

Water and Waste Department

**Annual Customer Seminar
December 7, 2005**



Agenda

- 8:30 a.m. – 9:00 a.m. Registration and Continental Breakfast
- 9:00 a.m. – 9:05 a.m. Welcome
- 9:05 a.m. – 9:25 a.m. Water Main Cleaning Program Update
- 9:25 a.m. – 9:45 a.m. Importance on Maintaining Your Private Water Service Infrastructure
- 9:45 a.m. – 9:55 a.m. Answers to Your Top 10 Questions on Drinking Water Quality
- 9:55 a.m. – 10:05 a.m. Water Treatment Program Update
- 10:05 a.m. – 10:20 a.m. Coffee Break

Agenda

- 10:20 a.m. – 10:35 a.m. Tips on Managing Your Solid Waste
- 10:35 a.m. – 10:45 a.m. Industrial Waste – Current Issues
- 10:45 a.m. – 10:55 a.m. Wastewater Treatment Update
- 10:55 a.m. – 11:15 a.m. Highlights of Proposed Changes in the Sewer By-law and What that Means for You
- 11:15 a.m. – 11:30 a.m. 2006 Water and Sewer Rates
- 11:30 a.m. – 11:40 a.m. Additional Questions and Closing Remarks

Water Main Cleaning Program



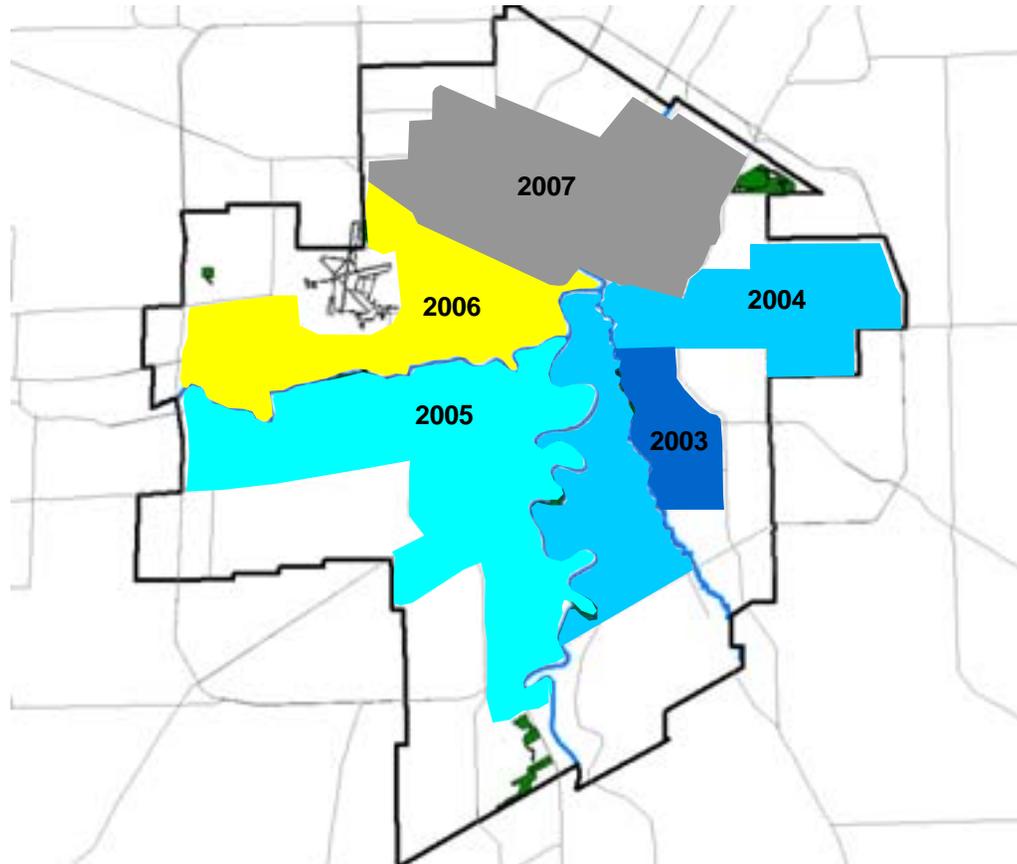
Outline

- Why are we cleaning the water mains?
- When and where are we cleaning water mains?
- What does water main cleaning mean to you?
- How long does it take to clean a water main?
- Monitoring water quality during cleaning
- Next steps

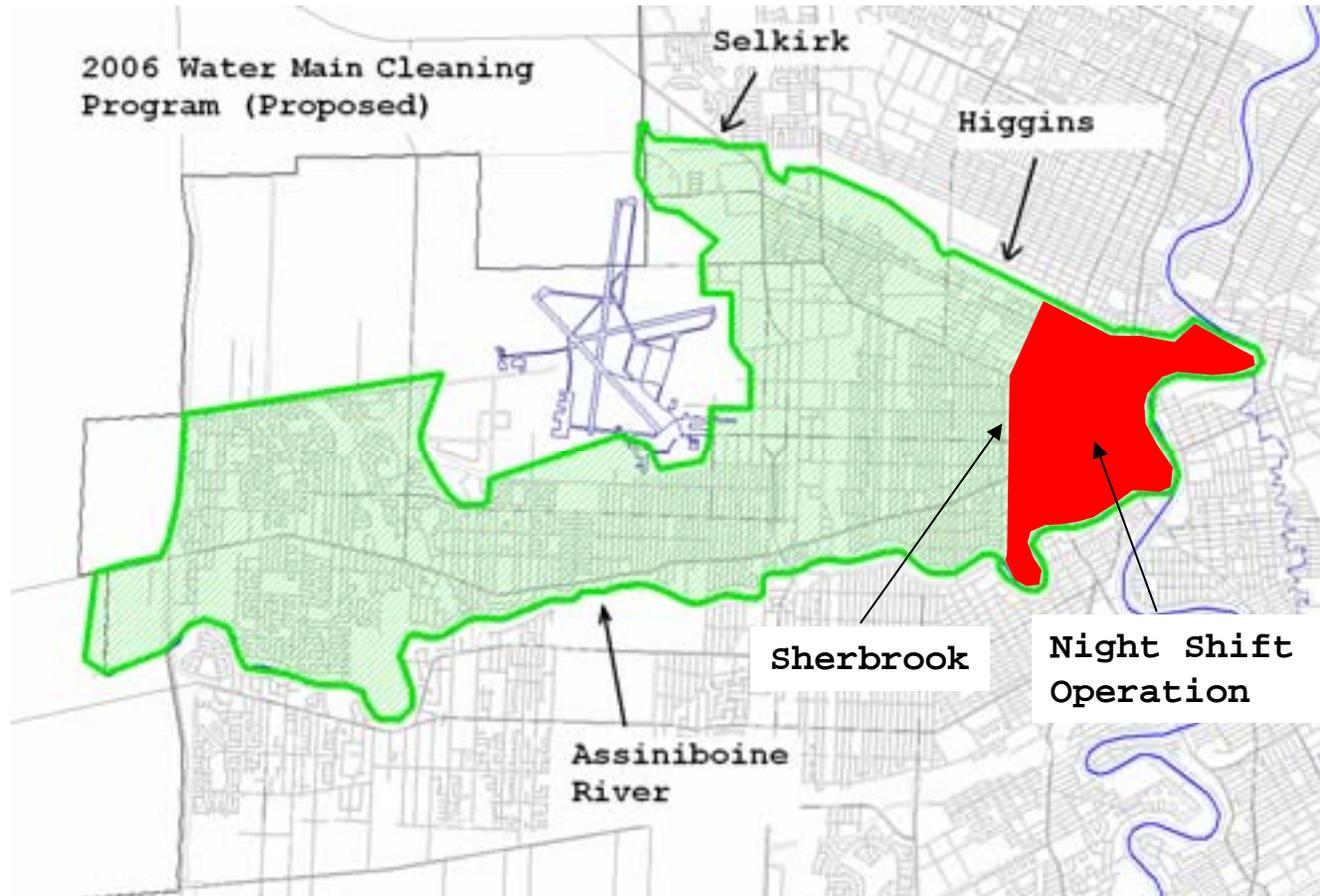
Why are we cleaning the water mains?

