

Nairn Centre WTP

Large Municipal Residential Drinking Water System

January 1, 2015 – December 31, 2015

***Reg 170/03 Schedule 22 Summary Report
Reg 170/03 Section 11 Annual Report
&
Reg 387/04 Annual Record of Water Taking***

Prepared by the Ontario Clean Water Agency
For The Corporation of the Township of Nairn and Hyman



**Ontario Clean Water Agency
Agence Ontarienne Des Eaux**



Drinking-Water System Number: 210002138
Drinking-Water System Name: Nairn Centre Drinking Water System
Drinking-Water System Owner: The Corp. of the Township of Nairn and Hyman
Drinking-Water System Category: Large Municipal Residential

SECTION 1: INTRODUCTION

This document is prepared in accordance with Section 11 and Schedule 22 of O.Reg.170/03 under the Safe Drinking Water Act and with Section 9 of O.Reg.387/04 under the Ontario Water Resources Act. The reports are prepared by the Ontario Clean Water Agency. Acronyms and definitions can be found at the end of the report.

A copy of the Summary Report must be provided to the members of the municipal council by March 31, 2016.

SECTION 2: REQUIREMENTS OF THE REPORTS

Schedule 22 Report

The report must list the requirements of the Act, the regulations, the system's approval and any order that the system **failed to meet** at any time during the period covered by the report. It must also specify the duration of the failure, and for each failure referred to, describe the measures that were taken to correct the failure.

For the purpose of enabling the owner of the system to assess the rated capability of their system to meet existing and future planned water uses, the following information is required to be included in this report:

- A summary of the quantities and flow rates of the water supplied during the period covered by the report, including monthly average and maximum daily flows.
- A comparison of the summary to the rated capacity and flow rates approved in the systems approval.

Section 11 Report

The annual report must contain the following:

- A brief description of the drinking water system and a list of chemicals used by the system.
- A description of any major expenses incurred during the period covered by the report to install, repair or replace required equipment.
- A summary of all adverse water quality incidents (AWQI) reported to the Ministry
- A summary of corrective actions taken in response all AWQIs
- A summary of all test results required under the regulation, under an approval, municipal drinking water licence or order, including an OWRA order.
- A statement of where a Schedule 22 report will be available for inspection.

The report must be prepared not later than February 28 of the following year.

Regulation 387 Report

On or before March 31 in every year, every holder of a permit to take water (PTTW) shall submit to a Director the data collected and recorded for the previous year.

A record of annual water taking can be found in [Appendix A](#).



SECTION 3: SCHEDULE 22 REPORT

Flows

In accordance with the Municipal Drinking Water License (MDWL), the **Nairn Centre WTP** shall not be operated to exceed a maximum flow of **818 m³/d** to the distribution system.

Daily raw maximum instantaneous flow is stated in the PTTW at a maximum rate of flow of **9.5 L/s** and a maximum daily volume of **820.8 m³/d**.

