CITY OF NANAIMO
THE HARBOUR CITY

COUNCIL POLICY

RCRS Secondary:	GOV-02	**Effective Date:**	1997-JUL-07 COUNCIL
Policy Number:	COU-130	**Amendment Date/s:**	1998-NOV-03 COUNCIL
Title:	Stormwater Management Policy	**Repeal Date:**	
Department:	Engineering and Public Works	**Approval Date:**	1997-JUL-07 COUNCIL

PURPOSE:
To endorse the priority policy area work plans for the Advisory Committee on Environment.

DEFINITIONS
N/A

SCOPE
N/A

POLICY
Council endorsed the priority policy areas for the Advisory Committee on Environment, as laid out in the staff report for the following areas:

- Stormwater Management
- Environmentally Sensitive Areas (ESA)
- Tree Protection Bylaw
- Steep Slope Development Guidelines

COUNCIL
1997-JUL-07

Council adopted the revised goals, objectives and policies for stormwater management proposed in the report (Council - 1998-NOV-03) as follows:

STORMWATER MANAGEMENT IN NANAIMO

Revised Goals, Objectives and Policies

16 November, 1998

The following are revised Goals, Objectives and Policies for stormwater management in Nanaimo proposed by City Council's Advisory Committee on the Environment (ACE).

Objectives and policies for stormwater management were initially adopted by City Council in 1981 in response to drainage and flooding problems. (For reference, the 1981 policies are appended to this document.) They were not substantially reviewed or revised until 1996, when Council adopted new goals and objectives that were recommended by its Aquatic Habitat Protection Committee (AHPC). The new goals and objectives attempted to move away from a "big pipe" approach to stormwater management, to one that better reflects the environmental implications of managing stormwater.

ACE has continued the review of the City's stormwater management policies. In this document, the Committee proposes a slight modification to the 1996 goal statements, and then presents a new series of policies to replace the 1981 policies. ACE has carried out this review in close collaboration with staff from the Strategic Planning and Engineering Divisions, Development Services Dept. and Public Works Dept.

Once adopted, these consolidated goals, objectives and policies for stormwater management can form the basis for revising the City's Engineering Standards and Specifications and master drainage plans.

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GOALS

A slight modification to the 2 goals originally adopted by Council in 1996 was made, by separating Goal I into two goals to clarify the dual priorities of flood prevention and habitat protection.

I. To protect Nanaimo's watercourses, aquatic habitat and ground water resources for their fish, wildlife and greenway values.

II. To reduce the risk to life and property associated with flooding.

III. To provide for the use of a wide range of stormwater management methods and practices in achieving a balance among environmental, economic and social objectives.

OBJECTIVES

No significant changes are proposed to the Objectives adopted in 1996.

1. Plan stormwater systems on a watershed basis, so that impacts on water quantity, quality and temperature, flood prevention, and management costs can be considered collectively for a given watercourse system.
2. Match post-development flows to pre-development flows at the receiving watercourses.
3. Maintain current ground water levels and recharge systems where feasible.
4. Minimize or eliminate the introduction of contaminants into stormwater, so as to help ensure that the water quality in Nanaimo's watercourses is sufficient to support fish and aquatic life.
5. Ensure effective sediment and erosion control measures are used in all new development and redevelopment.
6. Promote the use of integrated methods of stormwater management that match site-specific conditions and balance environmental, economic and social considerations.
7. Address concerns about flooding by ensuring that land use plans and approvals, as well as stormwater management plans and measures, reduce the risk to life and property associated with flooding.
8. Establish design standards for municipal drainage systems based on criteria that result in construction and maintenance at reasonable cost and efficient use of land and resources, while meeting other objectives regarding flood prevention and environmental protection.
9. Conduct maintenance of stormwater facilities in a controlled and environmentally sensitive way.
10. Employ the principles and practices of the federal/provincial "Land Development Guidelines for Protection of Aquatic Habitat", the provincial "Urban Runoff Water Quality Guidelines" and other applicable guidelines as they are released.