- Improve water quality
 - Sediments (primarily dead algae) accumulate in water mains and should be removed
 - Clean all water mains before the new water treatment plant begins operating
- Reduce “dirty water” complaints from water main breaks or valve operation
- Test the distribution system for deficiencies

Water Main Cleaning Plan

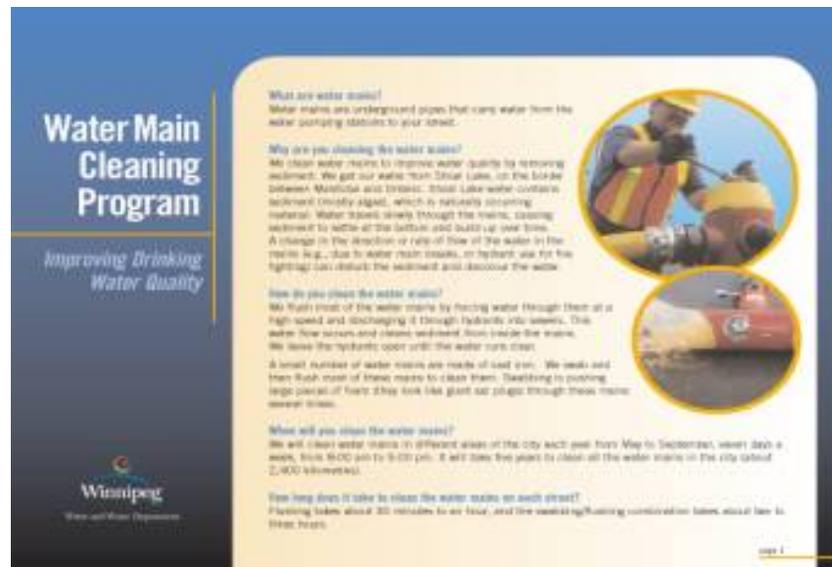
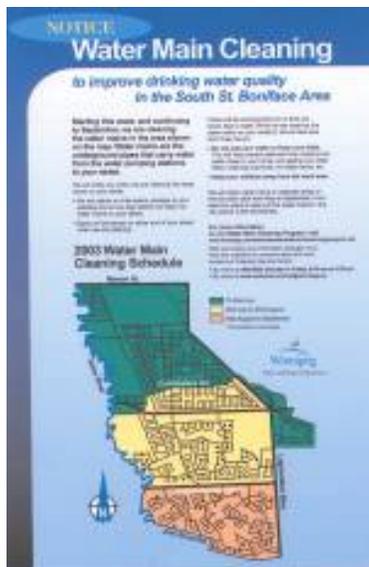


Water Main Cleaning Plan



What does water main cleaning mean to you?

- Notices placed monthly in community newspapers
- Q & A fact sheet on our Web site:
www.winnipeg.ca/waterandwaste/water/maincleaning.stm



What does water main cleaning mean to you?

- Before cleaning
 - We will contact you in person 1 – 2 days in advance to advise when work will begin and how long work is expected to take
 - If you need water while we are cleaning the water mains, fill containers with water or contact our Customer Service Centre

What does water main cleaning mean to you?

- During cleaning
 - Do not use water while we are cleaning the water mains on your street
 - Recommend turning off water supply to prevent sediment entering water pipes



How long does it take to clean a water main?

- Cleaning
 - Cleaning sequence usually completed in approximately 15 minutes



What does water main cleaning mean to you?

After cleaning

- We will contact you to let you know that we are finished cleaning the water mains
- Turn on cold tap water in building to see if water is clear

What does water main cleaning mean to you?

What else you may notice after the water mains are cleaned:

- Cloudy water
 - water is cloudy when air gets in it and makes tiny bubbles
- Chlorine smell
 - we add enough chlorine to the water to keep it safe
- Drop in pressure
 - water pressure will soon return to normal

We Monitor Water Quality

- Water samples are taken during the cleaning
- Sampling is completed at regional/residential/business locations during the program



Water Quality Monitoring

- Water samples are tested to confirm chlorine levels in the distribution system
- We also complete onsite random testing of water samples for chlorine residual



Next Steps

- All City water mains (2,400 km) expected to be cleaned once prior to starting up the new water treatment plant
- Continue as an ongoing maintenance program

Questions?



Maintaining Your Private Water System

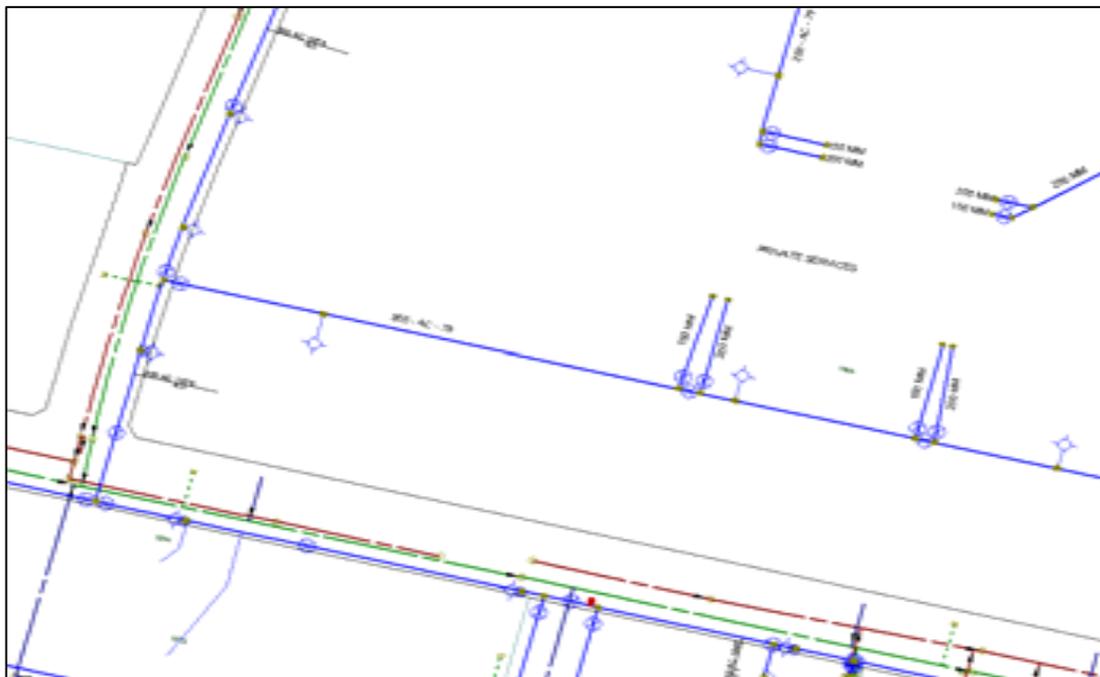
Responsibility of Water Systems

- You own and are responsible for the water pipe from the water main connection to your tap
- You own and are also responsible for any water main systems on your property



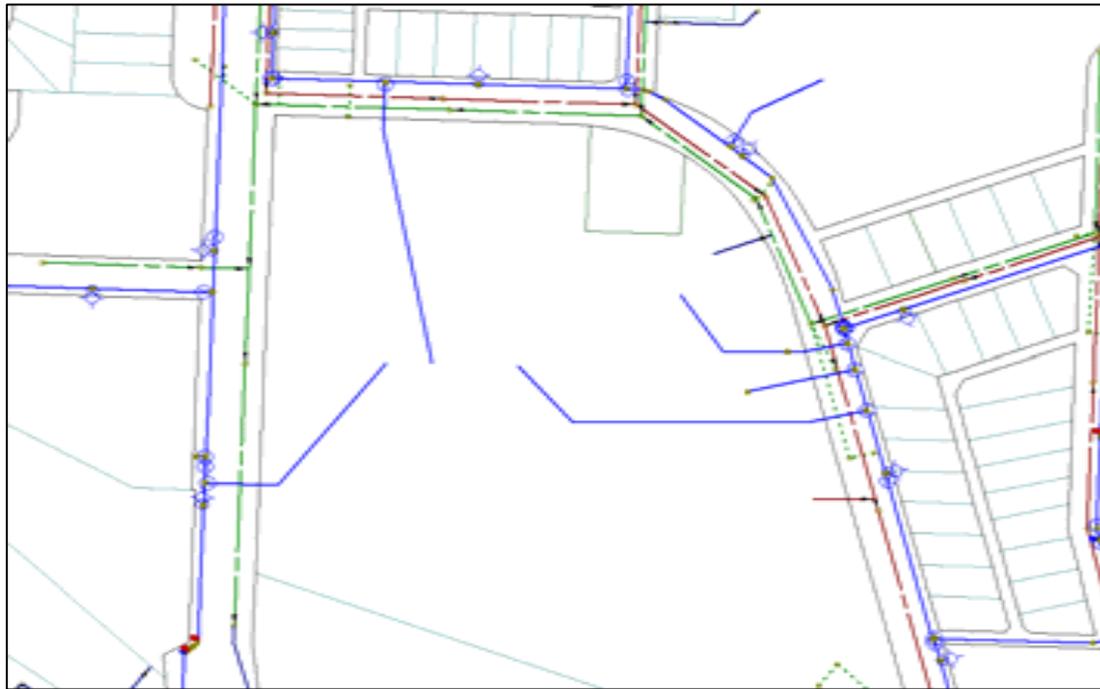
Maintaining Your Private Water System

- Accurate mapping is key to your ability to maintain and operate your system, and to our ability to respond to emergency situations



