Appendix A

Executive Summary of the Small Streams Study

Executive Summary of the Small Streams Study

The rural area of the Town of Markham is traversed by numerous small drainage features that convey water to defined tributaries of the Rouge and Don Rivers, and the Duffins, Highland, Petticoat and Cawrthers Creeks. Some of these features have formed naturally and others are the product of anthropogenic intervention to facilitate the drainage of agricultural fields, roads and building sites. All convey water downstream at a minimum, however some perform a range of functions which contribute to the health of the watershed downstream. As though the contributions of some of these small drainage features is recognized by the Town of Markham, because of the diversity of these features in terms of form, location and origin, decisions related to the appropriate strategy to be applied to protect or manage these small features have been the subject of considerable debate. In response, the Town initiated the Small Streams Study with the goal of creating a tool to guide the long term management of Small Streams and intermittent drainage features, with the objective of maintaining and enhancing the functional contribution of these features to the health of the watershed ecosystem, including the enhancement of water quality, stream flow and aquatic habitat.

The classification system and management recommendations set out in the Small Stream Study apply to zero-order (sub-first order features as defined by the Hortonian classification system) which:

- Cannot be defined as "watercourses" in accordance with the Conservation Authorities Act
- Are not permanently flowing features
- Are not situated within a valley corridor

Features which define watercourses and exhibit permanent flow with these characteristics are regulated by the Toronto and Region Conservation Authority.

Drainage features which are addressed by this study include:

- Features which are ill-defined or discontinuous
- Natural, altered or man-made features
- Features that convey flow on a periodic or intermittent basis

The study process was comprised of seven steps:

1. Gaining an understanding of the parameters that contribute to the form and function of small streams;
2. Developing a system to classify small streams based upon these parameters;
3. Gaining consensus on the appropriateness of the classification system;
4. Applying the classification methodology to define a suite of stream types;
5. Developing protection and management recommendations for each stream type;
6. Working towards achieving consensus on the management recommendations;
7. Developing a strategy to guide the implementation of the protection and management guidelines.

The initial stages of the process included a review of mapping to identify the broad range of small drainage features, field investigations to assess the characteristics of various types of features and research to define these functional characteristics of small features and identify precedents for the classification and management of small drainage features implemented elsewhere in the world.

Subsequent tasks in the study process included the following:

- Consultation with stakeholders to identify issues of concern which the study should address
- Evaluation and assessment of specific features as the basis for developing the classification system
- Consultation with the Stakeholders Advisory Committee and Technical Advisory Committee to present the findings of the assessment and set the direction for preceding with the development of the classification system
- Generation of the small streams classification system and preparation of preliminary management guidelines
- Completion of several case studies to test the classification system and confine the appropriateness of the outcomes of the classification process and implications of the preliminary management recommendations
- Further consultation with the Technical and Stakeholder Advisory Committees to seek consensus on the suitability of the classification system and preliminary management directions
- Completion of a more detailed demonstration study to further test the classification system and determine implications on urban form and servicing within a 400ha study area
- Preparation of management prescriptions and recommendations to guide the restoration of existing small streams in the urban area of Markham
- Development of long term monitoring and management recommendations
- Formulation of implementation strategies

The draft final report was presented to the public on January 26, 2005, stakeholders and Technical Advisory Committee for review and comment. The draft final report was refined in response to comments received to produce the final report. The final report was presented to the public in May of 2006.

The Small Streams Study builds on a body of existing legislation from a hierarchy of levels of government. Based upon the field assessment and research undertaken, it was found that small stream features typically perform many of the following functions:

- Source water protection
- Contribution of organic energy inputs which sustain downstream biota and contribute to the productivity of the watercourse
- Attenuation of runoff, moderating flow rates and contributing the downstream stability, and enhancing baseflow rates in term of duration of flow
- Contribution of sediment, which in-turn contributes to the maintenance of natural sediment transport characteristics and enhances to downstream stability
- Moderation of temperatures to sustain habitat for cold water fish communities
- Enhancement of water quality through the uptaking of pollutants by vegetation and the filtration of water through vegetation or the soil medium
- Provision of habitat for terrestrial and aquatic species, most notably herpetafauna, which require specific habitat conditions on a seasonal basis to fulfill their life cycle requirements

Contingent on their context and form, small drainage features perform different functions in varying degrees and consequently, their relative importance within the watershed also varies.

Consequently, the classification system developed as a component of the study was generated with the objective of determining the relative importance of individual features and therefore the appropriate long term management strategy presented for each.

The classification system was developed based on a review of the biophysical, hydrological, physiographic and hydrogeological characteristics of the study area. These "controlling" and "modifying influences" were assessed at both the drainage basin scale and the in-stream scale. The assessment determined that form was one of the key parameters which influences the function of small drainage features. As a result, a classification system was developed which utilizes form as one of the base considerations in the classification process. Features are catalogued into the following 3 broad groups based upon their form.

- Group A Features - Conveyors
  Features within this group are generally well defined and are efficient conveyors of runoff.

- Group B Features - Conduits
  Features within the group are typically broader than Group A features and convey water somewhat less efficiently, affording a storage function.

- Group C Features - Attenuators
  Features within this group are typically broad, flat depressions with no defined flow path. They attenuate runoff and convey it slowly downstream.

For each type of feature, a classification flowchart has been developed to evaluate the relative importance of a feature in comparison to a suite of criteria. These assessment criteria include:
- Flow characteristics
- Groundwater function - recharge / discharge
- Requirement for maintenance
- Aquatic in-stream habitat
- Contribution to aquatic habitat downstream
- Riparian vegetation community along the feature

Utilizing the classification flowcharts, features are assigned a ranking contingent upon an evaluation of their functional characteristics in relation to the above criteria as a result of the evaluation. Small streams are ranked as Class 1, Class 2 or Class 3 features. As determined by the criteria, management prescriptions are provided for each type of feature as follows:
- Class 1 Features - Preserve and enhance the functional integrity of the feature
- Class 2 Features - Permissible to modify the feature as long as function and form are enhanced
- Class 3 Features - Permissible to eliminate feature as long as function is enhanced through the implementation of stormwater management techniques

The appropriateness of the classification system was verified through the completion of a number of case studies. The findings of the case study exercise were presented to the

Stakeholder and Technical Advisory Committees to confirm the logic of the classification system and the appropriateness of the resultant management prescriptions.

In addition to the study, a more comprehensive demonstration study was undertaken. This study encompassed a 400ha block of land in central Markham bounded by Major MacKenzie Drive, McCowan Road, Kennedy Road and Elgin Mills Road. The site was selected because of its diversity and the complexity of features within the landscape. The demonstration study process was comprised of the following steps:

- Step 1 - Inventory of site characteristics
- Step 2 - Definition of "Rouge Park" lands
- Step 3 - Classification of drainage features
- Step 4 - Delineation of drainagesheds
- Step 5 - Delineation of areas requiring non-conventional stormwater management to achieve small streams management prescriptions
- Step 6 - Exploration of alternative stormwater management strategies for drainagesheds that contribute to Class 1 and Class 2 drainage features
- Step 7 - Development of community concept plan
- Step 8 - Exploration of alternative servicing options for specific land use types

The demonstration study revealed that the classification system and recommended management strategies will require innovative approaches to the development of a viable community design plan which conforms with the vision and objectives of the Town of Markham with respect to livability, compact form, transportation and transit, mixed use and open space planning. Nor did they present servicing challenges which could not be addressed through the application of various innovative, but proven and acceptable, stormwater management techniques. Key implications of the classification system related to land use planning and servicing should consider the following approaches and land use planning and servicing tools:

Land Use Planning / Community Design:

