



Watershed Management Policies



**Kawartha Region Conservation Authority
277 Kenrei Road
R.R.#1, Lindsay, Ontario. K9V 4R1**

Adopted by the Board of Directors April 1994,
Revised May 1994, February 1995, April 1996 and November 2002

Forward

The Kawartha Region Conservation Authority (Kawartha Conservation) is a corporate body established in 1979, under the provisions of the Conservation Authorities Act.

The Kawartha Region watershed has an area of 2,563 square kilometres (989 square miles), and drains the Nogies Creek, Emily Creek, Pigeon River, East Cross Creek, Nonquon River, Mariposa Brook and the Scugog River as well as Balsam, Cameron, Sturgeon, Scugog and Pigeon Lake drainage systems. Figure 1 illustrates the area encompassed by the Kawartha Conservation watershed.

The mandate of the Kawartha Region Conservation Authority is to establish and undertake programs to promote the conservation, restoration, development and management of natural resources in partnership with local municipalities and the Province. The Authority's partners include The City of Kawartha Lakes, The Township of Scugog, The Municipality of Clarington, The Township of Brock, The Township of Galway-Cavendish-Harvey and The Township of Cavan-Millbrook-North Monaghan.

The Kawartha Region Conservation Authority believes that the watershed is the most effective and efficient basis for making many environmental and resource management decisions. This method is adaptive and recognizes the dynamic nature of a watershed, watercourses, their associated landforms and the interrelationships of human activities.

The principles of resource management on a watershed basis will be followed as much as possible when dealing with matters involving:

- floodplains;
- stormwater management;
- steep and/or unstable slopes;
- the shorelines of lakes, rivers and streams;
- erosion;
- wetlands,
- ravines, valley, river and stream corridors;
- significant natural areas;
- groundwater; and
- fish habitat protection.

The Kawartha Region Conservation Authority participates in the review of planning applications generated by the public and its member municipalities in a proactive, coordinated manner. In addition, the Authority administers a Fill, Construction and Alteration to Waterways Regulation (Ontario Regulation 33/94). By undertaking in these activities, the Authority promotes the goals

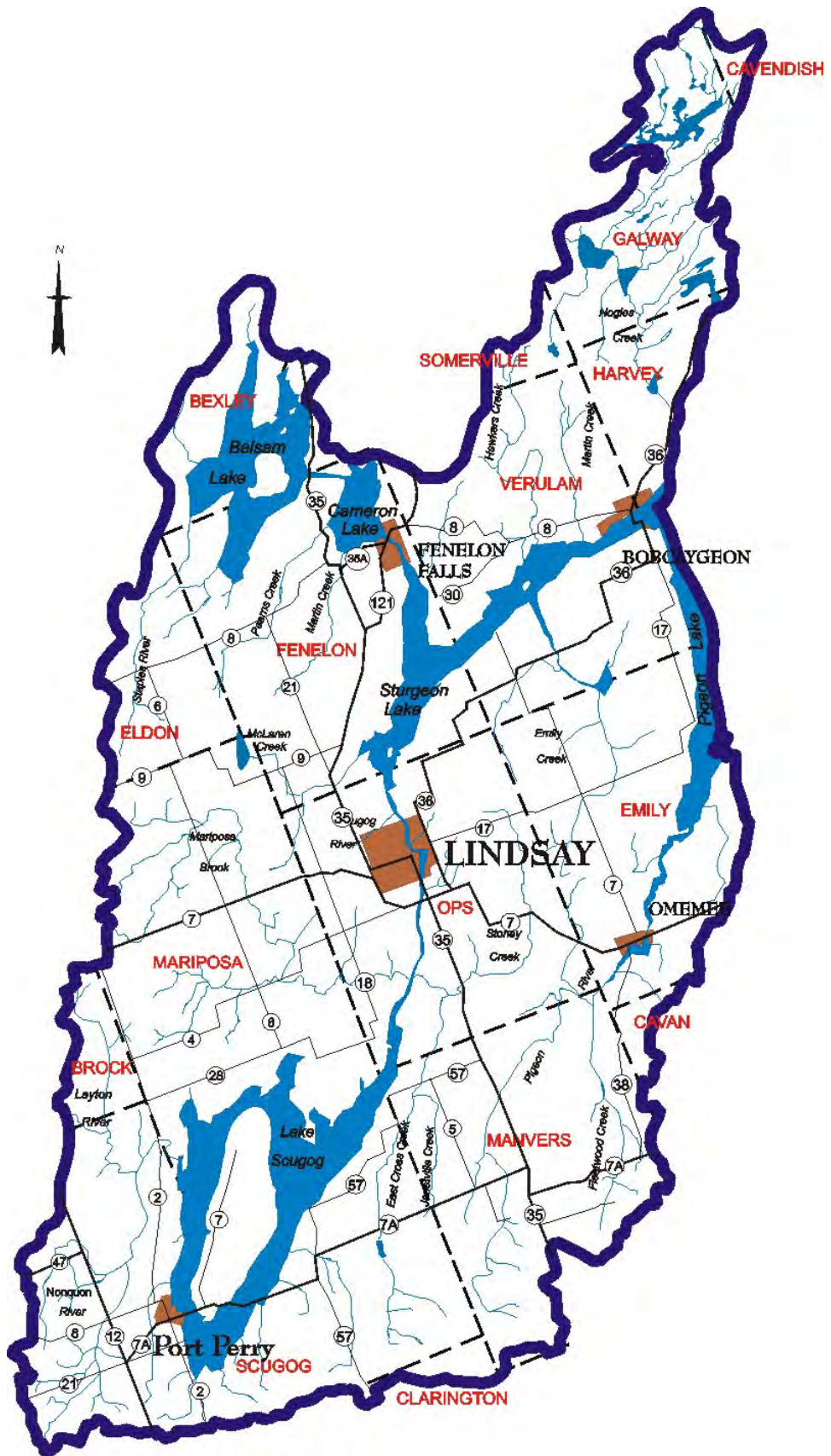


Figure 1 – The Kawartha Conservation Watershed

Watershed Management Policies

November, 2002

of the Watershed Management Program:

- the protection of human life and property from water-related hazards;
- a commitment to the integration and coordination of water resource management;
- a commitment to the preservation, conservation, enhancement and rehabilitation of significant natural heritage features; and
- the maintenance and enhancement of groundwater and surface water quantity and quality.

The Kawartha Region Conservation Authority has prepared these Watershed Development Policies to provide a fair, reasonable and consistent basis for management decisions. A glossary of terms has been included in this document to provide clarification on terms used in this document.

These Watershed Development Policies replace the Authority's Water Management Policies first approved by the Board of Directors on April 1994 and revised May 1994, February 1995 and April 1996.

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Section A

Administration Policies

Section A Administration Policies

The Kawartha Region Conservation Authority's watershed management program is administered using Watershed Development Policies, which have been approved by the Authority's Board of Directors. These policies provide direction to Authority staff, the public and the Authority's Board of Directors in dealing with plan review, stormwater management submissions and applications made under the Authority's Fill, Construction and Alteration to Waterways Regulation.

Technical policies for each component of the Kawartha Region Conservation Authority's watershed management program are found in the appropriate section of the Authority's Watershed Development Policies.

A(1.0) General Policy

- A(1.1) The Authority will administer all water management programs to the extent that funding and manpower allows;
- A(1.2) Decisions will be made based upon the information available at the time of the decision;
- A(1.3) Decisions will be made taking into consideration policies and engineering practices which are prevalent at the time of the decision;
- A(1.4) Decisions will take into consideration prior commitments made by the Authority;
- A(1.5) The "notwithstanding" clause will be used only in exceptional instances. The use of the "notwithstanding" clause shall not be considered to be precedent setting and may only be invoked by the Authority's Board of Directors.

A(2.0) Planning Advisory Services

Staff of the Authority are delegated the responsibility of providing comments on all planning applications circulated to the Kawartha Region Conservation Authority for the provision of comments by the Authority's member municipalities.

The staff specifically charged with this responsibility shall consist of:

- Resource Planning Technician(s); and
- Resources Planner and Regulations Officer.

The staff named above are supported by and report to the Director of Watershed Management and the Chief Administrative Officer.

A(2.1) A planning application may be referred to the Authority's Board of Directors for decision if:

- (a) Authority staff request the referral;
- (b) The Chair approves of an outside request for referral;
- (c) The use of the "notwithstanding" policy is being considered;
- (d) Authorization is sought to appeal a municipal planning decision to the Ontario Municipal Board.

A(3.0) Stormwater Management Submissions

Stormwater management is an integral part of municipal plan input and review. As a result, the responsibility of proving comments on stormwater management proposals has been delegated to staff.

