

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.

2012 Highlights

The Water and Sewer fund highlights for 2012 include:

- Replacement of water and sewer mains and water and sewer services on Matonabee Street and Byrne Road. The total budget was \$3.2 M.
- Niven Lake Subdivision expansion and completion of potable water circulation loop through Phase IV
- Annual/quarterly submissions of the City's water and sewage treatment report to the Mackenzie Valley Land and Water Board
- Yearly pumphouse & liftstation preventative maintenance as time permitted
- Yearly cleaning of boilers at Pumphouse #1
- Water & Sewer staff, cleaned, serviced, and/or repaired all boilers and furnaces in City system
- 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 on June 1
- Pumphouse and liftstation fire alarms were inspected and serviced
- Continue to add Actizyme treatment to the sewage system
- Thawed storm drains and culverts during spring runoff
- Upgraded fire hydrants as required; painted one-third of hydrants in City system
- Leak detection program ongoing; found and repaired 55 leaks to date; expect a total of 75 for 2012
- Flushed City's fire hydrants and water main system and completed

- flow testing on all hydrants
- Continued sewer flushing program; expect to complete 90% of City mains in 2012
- Liftstation cleaning to take place beginning October 2012
- Valve exercising program with fire hydrant flushing, and repairs completed as required
- Weekly chlorine monitoring in water system
- Daily chlorine monitoring in all pumphouses; continuous chlorine monitoring installed in Liftstation #6 and #8 on potable water supply to improve water quality monitoring capability and to reduce the number of confined space entries
- Water system temperature monitoring during winter months
- Annual lagoon decant began September 4th for approximately eight weeks
- City entered into a contract with NORTEC Industries to perform maintenance and repairs to our SCADA and programming systems
- Pumphouse and liftstation crew facilitated and organized the servicing of all City of Yellowknife generators and transfer switches by NORTEC
- Provided training courses such as confined space, chlorination, water treatment, and wastewater collection to Water and Sewer staff
- Improved and implemented maintenance schedules for water and sewer facilities, increasing the maintenance that can be performed with City staff.
- Clearly labeled all water and sewer facilities, as per water licence requirements
- Upgraded confined space procedures and completed labeling of such areas
- Canadian Dewatering (Arctic Divers) completed bi-annual inspection of the submarine line from Pumphouse #2 to Pumphouse #1
- Inspected all water reservoirs for sediment build up; they are reasonably clean with no cleaning required.

Pumphouse #1

- Ongoing SCADA maintenance
- A leak was discovered in Reservoir #1, Cell #3. Repair alternatives are being investigated.

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

Pumphouse #2

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- Routine maintenance

Pumphouse #3

- Pumps have been removed and inspected under improved maintenance program
- Building exterior was painted and interior painting in progress

Pumphouse #4

- Complete piping replacement and refurbishing project is in progress
- RV fill and dump station was moved and modified to improve usability

Pumphouse #5

- Routine maintenance
- Building exterior painted to cover graffiti

Pumphouse #6

- Routine maintenance

Liftstation #1

- Annual pump and communitor maintenance
- Interior of building was painted, including dry well to improve lighting

Liftstation #2

- Annual pump maintenance.
- Generator and pump well to be upgraded under capital. Work has been awarded but completion expected 2013.

Liftstation #3

- Annual pump maintenance.

Liftstation #4

- Annual pump and communitor maintenance
- Back-up generator installation in progress; commissioning expected in November
- Site drainage improvements

Liftstation #5

- Annual communitor maintenance as required
- Pumps removed, inspected and repaired to ensure maximum performance
- Alarms for combination generator behind the Multiplex are currently being installed to allow for monitoring via SCADA.

Liftstation #6

- Annual pump maintenance
- New roof contract awarded to New Image Construction; completion expected by October 31st
- Pellet boiler removed due to high maintenance requirements, unprecedented down time and unreliable operation

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

- Repairs were made necessary by several years of inactivity due to development issues of Niven Lake Phase IV; repairs have been completed
- Communications established with Pumphouse #1 SCADA
- Liftstation commissioned and in operation.

2013/2014/2015 Goals



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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 of new technology and explore how it could benefit the City)
- Continue to upgrade safety training of all 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.

