



Legislation Details (With Text)

**File #:** 00851      **Version:** 1      **Name:** Regarding the Establishment of a Program to Reimburse Property Owners for Losses Sustained as a Result of Backups or Stoppages in the Public Sewerage System.

**Type:** Report      **Status:** Filed

**File created:** 3/17/2005      **In control:** BOARD OF ESTIMATES (ended 4/2017)

**On agenda:** 4/19/2005      **Final action:** 4/19/2005

**Enactment date:** 4/25/2005      **Enactment #:**

**Title:** Regarding the Establishment of a Program to Reimburse Property Owners for Losses Sustained as a Result of Backups or Stoppages in the Public Sewerage System. (City-Wide)

**Sponsors:**

**Indexes:**

**Code sections:**

**Attachments:** 1. Final\_Report\_03022005\_\_2.doc, 2. APPENDICES.pdf

Date	Ver.	Action By	Action	Result
4/19/2005	1	COMMON COUNCIL	Grant with Condition(s) and Close the Public Hearing	Pass
4/11/2005	1	BOARD OF ESTIMATES (ended 4/2017)	RECOMMEND TO COUNCIL WITH THE FOLLOWING RECOMMENDATIONS - REPORT OF OFFICER	Pass
3/29/2005	1	COMMON COUNCIL	Refer	
3/17/2005	1	Engineering Division	Referred for Introduction	

**Fiscal Note**

**Title**  
Regarding the Establishment of a Program to Reimburse Property Owners for Losses Sustained as a Result of Backups or Stoppages in the Public Sewerage System.

**Body**

**1. Purpose**

In September 2004, the Madison Common Council adopted Resolution #61930 which established a program to reimburse property owners for certain losses sustained as a result of a water main break where it had been determined that the City was not legally liable. Reimbursements were limited to \$1,000 for clean up costs and \$2,500 for damage to building mechanicals and appliances.

This resolution also required that the City Engineer study whether and to what extent a similar program should be created for damages caused by sewer backups not caused by a water main break and submit a report and recommendations to the Board of Estimates by February 2005.

**2. Executive Summary**

The City conducted a review of its sanitary sewer system preventive maintenance program including data related to sewer main back ups, private sewer back ups and claims filed against the City for damage from

sewer back ups. The City's preventive maintenance activities and frequencies as well as rate of sewer main backups were compared to industry benchmarks. The City also surveyed property owners that had experienced a sewer back up that was determined to be the result of a blockage/problem in the City sanitary main.

Based on established benchmarks the City of Madison has a very aggressive sewer preventive maintenance and inspection program. This program provides for the scheduled cleaning of every section of sanitary sewer main at least once every three (3) years. As a result the City experiences a very low incidence of sewer back up.

Despite the aggressive maintenance and inspection program that the City has implemented system blockages are inevitable. The most common causes of blockages are tree roots and grease. Vandalism to and misuse of the system can also result in a main back up.

The majority of the City's sewer back up emergency response cost, however, is attributable to calls that were a result of problems in the property's internal plumbing system. In 2004 the City responded to 623 sewer back up calls. Of these, 569 (91.33%) were caused by a problem in the property owner's internal plumbing, rather than the City's sanitary main. The cost of the City's response to these calls was \$33,939.00.

Nearly 30% of surveys sent to City residents who had experienced a sewer back up were completed and returned. Key findings of the survey were:

- The typical survey respondent owned the property where the sewer back up occurred and had lived there for more the 5 years.
- The floor drain was cited in more than 95% of responses as being the access point for the sewer back up.
- Most respondents either did not have or did not know if they had a sewer backflow prevention device.
- For those respondents who did have a sewer backflow device the majority had never had the valve cleaned/maintained.
  
- The majority of respondents hired someone to clean their building sewer only when they experience problems or have never had their building sewer cleaned.

Sewer back ups into basements are largely preventable. It is our belief that in general citizens are not knowledgeable about how their building plumbing system works and the need for preventive maintenance. This conclusion is supported by citizen responses to the City's Sewer Back Up Survey.

Adoption of a program similar to that the Water Utility has established for water main breaks is not recommended for the reasons outlined below.

1. Cost is unpredictable.
2. City is not liable for these damages.
3. Sewer back ups into basements are largely preventable.
4. Does not address cause of the problem.
5. Benefit is limited to a very small pool of citizens.
6. Does not promote individual responsibility.

Sewer back ups into basements are largely preventable. Regular cleaning and preventive maintenance of the private building sewer is simply a part of the regular maintenance associated with owning a property. As such we recommend the development of programs that work towards eliminating sewer back ups into people's homes and minimizing damage to property and exposure to raw sewage where sewer back ups

are unavoidable. Proposed initiatives to work towards this goal are as follows:

1. Educational Materials.
2. Back Flow Valve Inspection Program
3. Prequalification of Sewer Drain Cleaning Companies.
4. Annual Request for Proposal (RFP) - Sewer Back Up Cleaning Services.

Based on our evaluation we not recommend reimbursing customers for damages for which the City is not liable. Doing so is not in the best interest of the City. We do recommend that the City proceed with the educational initiatives noted above and detailed in Section 7. of this report.