Match Your Service Connections to Your Business Needs

- If your business operation depends on a reliable water supply, consider using dual service connections to reduce the risk of service interruption



Inspect Your Private Water System Regularly

- Inspect and if necessary repair/replace your service connection or private water main system if your business depends on a reliable water supply



Clean Your Private Water System

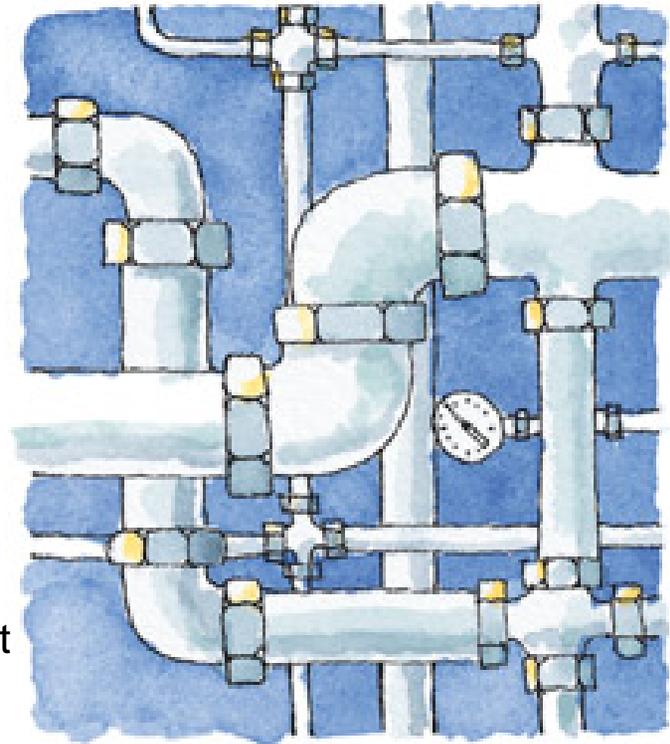
- Cleaning your private water system is important to maintaining high quality water
- Coordinate cleaning of your private water system with our water main cleaning program



Maintain Your Private Water System

Maintenance of your internal plumbing is key to high quality water

- Flushing / cleaning
 - Regular flushing of internal plumbing is required to maintain high quality water
- Filters
 - Consider using filters or other water treatment systems if your business operation requires consistently high quality water
 - You must maintain these water treatment systems according to the manufacturer's recommendations



Questions?



Answers to Your Top 10 Questions on Drinking Water Quality

Background

- Our water comes from Shoal Lake
- We treat the water with:
 - Chlorine to kill harmful viruses and bacteria
 - Fluoride to prevent tooth decay
 - Orthophosphate to reduce corrosion
- Our water is high quality but it also contains:
 - Aquatic plants and algae
 - Aquatic insects

Top Ten Customer Questions

10. Is my water safe to drink?

Yes. Our water is regulated by Manitoba Health and Manitoba Water Stewardship using the Manitoba Drinking Water Safety Act and Guidelines for Canadian Drinking Water Quality.

Our drinking water usually meets most of the more than 80 guidelines.

We do not always meet the guidelines for:

- turbidity
- odour
- Disinfection By-Products

Top Ten Customer Questions

9. What is in my water?

We provide an annual update of all test results on our Web site:

www.winnipeg.ca/waterandwaste/water/testResults.stm

Top Ten Customer Questions

8. Why can I smell or taste chlorine in my water?

We need to maintain some chlorine in the water at every location in the city to ensure safety and meet health regulations.

Top Ten Customer Questions

7. Why does my water look cloudy or milky?

- Water is cloudy when air gets in it and makes tiny bubbles.
- The air is harmless and will disappear if you let the water stand.
- Occurs most often in the winter when the water is cold.

Top Ten Customer Questions

6. Why does my water smell or taste musty?

Algae in our water can give the water an unpleasant taste and smell, often described as musty or swampy.

This does not affect the safety of our water.

Top Ten Customer Questions

5. Why does my water look dirty sometimes?

- A change in flow or flow direction in the pipes (i.e., a water main break) may cause the sediment to be stirred up.
- Wait until the water is clear before you use it.
- Our water main cleaning program removes this sediment.

Top Ten Customer Questions

4. Why are my filters plugging up?

- Sediment and algae in our water can clog filters.
- Number and type of algae varies throughout the year.
- Make sure your filters are properly designed and maintained as recommended by the manufacturer to protect your process.

Top Ten Customer Questions

3. Why is my hot water dirty?

- Sediment can build up in hot water tanks and cause hot water to appear dirty.
- Drain and flush your hot water system routinely.

Top Ten Customer Questions

2. Why is my water rusty?

- Over time, water can cause rusting of iron or steel pipes.
- You should protect or replace your pipes to prevent damage.
- Flush your pipes to remove accumulated rust.

Top Ten Customer Questions

1. Why does my water taste bad? (not like algae)

Water can dissolve pipe materials when it stays in pipes for a long time.

- Flush your pipes regularly to improve the taste of your water.
- Replace your pipes with non-metallic plumbing materials that will not corrode.

Summary

- Our water is safe.
- Taste, odour and appearance of our water is occasionally affected by algae and water main disturbances
- We have programs that will ensure a consistent level of high quality drinking water (water main cleaning and the new water treatment plant)
- Water quality can be affected by internal plumbing issues – you need a regular maintenance program

Questions?



Water Treatment Program Update

Outline

- Background
- Public health protection
- Water treatment program
- Schedule
- Chloramination

Background

- Since 1919, Winnipeg has enjoyed a high quality reliable water supply from Shoal Lake
 - minimal treatment (chlorine for disinfection)
- In 1993 Council
 - accepted the recommendation to undertake water treatment within a ten year time frame
 - established a Water Treatment Reserve Fund
- Between 1995 and 2004 a comprehensive program of monitoring, pilot testing and engineering studies were undertaken

Why do we need water treatment?

Water treatment is about protecting public health

- Reduce the risk of a waterborne disease outbreak caused by chlorine-resistant microorganisms
- Reduce chlorine disinfection by-products
- Meet drinking water quality guidelines

