

WATER & SEWER FUND

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Overview

This fund's activities include all aspects of establishing, operating and maintaining buildings, equipment and work related to the supply and treatment of potable water, distribution of potable water, and collection, treatment and disposal of sewage. These costs are recovered through charges to service users.

2013 Highlights

Highlights of the Water and Sewer Fund for 2013 include:

- Northland Trailer Park water and sewer infrastructure upgrades were awarded to RTL Enterprises. This project has an expected completion date of 2015, at a total budget of \$15,908,554.77
- Replacement of water and sewer mains and water and sewer services on Bromley Drive, Bromley Court and Knutsen Court; the total budget was \$3.7 million
- Revisions to accommodate new development in Niven Lake Subdivision, Phase IV; total budget was \$581,000
- Engineering and Water & Sewer staff provided support and review for the Homes North Block 501 development
- Annual/quarterly submissions of the City's water and sewage treatment report to the Mackenzie Valley Land and Water Board
- Yearly pumphouse and liftstation preventative maintenance
- Yearly cleaning of boilers at Pumphouse #1
- Cleaning, servicing and/or repairing all boilers and furnaces in City Water and Sewer system, as well as the City garage and new parking garage
- Yearly preventative maintenance of all fire extinguishers on City premises
- Monthly fly-out testing of lagoon at F1 & F3 sampling sites, as per regulatory requirements; three bulk samples taken for toxicity testing; increased sampling as per Water License requirements was implemented after a leak in the decant structure was discovered in May 2013
- Pumphouse and liftstation fire alarms were inspected and serviced by City water and sewer staff
- Thawing of storm drains and culverts during spring runoff

- Painted one-third of hydrants in the City water system; repairs are made annually as required and dictated by routine maintenance schedule
- Leak detection program ongoing; found and repaired 52 leaks to date; expect a total of 75 for 2013
- Flow testing on all hydrants in the Pumphouse #1 and #3 supplied water system in conjunction with mainline cleaning; due to capital improvement projects associated with the Pumphouse #4 water system, cleaning of hydrants and mainline was not completed in 2013
- Annual valve exercising and inspection was carried out in conjunction with hydrant flushing and water main cleaning
- Annual sewer flushing program continued; 90% completion of sewer mains expected for 2013
- Liftstation cleaning to take place in October 2013
- Weekly chlorine monitoring in the city's water system to ensure proper operation and resident safety and satisfaction
- 24/7 chlorine monitoring in all pumphouses
- Water system temperature monitoring completed weekly during winter months to ensure proper circulation and improve heating efficiencies.
- Annual lagoon decant began in September 2013; decant is undertaken over a period of 12 weeks annually
- Facilitated and organized the annual servicing of the City's generators and transfer switches
- Provided safety and other related training and recertification to Water and Sewer staff.
- Clearly labeled all water and sewer facilities, as per water licence requirements
- Upgraded confined space procedures and completed labeling of such areas

Pumphouse #1

- Ongoing SCADA maintenance
- A leak was discovered in Reservoir #1, Cell #3; repair alternatives were investigated, completed and the reservoir returned to full operation

*Pumphouse operators do double duty as both pumphouse operators and emergency dispatchers, which is unique to Yellowknife.

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Pumphouse #2

- Routine maintenance

Pumphouse #3

- Pumps have been removed and inspected under improved maintenance program
- Pump 5 electric motor was replaced

Pumphouse #4

- Facility piping upgrade and fire pump replacement complete
- Reservoir cells and pump wells cleaned

Pumphouse #5

- Routine maintenance
- Building exterior painted to cover graffiti

Pumphouse #6

- Routine maintenance

Liftstation #1

- Annual pump and communitor maintenance
- A new pump has been ordered for Pump # 3; Pumps # 1 and # 2 were rebuilt

Liftstation #2

- Annual pump maintenance.
- Liftstation replacement and upgrade completed, with generator replacement in progress at a total budget of \$547,000

Liftstation #3

- Annual pump maintenance.