The staff specifically charged with this responsibility shall consist of:

- the Water Resource Engineer and/or the Natural Hazards Specialist; and
- The Resource Planner and Regulations Officer.

These staff are supported by and report to the Director of Watershed Management and the Chief Administrative Officer.

A(3.1) Approvals of stormwater management proposals requiring an approval under the Authority's Fill, Construction and Alteration to Waterways Regulation, shall follow the procedures established under this Regulation.

A(4.0) Section 28 Regulations – Fill, Construction and Alteration To Waterways Regulation

A(4.1) The Kawartha Region Conservation Authority by virtue of the Conservation Authorities Act, R.S.O. 1990 as amended, Section 28,1(d) and regulations made pursuant to that Act, appoints the following staff as Enforcement Officers to enforce the Regulation:

- the Resources Planner and Regulations Officer;
- the Director of Watershed Management;
- the Chief Administrative Officer;
- and with full or limited authority under any policy, such staff as designated by the Chief Administrative Officer.

- A(4.2) An Enforcement Officer as appointed by the Kawartha Region Conservation Authority, if granted appropriate authorization, may:
- A(4.2.1) approve applications that comply with the Watershed Management Policies of the Kawartha Region Conservation Authority, with the exception of those applications which in the opinion of an enforcement officer may affect the control of flooding, pollution or the conservation of land.

These approvals must not contravene any other applicable legislation (i.e. The Lakes and Rivers Improvement Act, The Navigable Waters Protection Act, The Federal Fisheries Act, the Public Lands Act, The Heritage Canals Act).

Prior to an Enforcement Officer issuing a permit for work within an area susceptible to flooding, written authorization must be obtained from the Chief Administrative Officer of the Kawartha Region Conservation Authority.
 - A(4.2.2) defer any applications to the Board of Directors for decision notwithstanding Policy A(4.2.1);
 - A(4.2.3) require an applicant to submit any studies, surveys considered necessary for the Authority to make a decision. The cost of these studies shall be the responsibility of the applicant.
- A(4.3) The Board of Directors will ratify all applications approved by an Enforcement Officer at the next scheduled meeting of the Board of Directors, subsequent to the permit being issued.
- A(4.4) The Board of Directors cannot alter a permit granted by an Enforcement Officer.
- A(4.5) Applications, which are not approved by an Enforcement Officer, shall be presented before the Board of Directors for their decision with respect to approving or deferral to a hearing.
- A(4.6) Applications not approved by the Board of Directors of the Kawartha Region Conservation Authority shall be deferred to a Hearing under Section 28(12), of the Conservation Authorities Act, R.S.O. 1990. The members of the Board of Directors shall form the tribunal in accordance with the Statutory Powers and Procedures Act, R.S.O. 1990.

- A(4.7) An Enforcement Officer as appointed by the Kawartha Region Conservation Authority nor any member of the Board of Directors has the authority to alter, add to, or delete any policy without the express permission of the Board of Directors.
- A(4.8) Any variation from these policies by the Board of Directors or Hearing Tribunal shall be considered to have received the permission required under Policy A(4.7).
- A(4.9) An Enforcement Officer is authorized to issue a Violation Notice, for works that are undertaken without permission being granted in writing by the Kawartha Region Conservation Authority. A report will be made at the next meeting of the Board of Directors, of the particulars of any Violation Notices issued by Enforcement Officers.
- A(4.10) Legal action for breaches of the Authority's Fill, Construction and Alteration to Waterways Regulation may be initiated by an Enforcement Officer after written consent has been granted by the Chief Administrative Officer.
- A(4.11) Legal action initiated under Policy A(4.10) shall be presented at the next scheduled meeting of the Board of Directors for a decision on continuance.

A(5.0) Registration of a Document General

- A(5.1) The Kawartha Region Conservation Authority shall require that a Document General be registered on the title of a property, for applications received pursuant to the Authority's Fill, Construction and Alteration to Waterways Regulation, when there is a risk of flooding or erosion to either the entire property or to a significant portion of the property. The purpose of the Document General is to inform future owners that there is a hazard associated with a portion of this property.
- A(5.2) The Kawartha Region Conservation Authority shall request that as a condition of approval, member municipalities require the registration of a Document General when it is determined that there is a risk of flooding or erosion to either the entire property or to a significant portion of the property for applications made pursuant to the Planning Act.
- A(5.3) The costs associated with registering the Document General on Title shall be the responsibility of the applicant.
- A(5.4) An executed copy of the Document General must be provided to the Kawartha Region Conservation Authority prior to the issuance of the permit.

A(5.5) The Document General shall state:

- the name of the declarant;
- the fact that there is a risk of flooding or erosion to either a portion of the property or to the entire parcel;
- that the subject property is subject to an Ontario Regulation passed pursuant to Section 28 of the Conservation Authorities Act R.S.O. 1990 as amended.

A(5.6) If deemed necessary, the Kawartha Region Conservation Authority may register a Document General that deals with items other than those described above.

A(6.0) Engineering Submissions

All engineering submissions (reports, computer models, transmittal letters) which contain technical information must be stamped by a registered professional engineer, who is licensed to practice in the Province of Ontario, and this stamp shall be signed and dated.

Section B

Section 28 Regulations

Ontario Regulation 33/94

(Fill, Construction and Alteration To Waterways Regulation)

Section B(1.0) Construction

B(1.0) General Policy - Construction

It is the general policy of the Kawartha Region Conservation Authority to discourage all development within the floodplain. However in some cases, the Authority may consider a development proposal within the floodplain when there is no other opportunity to undertake the work outside of the floodplain, provided that all of the following requirements are satisfied.

B(1.1) Residential Structures

- B(1.1.1) that the depth of flooding to the site of the building does not exceed 1.0 metre (3.28 feet) under regulatory storm conditions;
- B(1.1.2) that the building site is subject to less than 1.0 metres/second of flood flow velocity under regulatory storm conditions;
- B(1.1.3) that safe access/egress is available to the site of the building as defined by the Authority;
- B(1.1.4) that the structure is flood-proofed to the satisfaction of the Authority;
- B(1.1.5) that the foundation, basement floors, concrete slab floor and structural walls located below the regulatory flood elevation must be designed and constructed to withstand hydrostatic pressures of elevated water tables and lateral pressures exerted upon them by the regulatory flood;

These submissions must be signed, stamped and dated by a registered professional engineer who specializes in structural design.
- B(1.1.6) construction materials located below the regulatory flood elevation are to be of a type which are not subject to deterioration by water or by alternate drying and wetting;
- B(1.1.7) all electrical circuits, outlets and permanently installed electrical equipment is to be located at least 0.3 metres (1 foot) above the Regulatory flood elevation;

- B(1.1.8) the loss in flood storage capacity due to the construction of a structure does not exceed 20 cubic metres (26.2 cubic yards);
- B(1.1.9) drains are to be equipped with valves capable of being closed manually or automatically to prevent the backup of floodwaters into the building;
- B(1.1.10) the finished floor/lowest opening of building is to be constructed at least 0.3 metres (1 foot) above the Regulatory Storm flood elevation;
- B(1.1.11) that a Document General is registered on Title stating the flood hazard.

B(1.2) Commercial/Industrial Structures

Commercial and industrial structures shall be subject to the same requirements as residential structures. Provided that the commercial/industrial structure does not contain a residential component, the provision of safe access/egress will not be required.

B(1.3) Institutions, Essential Services and Hazardous Substances

New development will not be permitted to locate within a flood susceptible area or in an area where safe access/egress is not available which is associated with:

- (a) institutional services such as hospitals, nursing homes and schools which would pose a threat to the safety of the inhabitants (E.g. the sick, the elderly, the disabled or the young);
- (b) essential services such as those provided by the police, fire, ambulance and electrical substations which would be impaired during a flood emergency;
- (c) the manufacture, storage and disposal of hazardous substances; the treatment, collection and disposal of sewage which would pose an unacceptable threat to public safety if they were to escape their normal containment as a result of flooding;

B(1.4) Cottages or Seasonal Residential Structures

Cottages or seasonal residential structures, as well as additions to these structures shall be subject to the same level of flood-proofing as permanent residential structures.

B(1.5) Replacement of Damaged or Destroyed Buildings

The construction of a new building to replace a building which has been extensively damaged or destroyed by fire or other natural disasters (with the exception of flooding) will be permitted, provided that:

- (a) the former building was in a habitable condition prior to its destruction and evidence of this is provided by the applicant, to the satisfaction of the Authority;
- (b) the replacement building is to be constructed at the same location, or in a shallower portion of the floodplain;
- (c) the replacement building is to have the same gross floor area as the former building;
- (d) the finished floor/lowest opening of the replacement building is to be constructed at least 0.3 metres (1 foot) above the Regulatory Storm flood elevation;
- (e) registration of a Document General on the title of the property stating the flood hazard.