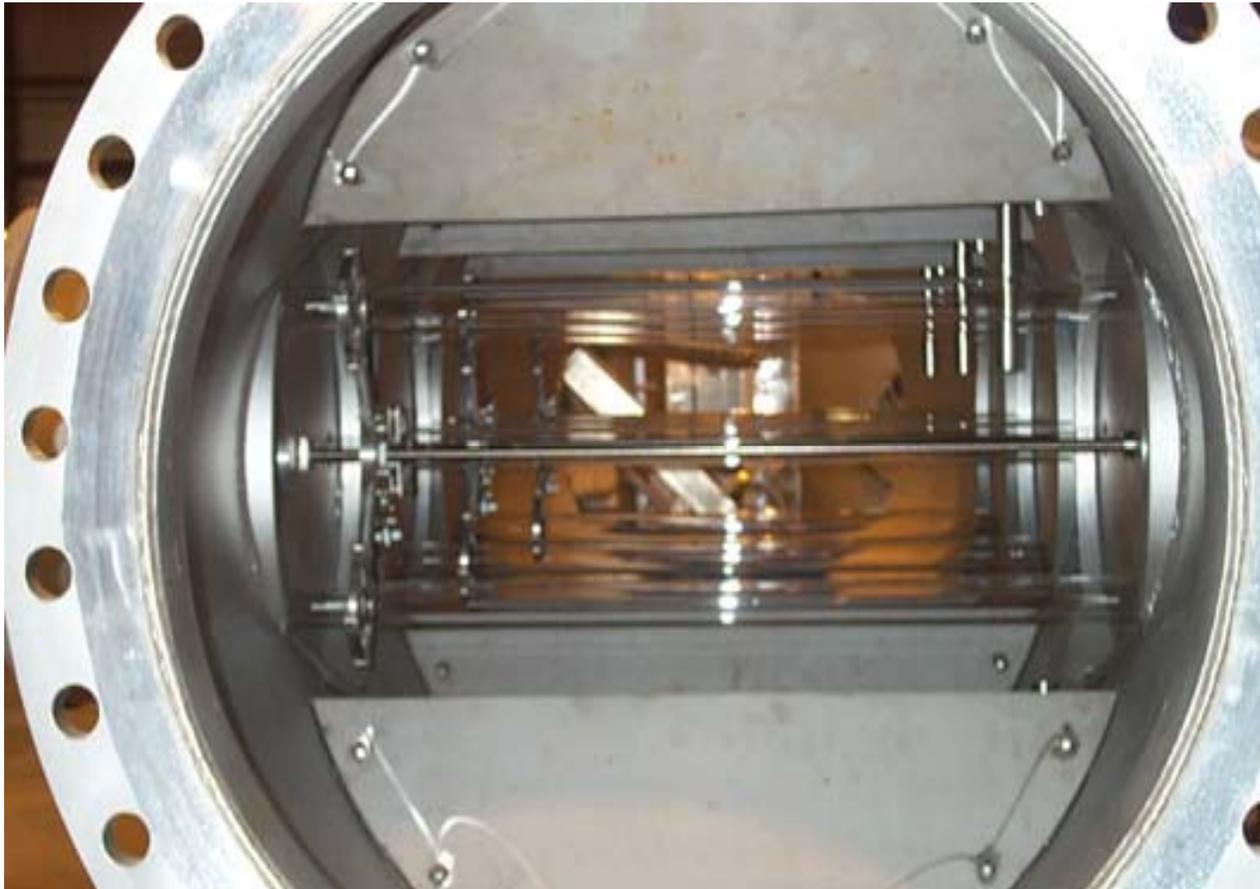
Water Treatment Program Schedule

- 2005:
 - Install and test Ultraviolet Light (UV) Disinfection system
 - Start building the new plant
- Late 2007:
 - Start operating the new plant
- Late 2008:
 - Convert the water distribution system to chloramines to reduce disinfection by-products

48" Ultraviolet Light Chamber



48" Ultraviolet Light Chamber



Our New Water Treatment Plant

- The new plant is being built at the Deacon Reservoir Site.
- Will be a state-of-the-art, modern facility designed for performance, safety, and environmental sustainability
- Capital cost estimate \$227 M



Water Treatment Plant Construction

July 2005



Photos Courtesy of Roger Rempel, TetrES Consultants

Construction in Progress



Chloramination

- Chlorine and ammonia combine to form chloramines
- Chloramine is a more persistent disinfectant than chlorine
- Precautions for:
 - Medical treatment, kidney dialysis
 - Fish tanks
- We will notify the public in advance

What will water treatment do for Winnipeg?

- Help protect against outbreaks from parasites such as *Cryptosporidium* and *Giardia*
- Allow us to meet evolving *Guidelines for Canadian Drinking Water Quality*
- Support the long-term health and well being of our community

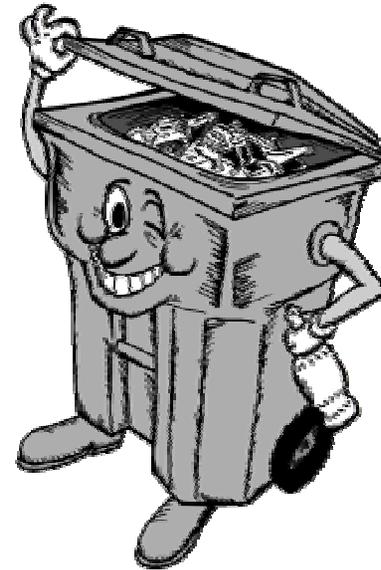
Questions?



Solid Waste Services Division Tips on Managing Solid Waste

Outline

- What we do
- Who we are
- Do you know where your garbage is?
- Lowering your cost



What we do...

- Residential Garbage Collection
 - Single and Multi-family Locations
- Residential Recycling
 - Single and Multi-family Locations
- Disposal Operations
 - Brady Road Landfill
- Limited Small Commercial Garbage and Recycling
 - User pay basis, 1.5 to 3.0 cubic metres per week = \$3.50 per cubic metre

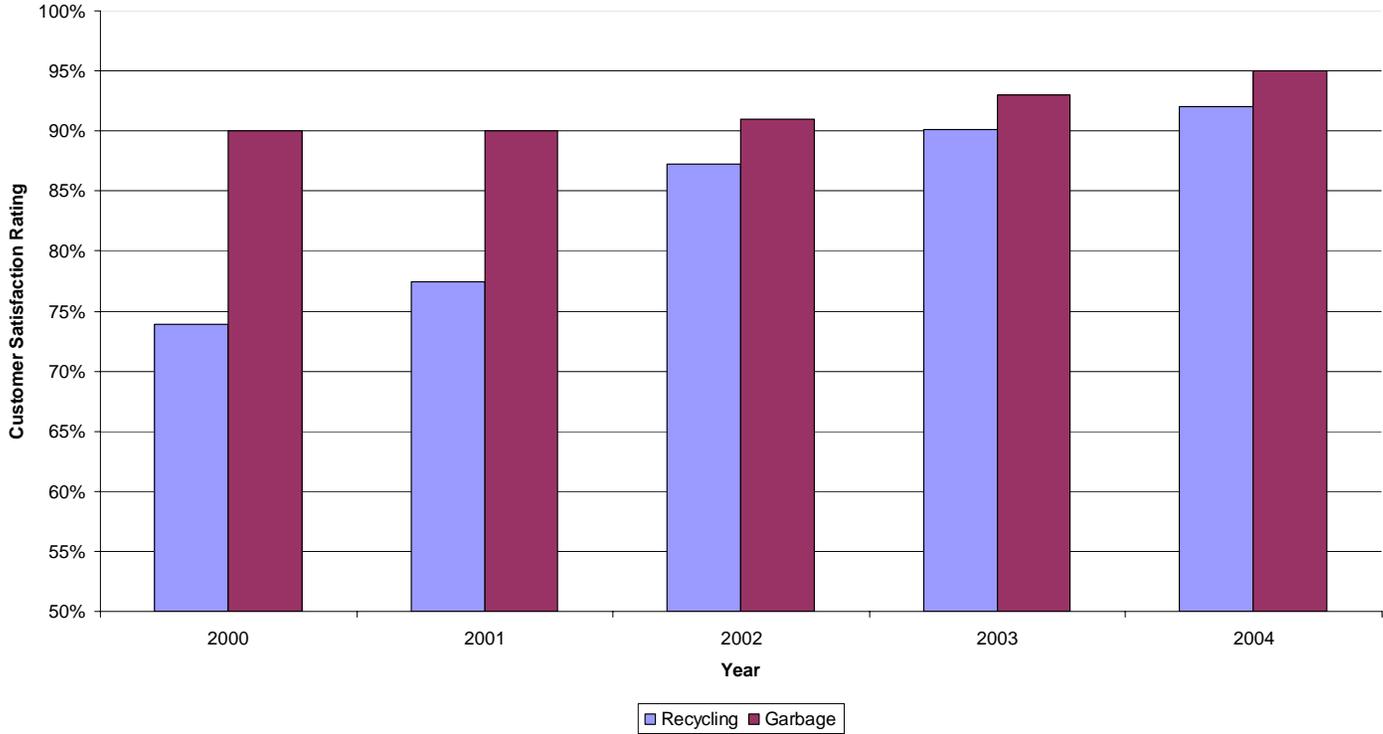


What we do...

- Environmental Management of 34 closed landfills
- Total Cost \$30+ million per year funded from:
 - Property taxes
 - Disposal Fees
 - Sale of Recyclables
 - Manitoba Product Stewardship Corporation (two cent levy)

What we do...

Customer Service Satisfaction Rating



Who we are...