### **3. Maintenance of the Sewerage System.**

#### **3.1. Operational Goals and Objectives**

The City of Madison's sanitary sewer collection system consists of nearly 750 miles of gravity pipe connected by more than 18,000 sanitary access structures. This system is supported by 29 pumping stations and transports 27.8 million gallons of raw sewage per day from Madison homes and businesses to the Nine Springs Wastewater Treatment Plant.

The City of Madison's goals for the operation and maintenance of its wastewater collection system are to:

- Convey wastewater to the Nine Springs Wastewater Treatment Plant with minimum inflow, infiltration and exfiltration.
- Prevent public health hazards.
- Reduce inconvenience and damage by responsibly handling service interruptions.
- Eliminate claims and legal fees related to backup by providing immediate, concerned and efficient service to all emergency calls.
- Protect municipal investment by increasing the useful life and capacities of the system and parts.
- Use operating funds efficiently.
- Perform all activities safely and avoid injury.

In order to achieve these goals the City has developed and implemented policies and procedures which provide for the:

- Execution of a routine preventive maintenance plan designed to prevent service interruption and protect capital investment.
- Immediate investigation of all complaints and prompt correction of faulty conditions.
- Routine inspection of system for physical damage and elimination of the cause.
- Consideration of personnel safety in all operations.
- Recognition of public ownership and the provision of courteous, efficient and prompt service.

#### **3.2. Maintenance and Inspection Program**

The City of Madison has an aggressive sewer maintenance and inspection program in place and as a result experiences a very low incidence of sewer back up. The City's program provides for every section of sanitary sewer main to be cleaned at least once every three (3) years. The City's sewer cleaning activities are categorized as follows:

- Emergency - in response to sewer back up calls from citizens.
- Preventive Maintenance - regularly scheduled maintenance performed on historically problematic lines; frequency of cleaning ranges from 1 time per year to 1 time per month.

- Area Cleaning - Standard cleaning cycle of once every three years.
- TV Cleaning - Cleaning done in advance of CCTV inspection.

### Emergency Cleaning

Every report of a sewer back up is a top priority for the City. The City of Madison Engineering Division's standard procedure for handling a sewer back up call is to dispatch a crew to check the City's sanitary sewer main that serves that particular property. If it is determined that there is a blockage in the City's sanitary sewer main, action is taken to relieve the blockage. If the City's main is operating normally, indications are that the private building sewer is the cause of the sewer back up. In this case, it is the responsibility of the property owner to clear the blockage. In either case, the crew contacts the property owner or resident and notifies them of what they found. Contact is made in person, by telephone or, as a last resort, by leaving a door hanger.

Additionally, every sewer main back up is televised to determine the reason for such back up. Where there are structural deficiencies the best method of rehab (i.e. point repair, replacement, lining, etc.) is determined. Additional specialized cleaning (i.e. grease treatment, chain cutter on vector, etc.) may be scheduled for lines where there appears to be no structural deficiency but additional cleaning is required. Such lines are then placed on the appropriate preventive maintenance schedule.

### Preventive Maintenance

Each sanitary asset (pipe segment, access structure, lateral connection, pump station) is included in the City's GIS mapping system. The asset data linked to this graphical data is incorporated into the City's Work and Asset Management database. The City has historical data going back to 1991 tracking the work performed on each asset. This includes repairs, sewer back ups, cleaning activities, types (roots, rags, grease, paper, grit, etc.) and levels (low to extremely high) of debris removed as reported by equipment operators.

This data is used to refine the City's preventive maintenance program and ensure optimal system operation. Lines that have a history of problems (i.e. sewer back ups, roots, grease, etc.) are identified and the best cleaning method and frequency of cleaning necessary are determined. These lines are placed on the preventive maintenance (PM) schedule and cleaned any where from 1 to 12 times per year.

### Area Cleaning

All lines that are not on the preventive maintenance scheduled are scheduled for area cleaning once every three years. This ensures that these lines continue to function properly. The first full three-year cleaning cycle was completed in 2004.

### CCTV Cleaning & Inspection

The City has a closed circuit video inspection system that allows internal inspection of pipe and provides a video record of conditions. Cleaning prior to such inspection ensures that the entire pipe surface is visible and that its condition can be properly assessed.

## **3.3. Performance Measurement**

Sanitary sewer main backups, or stoppage of flow, are the primary indicator of how successful the collection system is in doing its job and the effectiveness of maintenance activities.

Between 1971 and 1989, the City of Madison experienced an average of 255 backups (180 minimum and 291 maximum). In 1989 the 3 supervisors charged with sewer maintenance retired. Beginning in 1990 the number of back ups increased alarmingly reaching a record high of 385 in 1992. An internal review and

reorganization of maintenance activities yielded almost immediate results. In 1994 sewer main back ups decreased to 237 and by 1999 there were only 120.

Levels of sewer main back ups plateaued during the period 1999 to 2001 before dropping below 100 for the first time in 2002. In 2004 the City experienced a record low fifty-four (54) main back ups. The red bars in Chart 3.1 show the annual number of main backs in the City's system.

While the absolute number of sewer main back ups provides a gauge of system performance and maintenance effectiveness it does not factor in the increasing size of the system. The blue line in Chart 3.1 shows that the linear feet of pipe in the City's sanitary system has steadily increased each year.