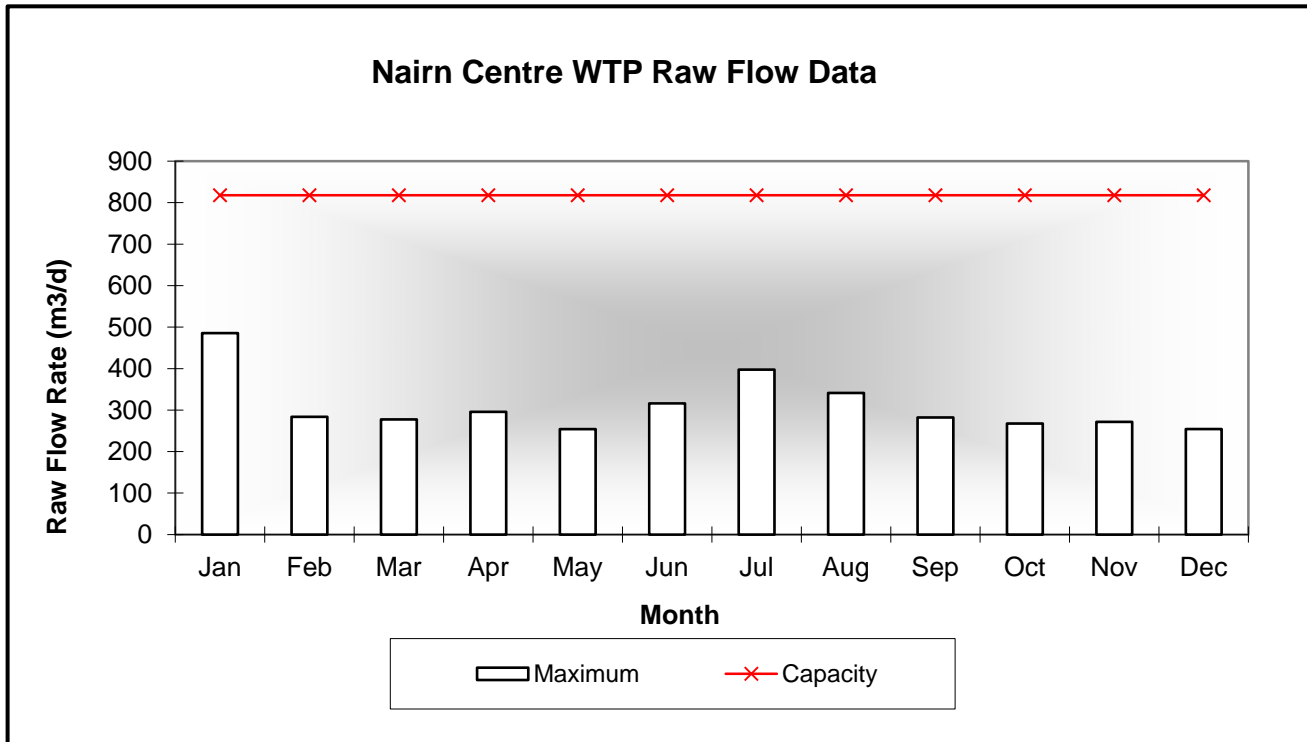
The daily treated water maximum flow was **275.75 m³** in **July** and represents **34%** of capacity.

The average monthly raw water flow for this reporting period was **197.93 m³/d**. The maximum daily flow was **485.66 m³/d** representing **59%** of water taking limits.

The quantity of raw water taken **did not** exceed any limits stipulated within the PTTW

The quantity of treated water supplied during the reporting period **did not** exceed the rated maximum capacity.

<i>RAW WATER FLOW DATA - TOTAL ALL SOURCES</i>						
Month	Total Monthly Flow (m3)	Average Flow (m3/d)	Maximum Flow (m3/d)	Maximum Flow Rate (L/s)	Limits	
					L/s (PTTW)	m ³ /d (PTTW)
January	8203.00	273.43	485.66	6.69	9.5	818
February	5518.96	197.11	283.88	6.17	9.5	818
March	5879.11	189.65	277.61	6.05	9.5	818
April	5769.43	192.31	295.87	6.08	9.5	818
May	4196.70	135.38	254.22	6.68	9.5	818
June	6140.34	204.68	316.07	6.83	9.5	818
July	8368.72	269.96	397.65	7.40	9.5	818
August	6213.78	200.44	341.40	6.46	9.5	818
September	5948.70	198.29	282.30	6.35	9.5	818
October	5397.10	174.10	267.70	8.62	9.5	818
November	5050.50	168.35	271.70	6.88	9.5	818
December	5314.70	171.44	254.40	7.74	9.5	818
Total	72,001.05					
Average		197.93				
Maximum			485.66	8.62		



Annual Raw Water Review

Raw Water Taking	Total Taking m3/d	Average Day m3/d	Max Day m3/d	Max Day % of PTTW allowable 818 m3/d
2015	72,001	198	486	59%
2014	65,906	161	514	63%
2013	67,512	339	524	64%

System

Failures and Corrective Actions

The latest inspection of the drinking water facility took place on September 10, 2015. The facility scored [0/522](#) providing a rating of [100%](#).

