 people using this water during the winter season and as many as 200 people during the summer. Water is delivered via an underground, insulated utilidor. A large quantity is delivered to various users by Narwhal Arctic Services water truck.

Sewage disposal is achieved by a utilidor system and is treated in a two cell septic tank located a building #20. Sewage effluent is discharged through an insulated pipeline near the southern corner of the airport reserve. The sewage from buildings not connected to the utilidor are held in tanks and are routinely pumped out and discharged at the waste disposal site.

The surveillance network program uses the following points:

1561-01	Strip Lake wet well
1561-02	Central heating plant, after treatment
1561-03	Sewage discharge from final discharge pipe
1561-04	Inlet to Resolute Lake

There is no metering of the outflow pipe as of date. The values representing waste are all calculated on the basis of 80% of water is eventually pumped out. The figure of 80% is a value that was arrived from a Transport Canada letter to Water Resources officer, Northern Affairs dated December 2, 1993.

WATER USAGE:

See Chart 1

WASTE DISPOSAL

See Chart 1

Significant information for use by your department.

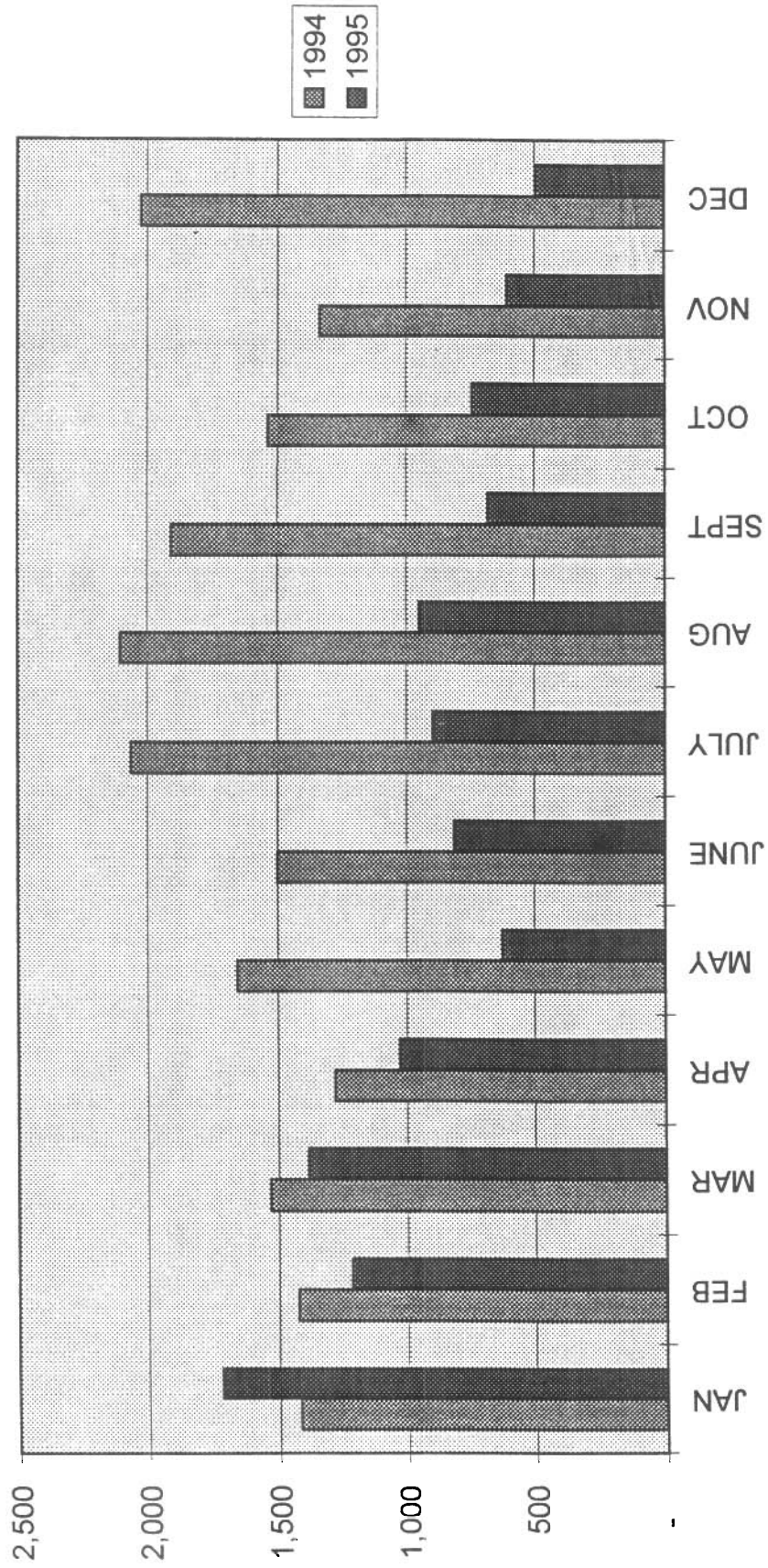
- ◆ Water Consumption, as you can see from Chart 1, has decreased more than half over the last two thirds of 1995 do to continuing improvements made on the system.