- Located at 1539 Waverley and Brady Road Landfill
- Garbage Collection 50% Contracted
- Recycling Collection/Processing 98% Contracted
- 120 employees
 - Manager & 5 Supervisors
 - Planners and Policy Staff
 - Environmental Engineers and Technologists
 - Contract Administrators
 - Collection Vehicle Drivers
 - Landfill Staff
 - Labourers



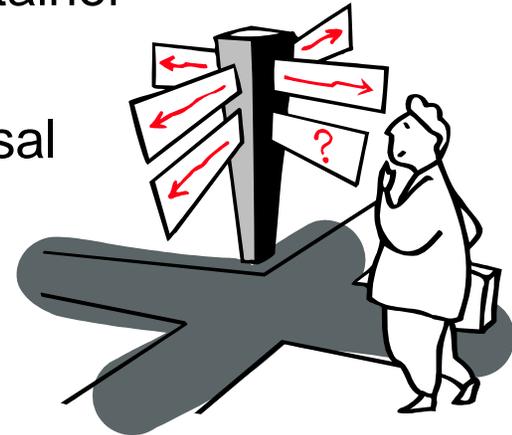
Do you know where your garbage is going?

- Three commercial landfills in the Winnipeg region
- Winnipeg sets the market price for disposal
 - February 2001 (>\$3 million savings)
- Brady – same price as others (\$22.50 per tonne)
 - also helps fund
 - Recycling
 - Take Pride Winnipeg
 - Closed landfill environmental management



Tips on Lowering your Cost

- Recycle (check out page 1126 of the MTS Yellow Pages)
- Beware the commodity markets!
- Conduct a waste composition study
- Know that the marketplace is very competitive
- Know your costs - rent vs. buy your container
- Be aware of mark-ups on disposal fees
- Check over contracts – right of first refusal



Questions?



Current Issues - Industrial Waste

Current Issues

- Grease, oil and sand interceptors
- Wastewater Hauler Tracking System

What are interceptors?

- Point-of-use devices connected to drains or sewer lines that stop harmful debris from entering the sewer system
- Commonly called traps

Who needs interceptors?

- These businesses require interceptors:
 - industries
 - garages
 - car washes, and
 - businesses with food preparation/dishwashers (i.e., bakeries, restaurants, hotels)

Why do you need interceptors?

- To keep materials such as grease, fat, oils, wax, lubricants, and sand out of the sewers
- These materials can plug the sewer and cause sewer backup - community suffers
- Required by Sewer By-Law

What do you need to do?

- You must:
 - Install an interceptor
 - Keep interceptors clean and in good working order
 - Keep up-to-date maintenance records

How are we monitoring interceptors?

- In the past, we were reactive
- We want to be proactive
 - More resources
 - More inspections
 - Closer cooperation with our field staff
 - Notices

Notice



Dear Resident:

We have had to clean the sewer lines in your area several times because some residents have poured cooking oil or grease down their drains.

Please put your cooking oils and grease into a container to harden, and then put it out for regular garbage collection. **Pouring grease down the drain can clog the sewer and cause backup in your home.**

For more information, please contact our Customer Service Centre by phone at **986-5858** or by email at **wwd-customer-service@winnipeg.ca**.

Thanks for your cooperation


Winnipeg
Water and Waste Department

Wastewater Hauler Tracking System

Wastewater Hauler Tracking System

- We were given new licences by the Province for our wastewater treatment plants
- We must maintain records of septage
- We must list all wastewater generators

Wastewater Hauler Tracking System

- A new tracking system for wastewater haulers and generators became effective October 3, 2005
- We need registration forms for all wastewater generators
- We need load tickets to track all wastewater loads discharged at septage facilities
- We will maintain database
- We will submit regular yearly reports to the Province

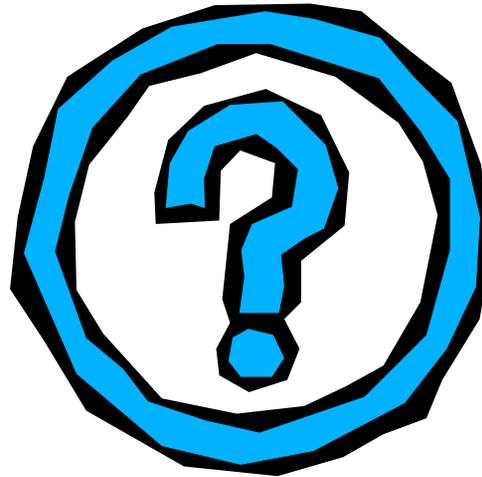
Septage Wastewater Rates

- We are reviewing the rates
 - Base hauler rate for domestic septage
 - Surcharge for overstrength waste – commercial/industrial

Septage Wastewater Rates

- We plan to charge haulers for residential septage
- We plan to invoice commercial/industrial customers directly for overstrength wastes
 - Based on waste strength and quantity
 - Strength determined by waste characterization of typical loads
- We will communicate with customers

Questions?



- Contact:
 - Bob Ross 986-4806 or
 - Steve Fletcher 986-4818

Wastewater Treatment Improvements

Outline

- Wastewater Improvement Plan
 - Disinfection
 - Nutrient reduction

Upgrades to Our Wastewater Treatment Plants

- What are the upgrades?
 - add effluent disinfection to two of our three treatment plants
 - add a nutrient removal process to all three of our treatment plants
- Why do we need these upgrades?
 - To meet provincial requirements
- How much will these upgrades cost?
 - About \$410 Million...completed by 2014
 - Part of a \$900 Million program

Upgrades

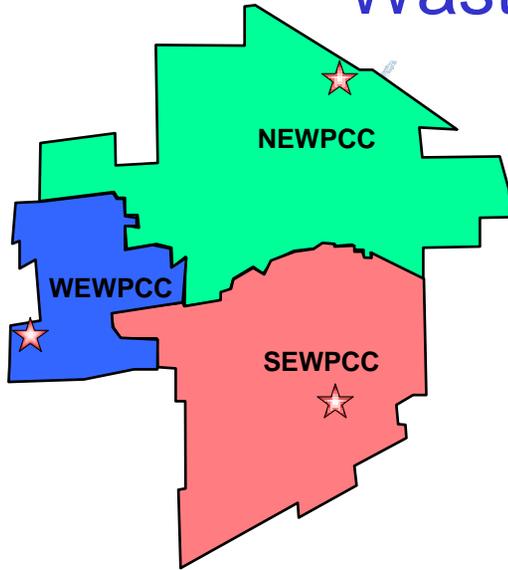
Effluent (treated wastewater) Disinfection

- A treatment process using ultraviolet light technology to kill bacteria in the wastewater to meet limits set by province
- Add year-round disinfection at the North End and West End plants

Nutrient Removal

- Nitrogen and phosphorus are nutrients in the treated wastewater
- Add a nutrient removal process at all three treatment plants (reduce nitrogen to 15 mg/L and phosphorus to 1.0 mg/L in final effluent)

Wastewater Treatment Plants



| | <u>NEWPCC</u> | <u>SEWPCC</u> | <u>WEWPCC</u> |
|-------------------------|--|---|---|
| |  |  |  |
| Population Served | 374,000 | 160,000 | 86,000 |
| ADWF Recorded in 2004 | 167 | 49 | 27 |
| ADWF Design Capacities* | 302 | 59 | 32 |

ADWF = Average Dry Weather Flow (ML/d)

* denotes: CBOD treatment process

Effluent Disinfection

- UV facility will be in place at the West End plant by 2007 (\$4 M)
- Construction underway at the North End plant to have UV facility in place for 2006 (\$20 M)
- Disinfection has been in place at the South End plant since 1998



Nutrients - Background

- Nutrients (phosphorus and nitrogen)
 - cause of algae blooms in Lake Winnipeg
- Nutrient loads to Lake have increased
- Our load constant for about 30 years
- Our nutrient load** to Lake Winnipeg is
 - 5.3% of total annual phosphorus load
 - 4.2% of total annual nitrogen load

** Source: Manitoba Conservation Nov 2005



Nutrients - Background

- Province announced Lake Winnipeg Action Plan in Feb 2003
 - Reduce phosphorus to lake by 10%
 - Reduce nitrogen to lake by 13%
 - Interim goal to be realized by 2007
- City will realize this by 2007
 - WEWPCC effluent nutrient removal, plus
 - NEWPCC centrate nutrient removal
- Additional nutrient removal
 - SEWPCC (2012) and NEWPCC (2014)



Nutrient Removal Projects

- North End plant \$269 Million
 - Centrate treatment, operational 2007
 - Full nutrient removal, operational 2014
 - West End plant \$22 Million
 - Full nutrient removal, operational 2007
 - South End plant \$94 Million
 - Full nutrient removal, operational 2012
- Total cost for nutrient removal \$385 Million**

Questions?