A more accurate basis on which to compare back ups from one year to another is the rate at which they occur when compared to the miles or feet of sanitary line in the system. The City uses a rate of 8 main back ups per 100 miles of sanitary sewer as the benchmark to measure its performance. This benchmark was arrived at following a review of Emmons' Municipal Benchmarks, 1996 Edition. Chart 3.2 illustrates the City's sanitary system performance relative to the established benchmark. In 2004, the benchmark number of main back ups was 60 (# of main back ups = Miles of Sanitary Sewer / 100 \* 8). The City outperformed this benchmark for the first time in 2004 with just 54 main back ups or 7.1674 back ups per year per 100 miles of sanitary sewer.

The City also compares its internal performance to other external benchmarks. A 1999 study prepared for the American Society of Civil Engineers in cooperation with the U.S. Environmental Protection Agency's Office of Wastewater Management cites a national average rate of 0.23 main back ups per mile of sewer per year. The chart below compares Madison's annual rate of sewer back up per mile per year to the average rate cited in the ASCE study.

The total cost of the City's response to the 54 sanitary sewer main back ups in 2004 was \$5,777.73. This is an 11.95% decrease from the cost of such response in 2003.

The majority of sewer back up emergency response cost, however, is attributable to calls that were a result of problems in the property's internal plumbing system. In 2004 the City responded to 623 sewer back up calls. Of these, 569 were caused by a problem in the property owner's internal plumbing, rather than the City's sanitary main. This amounts to 91% of all sewer back ups reported to the City. The cost of this response was \$33,939.00.

#### **Chart 3.4 Sewer Back Ups - Main vs. Lateral**

The 2003 numbers were comparable to 2004. Sewer back ups attributable to private sewer systems rather than the City's represented 86% of all such calls responded to by the City. The 2003 cost of this service was

\$29,113.10. This compares to \$6,561.62 for actual main back ups.

#### 4. Sewer Back Up Claims Against the City

Despite the aggressive maintenance and inspection program that the City has implemented, system blockages are inevitable. The most common causes of blockages are tree roots and grease. Materials such as concrete, gravel and sand can also cause problems.

Vandalism or misuse of the system is another contributing factor to main back ups. City crews responding to sewer back up calls have opened manholes only to find a christmas tree or bicycle frame stuffed down into the manhole as the cause. Clothing, dentures, jewelry and "lost" toys such as dolls, action figures, cars and stuffed animals are often retrieved from the system. In one instance a bowling ball was pulled out of a line during cleaning.

Suffice it say that customers do not always use the system for its designed purpose. As such, there will always be claims against the City for sewer back up damages incurred by property owners.

The Comptrollers Office provided data regarding sewer back up claims filed against the City for the 5-year period 2000 to 2004. Table 4.1 below summarizes this data. More detailed information on these claims in provided in Appendix A.

**Table 4.1 Sewer Back Up Claims Data 2000-2004**

Year	Claim Amount	Liability Amount	%	Adjuster Expenses	Total Paid	# of Claims	Liable	%
2000	\$ 9,072.71	\$ 883.60	9.74%	\$ 3,105.00	\$ 3,988.60	8	2	25.00%
2001	\$ 45,955.32	\$ 21,811.27	47.46%	\$ 4,217.40	\$ 26,028.67	12	4	33.33%
2002	\$ 8,546.56	\$ 461.50	5.40%	\$ 3,285.00	\$ 3,746.50	10	3	30.00%
2003	\$ 9,062.62	\$ -	0.00%	\$ 2,632.00	\$ 2,632.00	7	0	0.00%
2004	\$ 16,780.02	\$ 345.00	2.06%	\$ 1,548.00	\$ 1,893.00	9	1	11.11%
<b>Total</b>	<b>\$ 89,417.23</b>	<b>\$ 23,501.37</b>	<b>26.28%</b>	<b>\$ 14,787.40</b>	<b>\$ 38,288.77</b>	<b>46</b>	<b>10</b>	<b>21.74%</b>
<b>Average</b>	<b>\$ 1,943.85</b>	<b>\$ 2,350.14</b>	<b>26.28%</b>	<b>\$ 321.47</b>	<b>\$ 832.36</b>	<b>9.2</b>	<b>2</b>	<b>21.74%</b>

Between 2000 and 2004 there were 46 claims filed against the City for damages associated with sewer back ups.

The total value of these claims against the City was \$89,417.23. The City's insurer made payment in 10 of these cases for total damages of \$23,501.37. Of this amount, 92.81% was paid for damages associated with an overload caused by the Water Utility in 2001.

On average 10.0 claims were filed per year against the City during this period. The average claim was \$1,943.35 The City paid claims 21.74% of the time with an average payment of \$2,350.14 per claim.

Chart 4.2 illustrates the relationship between the number of main back ups, claims filed and claims paid for the period 2000-2004.

#### 5. Customer Survey

The Cit of Madison identified 244 properties where a sewer back up had been reported that were determined to be the result of a blockage/problem in the City sanitary main.

The City designed a survey (Appendix B) aimed at collecting information that might assist the City in identifying additional measures that could be taken to prevent future backups. A letter (Appendix C) explaining the purpose of the survey and a brochure (Appendix D) aimed at providing citizens with information on cleaning up after a sewer back up as well as preventing future reoccurrences were included as part of this mailing.