Safe access/egress is not a requirement for the replacement of damaged or destroyed buildings.

An application to reconstruct a building or structure, which has been destroyed by flooding, and which would be subject to the equivalent level of risk, shall not be supported.

B(1.6) Additions

The construction of additions to existing structures including roofline adjustments; increases in the gross floor area of the building, whether on one or more storeys; and the enclosure of decks and porches may be permitted provided that the risk of flood damage to the building and its contents and the risk to public safety is not increased.

B(1.6.1) Type 1 Additions

Type 1 additions may be permitted within an area susceptible to flooding provided that each of the following requirements are satisfied:

- (a) the size of the addition does not exceed 20% of the gross floor area of the existing structure or 20 square metres (215 square feet), whichever is the lesser;
- (b) the addition will not be more vulnerable to flooding than the existing structure;

- (c) the proposed addition will not increase the livable area of the structure;
- (d) the landowner shall be encouraged to flood-proof the addition, and whenever possible the entire structure;
- (e) a Document General is registered on Title stating the flood hazard.

B(1.6.2) **Type 2 Additions**

Type 2 additions may be permitted within areas susceptible to flooding on only one occasion per structure provided that each of the following requirements are satisfied:

- (a) the addition will increase the gross floor area of the existing structure by up to 50% or 50 square metres (538 square feet), which ever is the lesser;
- (b) the addition is flood-proofed;
- (c) safe access/egress is available to the site as defined by the Authority;
- (d) that loss in flood storage capacity resulting from the construction of the addition do not exceed 20 cubic metres (26.2 cubic yards);
- (e) in areas serviced by private sewage disposal systems, certification from the applicable approval agency as to the adequacy of the sewage disposal system to sustain the proposed use is required;
- (f) that a Document General is registered on Title stating the flood hazard.

B(1.6.3) **Type 3 Additions**

Additions which exceed 50% of the gross floor area of the existing structure or 50 square metres (538 square feet), which ever is less shall be considered to be Type 3 additions. The policies for new structures as described in Section B(1.0) and B(1.2) shall be satisfied for additions of this type.

B(1.7) **Non-Habitable Accessory Buildings**

Non-habitable accessory buildings (detached garages, boathouses, storage buildings, utility buildings, gazebos) will be permitted provided that:

- (a) the building will be constructed to withstand the effects of flooding to the regulatory flood level without structural damage;
- (b) the building is firmly attached to either a concrete pad or footings;
- (c) the building will not result in the increased flood susceptibility of other properties;
- (d) the building will not be susceptible to damage from ice and floating debris;

- (e) the size of the accessory building does not exceed 46.5 square metres (500 square feet);
- (f) goods stored in such structures must not be susceptible to damage due to flooding or must be capable of being removed from the floodplain.
- (g) electrical systems in accessory structures shall be located so that the main electrical panel and all outlets are located above the regulatory flood elevation. All electrical equipment is to be located above the flood elevation.

Compensation for the loss in flood storage capacity resulting from the construction of the accessory building is not required.

B(1.8) Infilling

Infilling will be permitted for lots of record, where similar land uses have already been established on adjacent properties provided that:

- B(1.8.1) the structure is flood-proofed; and
- B(1.8.2) safe access is available as defined by the Authority.

B(1.9) Fencing

A permit for the construction of fencing will not be required provided that the proposed fencing does not interfere with a watercourse and the fencing will permit the free flow of water during the regulatory flood.

B(1.10) General Exceptions

Construction that does not require a permit from Kawartha Conservation shall consist of:

- B(1.9.1) accessory buildings enclosing an area which does not exceed 10.0 square metres (107 square feet), provided that the structure is firmly attached to a concrete pad or footing;
- B(1.9.2) an unenclosed deck or veranda provided that there will be no fill placement or grade modifications in association with this work.

Section B(2.0) Fill Placement and Grade Modifications

B(2.1) General Policy

The following policies are for the placement of fill or the alteration of grades within areas scheduled for the placement of fill under the Authority's Fill, Construction and Alteration to Waterways Regulation.

Written descriptions of the areas, which are scheduled for the placement of fill, are listed in Ontario Regulation 33/94.

The placement of fill or the alteration of grades within a floodplain may be approved if:

B(2.1.1) stage-storage characteristics of the floodplain are maintained by means of an incrementally balanced cut and fill operation. This cut and fill operation must be designed in 0.3 metre (1 foot) vertical increments. Hydraulic analyses **may** be required, at the discretion of the Authority, to demonstrate that the later condition has been met and the proposed placement of fill will not have a detrimental effect on upstream water levels or local stream flow velocities.

B(2.1.2) flood flows are not impeded.

B(2.2) Allowable Loss In Flood Storage Capacity

Compensation is not required for losses in flood storage capacity due to the placement of fill, the alteration of grades or a combination of the construction of buildings and the placement of fill, which do not exceed 20 cubic metres (26.2 cubic yards).

B(2.3) Special Restrictions and Allowances

B(2.3.1) Notwithstanding Policies B(2.1.1) and B(2.1.2), a cut and/or fill operation will not be permitted within the following areas:

- environmentally sensitive areas (ESA's)
- wetlands
- areas of natural and scientific interest (ANSI's)
- significant woodlots
- significant valleylands
- sensitive wildlife habitats
- habitats of endanger and threatened species.

- B(2.3.2) Notwithstanding Policies B(2.1.1) and B(2.1.2), any proposal, which depends upon a cut and fill operation to allow new development will not be approved.
- B(2.3.3) A cut and fill operation may be allowed for the construction of a building on an existing lot of record, provided that the lot of record is not described under Policy B(2.2.1).
- B(2.3.4) Subject to all other policies, the placement or the alteration of existing grades must take place between the dates of May 15 and September 15 inclusive, to allow for the revegetation of the site. In the event that revegetation methods can be applied outside of the specified time frame, Kawartha Conservation may approve the application subject to the implementation of special conditions such as the implementation of sediment and water quality controls.

B(2.4) Exceptions

Exceptions have been made for certain types of developments since their function depends upon a location adjacent to a watercourse and most cases within a floodplain.

The placement of fill not conforming to Policy B(2.1.1) and B(2.1.2) will be allowed if:

- B(2.4.1) the placement of fill is associated with water related development (i.e. dams, sewage treatment plants and marinas);
- B(2.4.2) the placement of fill is to protect an existing structure from flood damage;
- B(2.4.3) the placement of fill is for road maintenance;
- B(2.4.4) the placement of fill conforms to Policy B(2.8);
- B(2.4.5) the placement of fill does not exceed 20 cubic metres (26.2 cubic yards).

B(2.5) Notice of Circulation

Notwithstanding Policies B(2.1.1) and B(2.1.2), any proposal for a cut and fill operation must be circulated to all property owners within 120 metres (300 feet) of the property that is to have the cut and/or fill operation performed on it.

The Kawartha Region Conservation Authority shall circulate a notice of the proposed work a minimum of 15 calendar days prior to Board of Directors meeting at which their application will be heard.

Adjacent property owners who are circulated on the cut/fill proposal and who wish to express their concern(s) are required to express their concern(s) in writing to the attention of the Chief Administrative Officer, a minimum of 5 calendar days prior to the Board of Directors meeting at which the application will be heard.

B(2.6) Geotechnical Analysis

In areas where the placement of fill could have an effect on the conservation of land by way of reduced slope stability, a geotechnical analysis will be required to demonstrate that the proposed placement of fill is acceptable from a geotechnical perspective. The costs associated with a geotechnical analysis shall be the responsibility of the applicant.

B(2.7) Certification of Finished Grades

Following the completion of a cut/fill operation, the applicant will be responsible for submitting certification from either a registered professional engineer or an Ontario Land Surveyor that the finished grades are in accordance with the approved plans.

Certification must be received within 30 days of the completion of grading operations.

B(2.8) Performance Bond

Prior to a permit being issued for a cut/fill operation, the applicant shall provide a performance bond in the form of a certified cheque in the amount of:

- \$250 per lot for a subdivision and shall apply to the specific lots affected by the cut and fill operation;
- \$1,000 for a single lot - minor development which is less than 5 hectares in area; and
- \$2,000 for a single lot - major development which is in excess of 5 hectares in area

to the Kawartha Region Conservation Authority. This deposit shall be refunded immediately after the certification of final grades has been submitted to the Authority and found to be satisfactory.