POLICIES

Preamble

The 1981 policies called for several bylaws to be established. This preamble recognizes the existence of bylaws and guidelines created since then to effect the 1981 policies.

Stormwater management policies were implemented by the following bylaws and guidelines:

- Bylaw 6000 "Plan Nanaimo"; specifically section 4.7 "Stormwater Services" and Section 8.2.23 Development Permit Area No. 23 Watercourses.
- Bylaw 4000 "Zoning Bylaw": specifically sections regarding the establishment of watercourses and leave strips.
- Bylaw 5105 "Flood Prevention Bylaw 1996".
- Bylaw 3260 "Subdivision Control Bylaw".
- Bylaw 3808 "Storm Sewer Regulation and Charge Bylaw".
- Bylaw 1747 "Soil Removal and Depositing Regulation Bylaw".
- Bylaw 3220 "Building Bylaw".
- City of Nanaimo Manual of Engineering Standards and Specifications.
- Geotechnical Review Guidelines adopted under Bylaw 6000 Plan Nanaimo.
- City of Nanaimo Erosion and Sediment Control guidelines.
- "Land Development Guidelines for the Protection of Aquatic Habitat" by Department of Fisheries and Oceans and Ministry of Environment, Lands and Parks (the Land Development Guidelines).

Watercourse Protection

The following replaces policy 1 of the 1981 policies, and refines and updates watercourse protection measures. It supports Goal I and Objective 10.

1. Natural watercourses shall be protected and managed as open streams.

1.1 Watercourses to be protected are identified in Schedule B of Bylaw 6000 and Schedule G of Bylaw 4000.

1.2 For these watercourses, stormwater management plans and actions shall sustain fish populations and protect aquatic habitat by: maintaining minimum flows; managing peak flows in terms of both volume and recurrence interval; and maintaining or improving on water quality.

1.3 These watercourses shall not be placed in conduits, pipes or canals except under special circumstances (such as high flood hazard).

1.4 Crossings of these watercourse shall be by bridge or culvert, in accordance with the classification system and as described in the Land Development Guidelines.

1.5 Culverts in fish-bearing watercourses shall be designed to allow fish access and habitat protection as provided in section 6 of the Land Development Guidelines, as well as consideration of backwater and flooding and debris/trash.

1.6 Utility crossings shall not obstruct watercourses.

1.7 Fencing shall be required where needed to protect watercourses from livestock.

1.8 Construction of in-stream stormwater detention is acceptable where it would enhance fish, bird or other wildlife habitat. Otherwise, off-stream detention is preferred.

1.9 Erosion and sedimentation from grading, construction and other development activities shall be avoided or controlled in accordance with the City's Erosion and Sediment Control Guidelines.

1.10 Guidelines for stream bank erosion control and rehabilitation shall be developed.

The following replaces 1981 policy 4. It reflects current policy of the Ministry of Environment, Lands and Parks regarding return of watercourse beds to the Crown. It also supports Objective 7.

2. To restrict liability and cost to the City, natural watercourses shall remain as Crown or private property.

2.1 Section 588.2 of the Municipal Act provides the City the means to obtain access through private property via statutory right-of-way for managing stormwater flows. If necessary, the City shall exercise its rights as provided in the Municipal Act to maintain the proper flow of water.

2.2 The beds of watercourses shall be returned to the Crown as the opportunity arises through new development or redevelopment.

Water Quality in Stormwater

The following replaces 1981 policy 9. It reflects the growing awareness that stormwater needs to be managed for water quality as well as volume. In so doing, the policy emphasizes better planning and site design as key to stormwater management. The policy supports objective #4.

3. To maintain good water quality in receiving waters, the discharge of pollutants to the stormwater system shall be regulated under the Stormwater Regulation and Charge Bylaw.

3.1 Policies, guidelines and/or regulations shall be developed to support land use planning and site design that recognize and provide for stormwater quality management, using a range of methods that emphasize ground infiltration (see policy #6).