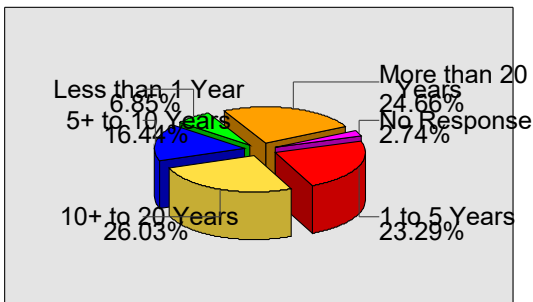
Surveys were mailed to the identified properties on December 9, 2004. The survey had a 29.92% positive

response rate with seventy-three residents returning a completed survey to the City. Ten of the surveys were returned as non-deliverable. The highlights of the responses received are provided in the following section. A tabular summary of all survey results is included in Appendix E.

## 5.1. SURVEY RESULTS

### **Question 1. Do you rent or own this property?**

- The majority of respondents (93.15%) indicated that they owned the property at which the sewer back up occurred. Only 6.85% of respondents were renters.



### **Question 2. How long have you lived at this address?**

- Responses ranged from 5 months to 64 years.
- Nearly 70% of respondents indicated that they had lived at address for more than 5 years. Another 23.29% had lived there for 1 to 5 years. Only 6.85% had been at the surveyed address for less than 1 year.

### **Question 3. Have you experienced more than one sewer back up at this address?**

- 60.56% of respondents responded that they had experienced more than one sewer back up at this same address.

### **Question 4. Was it raining heavily at the time of this sewer back up?**

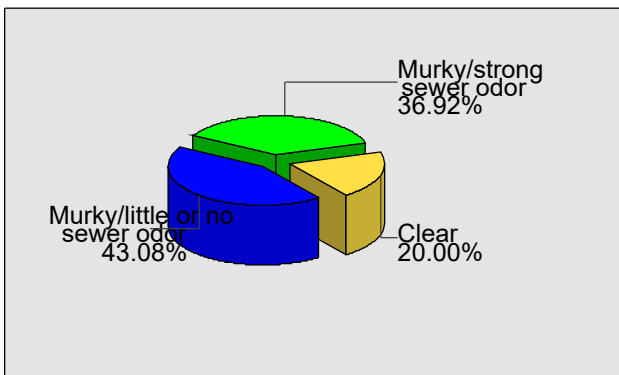
- Only 10.77% of respondents indicated that it was raining heavily at the time the sewer back occurred.

**Question 5. What was the extent of the flooding in your basement when the sewer backed up?**

- The extent of basement flooding was varied with ranging from “none” to “severe”.
- 20.90% of respondents classified the flooding as “minor” and contained to the floor drain area.
- 41.79% indicated that there was some accumulation of water in their basement and defined the extent of flooding as “moderate”.
- 29.85%, however, indicated that they experienced “severe” basement flooding as a result of the sewer back up.
- The respondents who classified their back up as “severe” were asked to quantify the extent of flooding by indicating the depth of water. Responses ranged from 1/8” to 60” with the average depth being 7.3275”.

**Question 6. How would you describe the water?**

- 



43.08% of respondents described the basement floodwater as “murky/muddy” with a “strong” sewer odor.

- 36.92% stated that while the water was “murky/muddy” that there was “little or no sewer odor” associated with it.
- 20.00% described it as “clear” with “little or no sewer odor”.



**Question 7. How did the water enter the basement?**

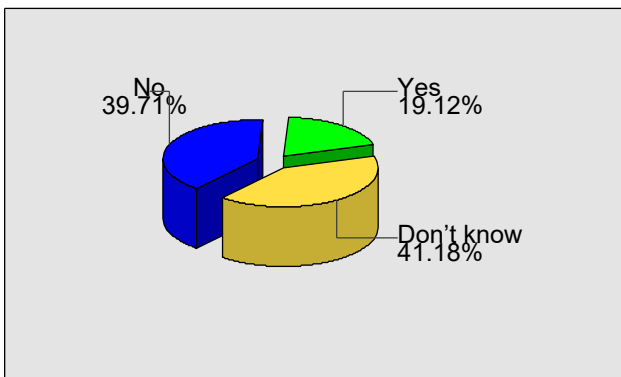
- Floor drains were identified as the source of floodwater in 95.45% of responses.
- Other sources including plumbing fixtures, such as toilets and sinks, were cited as the entry point in the remainder of instances.

**Question 8. Did this back up result in any damage?**

- 47.76% of the respondents indicated that the sewer back up resulted in damage to their property and/or personal belongings.
- For those who responded “Yes” the top three categories of damaged items were: carpet (32.65%); personal belongings (14.29%); and mechanicals/appliances such as furnaces, water heaters, washers, dryers (10.20%).

**Question 9. Does your homeowner or renter's insurance policy have a rider that specifically covers losses due to sewer back up?**

- 



Only 19.12% of respondents indicated that they had homeowner or renter insurance with a rider or endorsement that specifically covered losses due to a sewer back up. Note that one of these respondents stated that they did not have it at the time of the sewer back up but subsequently had it added to their coverage.