Sewer By-Law 7070/97 Revision 2006

Purpose of this Presentation

- To highlight advances made since last year with respect to updating the Sewer By-Law
- To explain the context of the Sewer By-Law revisions

Outline

- Why have a sewer by-law?
- What is driving the revision?
- What are the changes (for non-residential customers)?
- How may the changes could affect you?
- What are the timelines?
- Opportunities to get involved?

A Sewer By-Law Will:

- Ensure proper, safe, and reliable operation of the wastewater collection and treatment systems
- Protect public health and safety
- Protect the environment
- Protect property and wastewater systems
- Regulate the direct and indirect discharge of wastewater and pollutants to the wastewater system
- Establish legally enforceable compliance requirements

Sewer By-Law 7070/97

- Composed of
 - 14 parts
 - 2 schedules
- Became effective Jan. 1, 1998
- Stakeholders were involved

Why are we revising the by-law?

- Heard from public at 2003 CEC Hearings
 - Current by-law was outdated
 - many uncontrolled substances
 - making their way into the sewer
 - passing through treatment plants
- CEC recommendations:
 - Pollution prevention (source control)
 - More stringent quality and quantity restrictions
 - Compliance (by-law enforcement)

What are some of the changes?

| By-Law | Restricted Compounds | Prohibitions |
|------------------------------------|----------------------|--------------|
| Winnipeg (Current) Wastewater | 12 | 23 |
| Winnipeg (Proposed) Wastewater | 50 | 28 |
| Winnipeg (Current) Storm water | None | None |
| Winnipeg (Proposed) Storm water | 44 | 33 |
| Toronto Wastewater | 53 | 27 |
| Toronto Storm water | 44 | 31 |

What are the changes?

- Prevent disposal of contaminants of concern
- Encourage treatment at source
- Improve enforcement, and
- Increase penalties for violations

How may it affect you?

- For pollutants you are discharging today
 - Limits may change,
 - May not be permitted in the future
- You may be required to prepare a pollution prevention plan, including material substitution, material elimination, and/or treatment at source.
- Possible surcharge for high levels of nitrogen and phosphorus in wastewater discharges
- You will see our inspectors more often

What are the timelines?

- Study is being conducted in two phases
 - Using a consultant
 - Phase 1 of study (technical/financial)
 - January to December 2005
 - Draft By-Law to Standing Policy Committee on Infrastructure Renewal and Public Works
 - February 2006
 - Public release of Draft By-Law
 - February 2006
 - Phase 2 of study (stakeholder input)
 - March 2006 to May 2006
 - Implementation schedule will be developed with stakeholder input
 - Report and Revised By-Law to Standing Policy Committee on Infrastructure Renewal and Public Works and then to Council
 - July 2006

How can you get involved?

- Phase 2 (stakeholder input)
 - Outreach campaign
 - Web site
 - Public open houses
 - Meetings/workshops with stakeholders
- Indicate interest on today's evaluation form
- Presentation to Standing Policy Committee on Infrastructure Renewal and Public Works

Questions?



2006 Water and Sewer Rates

Summary

- Sewer rates are increasing much faster than inflation due to required improvements:
 - To remove nitrogen and phosphorous
 - To reduce combined sewer overflows

Rate Approval Process

- We prepare a 10-year rate forecast
- We recommend a one year rate change to our Standing Policy Committee and if they agree, they pass it on to Executive Policy Committee and Council
- You can be involved (dates could change)
 - Standing Policy Committee on Infrastructure Renewal and Public Works November 21, 2006
 - Executive Policy Committee November 29, 2006
 - City Council December 6, 2006

2006 Rate

Approved by City Council November 23, 2005

- Sewer rate increase 14% - from \$3.39 to \$3.87 per 100 cubic feet (i.e., from \$1.20 to \$1.37 per 1000 litres)
- Water rate unchanged
- Over strength charges are increasing 14%
 - TSS surcharge from \$0.49 to \$0.56 per kg
 - BOD surcharge from \$0.81 to \$0.92 per kg
- Full report is available at winnipeg.ca/waterandwaste/dept/

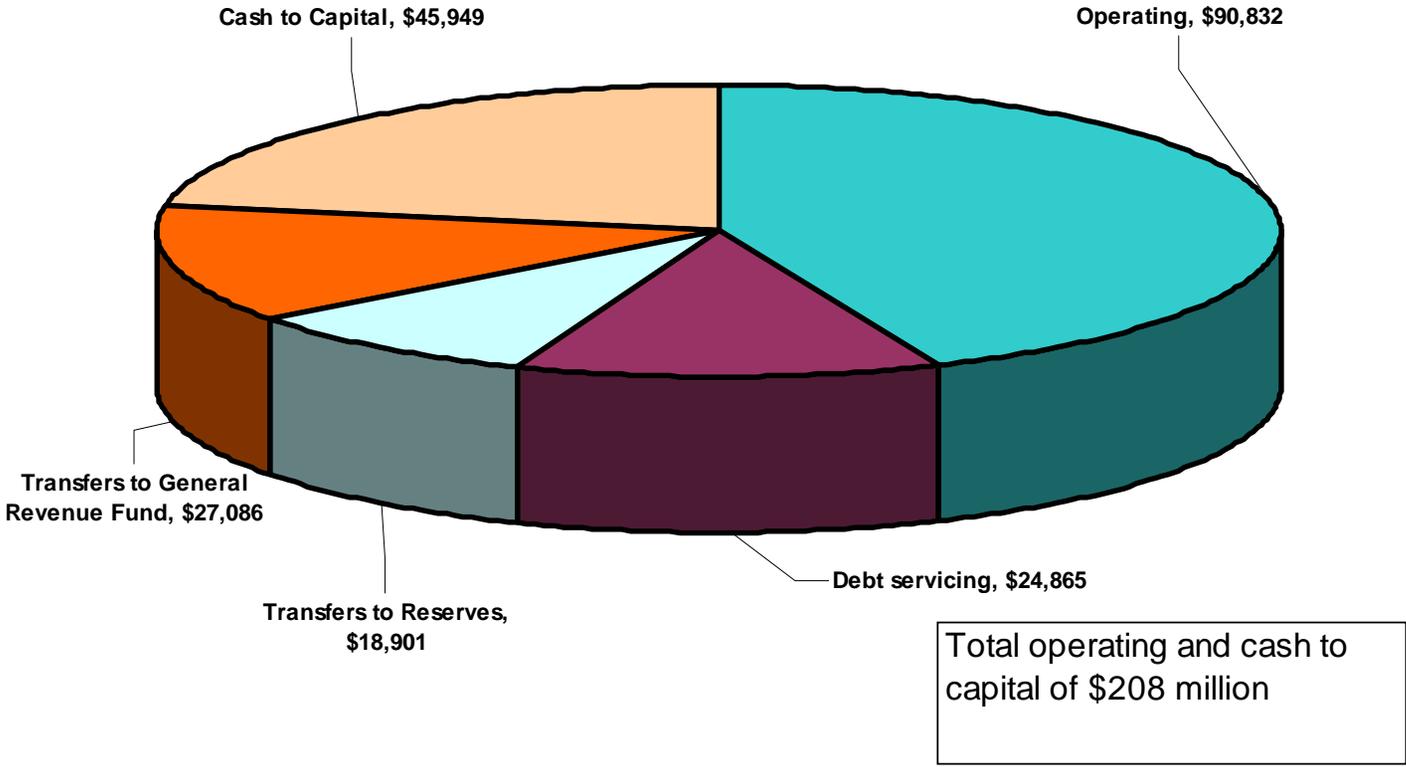
Rate Development Overview

- Forecast revenue requirements over the next ten years
 - Capital and operating costs
 - Financing reserves, cash to capital (“pay as you go”), debt
 - Transfers to other funds
- Forecast sales over 10 years
- Develop rate plan so that
Revenue = revenue requirements

Ten Year Forecast 2006 - 2015

- Operating costs will increase as new facilities begin operating
- Debt servicing will increase due to borrowing
- Transfers to reserves will increase to fund ongoing \$900 million wastewater improvement program
- Transfers to General Revenues will increase to fully fund the land drainage program by 2008
- Cash to capital will increase due to ongoing infrastructure renewal requirements + aging infrastructure (peak now due to criticality assessments)