3.2 Policies, guidelines and/or regulations shall be developed for the installation and maintenance of oil/water separation devices where these are needed to supplement site design measures.

3.3 Policies, guidelines and/or regulations shall be developed for the control of erosion and sedimentation during and following construction.

3.4 Policies and procedures for the design and maintenance of City stormwater facilities shall be reviewed to ensure they support improved water quality, taking into account the watercourse classification system identified in policy 1.

Regulation of Development – General

The following replaces 1981 policies 2 and 3. The intent of the 1981 policies was to propose a regulatory regime for development along watercourses. Since that time, bylaw changes have been made which address most of the proposals in those policies. This revised policy reflects the current regime, and picks up aspects of the former policies that are still relevant.

4. Development along watercourses shall be regulated to protect aquatic and riparian habitat and to maintain flow capacity.

4.1 Under the Flood Prevention Bylaw, Watercourse Protection Areas are established along watercourses within which existing developments and new development activities shall be regulated to prevent the fouling, obstruction or impeding of water flow in these watercourses.

4.2 Under the Official Community Plan, Watercourse Development Permit Area 23 (DPA #23) is established which encompasses watercourses and their associated leave strips. Within this Development Permit Area, all development activities shall be regulated to prevent, mitigate or compensate for impacts to aquatic habitat.

4.3 Under the Zoning Bylaw, buildings and structures shall be set back from watercourses as specified in Schedule G.

4.4 The Subdivision Control Bylaw shall encourage a range of stormwater and drainage management options in new subdivisions, taking long-term maintenance requirements into account.

4.5 The Storm Sewer Regulation and Charge Bylaw establishes the City's storm sewer system, and shall regulate the nature of connections and discharges to that system.

4.6 Excavation, removal and disposal of soil, gravel, etc. near watercourses shall be regulated under DPA #23 in areas along watercourses, and by the Soil Removal and Depositing Regulation Bylaw in other areas of the City.

4.7 In-stream works shall conform with the *Water Act*. Applications for such works shall be referred to the Ministry of Environment, Lands and Parks for notification or approval under that Act.

Stormwater Management in New Development

The following replace 1981 policies 7 and 8. They support Objectives 2, 3, 6 and 8 by aiming to reduce the impacts of post-development stormwater flows, and placing greater emphasis on ground infiltration of stormwater.

5. Runoff due to new development shall be limited according to the capacity and sensitivity of the downstream drainage system.

5.1 For new development that drains directly into fish-bearing watercourses, post-development peak flows from the development site shall be equal to or less than pre-development conditions for all peak flows up to and including the 10-year storm.

5.2 For new development upland from fish-bearing watercourses, post-development stormwater flows shall be designed to minimize impacts on the downstream receiving watercourse with respect to seasonal flow patterns, temperature, water quality, sediment, bank erosion, and any other characteristics that upland development may affect.

5.3 Accepted methods for calculating flows shall be defined in the City's Manual of Engineering Standards and Specifications.

5.4 Storage facilities (detention/retention) shall be constructed as required to meet these policies.

5.5 Site grading plans for new development shall be required to show pre- and post-grading drainage patterns. These plans shall ensure that drainage from one future lot does not impact negatively on neighbouring lots or on other portions of the drainage basin. Specifications for grading plans shall be defined in the City's Engineering Standards and Specifications.

6. The stormwater system for new development may consist of surface and underground drainage structures, or combinations thereof.

6.1 Underground storm sewers shall be constructed primarily to handle the minor system (5 year peak flow or less).

6.2 All lots shall have a gravity connection to the stormwater system. Special cases where there is no stormwater system, or no available connection to a stormwater system for every lot, shall be reviewed on an individual basis.

7. In general, new development shall use surface stormwater methods and ground infiltration measures as much as possible to help maintain good water quality, manage water volumes, and recharge groundwater resources.