2013/2014/2015 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, our Water License requirements, 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 Aquaflo units, as resources permit
- Review with Engineering Division future capital projects 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 and 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

	2011 Actual (\$000's)	2012 Budget (\$000's)	2012 Forecast (\$000's)	2013 Budget Recommended (\$000's)	2014 Budget (\$000's)	2015 Budget (\$000's)	Note
Revenue							
User Charges							
Piped Water	5,973	6,204	6,152	6,380	6,643	6,918	(1)
Trucked Water	1,033	1,043	1,057	1,088	1,135	1,185	(1)
Other User Charges	142	156	159	155	158	160	(2)
	7,148	7,403	7,368	7,623	7,936	8,262	
Allocated to Capital	(1,252)	(1,341)	(1,341)	(1,407)	(1,501)	(1,599)	(3)
	5,896	6,062	6,027	6,216	6,435	6,663	
Expenditures (By Activity)							
Sewage Disposal	1,651	1,557	1,614	1,641	1,679	1,722	
Water Distribution	3,068	3,094	3,009	3,139	3,209	3,276	
	4,719	4,650	4,623	4,780	4,888	4,999	
Labour & Equipment Allocation	577	270	300	299	301	308	
Amortization	3,850	3,886	3,879	3,974	3,698	4,587	
	9,146	8,807	8,802	9,053	8,887	9,893	
Net Revenue (Expenditures)	(3,250)	(2,744)	(2,775)	(2,837)	(2,452)	(3,230)	
Interfund Transfers							
(To) From General Fund	(1,066)	(1,111)	(1,105)	(1,143)	(1,190)	(1,239)	(4)
Change in Fund Balance Before Reallocation of Amortization	(4,316)	(3,855)	(3,880)	(3,980)	(3,642)	(4,469)	
Reallocation of Amortization	3,850	3,886	3,879	3,974	3,698	4,587	
Change in Fund Balance	(466)	31	(1)	(6)	56	118	
Opening Balance	84	84	(382)	(383)	(389)	(334)	
Closing Balance	(382)	116	(383)	(389)	(334)	(216)	
Expenditures (By Object)							
Wages & Benefits	2,078	2,104	2,127	2,106	2,139	2,182	
Other O&M	7,068	6,702	6,675	6,947	6,748	7,711	
	9,146	8,807	8,802	9,053	8,887	9,893	

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 2013 to 2015 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 2013 to 2015.
- (4) The Water and Sewer Fund pays an administration fee of 15% of revenues to the General Fund.



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Piped Services:	Monthly Charge (\$)	Average Monthly # of Accts.	2013 Budgeted Revenue (\$)
Equivalent residential unit charge	7.06	11,149	944,750
Demand charge based on water meter size:			
5/8"	8.77	4,348	457,485
3/4"	13.15	1	158
1"	21.91	61	16,128
1 1/2"	48.20	54	31,011
2"	83.26	75	74,781
3"	184.04	11	24,468
4"	324.28	3	11,674
6"	744.95	1	8,940
Consumption:			
330,200,000 gallons			
14.57/1,000 gallons			4,811,014
			<u>6,380,409</u>

Others
 Water Meters Fee @ \$124
 Connect/ Disconnect Permit @\$38

Trucked Services	Rate	Annual # of Account/ Consumption (gallons)	2013 Budgeted Revenue (\$)
Residential access charge - accounts	\$51.02	5,355	273,225
Residential consumption <3,300 gallons	\$14.57	9,300,000	135,505
Residential consumption >3,300 gallons	\$83.12	300,000	24,935
Commercial access charge - accounts	\$145.67	3,200	466,153
Commercial consumption <3,300 gallons	\$14.57	7,200,000	104,907
Commercial consumption >3,300 gallons	\$83.12	500,000	41,558
			<u>1,046,283</u>
Others			
Bulk Sales @ \$18.88/ 1,000 gallon			41,600
New Utility Account Setup/ Registration Fee	\$31	677	21,000

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

Monthly Charge (\$)	Average Monthly # of ERU	2013 Budgeted Revenue (\$)
10.00	11,917	1,430,000

