To: Chair and Members
Public Works, Infrastructure & Environment Committee
Outstanding Business Item No. M and Issue: Petition from Chedoke Farms Fessenden Subdivision regarding sewer backups
PW06053a

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Re: Chedoke Farms Fessenden Subdivision Petition - Sewer Backups (PW06053a) (Ward 8)

Council Direction:
At the November 10, 2005, Council meeting a petition was received from residents in the Chedoke Farms Subdivision, in the Fessenden neighbourhood, requesting action be taken to eliminate further sewer back-ups and ensure that all surface water reaches the streets. An Information Report was received at Public Works, Infrastructure & Environment Committee on May 1st and the petition was referred to the Storm Event Response Group (SERG) for a report back to Committee.

This subsequent Information Report provides current information on the continuing investigations within the Fessenden neighbourhood. All recommendations pertaining to these investigations will be addressed within the Independent Community Panel report.

Information:
There are several initiatives that have been undertaken to fully investigate surface flooding and sewer back-ups that occurred during the storm events on July 26 and August 19, 2005. The City of Hamilton has initiated a two-part drainage and stormwater management study for the Mountview Neighbourhood. In December 2005 a contract was awarded to McCormick Rankin Corporation (MRC) to carry out the two separate but related investigations as one study. Part A includes a review of the suitability of providing a stormwater management facility within the hydro corridor above the Escarpment in the Mountview Neighbourhood. Part B includes the Mountview Neighbourhood Storm Drainage Study that will review the storm sewer system in the context of the July 26, 2005 and August 19, 2005 storm events, which resulted in a number of complaints of flooding within the neighbourhood.

These investigations were initiated in January of 2006 and to date, data collection and review, site reconnaissance, some drainage modelling of the area, and technical meetings with the City’s project management team have been undertaken by MRC. A Public Information Centre (PIC) was held on May 9 with a total of 42 attendees. A
second PIC was held on September 20th and a third PIC, which will address Part A, is scheduled for October 19th. Draft and final reports will follow with recommendations, which may include Class EA projects, to be implemented by the Public Works Department.

MRC presented the study overview to the Independent Community Panel (ICP) earlier this year and the ICP will be addressing it as part of their final report.

The City has completed the preliminary inspection of all storm and sanitary sewers within the entire catchment area shown on the attached Appendix A, as well as a detailed closed-circuit television inspection of the sewers within the central catchment boundaries. The sewers between Mohawk Road West and the LINC were constructed in the period from 1968 to 1976 and from the LINC southerly from 1976 to 1988. The storm sewer on the LINC was constructed in 1995. Both the storm and sanitary sewer systems, which provide service for all of the properties within this catchment, discharge across Mohawk Road at the Rice Avenue intersection. For the purpose of this report, this catchment is being referred to as the Rice Avenue catchment.

The Rice Avenue catchment contains 25 of the 27 properties, or more than 90% of the properties whose owners filed flooding or SBU claims with the City pertaining to the July and August 2005 storm events.

All of the sewers north of the LINC and approximately 51% of the sewers south of the LINC were inspected in detail. From the preliminary inspection results, the remaining 49% of the sewers south of the LINC were deemed to be in acceptable condition by the preliminary inspection contractor and no further action has been taken.

Approximately 7,400 metres of sanitary main sewer, 8770 metres of storm main sewer, and 785 manholes, including the storm sewer system on the LINC within the catchment boundaries have been inspected at a cost of $61,230.

In general, both sewer systems are in good-to-excellent condition from structural and hydraulic perspectives. No rehabilitation of any kind is needed at this time.

Grease, in varying levels, was detected in close to 15% of the sanitary sewer system. Under Sewer Use By-law 04-150, the amount of oil and grease that can be discharged is limited and applies to all users. Over 930 notices of this together with a brochure on the proper disposal of grease and food wastes have been distributed to owners and residents in the suspect areas.

Sanitary sewage was observed in 9% of the storm sewer system indicating an unacceptable number of private drain cross-connections in the Rice Avenue catchment area. Under the current By-Law, this is deemed illegal and property owners are responsible for correction. The ICP will be addressing this in their final report as a policy question to be examined further by engaging owners in discussions.

Locations of silt, debris, and grease build-up exceeding depths of 10% of the pipe diameters together with medium-to-heavy encrustation have been compiled and removals by Wastewater Collection staff are in progress.

A summary of the condition of the sewers has been compiled and is attached. Refer to Appendix B.

Random smoke testing has been completed on 10 different streets within the Fessenden catchment area with 213 buildings being tested. Eight of these streets and
163 buildings are within the Rice Avenue catchment. The testing has provided strong evidence of potentially widespread storm and sanitary private drain connections in non-conformity with the City’s Sewer By-law i.e. cross-connected. This could cause a heavy flow of rain water and ground water into the sanitary sewer system, resulting in surcharging of the system, consequently causing sewer back-ups.

At the request of some of the residents, an informal meeting was held with City staff at the City offices on April 5, 2006. Discussions included what the City had learned to date and what type of investigations were planned. As well, the attending residents offered information about their flooding observations, experiences, and what they thought was the cause.