- Up front study required during Secondary Plan Stage
- Land use plan and servicing scenarios must be developed within an integrated process
- Assessment of small streams features and catchment area characteristics must be undertaken prior to exploring land use planning options
- Small stream management should be considered when determining land use pattern and built form.
- Road network and blocks defined by limits of contributing drainagesheds
- Road/block layout parallel to flow pattern
- Green corridor provided along features ranked '1' or '2'
- Slab-on-grade built form/land uses preferred where topographic constraints occur
- Parks and schools to be located in drainagesheds contributing to features ranked '1' or '2'

Servicing:

- Assessment of small streams features and management recommendations must be considered the exploration of servicing options
- Focus on infiltration where soils are conducive
- Third pipe system preferred to accommodate grades
- Sand fill may be required to achieve adequate topographic relief in some areas
- Surface runoff preferred where land use patterns permit

- Perforated pipe system preferred to augment shallow interflow
- Biofilters and biofilter swales in parking areas
- Review at-source and conveyance versus end-of-pipe facilities
- Multiple/exfiltration outlets preferred
- Consider roadside swales utilized where practical to moderate flow rates, filter stormwater and encourage infiltration
- Use soak away pits and infiltration galleries where soil conditions are conducive to encourage infiltration

Operations and Maintenance:
The implementation of some of the alternative stormwater management and servicing strategies explored in the course of completing the Demonstration Study will have implications for the Town with respect to the long-term operation and costs of maintenance of the system. Some of the solutions proposed are more complex than conventional systems and while this may or may not result in the need for additional maintenance effort and cost, it will certainly require that different operational and maintenance protocols be implemented. For example, with respect to winter maintenance, a limitation on the use of salt as a de-icing agent may be required in catchment areas that are tributary to infiltration-type stormwater management systems to address potential groundwater contamination concerns. In response, it will be necessary for the Town to explore the use of alternative de-icing agents, or where safety objectives can be met, the use of sand instead of salt. Conversely, the implications of the use of sand on the longevity and performance of infiltration systems is an important consideration in determining the most appropriate method of managing winter maintenance requirements. The use of coarse sand, which is itself is a suitable medium for infiltration has been explored in other jurisdictions as a means to achieve winter safety objectives while minimizing impacts of the long term performance of infiltration facilities. Operations and maintenance requirements for both hard (road / sewer) and soft (parks and open space) services, should be assessed in the course of developing land use and servicing plans early in the planning process to ensure that the implications and cost of operations and maintenance are fully understood and endorsed by the relevant departments within the municipality as well as Council in order that the system remains functional over the long-term.

The demonstration study also identified a number of other implications related to implementation and integration with existing policies that are addressed in a subsequent section of this document.

In addition to the implications on planning and servicing set out above, the demonstration study also identified a number of benefits related to community design, servicing efficiency and long-term cost benefits that can be realized in the course of implementing the small streams management recommendations, contingent on the characteristics of the site and configuration of the land use plan. It is important that the function of small stream features and the resultant management recommendations be completed prior to the exploration of land use and servicing options. Land use and servicing designs should be developed within an integrated process to maximize the opportunity to achieve small stream management objectives while optimizing the ability to achieve development objectives.

One of the most significant challenges to the protection of important small drainage features is the fact that the majority of these features traverse the rural areas of the Town of Markham. In the near term it is a priority to ensure that these features are not lost or altered without first determining their functional importance and consequently, the appropriate management strategy for each. Accordingly, there is a need to ensure that landowners are made aware of the importance of small streams and are encouraged to classify these features with the objective of implementing appropriate management recommendations.

To achieve this objective, a landowner education and stewardship program is recommended which will be focused on education, encouragement, incentives and recognition to facilitate the interim protection of small streams. The document also sets out a program to facilitate the restoration of Small Streams which have been impacted by past development, including opportunities to replicate the functions of lost small streams subject to available funding. The restoration program is focused of the following:

- Recreating small stream features where the opportunity exists to do so
- Implementing initiatives to replicate the function of small drainage features
- Restoring and enhancing existing watercourses to offset the impacts of the previous removal of small drainage features.

As a component of this restoration program, the Small Streams Study sets out recommendations to guide the recreation of small streams and the replication of small stream features.

The final sections of the Small Streams Study provide guidance in the form of an implementation strategy and recommendations to direct long-term management and monitoring of small drainage courses.

The Small Streams Study was developed as an effective tool to guide the classification of zero-order drainage features, define their respective functional importance and direct their long-term management. Most importantly, the Small Streams Study will afford features which have been determined to be important, in terms of form and function, the protection necessary to ensure that their functional contribution to the health and diversity of the downstream watershed is, at a minimum maintained, and preferably enhanced. The Small Streams Study exists as an effective decision-making tool to ensure that the ecological integrity of the Rouge, Don, Petticoat, Duffins and Highland watersheds within the Town of Markham is maintained and enhanced.