AWQIs reported to the Ministry					
Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
Aug. 12, 2015	TC	98	cfu/100 ml	Re sampling was completed with non-detect results.	Aug. 17, 2015

There were 5 community complaints in 2015. All 5 were for cloudy water that was due to air in lines.



SECTION 4: SECTION 11 REPORT

Information to be provided

Population Served	477 (Stats Canada – 2011)
Does your Drinking-Water System serve more than 10,000 people?	No
Is your annual report available to the public at no charge on a web site on the Internet?	Yes
Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.	Township of Nairn and Hyman, Municipal Office 64 McIntyre Street Nairn Centre, Ontario P0M 2L0
Number of Designated Facilities served:	0
Did you provide a copy of your annual report to all Designated Facilities you serve?	NA
Number of Interested Authorities you report to:	0
Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility?	NA
List all Drinking-Water Systems (if any), and their DWS Number which receive all of their drinking water from your system:	N/A
Did you provide a copy of your annual report to all Drinking-Water System owners that are connected to you and to whom you provide all of its drinking water?	NA
Indicate how you notified system users that your annual report is available, and is free of charge.	Public access/notice via the web
Indicate if you notified system users that your annual report is available and is free of charge using an alternate method	YES

Facility Description

A prefabricated package water treatment plant, comprising chemical addition, pre-chlorination, coagulation/flocculation, sedimentation, and dual media filtration, followed by pH adjustment, fluoridation and post chlorination, designed for conventional operating parameters at a rated capacity of 818 m³/day, with duty low lift pump starting and stopping the operation of the water treatment plant. Treated water storage consisting of two clear wells each having a capacity of 345 m³. High lift pumps comprising two vertical multistage pumps, each rated at 6.6 L/s and a fire pump with a capacity of 40.1 L/s. The discharge header fitted with pressure relief valve, a pressure gauge, a chlorine injection point, a magnetic flow meter, and sampling point for a chlorine residual analyzer with the discharge header having a system of three hydro-pneumatic tanks, each with 1.6m³ capacity. A 26m³ surge tank receives sludge from the clarifier and backwash waste from the dual media filters, equipped with two centrifugal submersible pumps each rated at 1.0 L/s with clarified supernatant from the 65 m³ settling chamber overflowing to an outfall chamber, and from there to the adjacent creek and from there to the Spanish River. Stand-by power is available from a 160 kW (200 kVa) diesel generator.



Chemicals Used

Aluminum Sulphate
Magnafloc LT 27 AG
Sodium Hypochlorite (12%)
Soda Ash (dense)
Hydrofluorosilic Acid (HFS)
SternPAC

Significant Expenses

Significant expenses incurred to

- Install required equipment
- Repair required equipment
- Replace required equipment

Probe for Fluoride analyzer \$1021
Chemical transfer pump \$1286
Raw water pump \$10504
Material for SCADA upgrades \$2868
Tools and equipment \$5286
Filter valve \$1357
Fluoride and chlorine system upgrades \$2476

Adverse Water Quality Incidents

Provide details on the notices submitted in accordance with subsection 18(1) of the Safe Drinking-Water Act or section 16-4 of Schedule 16 of O.Reg.170/03 and reported to Spills Action Centre					
Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
Aug. 12, 2015	TC	98	cfu/100 ml	Re sampling was completed with non-detect results.	Aug. 17, 2015

Microbiological testing done under the Schedule 10, 11 or 12 of Regulation 170/03.