Liftstation #4

- Annual pump and communitor maintenance
- Facility architectural upgrades in progress to improve heating efficiencies and esthetics; total budget \$35,000

Liftstation #5

- Annual communitor maintenance as required
- Pumps removed, inspected and repaired to ensure maximum performance
- Heating fuel tank upgraded

Liftstation #6

- Annual pump maintenance
- New generator installed under capital; total budget \$97,000
- Fuel tank upgraded to provide greater capacity for facility and generator operation
- Lot drainage improvements completed

Liftstation #7

- Annual pump and communitor maintenance

Liftstation #8

- Annual pump maintenance

Liftstation #9

- Annual pump maintenance

Liftstation #10

- Annual pump maintenance

Liftstation #11

- Annual pump maintenance

Liftstation # 12

- Annual pump maintenance



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2014/2015/2016 Goals

The goals of the Water & Sewer Fund are to:

- Provide a reliable supply of high quality, potable water to Yellowknife citizens, and efficiently and responsibly dispose of waste water
- Expand on and maintain a ten-year capital replacement plan for potable water and waste water systems; maintain piped water and sewer systems in good, functional condition
- Continue elimination of water losses and wastage on mains and services
- Continue upgrading the City's water and sewer systems and maintain them at a good, workable standard
- Conduct regular upgrading of supervisory staff (e.g. courses and conferences to learn about new technology and explore how it could benefit the City)
- Continue to upgrade safety training of staff
- Continue to upgrade safety equipment and procedures for staff
- Increase monitoring of water temperature in the critical areas of the piped water distribution system; this will reduce the need to heat water and result in additional fuel and power savings. Water obtained from the Yellowknife River is typically around 1°C during the winter
- Rebuild and/or replace pumphouse and liftstation pumps to increase pumping capacity and reduce power consumption in a cost-effective manner
- Hire qualified people to maintain a high standard of repair and maintenance
- Increase water quality monitoring with the installation of continuous chlorine monitors throughout the system

2014/2015/2016 Objectives

The objectives of the Water & Sewer Fund are to:

- Provide the community with potable water that meets or exceeds the Canadian Drinking Water Quality Guidelines, the requirements of our Water License, territorial and federal environmental and public health regulations (as established by the Mackenzie Valley Land and Water Board) and the *Public Health Act*

- Treat and dispose of waste water in order to meet or exceed the requirements of the *NWT Water Act* and our Water License discharge and monitoring requirements
- Provide adequate water pressure and volume to meet fire suppression needs and plan for remedial measures of future capital projects, should deficiencies be found
- Maintain water quality and protect public health through timely water quality testing – daily chlorine and fluoride, weekly bacterial and general water quality analysis
- Repair or replace piped water and sewer distribution mains prior to ultimate failure or excessive maintenance
- Manage and monitor trucked water delivery and trucked sewage pump-out contracts
- Eliminate water main and service losses through annual leak detection and repair, elimination of bleeders and calibration or replacement of water meters over the next three years
- Continue to reduce the number of single line water services and services having bleeders, heat trace and Aquaflow units, as resources permit
- Review future capital projects with Engineering Division to prioritize spending to best suit short- and long-term requirements from an operation and maintenance standpoint
- Initiate changes to shorten the staff time expended on water meter reading and billing through technologically advanced reading and downloading equipment, as well as a comprehensive review of current practices
- Establish an information inventory for the City's underground infrastructure and utilities
- Submit waste reports required by City's new Water License to the Mackenzie Valley Land and Water Board
- Public Works and Engineering and the Water & Sewer Division continue to work together for capital replacement projects
- Review by-laws to ensure residents are being serviced to the highest standard, equally and fairly