Appendix B

Classification Flow Chart

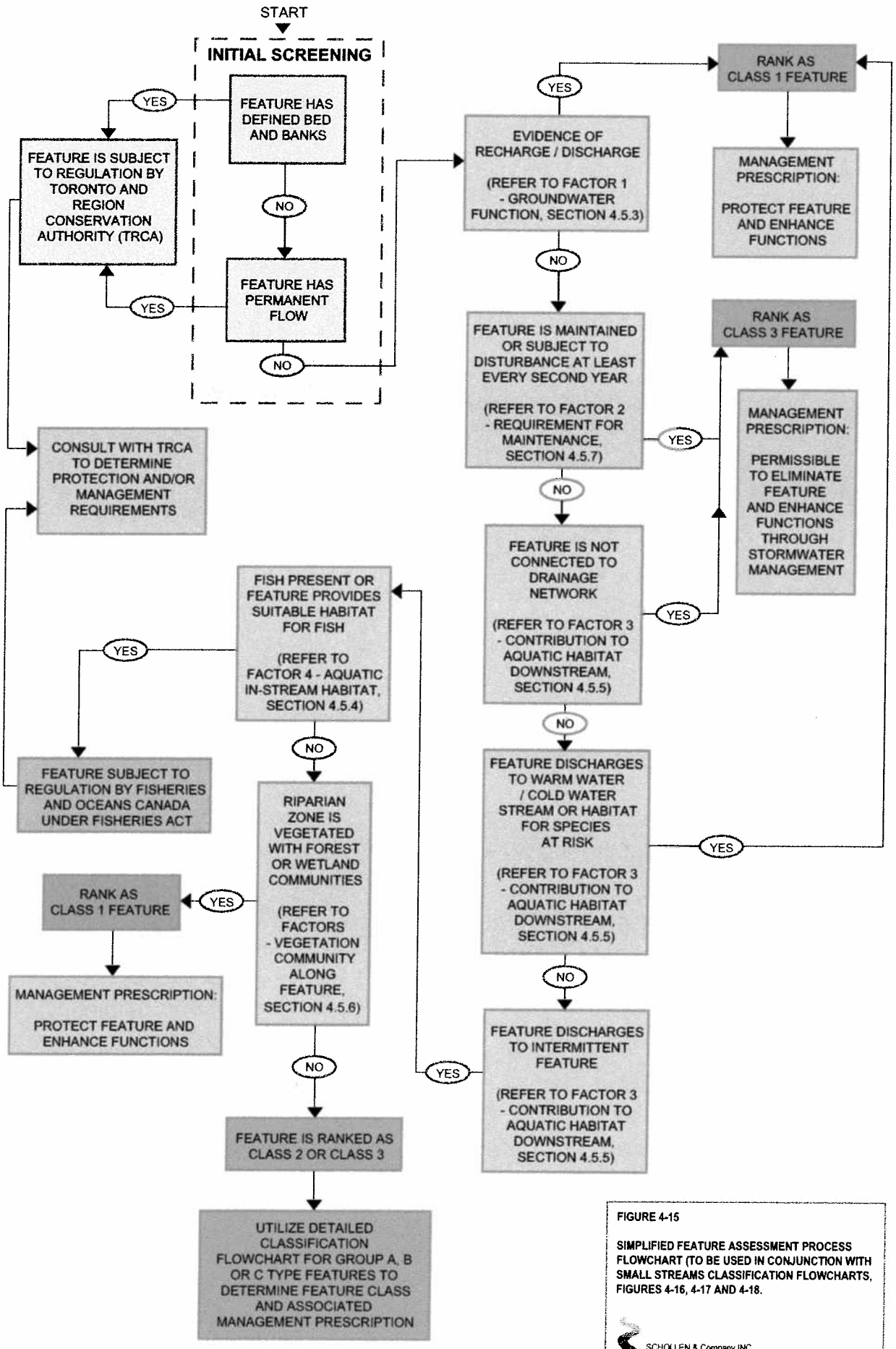

FIGURE 4-15

SIMPLIFIED FEATURE ASSESSMENT PROCESS FLOWCHART (TO BE USED IN CONJUNCTION WITH SMALL STREAMS CLASSIFICATION FLOWCHARTS, FIGURES 4-16, 4-17 AND 4-18.

Appendix C

Demonstration Study Site

Markham Small Streams Study

Case Study Site

Community Design Concept Plan

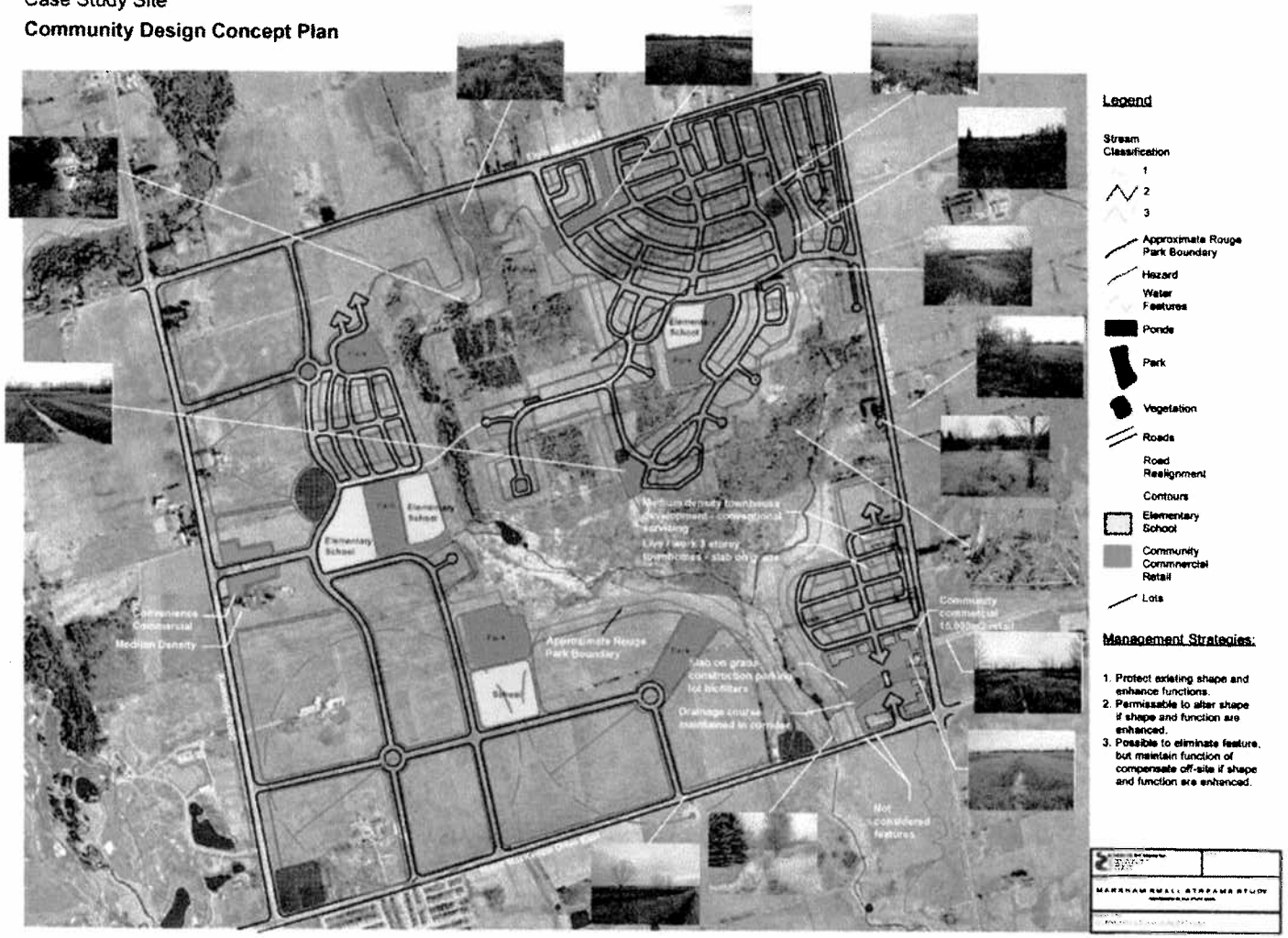

Figure B-5 Community Design Concept Plan


Demonstration Study Site
Elgin Mills Road
McCowan Road
Kennedy Road
Approximately 405 hectares
in rural Markham
Major Mackenzie Drive E.
Robinson Creek
N

Appendix D

Final Comment Response Report

Town of Markham
Small Streams Study

Comment Response Report

TABLE OF CONTENTS

Town of Markham
Small Streams Study

Comment Response Report

This report provides a summary of the comments received on the Markham Small Streams Study Draft Report of December 2004 and the modifications made in response to each comment received. Copies of the comments received are provided in an appendix to this document. Page numbers related to each comment correspond with the pagination of the December 2004 version of the document. Page numbers provided in brackets indicate the corresponding page number in the April 2006 draft final report.

A. Milne Park Conservation Association
Memo from Mike Price to Lilli Duoba
January 23, 2005

Comment 1
Additional relevant legislation has been added to the list contained within Section 2.0 – Background

Comment 2
A definition for "pre-development" has been provided

Comment 3
Recommendation that the Town provide a baseline database has been made in Section 6.8.2 pg. 105 (pg. 102) "Town of Markham" – This recommendation has been incorporated in the text for this section

Comment 4A – Management Recommendation pg. 63 (pg. 77)
i. Setback has been defined
ii. Text format changed to address clarity issue
iii. Additional text included as recommendation

Comment 4B – Management Prescriptions pg. 64 (pg. 78)
i. Enhanced function means requirement for maintenance is reduced
ii. Text edited for clarity

Comment 4C – Management Prescriptions pg. 65 (pg. 79)
i. "Predevelopment conditions" have been defined
ii. "Existing" versus "historic" has been defined

Comment 4D – last page of Section 5.0
i. Reference to road side ditches has been added
ii. Other options such as soak away pits, green roofs have been added to the list
iii. Comments re: use of sand have been noted in the text

Comment 5 – Section 6.0

Comment 5A – Page 81 (Page 82) – re: Landowners Rights
A statement has been added to the text on page 81 (Page 82) to address this issue

Comment 5B – Page 83 (Page 84)
Text modified to include reference to water quality and base flow. Typographical error noted and changed.

Comment 5C – Page 92 (Page 94)
Comment noted, text added to address potential limitations

Comment 5D – Page 101 (Page 98)
Text revised to address this comment

Comment 6 – re: Monitoring
Notwithstanding that it will take several years for monitoring results to indicate trends, it takes typically 3 years or more for a development to achieve assumption by the Town after build-out. Indications of adverse effects should be evident within this timeframe.

Text has been added to address the proposed response to unsatisfaction monitoring results.