	No. of Samples Collected	Range of E.Coli		Range of Total Coliform Results		Number of HPC Samples	Range of HPC Results	
		Min #	Max #	Min #	Max #		Min #	Max #
Raw Water	52	0	49	6	700	0		
Treated Water	52	0	0	0	98	52	0	42
Distribution	104	0	0	0	0	52	0	73

Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03



	No. of Samples	Range of Results	
	Collected	Minimum	Maximum
Turbidity, On-Line (NTU) - Filt1	8760	0.02	2.23
Free Chlorine Residual, Treated (mg/L)	8760	0	5.0

Summary of additional testing and sampling carried out in accordance with the requirement of an approval, order or other legal instrument. (Use monitoring BW TSS sheet to Paste and Copy)

Date of legal instrument issued	Parameter and limits	Month Sampled	Day Sampled	Result	Unit of Measure
MDWL 281-101 November 25, 2015	Backwash (BW) Total Suspended Solids (TSS) 25 mg/L annual average	Jan	29	10	mg/L
		Feb	17	8	mg/L
		Mar	30	9	mg/L
		Apr	23	2	mg/L
		May	25	2	mg/L
		Jun	22	3	mg/L
		Jul	20	2	mg/L
		Aug	24	4	mg/L
		Sep	28	2	mg/L
		Oct	26	2	mg/L
		Nov	26	2	mg/L
			Dec	21	24
		Annual Average		5.83	mg/L

Summary of Inorganic parameters tested during this reporting period or the most recent sample results

	Sample Date (mm/dd/yyyy)	Sample Result	MAC	No. of Exceedances	
				MAC	1/2 MAC
TREATED WATER					
Antimony: Sb (ug/L) - TW	1/21/2015	0.06	6.0	No	No
Arsenic: As (ug/L) - TW	1/21/2015	<MDL 0.2	25.0	No	No
Barium: Ba (ug/L) - TW	1/21/2015	5.96	1000.0	No	No
Boron: B (ug/L) - TW	1/21/2015	5.3	5000.0	No	No
Cadmium: Cd (ug/L) - TW	1/21/2015	0.009	5.0	No	No
Chromium: Cr (ug/L) - TW	1/21/2015	0.1	50.0	No	No
Mercury: Hg (ug/L) - TW	1/21/2015	0.02	1.0	No	No
Selenium: Se (ug/L) - TW	1/21/2015	<MDL 1.0	10.0	No	No
Uranium: U (ug/L) - TW	1/21/2015	0.01	20.0	No	No



	Sample Date (mm/dd/yyyy)	Sample Result	MAC	No. of Exceedances	
				MAC	1/2 MAC
TREATED WATER					
Fluoride (mg/L) - TW	6/30/2012	0.4	1.5	No	No
Nitrite (mg/L) - TW	1/21/2015	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	4/13/2015	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	7/20/2015	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	11/10/2015	<MDL 0.003	1.0	No	No
Nitrate (mg/L) - TW	1/21/2015	0.08	10.0	No	No
Nitrate (mg/L) - TW	4/13/2015	0.15	10.0	No	No
Nitrate (mg/L) - TW	7/20/2015	0.059	10.0	No	No
Nitrate (mg/L) - TW	11/10/2015	0.073	10.0	No	No
Sodium: Na (mg/L) - TW	1/9/2012	19.1	20*	No	No

*There is no "MAC" for Sodium. The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified when the sodium concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on sodium restricted diets.

Summary of Lead testing under Schedule 15.1 during this reporting period

Location Type	Number of Samples	Range of Results		MAC (ug/L)	Number of Exceedances
		Minimum	Maximum		
Distribution - Lead Results (ug/L)	1	1.10	1.10	10	0
Distribution - Alkalinity (mg/L)	2	12.5	28	n/a	n/a
Distribution - pH In-House	2	7.69	8.10	n/a	n/a
Distribution - pH Lab	0			n/a	n/a

Summary of Organic parameters sampled during this reporting period or the most recent sample results