- 39.71% indicated that they did not have such coverage. One respondent stated that they had discontinued such coverage due to its expense.
- The highest response rate of 41.18% was for those who responded that they did not know if they had such coverage.

**Question 10. How did you clean up after this back up?**

- The vast majority (76.47%) of respondents performed the clean up themselves.
- 17.65% of respondents hired a contractor to perform the clean up.

**Question 11. How often do you hire a private plumbing contractor or drain cleaning service to clean/unplug the plumbing in your home?**

- 26.09% of respondents indicated that they have regular preventive maintenance performed on their internal plumbing cleaned/maintained on a regular basis. The frequency of such maintenance ranged from quarterly to once every five years.
- 46.38% responded that they hire someone to clean their sewer only when they experience problems.
- 24.64% indicated that they have never had their sewer cleaned.

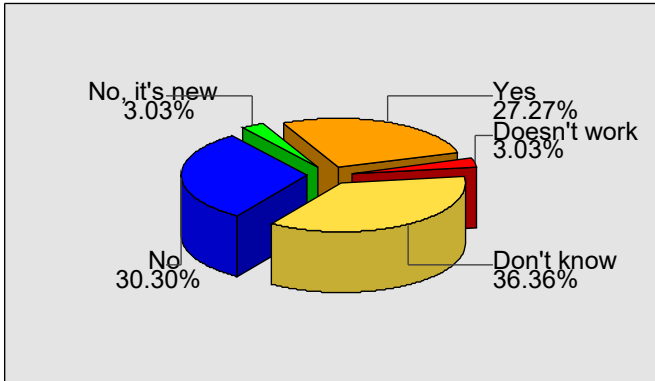
**Question 12. Do you have a sewer back flow prevention device installed in your home?**

- 30.00% of respondents indicated that they have a backflow valve device.
- 25.71% indicated that they did not have a backflow valve.
- 38.57% did not know whether they had one or not.

**Question 13. Please indicate the type of sewer back flow prevention device you have installed in your home.**

Only those respondents who indicated that their home was equipped with a back flow valve were asked to respond to this question.

- The most common type of back flow valve installed in respondents' homes was a "flapper valve" (42.42%).
- 18.18% had a "screw plug" in their floor drain.
- Only 9.09% of homes had an in-line PVC backwater valve installed.



**Question 14. Has the backwater prevention device you have in your home ever required any cleaning/maintenance?**

- Of those who responded that they did have a backwater prevention device only 27.27% acknowledged ever having had the valve cleaned/maintained.
- 36.36% responded that they “did not know”.
- 3.03% responded that “it doesn't work” while another 3.03% responded that they had the backwater device installed after experiencing a sewer back up.

**Question 15. Would you be interested in a free inspection to have your existing backwater valve checked and/or determine if you have one?**

- 68.75% of respondents expressed an interest in having such an inspection.

**6. Conclusions**

The City of Madison has an aggressive sewer maintenance and inspection program in place that provides for every section of sanitary sewer main in the City's system being cleaned at least once every three (3) years. As a result the City experiences a very low incidence of sewer back up. In 2004 there were fifty-four (54) main blockages or 7.1674 back ups per year per 100 miles of sanitary sewer.

Sanitary sewer main backups, or stoppage of flow, are the primary indicator of how successful the collection system is in doing its job and the effectiveness of maintenance. The total miles of sanitary sewer in the City's collection system increases every year, yet the number of main back ups continues to decrease. The City has outperformed the ASCE benchmark of 0.23 main back ups per mile of sewer per year since 1997. In 2004, the City outperformed the APWA established benchmark of 8 sewer back ups per hundred miles of sanitary sewer.

Despite the aggressive maintenance and inspection program that the City has implemented system blockages are inevitable. The most common causes of blockages are tree roots and grease. Vandalism to and misuse of the system can also result in a main back up. As such, there will always be claims against the City for sewer back up damages incurred by property owners.

Under Wis. Stat. § 893.80(4) the City of Madison is not liable for a sewer main back up unless it has created a nuisance and was negligent in the operation and maintenance of its system. Over the past 5 years the City has averaged 9 sewer back up claims per year. The last sewer main back up claim paid by the City paid was in 2002.

As part of this study the sewer main back ups that occurred in 2004 were reviewed in greater detail. There were 378 connections to the City mains where a resident experienced a back up that was determined to be caused by a blockage in the City's sanitary main. Yet only 53' of these properties experienced a sewer back up in their basement. This means that on average there were 7.13 connections to each main where a back up occurred yet typically only one resident was adversely affected.

An even greater problem for property owners is sewer back ups caused by problems within their building's plumbing. In 2004, 91% of sewer back up calls responded to by the City ended up being a problem in the property owner's building plumbing.

The typical survey respondent owned the property where the sewer back up occurred and had lived there for more the 5 years. Despite having control over the maintenance of the property where the backup occurred the majority of these residents were very uneducated regarding the operation and maintenance of their building's plumbing system.

Most respondents either did not have or did not know if they had a sewer backflow prevention device. The plumbing code has required the installation of such a device as part of the floor drain for well over 50 years. The floor drain was cited in more than 95% of responses as being the access point for the sewer back up.