Comment 7 – Section 8.0, page 109 (Page 106)

Comment 7A – Text changed as recommended

Comment 7B – Text modified for clarity

Comment 7C – Text changed as recommended

Comment 8 – Other items not in the study

Comment 8A – re: OMB Influence
Provincial OMB reform should assist in dealing with this issue. No changes to the text are proposed in response.

Comment 8B – Issues related to the location of SWM ponds re: West Nile virus – This issue would be better addressed in the process of the Town amending its SWM design guidelines. The Town has implemented wind driven aerators to deter the propagation of mosquitoes which harbour West Nile Virus in some of its SWM ponds.

Comment 8C
Issues related to spill contaminant should be addressed in the Town's engineering standards and SWM guidelines.

Comment 8D – re: Prohibition of diversion of water from one catchment to another
A statement has been added to the text.

Comment 8E – re: Rural septic systems
This comment addresses an issue which is beyond the scope of this study and the mandate set out by the Town of Markham

Comment 8F
Text has been added to address nutrient management and farm practices

Comment 8G – re: Secondary Use of Small Streams
Water use falls under provincial jurisdiction – A permit to take water is required. No amendments to the text were required.

Comment 8H – re: Supplementary water supplies for base flow augmentation
Text has been added in Section 6.4, page 89 (page 91)

Comment 8I – re: Routing road runoff through a SWM facility prior to discharge into Small Streams
This is a given under the regulation of the MOE and TRCA for all proposed developments.

Comment 8J
Text has been added in the report which addresses the fact that the corridors are intended to be naturalized to address nuisance waterfowl (pg. 63 & 64) (pg. 77 & 78)

B. Markham Environmental Alliance

Comment 1 – Report should provide a benchmark for future Greenfield development in Ontario
- No changes required

Comment 2 – Ignoring or weakening the report is not an option for the Town of Markham
- No changes required

C. Lorne R. Smith
Official Historian – Town of Markham

Comment 1 – Page 25 (Page 31)– No action required

Comment 2 – Page 29 (Page 37)– No action required

Comment 3 – Page 58 (Page 74)– re: TRCA 125ha limit
TRCA Generic Regulation has been modified to delete references to the 125ha catchment area. The text has been amended accordingly.

Comment 4 – Utilize must up to date stream names – no effect on study or text

Comment 5 – Section 5.0, page 63 (page 77)
Maps are difficult to interpret and pond has been removed. Maps edited accordingly.

Comment 6 – Site assessment should include consultations with long term knowledgeable residents of the area
Text to this effect has been added.

Comment 7
Block area planning and sharing of development opportunities and environmental liabilities.
Text has been added to the document to reflect this.

D. Friends of the Rouge Watershed

1.0 Summary Letter of February 9, 2005

Comment 1
Need for watershed strategy, water budget, NHS and subwatershed plans prior to preparing stream guidelines.
– Although it is agreed that the completion of these studies would be beneficial to overall watershed management, the scope of this comment falls outside of the terms of reference for the Small Stream Study. The criticism that the SSS could lead to incremental decisions which could be detrimental to the overall, this concern is unfounded since the study permits the removal of only low functioning conveyance features and mandates that their function be maintained or enhanced.

Comment 2 – Percent impervious cover / natural cover must be addressed first.
– While we agreed that impervious and natural cover limits can be effective tools to protect watershed health, the provision of recommendations related to the imposition of impervious cover limits is beyond the scope of and terms of reference for the Small Streams Study.

Comment 3 – Recommendation that the study should be reviewed by Dr. Williams of University of Toronto
– We support this recommendation, however, the decision to undertake an independent review lies with the Town of Markham

2.0 Detailed Comments – August 31, 2003

Comment 1 – Watershed strategy, water budget subwatershed plans and OPA required first.
– Refer to response to comment 1 above

Comment 2
– Amendments to the wording have been made to incorporate this recommendation Section 2.2, page 6 (page 6).

Comment 3 – Carrying capacity and maximum percent impervious surfaces

– The specification of impervious cover limits is not within the scope of the study
Comment 4A – Maintaining and enhancing native vegetation buffers around small streams
– This study does recommend wooded buffers along features to enhance infiltration and enhance soil storage. The recommendations of the study will contribute to the achievement of the York Region official plan target of 25% forest cover.

Comment 4B – Need for monitoring
– The study does provide monitoring recommendations and underscores the importance of monitoring to ensure success. The guidelines cannot be determined based on monitoring for 2 reasons:

- Monitoring data does not exist
- Historically small streams have been eliminated in the course of development leaving nothing to monitor in the post development scenario.

Comment 5A – Consider stream potential rather than current condition
– The purpose of the management recommendations for Class 1 and 2 streams is to achieve an enhanced condition recognizing the potential derived from the form and characteristics of the stream. The restoration strategy set out in 6.4.3 also defines restoration objectives and potentials.

Comment 5B – Consistency with Federal Fish Habitat Policy
Brian H. to address

Comment 5C – Understanding and minimizing soil structure change
– For Class 1 streams, the intent is to preserve existing soils in-situ. For Class 2 streams, modification is permitted – Text has been added to refer to the importance of maintaining soil depth and minimizing soil compaction in the course of recreating the small stream feature. Text added to Section 6.4.3 to recognize the importance of soils.

3.0 Don Watershed Council – Draft Report December 2004

Comments – Pg. 101 (Page 98)– Comments are supportive – no action required

Recommendations re: topsoil / grading by-law are provided in the text.

4.0 Krista Olins – Email of February 2, 2005

Comments supportive – no action required.

E. TRCA

Comment 13 Page 47 (Page 60)– Reference to permanently flowing watercourses

- Reference has been removed and subsequent sentence modified to delete reference to permanent flow

Comment 14 Page 48 (Page 61)– Suggestion to delete words 'highly' and 'rapid' since no thresholds or criteria exist

- Edit made

Comment 15 Section 4.5.8 – Drainage area should be considered as a classification parameter

- Although one would expect this to be the case, the initial assessment undertaken as part of the Study concluded that this was not an important factor in determining the importance of small drainage features. Every small stream drainage basin was mapped and measured with the objective of identifying a relationship between the characteristics of the feature and the size of the catchment area. Therefore no changes to the document were made in response to this comment.

Comment 16 Reference to 125ha catchment area

- Wording has been amended to delete reference to 125ha catchment area and clearly state that small streams that are subject to the guidelines are not those that meet the definition of watercourse or those that are regulated by TRCA.

Comment 17 Page 58 (Page 74)– Watershed Plans and Fisheries Management Plans should be considered in determining management strategies

- Additional bullet point added to address this comment

Comment 18A Page 63 (Page 77)– Additional clarity regarding setback/buffer is required

- Wording has been modified to enhance clarity. The issue of public ownership is addressed in the implementation section of the report.

Comment 19 Page 64 (Page 74)– Recommendation that there be a requirement to maintain drainage area. Also see comments and response provided above for second issue re: setback/buffer delineation

- Recommendation related to requirement to maintain size of catchment area provided.

Comment 20 Page 75 (Page B-14)– Note added to refer to requirement for modelling to confirm quality control targets are achieved

- Additional text provided to address quantity and quality issues.

Comment 22 Page 93 (Page 94) – Recommendation to reference MoE SWM Planning and Design Manual and other relevant guideline documents

- Reference has been added to this section.

Comment 23 Section 6.8.2 re: Generic regulation – point noted no editorial action required.

Comment 24 Page 106 (Page 103) – Expand text to include 'future TRCA policy updates'

- Edit made.

Comment 25 Page 106 (Page 103)- Expand text in fifth bullet point to include statement to the effect 'engineering strategies that afford the protection of small streams'

- Edit made.