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Water & Sewer Fund Budget

	2012 Actual (\$000's)	2013 Budget (\$000's)	2013 Forecast (\$000's)	2014 Budget Recommended (\$000's)	2015 Budget (\$000's)	2016 Budget (\$000's)	Note
Revenue							
User Charges							
Piped Water	6,133	6,380	6,333	6,623	6,907	7,203	(1)
Trucked Water	1,073	1,088	1,129	1,176	1,228	1,282	(1)
Other User Charges	159	155	152	155	161	167	(2)
	7,365	7,623	7,614	7,954	8,296	8,653	
Allocated to Capital	(1,314)	(1,407)	(1,407)	(1,507)	(1,609)	(1,716)	(3)
	6,050	6,216	6,207	6,448	6,687	6,937	
Expenditures (By Activity)							
Sewage Disposal	1,621	1,644	1,651	1,723	1,777	1,835	
Water Distribution	3,103	3,150	3,206	3,362	3,468	3,561	
	4,724	4,794	4,856	5,084	5,245	5,396	
Labour & Vehicle O&M Allocation	(14)	303	232	251	257	256	
Amortization	3,600	3,974	4,094	4,143	4,834	4,949	
	8,309	9,072	9,182	9,478	10,336	10,601	
Net Revenue (Expenditures)	(2,259)	(2,855)	(2,975)	(3,031)	(3,649)	(3,664)	
Interfund Transfers							
(To) From General Fund	(1,097)	(1,143)	(1,142)	(1,193)	(1,244)	(1,298)	(4)
Change in Fund Balance Before Reallocation of Amortization	(3,356)	(3,999)	(4,117)	(4,224)	(4,893)	(4,962)	
Reallocation of Amortization	3,600	3,974	4,094	4,143	4,834	4,949	
Change in Fund Balance	244	(25)	(23)	(81)	(59)	(13)	
Opening Balance	(382)	(383)	(138)	(162)	(243)	(302)	
Closing Balance	(138)	(408)	(162)	(243)	(302)	(315)	
Expenditures (By Object)							
Wages & Benefits	2,047	2,124	1,946	2,098	2,146	2,159	
Other O&M	6,262	6,947	7,237	7,380	8,190	8,443	
	8,309	9,072	9,182	9,478	10,336	10,601	
Details of Other O&M							
General Services	1,089	1,320	1,530	1,541	1,589	1,642	
Materials	233	292	277	285	290	295	
Maintenance	73	64	71	73	74	76	
Utility - Fuel	263	269	283	260	278	307	
Utility - Power	826	898	863	959	1,000	1,040	
Vehicle O&M & Fuel	178	131	118	120	125	133	
Amortization	3,600	3,974	4,094	4,143	4,834	4,949	
	6,262	6,947	7,237	7,380	8,190	8,443	

Notes:

- (1) Piped and Trucked Water - See the following schedule of water and sewer rates based on the rate increases of 4% each year from 2014 to 2016 for the estimated consumption and revenue.
- (2) Other user charges are mainly from utilities penalties.
- (3) According to Budget Policies, allocation to Capital Fund is based on 30% of revenues to fund water and sewer infrastructure projects. The actual transfer (plus the previous increase in infrastructure replacement levy) is reduced by \$200,000 from 2014 to 2016.
- (4) The Water and Sewer Fund pays an administration fee of 15% of revenues to the General Fund.



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		Monthly Charge (\$)	Average Monthly # of Accts.	2014 Budgeted Revenue (\$)
Piped Services:				
Equivalent residential unit charge		7.34	11,247	990,960
Demand charge based on water meter size:	5/8"	9.12	4,357	476,909
	3/4"	13.68	30	4,911
	1"	22.79	60	16,406
	1 1/2"	50.13	51	30,678
	2"	86.59	77	80,056
	3"	191.40	11	25,265
	4"	337.25	4	14,839
	6"	774.75	1	9,297
	8"	1,367.21	1	16,407
Consumption:		327,000,000 gallons		
		15.16/1,000 gallons		4,957,320
				<u>6,623,047</u>

Others
 Water Meters Fee @ \$129
 Connect/ Disconnect Permit @\$40

		Rate	Annual # of Account/ Consumption (gallons)	2014 Budgeted Revenue (\$)
Trucked Services				
Residential access charge - accounts		\$53.06	5,393	286,153
Residential consumption <3,300 gallons		\$15.16	9,700,000	147,052
Residential consumption >3,300 gallons		\$86.44	300,000	25,933
Commercial access charge - accounts		\$151.50	3,338	505,707
Commercial consumption <3,300 gallons		\$15.16	7,707,700	116,849
Commercial consumption >3,300 gallons		\$86.44	600,000	51,867
				<u>1,133,561</u>
Others				
Bulk Sales @ \$19.64/ 1,000 gallon				42,600
New Utility Account Setup/ Registration Fee				
Paper Billing		\$33	340	11,220
Paperless Billing		\$23	340	7,820
				<u>19,040</u>

Infrastructure Replacement Levy (to finance Water & Sewer Projects)
 Charge is Per Equivalent Residential Unit (ERU)

	Monthly Charge (\$)	Average Monthly # of ERU	2014 Budgeted Revenue (\$)
	10.00	12,080	1,449,600