Other investigations completed or in progress include:

- Inventory of reverse-grade driveways (completed).
- Inventory of front-yard and City trees (completed).
- Inventory of private rear yard catch basins (completed).
- Verifying proper covers on manholes (in progress)
- Feasibility of the installation of backflow preventers from economic and liability perspectives (in progress)

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Appendix B
Fessenden Neighborhood

General Observations from CCTV Inspections completed in February, March, and May, 2006

Rice Avenue Drainage Catchment Area – Mohawk to LINC

Inspection Reference Report AM06-11

Sanitary Sewer – total of approx. 4,568 metres representing 72 segments were inspected (100% of the segments within the Rice Ave. catchment)

- Traces of grease are reported in 9 of the segments inspected
- Silt and debris exceeding 10% of the pipe diameter are reported or observed in 15 of the segments inspected
- Medium-to-heavy encrustation is reported in 15 of the segments inspected
- Most high end segments require some flushing of construction debris due to lack of use
- Evidence of water level approaching 100% in a few areas
- Over 90% of private drain junctions are properly manufactured into the main sewer pipe, visible portions are in excellent condition
- All drain connection inverts are properly positioned at, or above springline [mid-point] of the main sewers
- Manhole covers generally appear to be the “closed” type, and have either 2 or 4 holes. From the CCTV inspection, the 4-hole type appears to be more prevalent. (These are no longer included in current standards)
- Evidence of some incorrect manhole covers (“open” type), rendering the system susceptible to unacceptable infiltration rates
- Tree roots in the main sewer and the visible portion of drain connections are non-existent
- Infiltration through pipe walls and around connections is negligible
- Inspection of 3 segments was abandoned due to obstructions and debris causing 10% to 80% blockage (these sewers have subsequently been cleaned and re inspected)

Storm Sewer – total of approx. 4,685 metres representing 72 segments were inspected

- Silt and debris exceeding 10% of the pipe diameter are reported or observed in 15 of the segments inspected
- Medium-to-heavy encrustation is reported in 15 of the segments inspected
- Colour of encrustation and build-up below connections varies from segment-to-segment – red, gray, black, brown
- Some reddish-brown build-up below some connections may be corroding re-bar or silt
- Possible cross-connections and sanitary sewage is reported in 6 of the segments inspected
- Most high end segments require some flushing of construction debris and silt due to lack of use
- Over 90% of private drain junctions are manufactured into the main sewer pipe, visible portions are in excellent condition
- Some drains have been improperly “broken in” with re-bar exposed and susceptible to corrosion
- All drain connection inverts are above springline of the main sewers
- Evidence of some incorrect manhole covers (“closed” type) potentially increasing the level of street flooding
- Tree roots in the main sewer and the visible portion of drain connections are non-existent
- Infiltration through pipe walls and around connections is negligible for small diameter pipes, unacceptable on the larger diameter pipes (say >750) at joints, lift holes, and around cut-in connections
Water levels in large diameter pipes observed at less than 5%, no visible signs of maximum high water levels
- No segment inspections had to be abandoned due to obstructions or debris

**Rice Avenue Drainage Catchment Area – LiNC southerly**

**Inspection Reference Report AM06-17**

**Sanitary Sewer** – total of approx. 2,832 metres representing 39 segments out of 76 segments were inspected (51% of the segments within the Rice Ave. catchment)
- Traces of grease are reported in 6 of the segments inspected
- Silt and debris exceeding 10% of the pipe diameter are reported or observed in 8 of the segments inspected
- Medium-to-heavy encrustation is reported in 8 of the segments inspected
- Most high end segments require some flushing of construction debris due to lack of use
- Evidence of water level exceeding 50% in some areas
- Over 90% of private drain junctions are properly manufactured into the main sewer pipe, visible portions are in excellent condition
- All drain connection inverts are properly positioned at, or above springline [mid-point] of the main sewers
- Manhole covers generally appear to be the “closed” type, with 2 lifting holes.
- Evidence of some incorrect manhole covers (“open” type) rendering the system susceptible to unacceptable infiltration rates
- Tree roots in the main sewer and the visible portion of drain connections are non-existent
- Infiltration through pipe walls and around connections is negligible
- Inspection of 8 segments was abandoned due to obstructions and debris causing 15% to 45% blockage (these sewers have subsequently been cleaned and re inspected)

**Storm Sewer** – total of approx. 4,081 metres representing 52 segments were inspected
- Silt and debris exceeding 10% of the pipe diameter are reported or observed in 8 of the segments inspected
- Medium-to-heavy encrustation is reported in 23 of the segments inspected
- Possible cross-connections and sanitary sewage is reported in 11 of the segments inspected
- Most high end segments require some flushing of construction debris and silt due to lack of use
- Over 90% of private drain junctions are properly manufactured into the main sewer pipe, visible portions are in excellent condition
- Some drains have been improperly “broken in” with re-bar exposed and susceptible to corrosion
- All drain connection inverts are properly positioned above springline [mid-point] of the main sewers
- Evidence of some incorrect manhole covers (“closed” type) potentially increasing the level of street flooding
- Tree roots in the main sewer and the visible portion of drain connections are non-existent
- Infiltration through pipe walls and around connections is negligible for small diameter pipes, unacceptable on the larger diameter pipes (say >750) at joints, lift holes, and around cut-in connections
- Water levels in large diameter pipes observed at less than 5%, no visible signs of maximum high water levels
- Inspection of 1 segment was abandoned due to 25% debris accumulation (these sewers have subsequently been cleaned and re inspected)
LINC Storm Sewer – total of 9 segments fully inspected out of 15 segments.

- Silt and debris at 15% to 30% depth reported in 2 segments.
- Inspection of 6 segments was abandoned due to debris, one intruding drain connection, and inaccessibility.
- Inspected segments are structurally and hydraulically satisfactory-to-good.