If the required survey of final grades is not submitted within 30 days, the applicant will forfeit his/her deposit, and the Authority may utilize the deposit to obtain elevation surveys of the final grades on the site. This information may subsequently be used in legal proceedings if it is found that excess, unauthorized fill has been placed.

The Authority may waive the requirement for a performance bond for applications involving small quantities of fill (for landscaping purposes, etc.) and for which, in the opinion of the Authority, there will clearly be no detrimental effects on the control of flooding, pollution or the conservation of land.

B(2.9) Landscaping Allowance for Large Waterbodies

The Kawartha Region Conservation Authority will permit a one time placement of fill within the floodplain to a depth of 15 centimeters (6 inches) plus 20 cubic metres (26.2 cubic yards) for each existing lot of record, without requiring compensation for the loss in flood storage capacity on the following bodies of water:

- Lake Scugog; and
- the Scugog River.

B(2.10) Banking of Flood Storage Capacity

In the event that there is an excess of cut in a cut and fill operation which is approved by the Kawartha Region Conservation Authority, the surplus cut may be applied against a future development provided that:

- B(2.10.1) the proposal for the future development is applied for within one calendar year of the original proposal being approved; and
- B(2.10.2) the second proposal represents a subsequent phase of the development which was identified in the original submission;
- B(2.10.3) the cut and fill submission for the second proposal complies with Policies B(2.1.1) and B(2.1.2).

B(2.11) Notwithstanding Clause

Notwithstanding Sections B(2.0) through B(2.9.3), the Board of Directors may grant permission to place fill or alter grades of the applicant provides evidence acceptable to the Board of Directors to document that the placement of fill will have no adverse effect on floodplain management, channel characteristics, the control of flooding, or the conservation of land.

Section B(3.0) Watercourse Alterations

The alteration of a watercourse can adversely affect neighboring properties, existing structures, public safety, water quality and the conservation of land. Provided that the following policies can be satisfied pertaining to the alteration of a watercourse, there will be no adverse effects.

Ontario Regulation 33/94 applies to all watercourses within the Kawartha Conservation watershed, regardless if they are described within a scheduled area for the placement of fill, under the above noted regulation.

B(3.1) General Policy – Watercourse Alterations

Alterations to a watercourse will be permitted provided that:

- B(3.1.1) flood levels are not affected; and
- B(3.1.2) velocities are not altered, or the increase in velocity will be compensated for by erosion protection; and
- B(3.1.3) discharge levels are not altered; and
- B(3.1.4) rates of erosion are not increased;
- B(3.1.5) the alteration does not adversely affect municipally owned properties (including road allowances) and privately owned properties.

B(3.2) Exceptions

- B(3.2.1) where a corrugated steel pipe or a concrete box culvert provide an existing watercourse crossing, and it must be replaced due to damage or deterioration, a crossing of an equivalent size will be permitted provided that this approval does not contravene any other legislation (i.e. The Lakes and River Improvement Act, The Federal Fisheries Act).

The applicant shall be responsible for providing the Kawartha Region Conservation Authority with documentation regarding:

- (1) the dimensions of the original crossing;
- (2) that all other necessary approvals can be obtained;

prior to the issuance of a permit from the Kawartha Region Conservation Authority.

B(3.3) Ponds

Ponds proposed in scheduled areas or associated with a watercourse are subject to the approval of the Kawartha Region Conservation Authority. The Authority shall uphold the following policies with respect to the construction of ponds.

- B(3.3.1) The Authority will not support the construction of instream, by-pass and ponds which are directly connected to a watercourse;
- B(3.3.2) The Authority may permit the construction of ponds provided that the following criteria are met:
- (a) flooding upstream and downstream of the site of the pond will not be significantly altered; and
 - (b) riparian rights of other landowners are not affected; and
 - (c) the water quality of the stream, including thermal pollution, will not be detrimentally affected; and
 - (d) there will be no detrimental effects on the function or significant features of environmentally significant areas, Areas of Natural and Scientific Interest (ANSI's) or wetlands.
- B(3.3.3) Prior to the issuance of a permit, the Authority must receive a satisfactory site plan detailing the means whereby erosion and sedimentation and their effects will be minimized on the site during and after the construction period.
- B(3.3.4) The Authority may require a pond management/maintenance agreement with the landowner as a condition of approval. This agreement shall be registered on Title.
- B(3.3.5) The landowner shall be responsible for obtaining all other necessary permits.
- B(3.3.6) All fill material excavated from the site of the pond is to be removed from the floodplain.
- B(3.3.7) All exposed soil surfaces are to be seeded or sodded immediately following the completion of grading to guard against erosion and sedimentation.
- B(3.3.8) Erosion and sediment controls are to be installed between the watercourse and the work site to the satisfaction of the Authority prior to the commencement of excavations. These controls are to be maintained until all disturbed soil surfaces have become revegetated.

B(3.4) Timing of Works

Any in water or near water works may only occur during those periods authorized by the Ministry of Natural Resources and the Federal Department of Fisheries and Oceans.

Only the Federal Department of Fisheries and Oceans Canada may authorize the harmful alteration, disruption or destruction of fish habitat.

B(3.5) Notwithstanding Clause

Notwithstanding Section B(3.0) to Section B(3.3.8), the Board of Directors may permit the alteration of a watercourse if, in the opinion of the Board of Directors the watercourse alteration will be insignificant and will not have an adverse effect on floodplain management, channel characteristics, the control of flooding, the conservation of land and the work will not contravene any other applicable legislation.

Section C

Planning Advisory Services

Section C Planning Advisory Services

Recent amendments to the Planning Act have placed a greater responsibility on municipalities for matters related to development. Kawartha Conservation provides assistance to its member municipalities at both the regional and local level on environmental matters related to planning applications. Comments are provided on municipally initiated applications such as official plans and comprehensive zoning by-laws; as well as planning applications initiated by private landowners and developers (i.e. official plan amendments, zoning by-law amendments, draft plans of subdivisions, draft plans of condominiums, consents, minor variances and site plan approvals).

Conservation Authorities have been delegated the responsibility of providing comments on behalf of the Province of Ontario on natural hazards such as flood susceptible areas, areas susceptible to erosion and unstable slopes under Section 3.1 of the Provincial Policy Statement.

Kawartha Conservation also provides information on natural heritage features such as wetlands, the shorelines of lakes, rivers and streams, ravines, valley, river and stream corridors, significant natural areas, groundwater and fish habitat protection.

By providing technical comments on planning applications, the Kawartha Region Conservation Authority's planning advisory service:

- protects against loss of life, property damage and social disruption;
- encourages the responsible management and protection of environmentally sensitive areas for future generations;
- ensures the compliance with legislative requirements at the local level;
- protection against hazardous areas (i.e. floodplains, unstable slopes);
- encourages a co-ordinated approach to land use planning and water management;
- the public is informed about natural hazards and heritage resources.

C(1.0) General Policy – Planning Advisory Services

C(1.1) The Kawartha Region Conservation Authority will review all planning documents submitted for our comments: official plans, zoning bylaw amendments, severances, minor variances, plans of subdivision, plans of condominiums and site plan applications circulated to the Authority by our member municipalities and provide advisory comments with regard to Section 3.1 of the Provincial Policy Statement;

C(1.2) The Kawartha Region Conservation Authority will promote the inclusion of natural hazards within the official plans and zoning bylaws, in accordance with Section 3.1 of the Provincial Policy Statement;

- C(1.3) The Kawartha Region Conservation Authority will not recommend the adoption of a planning document that does not reference an identified hazard in accordance with Section 3.1 of the Provincial Policy Statement;
- C(1.4) The Kawartha Region Conservation Authority will not recommend the adoption of a planning document that has not taken into consideration the problems of safe access/egress.
- C(1.5) When requested by a member municipality, the Kawartha Region Conservation Authority will investigate the suitability of the two-zone option or Special Policy Area concept for selected reaches of watercourse.
- C(1.6) The Kawartha Region Conservation Authority shall encourage the preparation of watershed and subwatershed plans.

C(2.0) Plans of Subdivision

- C(2.1.1) The Kawartha Region Conservation Authority shall require a Stormwater Management Plan detailing the manner in which stormwater runoff from the site will be addressed with respect to water quantity and Water quality. The plan should be in accordance to the Authority's Technical Standards for Stormwater Management, as outlined in Section D of this document.
- C(2.1.2) The Kawartha Region Conservation Authority shall require the submission of an Erosion and Sediment Control Plan detailing the measures that will be implemented before, during and after construction to minimize soil erosion and sedimentation. The plan should be in accordance to the Authority's Erosion and Sediment Control Guidelines as outlined in Section E of this document.
- C(2.1.3) For urban subdivisions, lot lines will not extend into the floodplain.
- C(2.1.4) For rural estate subdivisions, lot lines may be permitted to extend into the floodplain provided that there is sufficient land remaining outside the floodplain for develop to occur, without intrusion into the floodplain.