Comment 26 Page 106 (Page 103)– Section 6.8.3 re: Inventory of small streams

- Markham has indicated that an inventory would be useful – no editorial action required.

Comment 27 Page 107 (Page 104)– Points 2 & 3 – Who is responsible for doing the recommended E.I.S.?

- Additional text added to points 2 & 3 to address this comment.

Comment 28 Page 107 (Page 104)– Point 4 should mention the M.E.S.P. process

- Edit made to address this comment.

Comment 29 Page 107 (Page 104)– Point 5 should reference 'Draft Plans'

- Edit made to address this comment.

Comment 30 Section 6.8.5 – Is it the intent of the Town to inventory small streams on private lands or is the focus on the land development process?

- The Town intends to identify small stream features on private lands to the extent possible utilizing mapping and aerial photography in order to create a basic catalogue of features. However, the detailed classification will be undertaken as a component of the future land development process. No edit required.

Comment 31 Section 6.8.5

- Modify frost paragraph to mention opportunities to achieve multiple benefits, environmental and other.
- Additional text has been incorporated.

Comment 32 Section 7.0, page 108 (Page 105) re: Monitoring

- A statement has been added to the effect that monitoring will be undertaken by the Town and TRCA with finding provided by the landowner / developer.

F. Gartner Lee Limited
Memo from Ms. Deborah Martin-Downs to Ms. Lilli Duoba
February 9, 2005

Comment 1 Section 2.5.2 Definitions

This section is not intended to define specific features that are addressed by the study, but simply to provide examples of that types of features that may be, if they satisfy the following:

- They are not "watercourses", as per the TRCA definition
- They fall into one of the categories of features by going through the classification system (Figures 4-14 – 4-16)

The definitions provided here are standard definitions, it is agreed that they are not very "tight". However for this purpose of providing general background information, they do not need to be – it is the definitions of features that are determined through the application of the classification system that are important, and they are inherently defined by the classification system.

A preamble to this section has been provided including a short discussion that emphasizes the fact that the landscape surrounding small streams has been extensively modified; the features that exist here today appear "misfit" in their environmental setting. Hence the need to classify these features in terms of form and function and develop management prescriptions for them, before they undergo the modifying process of urbanization. The objective is to restore form and function (if features that are determined to be important through the application of the classification system) as urbanization proceeds, rather than trying to go back and retrofit after development is complete.

Comment 2 Section 2.6 Classification and Management Precedents
The DFO drain classification system mentioned in the comment does not apply to small streams; it applies to municipal drains, most of which are watercourses. In addition, since this project was initiated, there has been an emerging body of literature on the subject of small streams, both in Canada and the US. Additional references have been provided which further justify the importance of drainage features. Essentially research is confirming that "zero order streams" serve the same functions (in terms of supporting ecosystem function downstream) as 1st order streams. While their individual contribution is small, collectively they provide a substantial contribution.

Duffins Creek shares many similarities with the Rouge in terms of physiography, topography, drainage characteristics, groundwater regime and aquatic communities and therefore it is reasonable to utilize the findings of the watershed stated in a comparative assessment of the watersheds within the Markham Study area.

Comment 3 Section 2.7 The Importance and Function of Small Stream Features
This section has been expended to more fully discuss the role of small streams in terms of watershed function. Since the initiation of the project, there has been an emerging body of literature on the subject of small streams, both in Canada and the US. Additional references have been provided to rationalize the importance of small drainage features. These studies follow from work in BC and the United States in relation to proposed changes to the US Clean Water Act.

The word "typically" was utilized in the previous draft of the report; wording has since been clarified. With respect to the comment that small streams can deliver excessive quantities of nutrients and sediments, it is suggested that these issues can be addressed through source control measures and are not a reason for eliminating the drainage feature that functions to convey flows downstream – the wording has been clarified in the text. It is agreed that not all drainage features provide temperature modification, however riparian vegetation can provide a moderating effect. The importance of the function of features is defined through the application of the classification system.

Comment 4 Section 4 The Classification System
The maps have been modified to improve their legibility. A GIS-based process of identifying small streams was pursued in the early steps of the study, however this exercise was not effective because

of the degree of modification of the landscape and drainage patterns. Hence, a classification system approach was adopted that relies on GIS mapping to support it.

A simplified classification process in the form of a flow chart (a decision support system) has been provided that makes the process easier to understand and apply.

Comment 5 Section 4.4 Overview of Classification System
A summary of the field work has been provided as requested.

Comment 6 Section 4.5.1 Form
The classification system is intended to be comprehensive and is a tool to assess all identifiable drainage features, including pipes and ditches. Once classified, it does not mean that all features will be protected, and the systems allows for features less important features to be eliminated as incorporated into the proposed urban form in a modified configuration.

It is recognized that there is some overlap between the "small stream" classification system and "watercourses". The text which distinguished between small features and "watercourses" has been strengthened to reinforce the fact that it is an inventoried feature has the characteristics of a watercourse, then it should be treated as one according to policies of TRCA, MNR and the municipality. In any event, if a watercourse was classified according to this system, it would fall into the "protected" category.

Seeps and springs would be caught by the classification system, however they are often difficult to see, particularly in areas that have been tile drained. They would also be identified under "Discharge" in the groundwater section.

Comment 7 Section 4.5.2 Flow Characteristics
Antecedent moisture condition has been added to this section.

More explanation under the "permanent flow" section has been added to the text. This additional text reinforces the need to ensure that it is recognized that such features may be watercourses.

Agreed. By using specialists, the time of year for the field work may not be critical. More specifics in terms of a protocol for establishing flow conditions have been provided.

Comment 8 Section 4.5.3 Aquatic Instream Function
The wording has been reviewed.

The MNR mapping provides a screening level classification that is then confirmed through field work. If the feature discharges into a stream that supports warm or cold water fish communities (and it has permanent flow), it ranks as a Type 1 feature; if not, it is defined as either a Type 2 or 3 feature. Thus the thermal condition does not really affect the ranking.

Comment 9 Section 4.5.6 Vegetation Community Along the Feature
The purpose of identifying riparian vegetation is to recognize all functions of riparian vegetation.

Comment 10 Section 4.5.8 Using the Classification System
The classification system was implemented in the pilot study, and worked well. While it appears complex, in reality, features are quite easily classified in the field. An additional flowchart has been provided to enhance to ease of classifying features.

The wording regarding Fisheries Act has been revised to address this comment..

Comment 11 Section 4.5.10 Case Studies
Agreed – The graphics have been improved and CD version of the graphics will be made available through the Town.

Comment 12 Section 5.1 Management Prescriptions
As indicated, we have reinforced the rationale behind protecting small streams in the earlier sections and provided references which were not included in the draft document.

G. Urban Development Institute (UDI)
Letter from Mr. Carlo Stefanutti to Ms. Lilli Duoba
August 3, 2005

The response to comments (below) is restricted to those that are technical in nature since Broader concerns were discussed in a meeting with UDI on April 2006.

Comment 1 – Lack of Scientific Evidence concerning the importance of small drainage features
At the outset of the study, it was acknowledged that the significance of small drainage features had not received much attention in scientific literature. There was information that addressed the functions that these features served, but the overall significance to the watershed as whole was not well understood; in this regard this study is considered to be on the leading edge of science. Since that time however, there is a growing body of research that has investigated the importance of these features in both Canadian and US settings. More references to support the need to protect some of these features has been provided.

Comment 2 – Integration with Provincial Policy / Social and Economic Impacts
It is not agreed that there is a disconnect between protection of small features which are deemed to be important and more general provincial policy that argues for "intensification" over "urban sprawl". Our pilot study demonstrated that required densities can be achieved, while protecting small drainage features, and in fact, the emerging concepts of "new urbanism" and "low impact" development are complementary to the protection of these features.