2006 Combined (Water and Wastewater) Expenditure by Category (\$000s)



Water Treatment - \$227 million



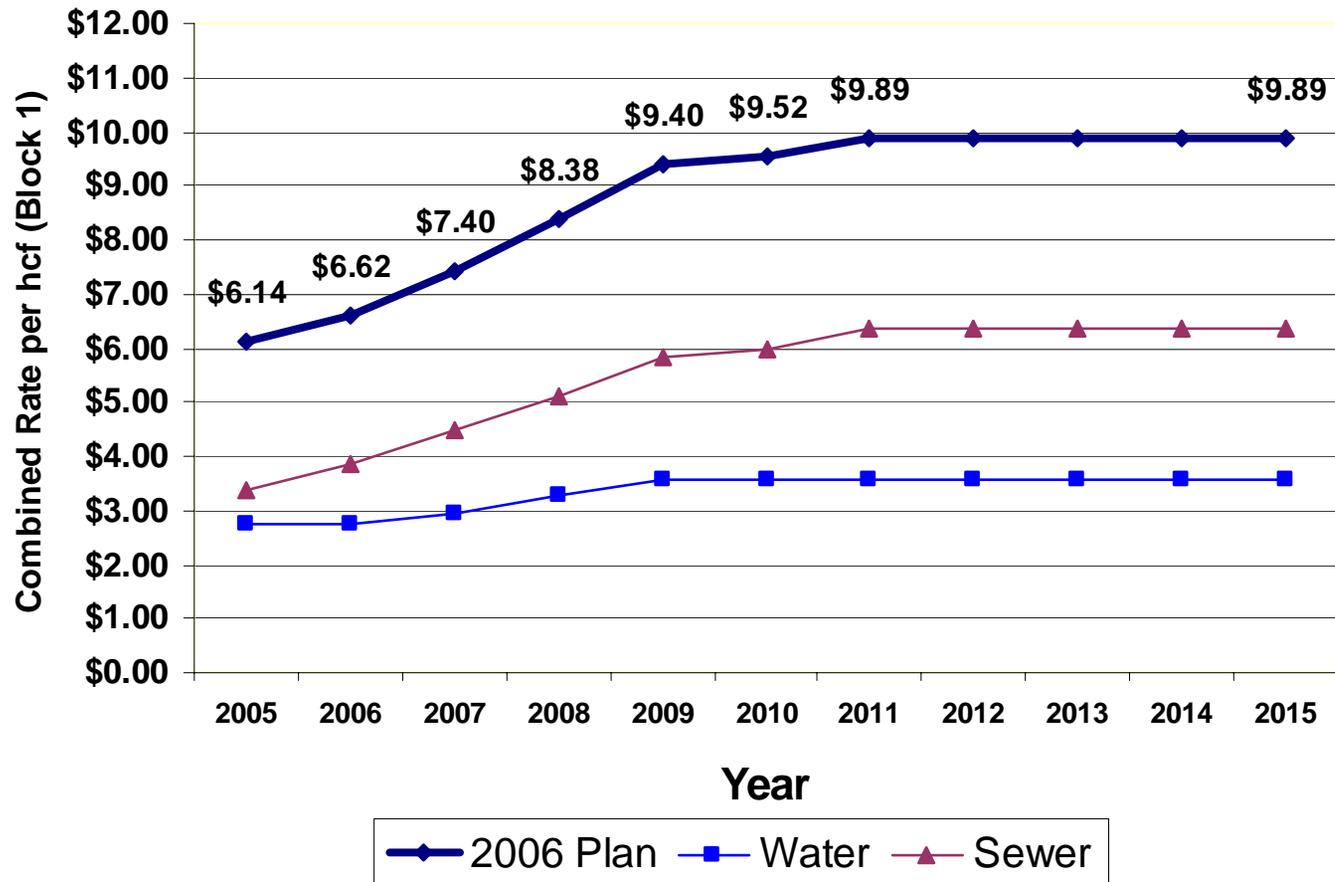
Environmental Projects

| Wastewater Improvements | | |
|-------------------------|---------------|------|
| | (\$ millions) | Year |
| Disinfection | \$ 24 | 2006 |
| Nutrient Control | \$ 385 | 2014 |
| CSO Control | \$ 417 | 2030 |
| Biosolids | \$ 63 | 2010 |
| Other | \$ 11 | |
| Total | \$ 900 | |
| | | |

\$20M Wastewater Effluent Disinfection Facility Under Construction



10 Year Rate Forecast (2006 - 2015)



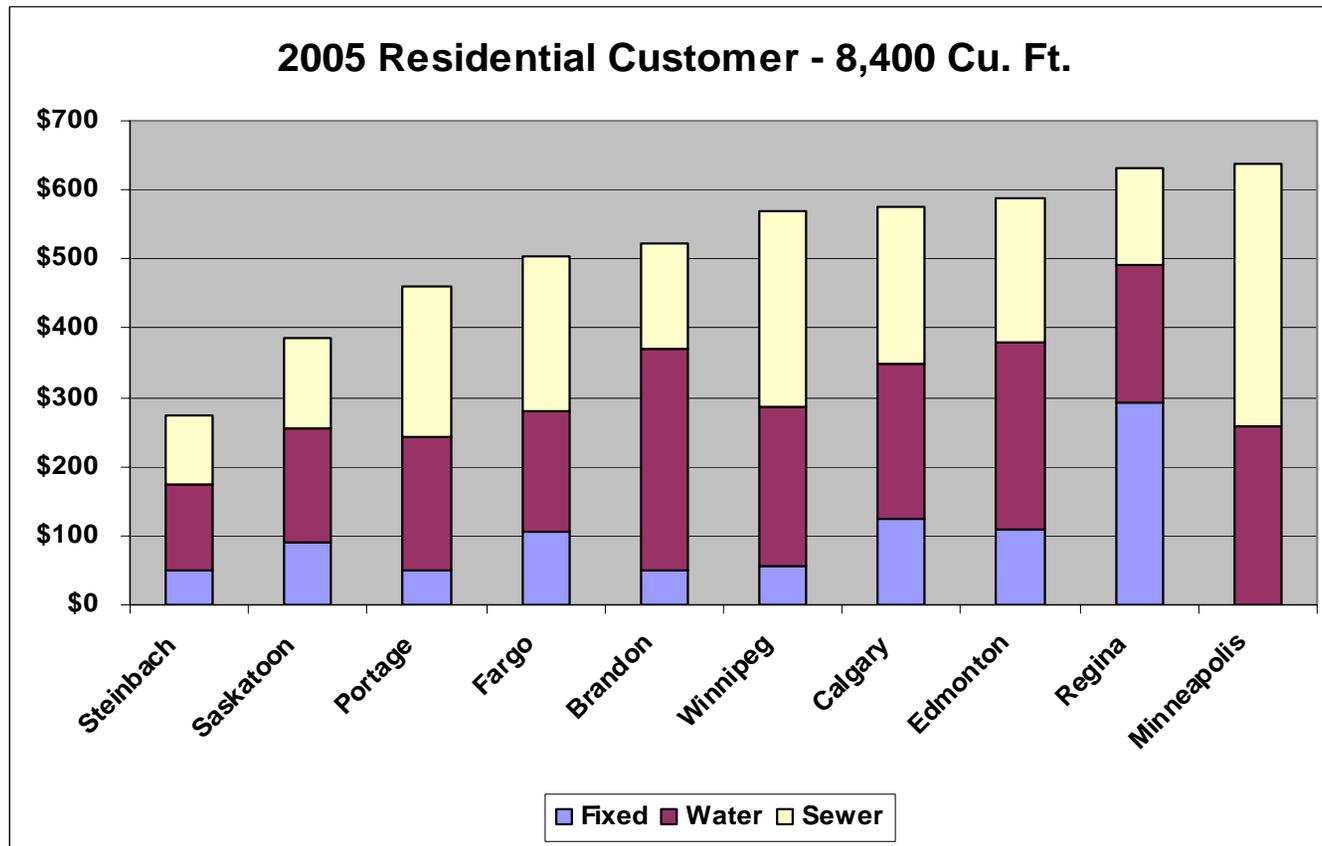
2006 Approved Rates

| Water and Sewer Rates - 2006 | | | |
|---|------------------------------|-------------------------|------------------------|
| | per 100ft³ | per 1000 gallons | per 1000 litres |
| Residential (Block 1) | | | per m ³ |
| Water | \$ 2.75 | \$ 4.41 | \$ 0.97 |
| Sewer | \$ 3.87 | \$ 6.21 | \$ 1.37 |
| Total | \$ 6.62 | \$ 10.63 | \$ 2.34 |
| Block 1 Water and Sewer Rate (litres per penny) | | | 4.28 |