C(3.0) Consents

The Kawartha Region Conservation Authority will not support the creation of new lots entirely within the floodplain. However, the Authority recognizes that there may be situations where development may be acceptable provided the following criteria are satisfied:

- C(3.1) the lot to be created has sufficient area outside of the floodplain to accommodate the proposed development; and
- C(3.2) safe access/egress is available to the property.

C(4.0) Buffer Zones

The Kawartha Region Conservation Authority recognizes the importance of conservation buffers. Buffer zones help to stabilize stream banks and prevent erosion; trap waterborne contaminants that pollute streams, rivers and lakes; and provide habitat for fish and wildlife.

C(4.1) For all new development, the Kawartha Region Conservation Authority will require that a vegetative buffer zone be maintained along both sides of a watercourse. The buffer zone is to be measured perpendicularly outward from the edge of the annual high water mark as follows:

- (a) a minimum of 15 metres (49.2 feet) for all warmwater streams/lakes;
- (b) a minimum of 30 metres (98.4 feet) for all coldwater or marginally coldwater streams/lakes;
- (c) greater buffer widths may be required in areas characterized by high permeability, shallow soil depths, or extensive organics;
- (d) buffer zones may be interrupted to allow watercourse crossings;
- (e) trails and paths may be allowed in a buffer zone provided that:
 - there is a compensating buffer allowance added to the width of the buffer zone;
 - the trail or path does not come closer than 4 metres (13 feet) to the edge of a watercourse;
 - the trail or path does not impede the natural function of the valleyland; and
 - the trail or path has a permeable surface.

C(4.2) The Kawartha Region Conservation Authority shall encourage municipalities to place protective zoning on watercourse buffer zones.

Section D

Technical Standards for Stormwater Management

Section D Technical Standards for Stormwater Management

D(1.0) Introduction

It is envisioned that by planning the management of stormwater resources when land is being developed, that the suitability and future availability of water to consume, play in, and sustain ecosystems will be protected. It is also expected that management will protect those at risk from water-related hazards and property damage.

D(1.1) Purpose

The purpose of the Technical Standards is to provide a fair, reasonable and uniform basis for engineering and design decisions when developing residential, commercial, industrial, and institutional development within the Kawartha Region watershed.

These Standards are based on the most current versions and associated amendments of the following documents:

- Conservation Authorities Act (CAA);
- Provincial Policy Statement (1997) – issued under Section 3 of the Planning Act;
- Stormwater Management Practices Planning and Design Manual (MOEE, 1994);
- Fish Habitat Protection Guidelines for Developing Areas (MNR, 1994); and
- Erosion and Sediment Control Training Manual (MOE, 1977).

These standards require a systems approach to water resource management, including both upstream and downstream considerations for all development.

D(2.0) Stormwater Management Design Criteria

The following stormwater management criteria have been developed for residential, commercial, industrial and institutional developments in the absence of subwatershed level planning.

All proposals must be approved by:

- The Kawartha Region Conservation Authority;
- the local municipality; and
- other approval agencies.

Background technical information for any proposal must be prepared by a qualified professional engineer licensed in the Province of Ontario.

Pre-consultation with the Kawartha Region Conservation Authority and municipal staff is recommended to confirm/clarify issues, policies and design requirements.

D(2.1) General

- In any multi-lot development, major development shall be defined as a developable area of more than five lots.
- In any new single structure development, major development shall be defined as any large-scale proposal or site alteration with a developable area, which is, equal to or exceeds 929 square metres (10,000 square feet).

If the developable area is deemed major as per the above criteria, the Kawartha Region Conservation Authority will require a preliminary report in support of draft or site plan approval and a final report and plans addressing water quality control; water quality control and baseflow maintenance; detention facilities and erosion and sediment control. (Refer to Sections 2.2, 2.3, 2.4 and 3.0, respectively).

Final reports and plans must be approved prior to the issuance of a Kawartha Region Conservation Authority Fill, Construction and Alteration to Waterways (Ontario Regulation 33/94) permit, a clearance letter and/or a municipal building permit.

D(2.1.1) Design Storms

The design storm information used for the Kawartha Region Conservation Authority watershed is based upon information recorded at the Lindsay Filtration Plant. Pre-consultation with Authority staff is required to establish the design storm information to be implemented. Depending upon the nature of the work being considered, the storm information may vary, and should be tailored to the design tools to be used.

D(2.1.2) Hydrology Models

Prior to commencing a drainage study, the proponent should consult with the Kawartha Region Conservation Authority to confirm which model or models are acceptable for use in the study. Depending upon the size of the drainage area and the need to evaluate seasonal performance of any proposed Stormwater Management Facilities, the model selection, storm durations and other parameters should be reviewed with Authority staff.

D(2.1.3) Stormwater Management – Industrial/Commercial/Institutional

These guidelines are for site plan developments, for properties that are less than 5 hectares (12.4 acres) in size. Each application for development must incorporate quantity and quality treatment for storm water runoff to mitigate the impacts of development. Depending upon the location of the property, a Master Environmental Servicing Plan or a Master Drainage Plan may be required.

Table 1 -- Stormwater Management Requirements

Scenario	Condition	Options
Scenario "A" Quality/Quantity Facility Downstream	<ul style="list-style-type: none"> • Site imperviousness within 5% of approved Plan • Site Imperviousness >5% of the approved Plan • Major overland route on-site possible • Major overland route not possible 	<ul style="list-style-type: none"> • Follow existing Drainage Plan • On-site quantity control, or • Confirm downstream conveyance • Maximum depth of 0.3 metres (1 foot) • Secure alternate route with easements • Additional storage limited to minor system capacity
Scenario "B" Quantity only facility downstream	<ul style="list-style-type: none"> • Minor/major system design • Quality treatment 	<ul style="list-style-type: none"> • Same as scenario "A" • See MOEE SWM Practices Planning & Design Manual (1994) -- Table 4.1 • Or cash-in-lieu where applicable
Scenario "C" No Downstream Quality/Quantity Controls	<ul style="list-style-type: none"> • Minor/major system design both on and off site • Quantity measures • Quality treatment 	<ul style="list-style-type: none"> • Same as scenario "A" with historical conditions taken into account • On-site storage • See MOEE SWM Practices Planning & Design Manual (1994) – Table 4.1 • Or cash-in-lieu where applicable

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- For sites less than 5 hectares (12.4 acres) in size, the Rational Method can be used to determine runoff conditions.
- If there is a Drainage Plan with the runoff calculated by some other means it may be necessary to substantiate any deviation from the original plan by using the same model for comparison purposes. This will be established in consultation with KRCA staff.

The available techniques that can be considered on an individual site are found in the 1994 MOEE Stormwater Management Practices Planning and Design Manual. Specific measures that are more suited to industrial, commercial and institutional site plans are summarized in Table 2.2. The Consultant can follow the design criteria in the MOEE manual or the more specific sizing measures provided in this section.

Table 2 -- Stormwater Management Measures for Site Plans

Control:	Stormwater Management Measure:
quantity controls	<ul style="list-style-type: none"> • roof top storage • parking lot storage • landscaped area storage • on-line storage (oversized pipe or tank) • extended detention pond (dry or wet)
quality controls	<ul style="list-style-type: none"> • infiltration/recharge trench • grass swales with perforated pipes • grass swales with check dams • vegetated buffers • extended detention pond (wet) • wetland • oil/grit separators

D(2.2) Water Quality Control

The Kawartha Conservation Authority requires that all new development proposals design for, and provide water quality protection to the most stringent standards. In all cases, maximizing undisturbed areas, maximizing pervious surfaces and minimizing directly connected impervious area is the first consideration for quality control.

- Design an integrated water management approach utilizing buffers, lot level source controls, conveyance controls, innovative approaches and/or end-of-pipe facilities to meet or exceed current provincial standards, and;
- Proposals must address regional, local and in-stream concerns (both acute & cumulative) which may include: dissolved oxygen levels, microbiological contamination, eutrophication, in-stream erosion and thermal impacts on the receiving stream.
- Integrated design shall qualitatively and quantitatively demonstrate that the proposal meets Level 1 protection requirements, with a target total suspended solids removal of 80%, as outlined in the MOEE Stormwater Management Practices Planning and Design Manual (1994). (EXCEPTION: When Subwatershed Study criteria are in effect).