Comment 3 – Scientific Evidence and Analysis
As noted above, the science exists to justify the protection of small features which are deemed to be important through the application of the classification system. Additional references have been provided to support this position.

Improved to definitions and the classification system have been made to reduce ambiguities and increase clarity.

Comment 4 – Recommendations
As noted above, further references have been provided justifying the importance of some of these features. DFO, TRCA and MNR have been consulted and have endeavoured to ensure that the treatment of these small drainage features is consistent with the relevant definitions and legislation of these agencies. It is intended that implementing this classification system will resolve many of the current multi-agency inconsistencies with respect to the treatment of these small drainage features and will lead to a streamlining of the approvals process.

H. Dillon Consulting Ltd
Memo to UDI
Undated

Comment 1 – Hydrology and Geomorphology
The term "baseflow" has been classified and separated from the observation regarding the storage function of agricultural fields. It is not the intent of the document to protect farm fields, nor to protect all drainage ditches, but where these ditch features do intersect an important recharge or discharge feature, they do require protection. We have included tile drains in the group of features to be classified for some of the very reasons you indicate, however, this does not mean they will automatically be protected, simply that they warrant considerations to determine these potential treatment importance.

Comment 2 – Stream Classification System – Section 4.5.1 – Form
These comments have been revised and those that provide greater clarity to the descriptions have been incorporated in the document. It is reiterated that none of the features is intended to include farm fields in the definition.

Comment 3 – Stream Classification System – Section 4.5.2 – Flow Characteristics
A section that discusses the "ranking" system has been provided. A more detailed protocol for characterizing flow conditions.

Comment 4 – Stream Classification System – Section 4.5.3 – Groundwater Function
Additional definitions of what is intended by the term "important" recharge areas to ensure that areas of low infiltration are not included. With respect to recharge areas, the document is simply stating that where a feature intersects a recharge area, it functions to provide recharge and therefore should be protected.

Comment 5 – Stream Classification System – Section 4.5.4 – Aquatic Instream Function
The presence of "emergent and marginal aquatic vegetation" does not conclusively indicate that fish habitat is either absent or present; therefore this was not included in the classification strategy.

As noted above, a clear protocol to define flow (and pool) characteristics has been provided.
The discussion concerning food source has have supplemented for added clarity.

This section has been reviewed and revised to ensure that definitions that are too broad have been avoided.

Comment 6 – Stream Classification System – Section 4.5.6 – Contribution to Downstream Habitat
It has been made clear that if the feature discharges to an intermittent watercourse, it is ranked lower than one that discharges to a permanent watercourse; this is the key differentiating characteristic for this factor. A feature that discharges to a permanent watercourse which supports cold or warm water fish communities will receive the same score.

We are confident, based on input from the agencies, that the classification system will address many of the current conflicts that exist now in terms of defining which of these drainage features need to be protected.

Comment 7 – Stream Classification System – Section 4.5.6 – Vegetation Community Along The Feature
No action required.

Comment 8 – Other Terrestrial Related Questions
There is limited potential for such small wetland features being somehow linked into a wetland complex under the MNR PSW classification. There is clearly some potential that some of these small drainage features may provide a linkage between some wetland complexes, however, the wetland legislation already provides for protection of such features and linkages. It is not the intent of the document to support a "complexing" approach. Individual features are assessed based on their merit through the application of the classification system.

Comment 9 – Ecological – Global Perspective
No Comment.

I. Stantec Consulting Limited
Memo from Sarah Kurts and Sean Geddes to UDI
Dated: February 9, 2005

Comment 1 – First Bullet:
The format of the classification system has been reviewed, with the intent of improving its readability and flow. While the original objective was to provide more of a system that could be used by a "lay person", it was recognized that the system requires specialist expertise to implement. However, that being said that the system can be economically implemented and therefore does significantly add to the cost of "predevelopment" studies.

Comment 2 – Second Bullet:
The study was developed based on the position that all small drainage features should be included in the classification system, thus avoiding any criticism that the system is not sufficiently rigorous. However, this does not mean that all features warrant protection, and based on our pilot study, we conclude that the majority of features fall into categories 2 or 3: features that can be modified and/or eliminated. The entire purpose of the classification system is to determine which features warrant

some degree of protection and which do not. To successfully achieve this objective, it is important that all features be considered in the classification process.

Comment 3 – Third Bullet:
See our comment in Bullet 1.

Comment 4 – Fourth Bullet:
See our comment in Bullet 1.

Comment 5 – Fifth Bullet:
See our comment in Bullet 1.

Comment 6 – Sixth Bullet:
See our comment in Bullet 1. As stated in the document, source level controls or other SWM solutions may be appropriate to achieve management objectives for category 2 features.

Comment 7 – Seventh Bullet:
See our comment in Bullet 1.

Comment 8 – Eighth Bullet:
See our comment in Bullet 1. These features have been included as small drainage features even though they are not "stream-like" because they may be associated with seeps / discharge functions.

Comment 9 – Ninth Bullet:
The classification system has been reviewed and modified to enhance clarify.

Comment 10 – Tenth Bullet:
This comment is acknowledged, however, it is also noted that in many cases such downstream important features as barriers can be remediated and therefore should not nullify protection of what is an important headwater feature. TRCA is actively working to remove barriers to fish migration within the Rouge watershed.

Comment 11 – Eleventh Bullet:
This issue has been reviewed.

Comment 12 – Twelfth Bullet:
Noted.

Comment 13 – Thirteenth Bullet:
The classification system has been modified for clarify. A better description to explain how the "ranking" works has been provided.

Comment 14 – Comments Specific to Alternative Servicing and Stormwater Management
These comments have been reviewed in consultation with the appropriate agencies/departments.

Comment 15 – General Comments Regarding Land Use Change and Function Preservation
It is not agreed that including features in the classification system arbitrarily gives them greater importance. The importance of each feature is established by following the classification system and it can be seen why some features are considered unimportant, rather than excluding them at the outset. This is a rational decision-making process to exclude features arbitraries without understanding the functional importance may lead to the eliminating of important features and resulted impacts on the watershed downstream.

It is recognized that there are servicing issues that extend beyond road and sewer infrastructure. Generally, however these other servicing issues are accommodated within the road ROWs; and based the pilot study, few problems are anticipated. The pilot study demonstrated that development could be properly serviced, while at the same time protecting the most important features. It was concluded that, provided that these features are identified upfront, they can be accommodated through innovative urban planning and design.

J. Letter from the Municipal Infrastructure Group to Lilli Duoba
Dated March 28, 2005

Comment 1 – First Bullet:
It is not agreed that the inclusion of drainage features that warrant protection through the Small Streams Classification System will lead to a "fractured urban landscape" or indeed lead to higher house prices and taxes. Our pilot study demonstrated that theses features can be protected by using innovative planning and design, consistent with principles of the emerging concepts of "new urbanism" and "low impact development".

Comment 2 – Second Bullet:
As noted in the previous comment, it is not agreed that this policy will contribute significantly to urban sprawl.

Comment 3 – Third Bullet:
The rationale and the methodology to identify environmental features that should be considered as part of the overall holistic environmental assessment has been provided; prior to this, such features were typically not considered part of this assessment, because their form and function was not properly understood, identified and evaluated.

Comment 4 – Fourth Bullet:
The Small Streams document is intended to be one of many guidance documents that would be used to aid in the planning of communities. It was not intended to be an all encompassing document or to be applied in isolated of the planning and engineering strategies. This issue will be addressed by the Town as it moves forward towards implementation.

Comment 5 – Fifth Bullet:
The document has been circulated for review to the agencies/departments that are identified. Many of the "leading edge" stormwater management techniques and technologies that include facilities that infiltrate surface water are gaining acceptance. As the co-authors of the current version of the MOE

Stormwater Management Planning and Design Manual. There are a number of techniques which can be applied to areas that surface water infiltration would be acceptable.