The following is a list of work completed:

- ◆ Outfall and waste system inspected monthly
- ◆ October, 1995 the main outfall line froze. Men and resources were mobilized to free frozen section. It is believed that due to perma frost the end of the outfall has leveled off which causes the end to freeze. It will be determined this summer as to how to proceed.
- ◆ Water line was restored into Building #11 in July of 1995.

WATER METERS READINGS - RESOLUTE BAY AIRPORT											
MONTH	START	END	TOTAL CUBIC METERS	MONTH	START	END	TOTAL CUBIC METERS	TOTAL MONTHLY CONSUMPTION	WASTE DISCHARGED		
NARWHAL ARCTIC SERVICES											
1994				1994							
				ANS STAFF HOUSE							
JAN	20,370	20,498	128	JANUARY	103,520	104,810	1,290	1,418	1,134		
FEB	20,498	20,781	283	FEBRUARY	104,810	105,952	1,142	1,425	1,140		
MAR	20,781	21,142	361	MARCH	105,952	107,122	1,170	1,531	1,225		
APR	21,142	21,602	460	APRIL	107,122	107,942	820	1,280	1,024		
MAY	21,602	22,106	504	MAY	107,942	109,093	1,151	1,655	1,324		
JUNE	22,106	22,479	373	JUNE	109,093	110,221	1,128	1,501	1,201		
JULY	22,479	22,991	512	JULY	110,221	111,770	1,549	2,061	1,649		
AUG	22,991	23,642	651	AUGUST	111,770	113,222	1,452	2,103	1,682		
SEPT	23,642	23,975	333	SEPTEMBER	113,222	114,795	1,573	1,906	1,525		
OCT	23,975	24,204	229	OCTOBER	114,795	116,103	1,308	1,537	1,230		
NOV	24,204	24,375	171	NOVEMBER	116,103	117,270	1,167	1,338	1,070		
DEC	24,375	24,594	219	DECEMBER	117,270	119,073	1,803	2,022	1,618		
ANNUAL CONSUMPTION			4,224				15,553	19,777	15,822		
1995				1995							
JANUARY	24,594	24,802	208	JANUARY	119,073	120,582	1,509	1,717	1,374		
FEBRUARY	24,802	25,037	235	FEBRUARY	120,582	121,564	982	1,217	974		
MARCH	25,037	25,393	356	MARCH	121,564	122,592	1,028	1,384	1,107		
APRIL	25,393	25,731	338	APRIL	122,592	123,282	690	1,028	822		
MAY	25,731	25,939	208	MAY	123,282	123,698	416	624	499		
JUNE	25,939	26,193	254	JUNE	123,698	124,256	558	812	650		
JULY	26,193	26,515	322	JULY	124,256	124,829	573	895	716		
AUGUST	26,515	26,863	348	AUGUST	124,829	125,427	598	946	757		
SEPTEMBER	26,863	27,172	309	SEPTEMBER	125,427	125,797	370	679	543		
OCTOBER	27,172	27,480	308	OCTOBER	125,797	126,230	433	741	593		
NOVEMBER	27,480	27,734	254	NOVEMBER	126,230	126,581	351	605	484		
DECEMBER	27,734	27,962	228	DECEMBER	126,581	126,846	265	493	394		
CONSUMPTION YTD			3,368				7,773	11,141	-	8,913	

TOTAL WATER USAGE 1994 VS 1995





DIAND Nunavut District
Box 100
Iqaluit, NT
XOA OHO

January 15, 1996

Mr. D. A. Rayko
Airport Manager
Resolute Bay Airport
Resolute Bay, NT
XOA OVO

Submission of the 1995 Annual Report
Water Register No.: N4L4-1561



Your file Votre référence

Our file Notre référence

B9545-5-N4L4-1561



1561
WB

1. This is to remind you that the 1995 Annual Report as required by Part A, Item 3 of the Water Licence N.; N4L4-1561, issued to the Resolute Bay Airport is due no later than March 1st, 1996.
2. The report is to be submitted to the NWT Water Board, to the attention of:

Mr. Gordon Wray
Chairman
NWT Water Board
P.O. Box 1500
Yellowknife, NT
X1A 2R3
3. If you have any questions, please feel free to contact this office at your convenience.

Sincerely,

Paul Smith
Water Resources Officer
Nunavut District (Baffin Region)

cc. Water Resources Division, DIAND NWT Region, YK

Canada