The Best Management Practices (BMP) selection process shall review all environmental constraints and provide rationale for the selection of alternatives for a specific site. The report is to include a selection matrix describing this process. In all cases, infiltration of stormwater from rooftops and grassed areas by using dry wells, rear yard discharge, infiltration trenches, buffer zones, enhanced grass swales, etc. shall be the first consideration for stormwater quality control within an integrated design.

D(2.2.1) Infiltration

The use of infiltration trenches can be considered on sites where soil conditions are appropriate. These measures can be used to augment water quality measures in areas with sandy soils. Sandy soils typically range in coefficient of permeability from 10-1 cm/second (coarse sand) to 10-5 cm/second (silty sand). Figure 2 shows the potential trench size over a range of sand types and contributing flow area. An oil/grit separator should be used to capture flows for pretreatment prior to entering the infiltration trench.

D(2.2.2) Grassed Swales

The use of grassed swales to provide water quality treatment has limited use, but can be used in conjunction with other methods. Runoff passing through the soil/air interface in the grass can provide water quality treatment. For small flows and low velocities, swales can provide some treatment. The use of perforated pipe with a shallow sand filter will also increase quality treatment. Small dams will also help reduce velocities and promote longer contact time with vegetation. Swales should convey flows with velocity less than 0.5 metres/second during a 25 mm storm event. Swale length is greater than 30 metres.

D(2.2.3) Vegetated Buffers

The use of a vegetated buffer can be considered for small drainage areas (<0.3 hectares) and for flows that are not concentrated. The buffer should have a level flow spreader that distributes the flow over an area (10 metres to 20 metres wide) that ensures a flow depth between 50 and 100 mm during a 10mm 4 hour Chicago storm. For flat slopes the length of the buffer is 10 to 15 metres. For slopes greater than 5% the length of the buffer is 15 to 20 metres.

Dry-weather spill control requirements should be confirmed with the Ministry of the Environment. Spill/Hydrocarbon control will typically be required by the Kawartha Region Conservation Authority or municipality on some types of industrial, institutional and commercial land uses.

D(2.2.4) Oil/Grit Separators

Oil/grit chambers are to be used to augment other measures to be used for water quality treatment and are mandatory on sites where there will be storage of fuels or chemicals. These devices are typically used in conjunction with other treatment measures.

Input on the impacts of stormwater discharges on fisheries habitat may be obtained from the Department of Fisheries and Oceans, Ministry of Natural Resources and the Ministry of Environment to address fisheries habitat impacts and potential mitigation requirements.

D(2.3) Water Quantity Control and Base Flow Maintenance

The Kawartha Region Conservation Authority's overall target for water quantity and base flow maintenance is to match the pre-development hydrologic regime (surface flows and infiltration amounts) with the post-development regime by implementing the following volume and peak flow controls.

In all cases, maximizing undisturbed areas, maximizing pervious surfaces and minimizing directly connected impervious area is the first consideration for quantity control and base flow maintenance.

- Attenuation of all post-development flows to pre-development levels, up to and including the 100-year storm. For industrial, commercial, or institutional sites where parking lot storage is being considered, the 100-year post-development flow will be controlled to the pre-development flow conditions. The return period for the local municipal drainage system will be used to control flows (ie. 2-year, 5-year or 10-year). The release rate will still be established by pre-development conditions regardless of municipal capacity.

- The SCS Type II, Chicago and AES rainfall distributions should be applied to the hydrologic model (along with IDF curve values for the 2, 5, 25, 100-year return periods) and select the event which produces the greatest runoff peaks and volumes. The duration of the storm event should be tailored to the anticipated travel time/time of concentration in the local watershed. Typically for small sites with rapid response times, there should be no longer than a one-hour duration storm event. The longer duration storms are to be utilized only when considering larger watersheds or lumping the proposed site into a larger watershed. Also when evaluating the performance of a wet pond, longer duration events can be considered.
- The Regional Storm should be modeled for conveyance.
- All attempts should be made to maintain or enhance existing (pre-development) infiltration amounts, which are a function of soil type, land-use, vegetation and geology.
- All attempts should be made to maintain the existing drainage pattern(s).
- Potential effects on stream base flow due to increased development must be examined.
- The effects of cumulative impacts, such as changes in land uses and up/down stream impacts must be examined.
- Stormwater discharge should be managed in a way that will not require any off-site requirements for erosion protection or flood control in the receiving stream.
- Preliminary reports must describe the suitability of outlets, the legal right of discharge, and include written copies of any required drainage agreements.
- Retrofitting of existing developments which do not meet current standards will be considered where feasible, and in conjunction with the Ministry of the Environment.

D(2.3.1) Quantity Control – Industrial, Commercial and Institutional Sites

Parking areas where stormwater management volumes are shown to be ponded are to be paved and not to be left as gravel surfaces, which can be easily modified. The required storage is dependent upon the controlled release rate and the percentage imperviousness of the site. Table 2.3 gives typical storage volumes for quantity control for preliminary sizing purposes. These values can be used to determine the viability of a conceptual plan during rezoning inquiries. These values are based on no roof top storage. Prior to final approval a qualified consultant must provide the detailed analysis to establish the required storage for the site.

Table 3 -- Quantity Control Storage Requirements (m3/ha)

% Imperviousness	Release Rate:		
	2 year pre	5 year pre	100 year pre
95	283	274	248
85	250	241	215
75	217	208	182

D(2.3.2) Roof Top Controls

The use of roof top storage can reduce the storage requirements elsewhere on the site. The runoff from the roof can be separated from the remainder of the runoff when designing quality control measures to be implemented onsite.

Roof drain control is to be indicated on the plan, including type of control, number of drains and weirs, release rate per weir and total release rate, volume detained, draindown time (maximum 24 hours) and ponding depth (maximum 150 mm). Drains are not to be located more than 15metres from the edge of the roof and not more than 30metres from the adjacent drains. There must be at least 1 drain for each 900-square metres.

D(2.3.3) Site Grading

Grading shall be designed such that if all mechanical systems fail then the major system/overland flow route will be capable of conveying the flows associated with the 100-year storm. The major system/overland flow route must be clearly indicated upon the plans and noted in the legend. Depths shall not exceed municipal standards or the maximum ponding depths permitted are 0.3metres in drive aisles, 0.5 metres in landscaped areas and 1.0 metre in below grade loading areas.

In situations where site servicing or grading constraints do not permit conveyance of the major overland flows directly to an existing right-of-way or Town easement, the consultant shall undertake the following options:

- Investigate an alternate path in which easements through adjacent properties would have to be obtained.
- Local site storage would be modified to use the local site sewer as the outlet control for the 100-year event taking into account all hydraulic calculations for potential submerged outlets (storage not to exceed previous depths).

D(2.3.4) Outlet Controls

The control used predominantly on site plans is the orifice. The minimum size orifice to be used is a 75 mm diameter opening. The minimum contributing impervious area to the storage location serviced by an orifice is 0.375 hectares. The orifice size, control chamber, and location must be clearly detailed on the plans.

D(2.4) Detention Facilities

On-site detention facilities may be provided for both the major and minor systems (or combined) as required to reduce runoff increases (from all storm events) from post development to pre-development levels and to meet downstream flow constraints.

The flows must be controlled prior to leaving the lands owned by the developer(s) in question.

EXCEPTION: Off-site facilities may be permitted under the direction of a Subwatershed Study or Master Drainage Plan.

Both wet ponds, constructed wetlands, infiltration and batch dry detention facilities may be considered, as defined in the 1994 MOEE document titled "Stormwater Management Practices Planning and Design Manual". The characteristics of the facility are to closely match these planning guidelines. Designers shall provide appropriate reference or rationale when modifying, or improving on these guidelines.

The construction of facilities must be within the developed lands, located outside Natural Hazard Areas, outside wetland boundaries, and located outside the Regional Storm floodplain.

EXCEPTION: Location of Facilities below the Regional Storm floodplain and the floodway will only be considered for two zone or special policy areas after appropriate studies address Public Health and Safety Policies and Natural Heritage Policies.

Detention facilities may be used as sedimentation control during construction if the outlet is altered to allow ponding and settling of sediment particles. Separate basins are preferred. Restoration details, after the construction stage, must be provided if the detention facility is used for sedimentation control. Infiltration facilities shall not be used for sediment control during construction.

A planting plan, prepared by a qualified landscape architect is required for all detention facilities utilizing the 5-zone approach and incorporating native tree, shrub and aquatic plants. The plan is to address water quality and temperature; aesthetics (blending of the facility into the natural and built environment) slope stability and public safety. The preparation of this plan is to be referenced in development agreements and is typically required prior to final clearance of conditions.