Comment 6 – Sixth and Seventh Bullet:
The case study is consistent with the overall objective of the project in that the example illustrates that the proposed classification system can be implemented for a proposed urban area .The intent of the case study was not to address all of the stormwater or environmental issues but to show that the proposed measures are consistent with existing or future (i.e. Water budget requirements) requirements of the province and municipality. The examples used are consistent with those provided in the MOE Stormwater Planning and Design Manual. They are also consistent with recent studies and/or construction projects carried out by the study team for municipalities in Ontario. The case study example is generally consistent with current standards, however, one of the primary recommendations of the project is that changes to municipal and provincial standards may be required in order to accommodate emerging stormwater management and urban form/infrastructure techniques/approaches

Comment 7 – Eighth Bullet:
It has been demonstrated that these features can easily be identified in the landscape and described and ranked in terms of their form and function. There is a growing body of literature now describing the importance of these "zero" order streams. Additional references documenting this supporting material have been provided to substantiate the need to protect some of these features. Furthermore, the classification system provides a means of classifying small drainage features based on their fundamental functions and importance in the context of supporting watershed functions. This approach allows important features to be protected based on their own merits, rather than relying on a definition that may exclude some features that should be protected.

Appendix E

Town's Correspondence with UDI

Urban Development Institute / Ontario

May 23, 2006

Mayor Don Cousens
Town of Markham
101 Town Centre Boulevard
Markham, Ontario
L3R 9W3

Dear Mayor Cousens:

Re: ***Markham Small Streams Study, Final Draft Report, Revised April 17, 2006***

On May 4, 2006, the Town of Markham ("Town") released *Markham Small Streams Study, Principles and Strategies for the Protection and Management of Small Drainage Courses, Final Draft Report, Revised April 17, 2006* ("draft Study") along with a companion document: the *Town of Markham Small Streams Study Comment Response Report* ("Response Report"), which documents the Consultant's response to the comments received regarding the first draft of the Small Streams Study as released in December 2004. We understand that it is the intention of Town staff to submit the draft Study to Council on June 13, 2006.

We are writing to advise you of the Urban Development Institute/Ontario's ("UDI") reservations respecting the draft Study as well as our discontent with the timing of this initiative.

UDI is of the firm belief that the draft Study, if widely implemented, will greatly impact the Town's ability to meet its obligations under the, soon to be released, Growth Plan for the Greater Golden Horseshoe, *Places to Grow*. UDI/Ontario believes that the draft Study will not only negatively impact future growth in the Town but that these impacts will reverberate in other municipalities across the Greater Golden Horseshoe and quite possibly the province.

UDI understands that the Town does not intend to implement the draft Study until all the other required background studies are completed and integrated into a comprehensive policy and plan. Unfortunately, past experience reveals that once this type of study is released and sanctioned by a municipal Council, Conservation Authorities, other agencies and municipalities (with a less than thorough understanding of Markham's municipal planning process) will adopt the recommendations and require applicants to integrate them into their plans.

As the Town does not have plans to implement the draft Study's recommendations in the near future and in light of the potential significant impacts identified, UDI does not comprehend the haste with which this initiative is moving forward.

As well as the speed with which this initiative is proceeding, the consultation process undertaken by the Town in this matter also concerns UDI. As a significant stakeholder, UDI York Chapter has made good faith efforts to monitor and consult with the Town respecting the development of the draft Study. Our members have provided the Town with comprehensive technical written submissions, along with a request for further meetings to engage in detailed discussions. Town staff appeared to be receptive to UDI involvement and input and agreed to: 1. Keep UDI informed of the progression of the draft Study; 2. Provide additional information to our sub-committee so that UDI could respond more fully prior to the draft Study being released; and, 3. Coordinate a meeting to discuss our concerns.

Regrettably, due to delays and tight constraints, the originally agreed upon consultation process and timeline was not realized - leaving UDI unable to respond prior to the draft Study being released on May 4, 2006. UDI members have some apprehension that the Town is not interested in our input and does not intend to address UDI's concerns. We request clarification of the Town's intent respecting further consultation so that we can determine the most strategic future investment of our volunteer sub-committee's time and effort.

UDI understands that differences of opinion are inevitable and agreement cannot always be reached, but in our past experience with the Town we have found that UDI members and staff have been able to establish genial working relationships and undertake good faith negotiations. UDI submits that both organizations benefit from a transparent process that is built on trust, which is why we are disillusioned by our recent experience with the Town.

In conclusion, we request that the draft Study not be submitted to Council at this time as we submit that it is premature and will have unintended consequences if adopted and also so that we may engage the Town in further detailed discussion.

For your information we have attached a copy of our previous submission to the Town along with further technical comments. (Due to time constraints we are unable to offer comprehensive comments at this time regarding the draft Study as revised and released on May 4, 2006.)

Please do not hesitate to contact me if you would like to discuss this matter further.

Sincerely,

Neil Rodgers
President

Copy to: Frank Scarpitti, Deputy Mayor
Members of Council
John Livey, Chief Administrative Officer
Alan Brown, Director, Engineering
Lilli Duoba, Senior Project Coordinator, Rouge Park & Environment

UDI/Ontario York Chapter
UDI/Ontario Markham Small Streams Study Sub-Committee

Memo

The
MUNICIPAL
INFRASTRUCTURE
Group

DATE:	May 15, 2006
TO:	Jessica Annis, UDI Ontario
FROM:	Dave Ashfield / Abe Khademi
SUBJECT:	Markham Small Streams – Review of April 17, 2006 Draft Final Report

This memo provides additional comment with respect to the above-captioned report. Given the short time available to review the latest version, our observations relate specifically to the "Comment Response Report", included as part of the April 17, 2006 Final Draft.

The following observations correspond to Section 'J' of the Comment Response Report, which addresses the letter to Lilli Duoba from the Municipal Infrastructure Group, dated March 28, 2005.

Comment 1 – First Bullet:

The authors of the Report disagree with our suggestion that the protection of the subject drainage features may lead to a fractured urban landscape, higher house prices, and increased taxes. However, the pilot study provided in the Report does not include an analysis of the costs associated with protection of these features, or the marketing research in support of the requisite development patterns. If such an analysis has been completed, it should be included in the Report to demonstrate the viability of the pilot study. The analysis should include consideration for the multitude of additional road crossings that would be required, as well as the associated maintenance costs.

Comment 2 – Second Bullet:

The authors further disagree that the fractured urban landscape shall lead to urban sprawl. However, the current development process includes the rigorous review by numerous environmentally mandated agencies with numerous environmental policies. The preservation of additional features in this context shall physically limit the utility of a parcel of land, thus spreading a given population over a larger area. This is desirable where features have demonstrated significance. However, this significance should be quantified with consideration for the cost of their preservation within an urban area.

Comment 3 – Third Bullet:

The authors assert that adequate rationale has been provided to include these features as part of the overall holistic environmental assessment. However, existing Provincial and Federal policies have evolved over the years to establish rationale for the classification of natural features, and these policies have excluded the features that are the subject of the Small Streams Report. The holistic environmental assessment that has been completed, but has not, as mentioned previously, accounted for the costs to be incurred by the community through preservation of these features. As these features are outside the scope of current Provincial and Federal classification systems, it would seem reasonable that a full accounting of the benefits of their preservation to the community be required, which would include an evaluation of the cost of their preservation.

Comment 4 – Fourth Bullet:

We acknowledge, through our discussions of May 3rd, 2006, that the document has been revised to recognize the additional effort that will be required to integrate the recommendations with current municipal criteria, and vice versa. However, viability of the recommendations (e.g. via the pilot study) cannot be demonstrated prior to undergoing this integration process.