For those respondents who did have a sewer backflow device the majority had never had the valve cleaned/maintained. In order to function properly this valve should be inspected at least annually. If not cleaned/maintained the valve can stick open because of a buildup of lint, corrosion or other debris thus allowing wastewater to enter the building through the floor drain.

The majority of respondents either hire someone to clean their building sewer only when they experience problems or have never had their building sewer cleaned. Like any other building component the building sewer requires periodic preventive maintenance to ensure it continues to operate as designed and to identify problems prior to failure. Sewer back ups into basements are largely preventable. It is our belief that in general citizens are not knowledgeable about how their building plumbing system works and the need for preventive maintenance. This conclusion is supported by citizen responses to the City's Sewer Back Up Survey.

## 7. Recommendations

### 7.1. Water Main Break Damage Reimbursement Program

In September 2004, the Madison Common Council adopted a resolution (Appendix F) which established a program to reimburse property owners for certain losses sustained as a result of a water main break where it had been determined that the City was not legally liable. Reimbursements were limited to \$1,000 for clean up costs and \$2,500 for damage to building mechanicals and appliances. The Council directed the City Engineer to study whether and to what extent a similar program should be created for damages caused by sewer backups not caused by a water main break effective January 1, 2004.

Adoption of a program similar to that the Water Utility has established for water main breaks is not recommended for the reasons outlined below.

#### 7.1.1. Cost is unpredictable.

The cost of a program to reimburse property owners for losses resulting from a sewer main back up for which the City is not liable (excluding those main back ups covered by Water Utility's Program) is difficult to predict with any real accuracy. Our projections show that annual costs could range from a low of \$12,522.76 to a high of \$63,172.07.

The low estimate of \$12,522.76 is based on the actual number and dollar value of sewer back up claims filed by citizens between 2000 and 2004 that were not covered by WMMIC and were not the result of water main break. This claim data is summarized in Table 6.1.

Under this scenario claims not paid by WMMIC were reimbursed up to the \$3,500 cap. Where the claimant did not provide a dollar amount of damages the maximum reimbursement was assumed.

**Table 7.1 No-Fault Reimbursement Projection Based on Actual Claims Filed 2000-2004**

Year	Claim Amount	No-Fault Reimbursement
2000	\$ 8,189.11	\$ 10,768.90
2001	\$ 24,144.05	\$ 14,186.02
2002	\$ 8,085.06	\$ 15,475.06
2003	\$ 9,062.62	\$ 12,062.62
2004	\$ 16,435.02	\$ 8,771.18
Total	\$ 65,915.86	\$ 61,263.78
<b>Annual Average</b>	<b>\$ 13,183.17</b>	<b>\$ 12,252.76</b>

The high estimate of \$63,172.07 is based on an increased number of claims being filed due to the no-fault nature of the program. The sole eligibility requirement for reimbursement under such a program is that the obstruction was in the City's sanitary main. Under this scenario we used the average number of sewer main back ups as the starting point from which to calculate potential costs of such a program. From 2000 to 2004 the average annual number of sewer main back ups was 61.2. Cost calculations were separated into "cleaning" and "damage" reimbursement and are detailed below.

The survey of citizens who had experienced a sewer back up indicated that 41.79% of back ups resulted in "moderate" flooding, while 29.85% resulted in flooding described as "severe". When these percentages are applied to the annual average number of sewer main back ups we end up with 26 properties with moderate flooding and 18 with severe flooding.

Cleaning cost reimbursements are capped at \$1,000 per incident per property under the Water Utility program. We assumed average cleaning costs of \$250 for those experiencing moderate flooding and \$500 for those experiencing severe flooding. Cleaning reimbursements made in this scenario totaled \$15,500.00.

**Table 7.2 Cleaning Cost Reimbursement Calculations**

<b>Number of Sewer Back Ups</b>	61.2
<b>Moderate Flooding</b>	
<b>% Households</b>	41.79%
<b># Households</b>	26
<b>Cleaning Reimbursement per Household</b>	\$250.00
<b>Sub-Total - Cleaning Reimbursement - Moderate</b>	\$6,500.00
<b>Severe Flooding</b>	
<b>% Households</b>	29.85%
<b># of Households</b>	18
<b>Cleaning Reimbursement per Household</b>	\$500.00
<b>Sub-Total - Cleaning Reimbursement - Severe</b>	\$9,000.00
<b>Total Cleaning Reimbursement</b>	\$15,500.00

Damages resulting from a sewer main back up were reported by 47.76% of survey respondents. Applying this rate of damage to the average number of main backs we estimate 29 claims for damage

reimbursement under the no-fault program. The average sewer back up claim amount filed against City between 2000 and 2004 was \$1,979.38. The gross cost of damage reimbursement for these 29 claims is estimated to be \$57,855.62.