All detention facilities shall be delineated as a Block on the Draft Plan and placed in a restrictive zone category [e.g. Environmental Protection (EP)], in the implementing zoning by-law. The purpose of restricting zoning for these facilities is two-fold:

- to reflect a potential hazardous area,
- to ensure the long-term function of the facility.

Maintenance and function of a facility with private ownership shall be provided within and controlled by Site Plan Control.

Detention facilities must include the following:

- An access route for maintenance/emergency vehicles from the roadway to the detention facility.
- Stable, vegetated side slopes under the full range of design conditions including the Regional event.
- Terraced side slope grading for safety, vegetation zones and ease of maintenance.
- An appropriate freeboard above the 100-year storm event.
- An emergency overflow structure capable of safely conveying the Regional Storm in the event the normal outlet does not function properly.
- An operations and maintenance plan.

Detention facilities may include the following:

- Allowance for permanent pool drainage for maintenance
- Maintenance by-pass system at the inlet
- An area designated for on-site sediment storage & de-watering
- Water quality inlets to reduce sediment load and extend facility storage life
- Community access and trail systems

Section E

Erosion and Sediment Control Guidelines

Section E Erosion and Sediment Control Guidelines

E(3.1) Purpose

The purpose of erosion and sediment control is to protect life and property and to minimize adverse impacts on water quality, and the natural environment both internal and external to the site. (The consultant is required to inform the client of all federal, provincial and municipal issues with erosion and sediment control and the requirement for technical expertise).

E(3.2) Objectives

The objectives of an erosion and sediment control plan will be to prevent soil particles first from eroding and then from moving off the development site or impacting natural features within the development.

A plan should follow these principles:

- Fit development to the topography;
- Understand the site's drainage pattern;
- Time and phase development;
- Retain existing vegetation where feasible;
- Re-vegetate or mulch immediately after construction;
- Divert runoff from exposed areas;
- Prepare outlets and conveyance to handle increased runoff;
- Minimize length and steepness of slopes;
- Keep runoff velocity low;
- Trap sediment on site;
- Inspect and maintain measures.

E(3.3) Requirements

Preparation of a strategy to control erosion and sedimentation is always required and the strategy is to be prepared and approved as part of the detailed SWM design submission.

An adequate erosion and sedimentation control plan shall be prepared for each construction project. This consists of three phases:

- 1) during site clearing/grubbing/pre-grading;
- 2) during site servicing and the construction of buildings; and
- 3) post-development erosion control.

These requirements are to be incorporated into contract provisions and drawings.

An adequate plan will consist of a narrative, layout & grading plans, construction details, contract provisions, calculations, designated contacts, restoration/stabilization details and a work schedule. The Kawartha Region Conservation Authority suggests using the "Procedure for Producing an Erosion and Sediment Control Plan" as outlined in the 1997 MOE document entitled "Erosion and Sediment Control Training Manual".

As a minimum, the layout and grading plan shall depict the following:

- 1 metre existing, preliminary and final contours;
- soil characteristics;
- existing vegetation types;
- adjacent and internal areas and properties that are sensitive to erosion and sediment damage, zones of high erosion potential, existing, during and post development drainage patterns and outlets, all specifications and installation procedures, detailed notes, limits of clearing and grading, stockpile locations, and monitoring & maintenance requirements.

All erosion and sedimentation control measures & facilities must be implemented according to the staging outlined in the erosion and sediment control plan (and depicted on the contract drawings), or must be in place prior to any development beginning.

The following sedimentation control parameters are requested:

- use temporary sediment ponds / traps during the grading and construction phases.

The minimum sizing criteria is:

- to detain the runoff from a 25 mm, 2-hour duration rain event (using average intensity) and is to be based on local and up to date Intensity-Duration-Frequency (IDF) information. The length of retention time shall be based on settling a particle size of 0.04 mm. Where grain size analysis shows a significant percent passing < 0.04mm additional measures may be required in consultation with the KRCA and Municipality. (i.e. staging, vegetation and mulching). All temporary ponds must incorporate a permanent pool of 0.6m in depth.
- To convey runoff, all other sediment control techniques and temporary conveyance techniques shall be designed to withstand the runoff from a 15 mm/hour intensity storm. Particles retained shall be based on the exposed soils within the catchment area of the proposed control.

The following erosion control measures are requested:

- development phasing, retain existing vegetation, re-vegetation, cover practices, slope stabilization.

Erosion and Sediment Control Devices

- **Silt Fence**

Silt fence shall consist of T-bars spaced no further than 3.0 metres apart and 1.0 metres high. Fabric can be woven or non-woven material with openings ranging in size from 0.15 mm to 0.25 mm. Fabric can be overlapped at joints by 1.0 metres. Stone filter at the base of the fence is to be considered during frozen ground conditions.

- **Sediment Basin**

- The minimum basin volume shall be 125 cubic metres per hectare of contributing drainage area.
- The surface area shall be designed using a settling velocity of 0.0021 metres/second. ($A = 1.2Q/v_s$, where Q is flow measured in cubic metres per second).
- The basin length to width ratio shall be greater than 2. The basin shall have a maximum side slope of 3:1 and a minimum freeboard of 0.3 metres.
- A 1.8 metre high chain link fence shall be erected along the perimeter of any sediment basin.
- The outlet shall be designed for a minimum 24-hour drawdown.

- **Catchbasin Sediment Trap/Barrier**

Catchbasin sediment traps and barriers can be used for drainage areas up to 2 hectares.

E(3.4) Responsibility

- It is the responsibility of the landowner (usually represented by a designated agent) to implement, monitor and maintain all erosion/sedimentation control structures until a vegetative cover has become established (after construction). This would include field inspection of all structures before a predicted storm event and after each rainfall event and follow-up with any required maintenance.
- A representative from the Authority may inspect erosion control measures prior to any on-site grading (if this has been outlined on your Kawartha Region Conservation Authority Fill, Construction, and Alteration to Waterways Permit). 24-hour notification should suffice.
- It is the responsibility of the project, site or construction supervisor to provide a performance report on the erosion and sediment control strategy after rainfalls in excess of 10 mm in any 24 hour period, or if any problems develop on the site. This is to include the actions taken to solve any problems. Or if you are outside fill-lines and are not working in water, please follow municipal reporting procedures.

When an approved erosion and sediment control plan is found to be inadequate or the plan as implemented appears to be inadequate, modifications are expected.

Section F

Glossary of Terms

Glossary of Terms

Accessory Building: a subordinate non-habitable building on the same lot as the main building to which it is subordinate.

Agricultural Uses: means the growing of crops, including the growing of crops, including nursery and horticultural crops, raising of livestock and other animals for food, or fur, including poultry or fish; aquaculture; agroforestry; maple syrup production; and associated on-farm buildings and structures.

Alteration of a Watercourse: an alteration of a watercourse is the straightening, piping, changing, diverting or interfering in any way with the existing channel of a river, creek, stream or watercourse.

Areas of Natural and Scientific Interest (ANSI): areas of land and water containing natural landscapes or features that have values related to protection, natural heritage appreciation, scientific study, or education. Depending on the features of particular areas, they may be referred to as life science or earth science sites. These areas vary in their level of significance and their vulnerability to environmental impacts.

Authority: in this document means the Kawartha Region Conservation Authority.

Baseflow: means low flow conditions of a watercourse, sustained by groundwater or input from a wetland.

BMP: means Best Management Practice.

Conservation Authority: means a body corporate formed under the Conservation Authorities Act R.S.O. 1990, Chapter 27 (or its predecessors) at the request of the municipalities.

Conservation of Land: the management of land resources (soil and related plant life) such that its environmental integrity is not adversely affected (i.e. The integrity of valley systems).

Construct/Construction: to do anything in the erection, installation or extension of a building or structure and includes the installation of a building unit fabricated or moved from another location.

Conveyance: means the directing of water flow in a certain pattern or within a structure, device or area.

Cumulative Effects: the combined effects of all activities in an area over time and the incremental effects associated with individual projects in an area over time.

Cut and Fill Operation: means a determination of the volume of fill which is to be removed from a property in order to compensate for an equal volume of fill which is to be placed within an area susceptible to flooding, in order to flood-proof a building or access road.

Detention Facility: means a device, structure or technique with the ability to hold or dissipate a quantity of stormwater

Development: is defined as,

- (a) the construction, reconstruction, erection or placing of a building or structure of any kind,
- (b) any change to a building or structure that would have the effect of altering the use or potential use of the building or structure, increasing the size of the building or structure or increasing the number of dwelling units in the building or structure,
- (c) site grading,
- (d) the temporary or permanent placing, dumping or removal of any material, originating on the site or elsewhere.