Comment 5 – Fifth Bullet:

There appears to be conflicting mandates with respect to the utilization of untreated stormwater for the purpose of groundwater infiltration. Again, the viability of the Report's recommendations cannot be fully demonstrated prior to the resolution of these conflicts. The risk of proceeding with the recommendations as they stand includes deadlocked growth and inequity to landowner proponents.

Comment 6 – Sixth and Seventh Bullets:

The case study provided in the Report has illustrated the method by which the small stream features could be incorporated in an urban setting. However, the approvability of the case study has not been considered, which has significant cost implications. Again, this leads to an incomplete assessment of viability.

Comment 7 – Eighth Bullet:

We acknowledge that the form and function of "zero" order streams may possess value. However, the value of these features within an urban area, draining to other urban areas, may not warrant the cost of their preservation. The functions of these features are often replicated through current stormwater management practices; however, the value associated with the form of these features must be sufficient to offset the cost of their preservation.

In conclusion, and to reiterate the primary recommendation of the above observations, an assessment of the preservation of small stream features must include an evaluation of the cost of their preservation; on the environment, on growth, and on the community as a whole.

MARKHAM
the MARK of EXCELLENCE

Alan Brown
Director of Engineering

June 26, 2006

Urban Development Institute
2025 Sheppard Avenue, East
Suite 2208
Toronto, ON M2J 1V6

Attn: Neil Rodgers
President

Re: Markham Small Streams Study
Final Draft Report, Revised April 17, 2006

Dear Mr. Rodgers,

We acknowledge the receipt of your letter dated May 23, 2006 with the attachment from Mrs. Jessica Annis (dated May 15, 2006). In addition, I have noted Mrs. Annis' concerns during the June 14, 2006 phone call to our environmental engineer Mr. Soran Sito.

Since the beginning of this Study in July 2002, the Town kept UDI involved in the Study through engaging UDI members (Nik Mracic and Carlo Stefanutti) in the Stakeholders Committee. To-date, UDI has been involved in the progress of the Study through two meetings (March 28, 2006 and May 3, 2006), two Public Information Centres (January 26, 2006 and May 4, 2006), and two detailed written responses to comments submitted by you (March 31, 2006 and the companion document of May 4, 2006).

I have noted that you requested another meeting with the study team to further discuss issues that are still a concern to UDI. This meeting will be more productive if you first provide us with an itemized list of the specific technical issues explicitly related to the latest draft report (Draft Final Report, April 17, 2006), with references to specific sections and page numbers.

Although this study has already taken an unusually long period of time (in excess of 3.5 years), we are proceeding in accordance with our commitment to an internal schedule approved by the Town and intent to submit the final study to Council with staff recommendation in September 2006.

If your list of the specific technical issues is provided to me before July 7th, 2006, the study team will certainly review each one carefully, and we will set up a meeting to discuss your list of specific issues.

Sincerely,

Alan Brown
Director of Engineering

C Soran Sito, Environmental Engineer
Lilli Duoba, Senior Project Coordinator, Rouge Park & Environment
Brian Lee, Manager, Development Engineering
Mark Schollen, Principal, Schollen & Company Inc.
Jessica Annis, Senior Policy Analyst, UDI
Carlo Stefanutti, Fieldgate Development

Urban Development Institute / Ontario
York Chapter

AB

July 23, 2003

Ms. Lili Duoba,
Sr. Project Coordinator - Environmental Planning and Rouge Park
Development Services Commission
Town of Markham
101 Town Centre Blvd.
Markham, Ontario
L3R 9W3

Dear Ms Duoba:

Re: Small Streams Study
UDI Comments / Concerns

Thank you for the minutes of the June 25th, Small Streams Stakeholder Meeting and for our opportunity to comment on the package circulated subsequent to the said meeting. Our comments are as follows:

- As indicated by our verbal submissions at the meeting, we are generally not supportive of the premise and objective of the Small Streams Study. In particular, it is our position that existing regulations governing the protection of watercourses are sufficient and that an additional layer of regulatory requirements as proposed by the Study, are not necessary and will promote inefficient use of development lands within Markham.

- The proposed scope of drainage "features" being addressed will needlessly degrade development rights and land values for existing landowners in the Town. In fact, such regulation may lead to detrimental land management practices on existing Agricultural lands. There is no evidence that this type of regulation is required in order to facilitate sustainable growth.

- Small drainage systems such as those being discussed are routinely altered, and often piped, their function being replaced by a Stormwater Management system. Has the Town addressed the land requirements, future maintenance costs, and servicing options that will be required if such drainage "features" are maintained without alteration ?

- Will the Study address the financial mechanisms necessary to implement the outcomes of this study ? Will the Town compensate landowners for the additional taking of land required to implement the regulations that emerge from the Study ?

- Due to limited resources, the focus on such small drainage "features" may diminish the Town's ability to properly fund and maintain significant environmental features that benefit the majority of residents within the Town.

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...2/
Ms Lili Duoba,
Sr. Project Coordinator - Environmental Planning and Rouge Park
Development Services Commission
Town of Markham

- Since we are opposed to the basic premise of the Study, we are reluctant to comment on any specifics thereby lending support to the work that is being done. Notwithstanding the above, the end product should be defensible at the OMB, if enacted by Town / Region through an OPA.

Thank you for the opportunity to participate in this process. If further information is required please do not hesitate to contact either of the undersigned, at your earliest convenience.

Yours truly,
UDI - York Chapter

David Stewart, Development Manager
Bayview Wellington Management Inc.

Nik Mracic, Project Manager
Metrus Development Inc.

DS-NM/ds-nm

c: Ms. Joanna Kidd, Facilitator, Lura Consulting
Mr. Alan Brown, Director of Engineering, D.S.C., Town of Markham
Mr. Mark Schollen, Schollen and Company
Mayor Don Cousens, Town of Markham
Councillor George McKelvey, Chairman, Development Services Committee, Town of Markham
Regional Councillor Tony Wong, Town of Markham
Mr. Fraser Nelson, Chairman, UDI - York Chapter

File/Markham-Roundtable/word/Markham/Roundtable/2003/Small Streams Submission July 2003

GTHBA - UDI
ONE INDUSTRY - ONE VOICE

January 5, 2007

Soran J. Sito, P.Eng.
Town of Markham
101 Town Centre Blvd.
Markham, ON
L3R 9W3

Dear Mr. Sito:

Re: Markham Small Streams Study: Principles and Strategies of the Protection and Management of Small Drainage Courses, September 2006

I am in receipt of your email dated December 21, 2006, wherein you offer GTHBA-UDI an opportunity to submit further comments with respect to the *Markham Small Streams Study: Principles and Strategies of the Protection and Management of Small Drainage Courses* (Study) released in September 2006.

Although we would be pleased to discuss the issues that are still of concern to GTHBA-UDI and our members, we infer from a letter received by us in June 2006 from Alan Brown and your recent email that Markham staff are only willing to address 'new', 'technical' issues and conversely are unwilling to address what, in our opinion, are the most significant issues, i.e., the premature timing of this initiative and the integration of the Study with the Growth Plan for the Greater Golden Horseshoe, *Places to Grow* as well as other municipal planning studies that will be required prior to development taking place.

At this time, for the reasons articulated above, I do not anticipate that providing further written comments nor meeting with staff will be productive for Markham or our sub-committee.

If you have any questions please feel free to contact me.

Sincerely,

Carlo Stefanutti
Vice President, Fieldgate Developments
Chair, GTHBA-UDI York Chapter Markham Small Streams Study Sub-Committee

.../2

Copy to: Mayor and Members of Council
Alan Brown, Town of Markham
Lilli Duoboa, Town of Markham
Brian Lee, Town of Markham
Mark Schollen, Schollen & Co. Inc.
Neil Rogers, GTHBA-UDI
Members, GTHBA-UDI York Chapter