**Table 7.3 Damage Reimbursement Calculations**

<b>Number of Sewer Back Ups</b>	61.2
<b>Rate of Damage</b>	47.76%
<b>Number of Household with Damage</b>	29
<b>Damage Costs per Household</b>	\$1,979.38
<b>Gross Damage Costs</b>	\$57,855.62
<b>% of Households Hiring Cleaning Company Prior to Program Implementation</b>	17.65%
<b>Deduction for cleaning costs included in per claim cost</b>	(\$10,211.52)
<b>Net Damage Costs</b>	\$47,644.10

This amount was adjusted downward by \$10,211.52 to reflect the fact that the average claim amount of \$1,979.38 included some claims where the property owner had hired a contractor to provide post sewer back up cleaning. The amount deducted was based on the percentage of survey respondents who hired a company to clean up after their sewer back up. This assumes that the same percentage that had filed claims with the City had included these costs in their claim. After deducting this amount the net cost of damage reimbursements was \$47,644.10.

Combining the cleaning and damage reimbursement amounts we arrived at the upper end program cost estimate of \$63,172.07.

7.1.2.City is not liable for these damages.

Under Wisconsin law, the City has no legal liability for damages caused by a sewer back-up, unless it fails to reasonably conduct inspections of the main line, or fails to remove an obstruction in the main upon receiving notice of the obstruction. However, even in such instances, contributory negligence of a homeowner in failing to have a properly functioning backwater valve can eliminate or reduce any City liability. The City is usually not legally liable for damages caused by back-ups. If the City is liable, payment of claims would be made by the City's liability insurer.

The City has an extremely low incidence of sewer main back ups relative to benchmarks established by the APWA and ASCE. Significant resources have been invested in the operation and maintenance of the City's collection system to limit the number of main back ups. Paying claims for which the City is not liable will divert funds from more productive uses that benefit a greater percentage of customers.

7.1.3.Sewer back ups into basements are largely preventable.

Installation and proper maintenance of an in-line PVC backflow prevention device can eliminate the majority of sewer back ups that a homeowner would otherwise experience. The no-fault program is reactive rather than preventive.

7.1.4.Does not address the cause of the problem.

As the survey results clearly indicate there is a considerable knowledge gap that exists on the part of individual property owners when it comes to the operation and maintenance of their home's internal plumbing system.

Again, the no-fault program is reactive rather than preventive.

7.1.5. Benefit is limited to a very small pool of citizens.

On average this program would impact 61.2 households per year. The remaining citizens would be no better off as a result of this program.

7.1.6. Does not promote individual responsibility.

Property owners are reimbursed for expenses resulting from their own negligence (i.e. lack of backwater prevention device, inadequate preventive maintenance, not carrying insurance to cover such event, etc.). This program provides a disincentive for property owners to incur the expenses associated with proper maintenance, insurance coverage.

## 7.2. Recommended Alternative Initiatives to Eliminate Sewer Back Ups

The results of our survey clearly indicate that there is an overall lack of understanding as to how the sanitary sewer system functions and what is involved in maintaining a properly operating system. As such, education plays a key role in meeting the above stated goals. Specific areas where education is needed are outlined below

- Sewer System - public verses private; who is responsible for what; relationship - impact of private on public.
- Individual Sewer System - use, operation and maintenance.
- Back Flow Valves - benefits, operation and maintenance.
- Dealing with a Sewer Back Up - health risks, proper clean up procedures and personal protective equipment, sanitizing contaminated areas.
- Insurance Coverage Options

Sewer back ups into basements are largely preventable. Regular cleaning and preventive maintenance of the private building sewer is simply a part of the regular maintenance associated with owning a property. As such we recommend the development of programs that work towards eliminating sewer back ups into people's homes and minimizing damage to property and exposure to raw sewage where sewer back ups are unavoidable. Proposed initiatives to work towards this goal are outlined below. We believe these initiatives would provide a greater benefit to the City and its customers than simply reimbursing customers for damages for which the City is not liable.

### 7.2.1. Educational Materials

The City currently has three (3) pieces of printed literature which it uses to communicate with customers regarding sewer back ups:

1. Informational pamphlet, which describes what to do in the event of a sewer back up and how to avoid such an event. This pamphlet has been sent to customers with their water/sewer bill on annual basis. See Appendix G for a copy of this pamphlet.
2. Door hanger - every time the City responds to a sewer back up call - whether the problem is in the City's main or the property owner's private system - the responding crew provides the property owner with a door hanger indicating what and where the problem was and what, if any action they should take. A copy of the informational pamphlet described above is attached to this door hanger (Appendix H).
3. Guide to Dealing with a Sewer Back Up - recently developed brochure aimed at educating property owners on how to safely clean up after a sewer back up (Appendix D).

This information is also available for review on the City's website at <http://www.cityofmadison.com/engineering/operations.htm#F>

We recommend the following to update and expand educational materials available to citizens as well as diversify the means of delivery so that different audiences are reached.

- *Update and expansion of printed literature*  
The current informational brochure is content-rich - so much so that many citizens probably toss it in the recycling container without ever reading it. We recommend that the existing brochure be updated to be more readable.
- *Enhancement of website information*  
Enhance website information to be more interactive making it easier for people to find information relevant to their specific need.
- *Articles/Press Releases*  
Draft articles and press releases for dissemination to local media and neighborhood associations.
- *Video*  
Develop informational videos that can be viewed and downloaded from the City's website as well as aired on City Channel 12.
- *Public Service Announcements*  
Develop Public Service Announcements (PSAs) to air on local television and radio stations.
- *Community Presentations*  
Participate in local events that draw homeowners (i.e. home shows, garden expo, etc.) Make presentations at neighborhood association meetings.