DFO: means the Federal Department of Fisheries and Oceans Canada.

Document General: means a document to be registered on the Title of a property, which is subject to flooding or erosion. The Document contains only factual information, and is registered on Title at a Land Registry Office to advise potential purchasers of the concerns of the Conservation Authority.

Dry-well: means a soak-away pit, infiltration pit, a device to capture rainfall in an underground rock pit and release it to the groundwater by infiltration.

Ecosystem: an ecosystem consists of the air, land, water and living organisms, including humans, and the interaction among them. It includes the community of living things and the complex of physical and chemical factors forming the environment.

Enforcement Officer: means a person appointed by the Authority's Board of Directors to enforce the Fill, Construction and Alteration to Waterways Regulation (Ontario Regulation 33/94).

Environmental Impact Study: a study prepared in accordance with established procedures to identify and assess the impacts of development on a particular significant natural heritage feature.

Erosion Hazard: means the loss of land, due to human or natural processes, that poses a threat to life and property. The erosion hazard limit is determined using the 100-year erosion rate (the average annual rate of recession extended over a hundred-year time span), an average allowance for slope stability, and an erosion allowance.

Erosion and Sediment Control: means human intervention to prevent environmental damage attributable to the detachment, transport and deposition of soil and related substances; related to water action associated with rainfall and surface runoff.

Fill: earth, sand, gravel, rubble, rubbish, garbage, or any other material whether similar to or different from any of the aforementioned materials, whether originating on the site or elsewhere, used or capable of being used to raise, lower, or in any way affect the contours of the ground.

Fill, Construction and Alteration to Waterways Regulation: means a regulation passed pursuant to Section 28 of the Conservation Authorities Act, R.S.O. 1990 whereby a conservation authority may regulate:

- the straightening, changing, diverting or interfering in any way with an existing channel of a river creek, stream or watercourse;
- development if in the opinion of the Authority, the control of flooding, erosion, dynamic beaches or pollution or the conservation of land may be affected by the development.

Fish Habitat: includes spawning grounds and nursery, rearing, food supply and migration areas on which fish depend directly and indirectly to carry out their life processes.

Finished Floor: the main floor within a dwelling.

Floodplain: the area, usually low lands adjoining a watercourse, which has been or may be subject to flooding hazards.

Flood: Means a temporary rise in the water level resulting in the inundation of areas adjacent to a watercourse not ordinarily covered by water.

Flood fringe: the outer portion of the floodplain between the floodway and the limit of the regulatory flood. Flood depths and velocities are generally less severe in the flood fringe than those experienced in the floodway.

Flood-proofing: a combination of structural changes and/or adjustments incorporated into the basic design and/or construction or alteration of individual buildings, structures or properties subject to flooding so as to reduce or eliminate flood damages including the incorporation of safe access provisions. Total protection of buildings or structures cannot always be assured.

Floodway: the channel of a watercourse and that inner portion of the floodplain where flood depths and velocities are generally higher than those experienced in the flood fringe. The floodway represents that area required for the safe passage of flood flow and/or that area where flood depths and/or velocities are considered to be such that they pose a potential threat to life and/or property damages.

Flood Storage: means the area that is occupied by floodwaters during a flood event.

Groundwater: water located below the surface of the ground.

Gross Floor Area: means the total area of all floors measured between the outside surfaces of exterior walls and includes a basement.

Habitable: that portion of a building containing rooms or spaces required and intended for overnight occupancy and associated living space, and includes those portions which contain facilities for storage, heating, air-conditioning, electrical, hot water supplies, which are necessary to maintain the habitable condition.

Hearing: means a hearing held under Section 28(12) of the Conservation Authorities Act. This hearing is held before the Authority's Board of Directors, acting as a tribunal, when a proposed application does not comply with the Authority's Watershed Development Policies. The applicant is in attendance and has the opportunity to make a presentation to explain why a permit should be granted for the work that he is proposing to undertake. The Tribunal may grant or refuse permission based upon the information presented.

High Water Mark: the mark made by the action of water under natural conditions on the shore or bank of a body of water, which action has been so common and usual and so long continued that it has created a difference between the character of the vegetation or soil on one side of the mark and the character of the vegetation or soil on the other side of the mark.

Hydrologic cycle: the cycle of water movement from the atmosphere to the earth and back to the atmosphere through various stages or processes, as precipitation, interception, runoff, infiltration, percolation, storage, evaporation and transpiration.

IDF: means intensity-duration-frequency.

Infilling: means a situation where a building is to be constructed on an undeveloped lot of record and it located between two existing and developed lots which is separated by a distance of not more than 30 metres.

Landscaping: means the placement of fill for lawns, gardens or flowerbeds.

Lot of Record: means a lot that has been severed from a larger parcel, which has not yet been developed.

Lowest Opening: the elevation of the lowest opening to a building (window, door, and dryer vent in relation to the elevation of final grade of the ground surface.

Mitigation: means the design and maintenance of appropriate erosion and sediment control during the period that any development activity is being undertaken, to make less severe, or to alleviate or abate negative impacts.

MOE: means the Ontario Ministry of the Environment.

Natural Heritage Features: means areas, which are impacted by flooding, erosion, dynamic beaches, unstable soils and unstable bedrock.

Notwithstanding Clause: means a policy of the Conservation Authority's Watershed Development Policies, which enables the Board of Directors to make a decision when circumstances that complete compliance is not possible for a proposal, but where it can be demonstrated that compliance is either not necessary or in appropriate.

One Hundred Year Flood (1:100 Year): that flood, based on an analysis of precipitation, snow melt or a combination thereof, having a return period of 100 years on average, or having a 1% chance of occurring or being exceeded in any given year.

Permit: means a written approval under the Conservation Authority's Fill, Construction and Alteration to waterways Regulation.

Pollution: any deleterious physical substance or other contaminant that has the potential to be generated by development in an area which a regulation made under Section 28(1) c of the Conservation Authorities Act applies.

Professional Engineer: a member in good standing of the Association of Professional Engineers of Ontario.

Provincially Significant Wetland: a class 1, 2 or 3 wetland as defined by the Ministry of Natural Resources according to "An Evaluation System for Wetlands of Southern Ontario South of the Precambrian Shield", as amended from time to time.

Qualitative: is a description of the relative nature and attributes of things showing the degree of excellence.

Ratification: means a process whereby the Board of Directors of the Kawartha Region Conservation Authority ratifies or recognizes and endorses those permits previously issued by the Authority's Enforcement Officers.

Regulatory Storm: means the flood event that is calculated to occur if the Regional Storm event was centered over any one particular watershed. If the Regional Storm or more severe storm has occurred, then the regulatory flood is an observed flood level. The 1:100 flood is the regulatory flood if it is greater than a flood that produced by the regional storm.

Safe Access: defined by the Kawartha Region conservation Authority as 0.3 metres (1 foot) of flooding or less.

Site Alteration: activities such as fill, grading and excavation that would change the landform and natural vegetative characteristics of a site.

Stormwater: means water that runs off the land or infiltrates into shallow aquifers. The original source of the water was a rainfall event.

Stormwater Management: means a planned set of public policies and activities undertaken to regulate stormwater runoff under specified conditions within an urbanized drainage system. In general, stormwater management is primarily concerned with limiting future flood damages and environmental impacts resulting from development.

Subwatershed: means the land drained by an individual tributary to the main watercourse.

Violation Notice: means a notice sent to a person or company who have undertaken work requiring a permit under the Conservation Authority's Fill, Construction and Alteration to Waterways Regulation (Ontario Regulation 33/94), prior to obtaining written permission to undertake the work.

Watercourse: a watercourse is flowing water, though not necessarily continuous, within a defined channel and with a bed or banks and usually discharges itself into some other watercourse or body of water.

Watershed: all lands drained by a river or stream and its tributaries.

Watershed Planning: a form of holistic planning that integrates watershed ecosystem resource management and land use planning.

Water Quality: means the chemical, physical, and biological condition of water related to beneficial use.

Wetland: means land that,

- (a) is seasonally or permanently covered by shallow water or has a water table close to or at its surface,
- (b) directly contributes to the hydrological function of a watershed through connection with a surface watercourse,
- (c) has hydric soils, the formation of which has been caused by the presence of abundant water, and
- (d) has vegetation dominated by hydrophytic plants or water tolerant plants, the dominance of which has been favored by the presence of abundant water,

but does not include periodically soaked or wet land that is used for agricultural purposes and no longer exhibits a wetland characteristic referred to in clause (c) or (d).

For More Information Contact



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