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Sewage Disposal Budget

	2012 Actual (\$000's)	2013 Budget (\$000's)	2013 Forecast (\$000's)	2014 Budget Recommended (\$000's)	2015 Budget (\$000's)	2016 Budget (\$000's)
Liftstations/Effluent Operations						
Operations & Maintenance	304	364	371	396	412	431
Allocated Vehicle O&M & Fuel	36	23	24	24	25	27
Allocated Labour	152	169	152	161	164	165
	492	556	547	581	602	623
Trucked Sewage						
General Services	757	758	815	845	870	901
Allocated Vehicle O&M & Fuel	-	1	-	-	-	-
Allocated Labour	1	18	1	1	1	1
	759	777	816	846	871	902
Sewage System Maintenance						
Operations & Maintenance	168	100	108	107	110	113
Allocated Vehicle O&M & Fuel	63	63	42	43	45	47
Allocated Labour	138	148	138	146	149	150
	370	312	288	296	304	310
Total Sewage Disposal						
Direct Costs	1,230	1,222	1,294	1,348	1,392	1,444
Allocated Vehicle O&M & Fuel	99	87	66	67	70	74
Allocated Labour	292	335	291	308	315	317
	1,621	1,644	1,651	1,723	1,777	1,835



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Water Distribution Budget

	2012 Actual (\$000's)	2013 Budget (\$000's)	2013 Forecast (\$000's)	2014 Budget Recommended (\$000's)	2015 Budget (\$000's)	2016 Budget (\$000's)
Pumphouses						
Labour - Pumphouse # 1		-	-	-	-	-
Operations & Maintenance	973	1,039	1,013	1,064	1,111	1,166
	973	1,039	1,013	1,064	1,111	1,166
Allocated Vehicle O&M & Fuel	8	6	5	5	5	6
Allocated Labour	888	906	885	936	958	964
	1,869	1,951	1,903	2,005	2,074	2,136
Trucked Water Delivery						
General Services	685	699	758	781	804	828
Water Line/Hydrant Maintenance						
Operations & Maintenance	52	74	65	72	74	75
Allocated Vehicle O&M & Fuel	60	32	40	40	42	45
Allocated Labour	341	299	339	359	367	370
	452	405	443	471	483	489
Water Meter Services						
Operations & Maintenance	4	11	13	11	12	12
Allocated Vehicle O&M & Fuel	11	5	7	7	8	8
Allocated Labour	82	79	82	86	88	89
	96	96	102	105	107	109
Total Water Distribution						
Direct Costs	1,715	1,823	1,848	1,928	2,000	2,081
Allocated Vehicle O&M & Fuel	78	43	52	52	55	58
Allocated Labour	1,311	1,284	1,306	1,381	1,413	1,422
	3,103	3,150	3,206	3,362	3,468	3,561

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Water & Sewer Fund Performance Measures

	Projected 2012	Actual 2012	Projected 2013	Forecasted 2014	Forecasted 2015	Forecasted 2016	Notes
Workload Indicators							
No. of metres of replaced water and sewer mains	652	824	3,512	3,252	2,729	500	(1)
No. of fire hydrants	326	332	332	332	332	332	(2)
No. of fire hydrants flushed	310	310	320	320	320	320	
No. of bleeders on City main lines	1	2	2	5	5	5	(3)
No. of water meters replaced							
Public Works (in-house)	40	18	40	40	40	20	
Contracted out	-	-	55	100	100	-	
Total water meters replaced	40	18	95	140	140	20	(4)
No. of new water and sewer (W&S) services privately installed:							
Northlands	-	-	55	100	100	-	
No. of services replaced under Capital	35	21	64	-	60	-	
No. of services repaired/replaced under Service Connection Failure Assistance Fund (SCFA)							
Public Works (in-house)	60	81	75	50	50	50	
Contracted out	15	10	10	25	25	10	
Total	75	91	85	75	75	60	
No. of services repaired/replaced by City (Capital and O&M)	110	112	149	75	75	60	
No. of single line bleeders eliminated	15	6	25	15	15	5	
No. of Aquaflow units eliminated	7	1	5	5	-	-	

Notes:

- (1) In 2012 water and sewer mains were replaced on Matonabee Street and Knutsen Avenue. In 2013, replacement was carried out on Knutsen Court, Bromley Drive and Bromley Court.
- (2) Fire hydrants - in this budget cycle all fire hydrants within Northland Trailer Park will become part of the City's PH #4 system, thus current identification system requires updating.
- (3) Bleeders on City mains in Niven Lake are required until circulation loops are tied in and Pumphouse #6 (Niven Booster Station) can operate as designed. The number of bleeders will increase from 2014 onward due to Northlands Trailer Park and the Homes North 501 project.
- (4) Replacement of meters will be ongoing, especially now that specifications have been changed due to purchase of automated reading equipment.