#### 7.2.2. Back Flow Valve Inspection Program

A major component of the educational process would be implementation of a Back Flow Valve Inspection Program. The purpose of this program would be to assess the condition of existing backwater valves and/or determine if the property is equipped with such a device.

A City Engineering staff member along with a licensed plumber would conduct an on-site visit with the property owner to physically inspect their interior plumbing system. The on-site inspection will provide the City with the opportunity to educate homeowners as well as provide them specific actions they can take to prevent future back ups.

The inspection team will utilize a standardized inspection checklist to systematically review and identify potential problem areas. This checklist will then be used to develop recommendations specific to the individual homeowner's situation. The "Home Sewer Inspection Checklist" developed by the Association of Bay Area Governments is provided in Appendix I.

Data collected during each inspection will be maintained in a database. This will allow the City to follow up with individual homeowners to see which, if any, of the recommendations were implemented and determine if the problems have been eliminated.

The pilot phase of this program would target the nearly 70% of survey respondents who expressed an interest in participating in such a program. Upon completion of the pilot phase we would evaluate its effectiveness to determine if it should be continued and, if so, identify the scope of population eligible for participation.

#### 7.2.3. Prequalification of Sewer Drain Cleaning Companies

Each year the City experiences sewer main back ups resulting from private drain cleaners that push roots and debris into the sanitary main from a connecting building sewer. Main back ups also occur when these companies break their cleaning tools while in the line and the broken parts end up in the City's sanitary main.

In an effort to minimize the number of the back ups associated with these types of problems the City sends an annual letter (Appendix J) to area companies that provide local residents and businesses with these services. In this letter the City requests that it be notified whenever private contractors are working on clearing a heavy blockage or cleaning a heavy root infestation from a private sewer connected to a City main. While there are contractors that comply with our request, this unfortunately is not the case across the board. Additionally, we



often find holes in our clay pipe across from a service connection - typical cause is the private drain cleaner's tool stabbing into our pipe from the service connection.

From the property owner's standpoint we hear all too often "the problem can't be with my plumbing, we just had "so-and-so" here last month and they cleaned our line". All too often private drain cleaning services merely poke a hole in the obstruction that is causing the homeowner's problem and don't do a thorough cleaning. At the time the homeowner is satisfied because the wastewater recedes. The problem is that if the line isn't thoroughly cleaned, it will soon be completely blocked again - especially if tree roots are the problem. We also hear that "so-and-so" said that the homeowner's lateral is broken simply because the drain cleaning company couldn't get through the obstruction. Quite often this is not the case. The costly decision to dig and make a repair should only be done after an internal TV inspection confirms that there is a break. Additionally, the property owner should be provided a copy of the video taped inspection along with the measured location of the damaged section of pipe so that s/he can get recommendations and/or quotes from other contractors and/or the City. Finally, private drain cleaning services often do not inform citizens that if the damaged section of their pipe is located in the right-of-way they can contract with the City - usually at a lower cost - to have the repair made.

Prequalification of these companies would provide the City the ability to resolve many of these issues. Part of the prequalification would be a specification that distinguishes between "opening" a line and "cleaning" a line.

Contractors would be required to inform property owners of the difference and then owners could make an informed choice as to what they were purchasing. Contractors would also be required to notify the City prior to responding to a sewer call where the source of the back up is the basement floor drain. This would allow the city to determine if the problem is in the City main and save the homeowner the expense of a private contractor if not necessary.

Additionally, a condition of continued prequalification would be to notify the City when a tool is broken and lost in our main or when large amounts of roots or other debris are pushed from the private lateral into the main that could potentially cause a main back up.

The list of prequalified contractors would be available to citizens via the City's website or by contacting the Engineering Division. Additionally, this information could be provided at the time most needed - when the City responds to a sewer back up call that is a problem in the property owner's private sewer.

The City would set up a database to track compliments and complaints received from property owners regarding service provided by specific companies and make this information available to others so they could make an informed decision when contracting for services.

The prequalification process would be similar to that for contractors licensed to perform sidewalk, drive apron work in the right-of-way with the contractor being required to provide a \$1,000 bond to assure quality job performance. This more formal relationship between private contractors and the City would benefit the City, citizens and the companies providing these services.

#### 7.2.4. Annual Request for Proposal (RFP) - Sewer Back Up Cleaning Services

The City would issue an annual RFP to establish a list of companies, available services and costs. The City itself would not actually contract for these services. Rather, this would be a resource for City residents who had experienced a sewer back up and were in need of such services.

This list would be published on the City's website and included in literature distributed by the Sewer Utility. City staff would also be able to quickly provide property owners with this information when responding to a sewer back up call. Use of a contractor to provide these services would protect residents from the potential health risks associated with exposure to raw sewage.

## APPENDICES

- A. Sewer Back Up Claims Against City 2000-2004
- B. Survey
- C. Cover Letter accompanying survey
- D. Guide to Dealing with A Sewer Back Up brochure
- E. Survey Tab
- F. Resolution
- G. Sewer Maintenance informational pamphlet
- H. Door Hanger
- I. Backflow Inspection Checklist
- J. Annual Letter to Drain Cleaning Services