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Sewage Disposal

	2011 Actual (\$000's)	2012 Budget (\$000's)	2012 Forecast (\$000's)	2013 Budget Recommended (\$000's)	2014 Budget (\$000's)	2015 Budget (\$000's)
Liftstations/Effluent Operations						
Operations & Maintenance	317	358	322	364	367	370
Allocated Equipment	27	26	22	23	24	25
Allocated Labour	166	149	169	168	170	174
	509	533	514	555	561	568
Trucked Sewage						
Contracted Services	721	737	740	758	783	809
Allocated Equipment	1	1	1	1	1	1
Allocated Labour	17	9	18	17	18	18
	739	746	759	776	802	828
Sewage System Maintenance						
Operations & Maintenance	185	88	135	100	103	107
Allocated Equipment	73	44	59	63	64	66
Allocated Labour	145	145	149	147	149	153
	403	277	342	310	317	326
Total Sewage Disposal						
Direct Costs	1,223	1,184	1,197	1,222	1,253	1,286
Allocated Equipment	101	71	82	87	89	92
Allocated Labour	328	302	336	332	338	344
	1,651	1,557	1,614	1,641	1,679	1,722



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Water Distribution

	2011 Actual (\$000's)	2012 Budget (\$000's)	2012 Forecast (\$000's)	2013 Budget Recommended (\$000's)	2014 Budget (\$000's)	2015 Budget (\$000's)
Pumphouses						
Labour - Pumphouse # 1	-	-	-	-	-	-
Operations & Maintenance	1,004	958	955	1,039	1,050	1,063
	1,004	958	955	1,039	1,050	1,063
Allocated Equipment	7	5	6	6	6	6
Allocated Labour	886	914	907	898	912	931
	1,897	1,877	1,867	1,943	1,969	2,000
Trucked Water Delivery						
Contracted Services	675	666	666	699	734	759
Water Line/Hydrant Maintenance						
Operations & Maintenance	79	73	57	74	76	77
Allocated Equipment	37	33	30	32	33	34
Allocated Labour	292	344	299	296	301	307
	408	450	386	402	409	418
Water Meter Services						
Operations & Maintenance	4	11	6	11	12	12
Allocated Equipment	6	7	5	5	5	6
Allocated Labour	78	82	80	79	80	82
	88	100	90	95	97	99
Total Water Distribution						
Direct Costs	1,762	1,708	1,683	1,823	1,871	1,911
Allocated Equipment	50	45	41	43	44	46
Allocated Labour	1,256	1,340	1,285	1,273	1,293	1,319
	3,068	3,094	3,009	3,139	3,209	3,276

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Water & Sewer Fund Performance Measures

	Projected 2011	Actual 2011	Projected 2012	Forecasted 2013	Forecasted 2014	Forecasted 2015	Notes
Workload Indicators							
No. of metres of replaced water and sewer mains	346	1,146	652	1,787	1,745	1,222	(1)
No. of metres of new water and sewer mains	0	1,512	0	0	0	0	
No. of fire hydrants	315	318	326	326	326	326	(2)
No. of fire hydrants flushed	315	305	310	320	320	320	
No. of bleeders on City main lines	4	4	1	0	0	0	(3)
No. of water meters replaced							
Public Works (in-house)	20	22	40	60	60	20	
Contracted out	0	0	0	0	0	0	
Total water meters replaced	20	22	40	60	60	20	(4)
No. of new water and sewer (W&S) services privately installed:							
Niven Lake	5	37	0	0	0	0	
Other (Northlands)	2	0	0	100	100	55	
No. of services replaced under Capital	30	17	35	40	0	60	
No. of services repaired/replaced under Service Connection Failure Assistance Fund (SCFA)							
Public Works (in-house)	80	76	60	50	50	50	
Contracted out	10	8	15	15	15	15	
Total	90	84	75	65	65	65	
No. of services repaired/replaced by City (Capital and O&M)	120	101	110	105	65	125	
No. of single line bleeders eliminated	0	0	15	30	15	15	
No. of Aquaflo units eliminated	3	3	7	5	5	5	

Notes:

- (1) In 2010, it was carried out on Woolgar Avenue. In 2011 it was on Knutsen Avenue. In 2012 Matonabee Street and Byrne Road were replaced.
- (2) Fire hydrants - In addition there are 9 fire hydrants at the airport and 10 in Northlands Trailer Park. Northlands hydrants are flushed by City staff.
- (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.
- (4) Replacement of meters will be ongoing, especially now that specifications have been changed due to purchase of automated reading equipment.