	Sample Date (mm/dd/yyyy)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
TREATED WATER					
Alachlor (ug/L) - TW	1/21/2015	<MDL 0.02	5.00	No	No
Aldicarb (ug/L) - TW	1/21/2015	<MDL 0.01	9.00	No	No
Aldrin+Dieldrin (ug/L) - TW	1/21/2015	<MDL 0.01	0.70	No	No
Atrazine + N-dealkylated metabolites (ug/L) - TW	1/21/2015	<MDL 0.010	5.00	No	No
Azinphos-methyl (ug/L) - TW	1/21/2015	<MDL 0.02	20.00	No	No
Bendiocarb (ug/L) - TW	1/21/2015	<MDL 0.01	40.00	No	No
Benzene (ug/L) - TW	1/21/2015	<MDL 0.32	5.00	No	No
Benzo(a)pyrene (ug/L) - TW	1/21/2015	<MDL 0.004	0.01	No	No
Bromoxynil (ug/L) - TW	1/21/2015	<MDL 0.33	5.00	No	No
Carbaryl (ug/L) - TW	1/21/2015	<MDL 0.01	90.00	No	No
Carbofuran (ug/L) - TW	1/21/2015	<MDL 0.01	90.00	No	No
Carbon Tetrachloride (ug/L) - TW	1/21/2015	<MDL 0.16	5.00	No	No
Chlordane: Total (ug/L) - TW	1/21/2015	<MDL 0.01	7.00	No	No



Chlorpyrifos (ug/L) - TW	1/21/2015	<MDL 0.02	90.00	No	No
Cyanazine (ug/L) - TW	1/21/2015	<MDL 0.03	10.00	No	No
Diazinon (ug/L) - TW	1/21/2015	<MDL 0.02	20.00	No	No
Dicamba (ug/L) - TW	1/21/2015	<MDL 0.2	120.00	No	No
1,2-Dichlorobenzene (ug/L) - TW	1/21/2015	<MDL 0.41	200.00	No	No
1,4-Dichlorobenzene (ug/L) - TW	1/21/2015	<MDL 0.36	5.00	No	No
DDT + metabolites (ug/L) - TW	1/21/2015	<MDL 0.01	30.00	No	No
1,2-Dichloroethane (ug/L) - TW	1/21/2015	<MDL 0.35	5.00	No	No
1,1-Dichloroethylene (ug/L) - TW	1/21/2015	<MDL 7.0	14.00	No	No
Dichloromethane (Methylene Chloride) (ug/L) - TW	1/21/2015	<MDL 0.35	50.00	No	No
2,4-Dichlorophenol (ug/L) - TW	1/21/2015	<MDL 0.15	900.00	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW	1/21/2015	<MDL 0.19	100.00	No	No
Diclofop-methyl (ug/L) - TW	1/21/2015	<MDL 0.4	9.00	No	No
Dimethoate (ug/L) - TW	1/21/2015	<MDL 0.03	20.00	No	No
Dinoseb (ug/L) - TW	1/21/2015	<MDL 0.36	10.00	No	No
Diquat (ug/L) - TW	1/21/2015	<MDL 1.0	70.00	No	No
Diuron (ug/L) - TW	1/21/2015	<MDL 0.03	150.00	No	No
Glyphosate (ug/L) - TW	1/21/2015	<MDL 1.0	280.00	No	No
Heptachlor+hepachlor epoxide (ug/L) - TW	1/21/2015	<MDL 0.01	3.00	No	No
Lindane (ug/L) - TW	1/21/2015	<MDL 0.01	4.00	No	No
Malathion (ug/L) - TW	1/21/2015	<MDL 0.02	190.00	No	No
Methoxychlor (ug/L) - TW	1/21/2015	<MDL 0.01	900.00	No	No
Metolachlor (ug/L) - TW	1/21/2015	<MDL 0.01	50.00	No	No
Metribuzin (ug/L) - TW	1/21/2015	<MDL 0.02	80.00	No	No
Monochlorobenzene (Chlorobenzene) (ug/L) - TW	1/21/2015	<MDL 0.3	80.00	No	No
Paraquat (ug/L) - TW	1/21/2015	<MDL 1.0	10.00	No	No
Parathion (ug/L) - TW	1/21/2015	<MDL 0.02	50.00	No	No
PCB (ug/L) - TW	1/21/2015	<MDL 0.04	3.00	No	No
Pentachlorophenol (ug/L) - TW	1/21/2015	<MDL 0.15	60.00	No	No
Phorate (ug/L) - TW	1/21/2015	<MDL 0.01	2.00	No	No
Picloram (ug/L) - TW	1/21/2015	<MDL 1.0	190.00	No	No
Prometryne (ug/L) - TW	1/21/2015	<MDL 0.03	1.00	No	No
Simazine (ug/L) - TW	1/21/2015	<MDL 0.01	10.00	No	No
Temephos (ug/L) - TW	1/21/2015	<MDL 0.01	280.00	No	No
Terbufos (ug/L) - TW	1/21/2015	<MDL 0.01	1.00	No	No
Tetrachloroethylene (ug/L) - TW	1/21/2015	<MDL 0.35	30.00	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	1/21/2015	<MDL 0.2	100.00	No	No
Triallate (ug/L) - TW	1/21/2015	<MDL 0.01	230.00	No	No
Trichloroethylene (ug/L) - TW	1/21/2015	<MDL 0.44	50.00	No	No
2,4,6-Trichlorophenol (ug/L) - TW	1/21/2015	<MDL 0.25	5.00	No	No
2,4,5-T (ug/L) - TW	1/21/2015	<MDL 0.22	280.00	No	No