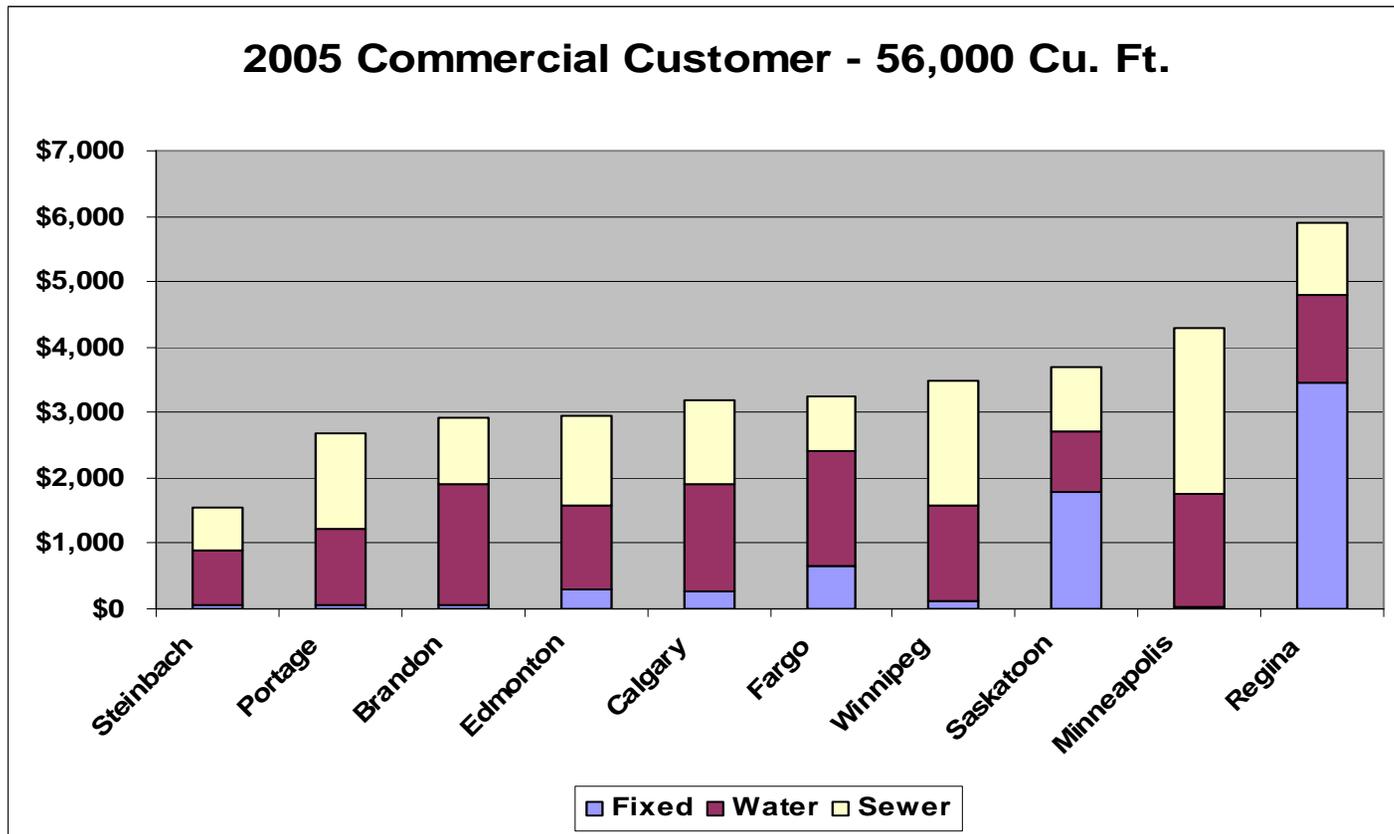
Customer Impact

| | Annual Cons. | | | Increase | |
|-------------------------|---------------------|---------------|---------------|-----------------|----------|
| | hcf | 2005 | 2006 | \$ | % |
| Residential | 84 | \$ 570.25 | \$ 611.07 | \$ 40.82 | 7.2% |
| Small Business | 560 | \$ 3,286.40 | \$ 3,553.74 | \$ 267.34 | 8.1% |
| Large Business | 6260 | \$ 33,367.72 | \$ 36,359.42 | \$ 2,991.70 | 9.0% |
| Large Industrial | 89870 | \$ 466,559.09 | \$ 509,530.42 | \$ 42,971.33 | 9.2% |

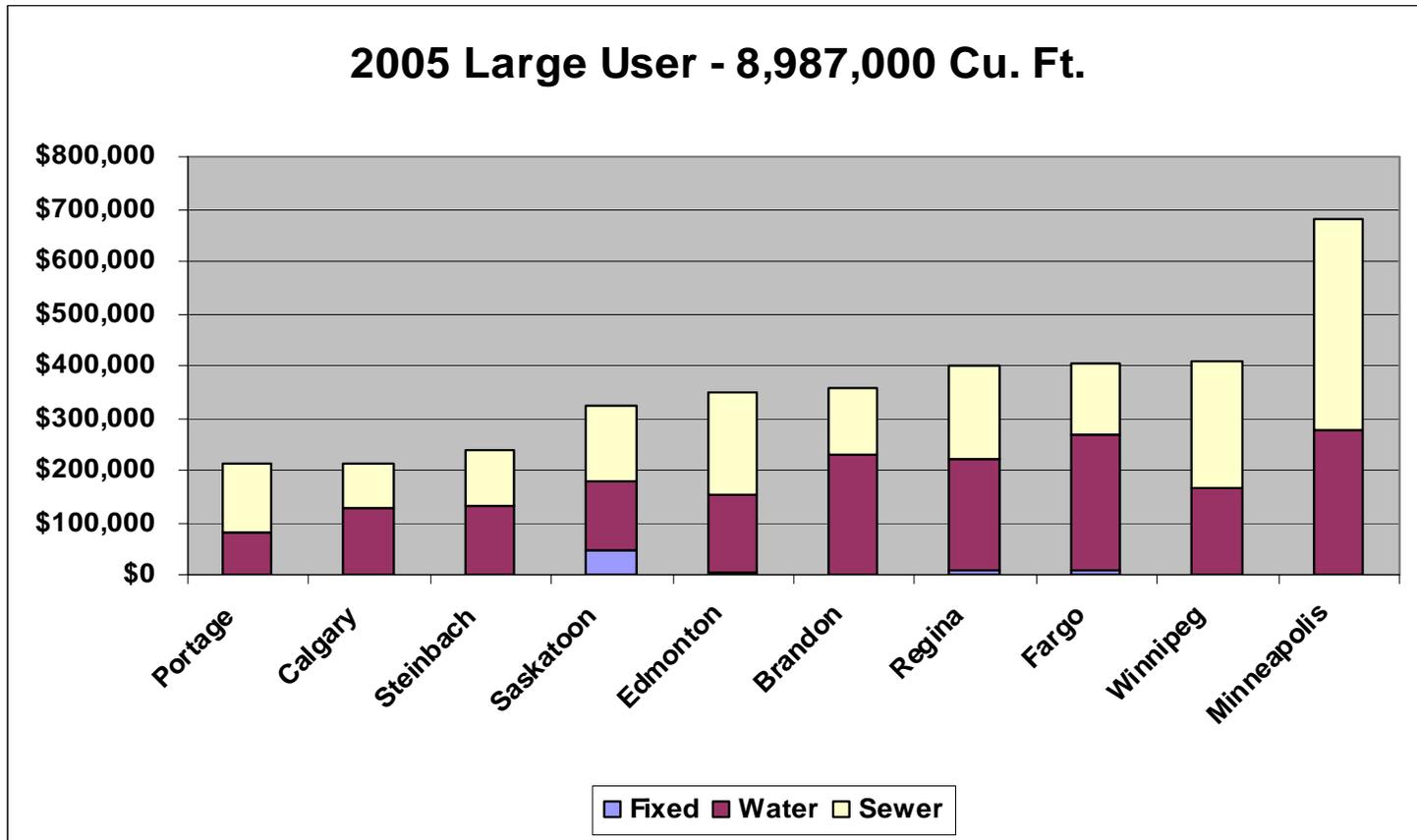
Residential Rate - Benchmarking



Commercial Rate - Benchmarking



Large Industrial Rate - Benchmarking



Questions?



www.winnipeg.ca/waterandwaste/