Trifluralin (ug/L) - TW	1/21/2015	<MDL 0.02	45.00	No	No
Vinyl Chloride (ug/L) - TW	1/21/2015	<MDL 0.17	2.00	No	No
DISTRIBUTION WATER					
Trihalomethane: Total (ug/L) Annual Average - DW	12/31/2015	55.5	100.00	No	No

SECTION 5: RAW WATER SUBMISSIONS

Raw water flows have not been submitted to the MOECC although the information has been uploaded to their website. The website is currently unable to accept submissions. Flows are required to be submitted by March 31, 2016. Confirmation of submission will be provided once the MOECC's website is operational again.

SECTION 6: CONCLUSION

The [Nairn Centre WTP](#) delivers water that, in all its treated and distribution samples, indicates the water to be free of bacteriological contamination.

For the 2015 operating year, the [Nairn Centre WTP](#) was able to meet the demand of water use without exceeding the PTTW or the MDWL.

List of Acronyms and Definitions

Alkalinity	The capacity of water for neutralizing an acid solution
AWQI	Adverse Water Quality Incident- when a water sample test result exceeds the Ontario Drinking Water Quality Standards
Backwash	Water pumped backwards to clean filters
BWA	Boil Water Advisory; Issued when risk of contamination is possible in drinking water
CFU	Colony Forming Units
Chlorine Residual	A low level of chlorine remaining in water after disinfection occurs
DW	Distribution Water
DWA	Drinking Water Advisory; Issued when water cannot be consumed by any means
DWWP	Drinking Water Works Permit - provides a description of the overall system
E.Coli	Bacteria used as indicators to measure the degree of pollution and sanitary quality of water
GUDI	Groundwater Under Direct Influence – Considered to be surface water under O.Reg 170/03
HPC	Heterotrophic Plant Count
L/s	Litres per Second
m3/d	Cubic Metres per Day
MAC	Maximum Acceptable Concentration
MDL	Minimum Detection Level
MDWL	Municipal Drinking Water Licence - relates to the operation and performance requirements
mg/L	Miligrams per Litre
Ministry	Ministry of the Environment and Climate Change
MOECC	Ministry of the Environment and Climate Change
O.Reg	Ontario Regulation
PTTW	Permit to Take Water – Permit which allows water taking from groundwater or surface water
RW	Raw Water
TC	Total Coliforms
TSS	Total Suspended Solids
Turbidity	Cloudiness or haziness of water
TW	Treated Water



Appendix A

Raw Water Flows