7.1 Land use and site design shall optimize ground infiltration by minimizing impervious surfaces, using vegetated areas to receive surface runoff, and designing underground systems that encourage ground infiltration.

7.2 While ground infiltration is encouraged, it shall not be applied in hydraulic design to reduce the runoff coefficients normally applied to different types of surfaces.

7.3 The City shall develop criteria and/or identify geographic areas where: a) the replacement of existing roadside ditches with underground pipe is not desirable; and b) full frontage stormwater works (curb, gutter and storm sewer) in new development are not necessary or desirable. Such criteria shall consider maintenance costs and efficiency, sensitivity of receiving water, public safety and the nature of the surrounding land uses.

Stormwater Storage Facilities

The following policies replace 1981 policy 6b. They reflect current policy regarding maintenance responsibilities for single-family storage facilities, and refine circumstances where temporary detention facilities are acceptable. They support objectives 2,3 and 6.

8. Stormwater storage (detention or retention) in residential (single family dwellings) development shall be provided as required to meet the preceding policies.

8.1 Permanent storage facilities may be surface or underground. Roof storage may be used but will not be applied in the hydraulic design for the site.

8.2 The location, number and size of storage facilities and the release rate from these facilities shall be determined from the applicable drainage basin plans.

8.3 In general, storage facilities on a single lot will be maintained by the lot owner.

8.4 Where more than one lot is served by a storage facility, maintenance requirements and responsibilities shall be determined by the City on a case-by-case basis.

9. Stormwater storage shall be provided in new multi-family, commercial, industrial, institutional and other corporate developments as required to meet the preceding policies.

9.1 Permanent storage facilities may be surface or underground. Roof storage may be used but will not be applied in the hydraulic design for the site.

9.2 Permanent storage facilities may be privately or municipally owned and maintained.

9.3 Private systems shall be maintained by the property owner(s). Under the Storm Sewer Regulation and Charge Bylaw, the City has the authority to ensure that facilities are properly maintained via penalties, bonding, inspection, or ability to carry out maintenance and charge back costs.

9.4 Private property owners shall indemnify the City from liability arising out of private facilities.

10. Where land developments occur in advance of completed basin plans or facilities, and where existing facilities are inadequate to handle additional stormwater flows, the City will consider temporary storage facilities on an individual basis. Maintenance charges for temporary storage facilities will be established on an individual basis.

10.1 Small subdivisions of four lots or less are authorized to install private storm water detention facilities if the following conditions exist:

- stormwater facilities downstream of the subdivision are inadequate to handle the additional runoff from the subdivision.
- the subdivision is clearly infilling an existing area.
- circumstances to resolve the downstream drainage basin concerns are clearly beyond the control of the subdivider, i.e.; unreasonable costs, beyond the subdivider's control to remedy, and/or upgrading of facilities is at least 10 years in the future.

Integrated Stormwater Management (Drainage Basin) Plans

The following replaces 1981 policies 5, 6 and 10, combining policies that relate to stormwater (drainage) management plans under one heading. These policies acknowledge the existence of drainage plans developed since 1981 but also the need to review these plans in light of the revised policies, and to develop new plans for areas subject to development pressure. The term "integrated" refers to combining drainage control with watercourse protection by looking at a watershed (drainage basin) as a whole.

11. Stormwater management/drainage basin plans shall be reviewed (where they already exist) or established (where they do not) for watersheds that are subject to existing or future development, taking into account the preceding goals, objectives and policies for stormwater management.

12. A stormwater management plan shall also reflect the specific objectives of the community for the watershed in question.

12.1 Such objectives may include (but not be limited to):

- Flood prevention needs of the drainage area.
- protection, restoration and potential enhancement of fish populations, if the receiving watercourse is fish-bearing.
- protection of other biological, open space, aesthetic and educational values.

12.2 Plans may incorporate targets and measures appropriate to meeting the stated goals and objectives, such as: limits on impervious surface area; mitigation of hydrological impacts; protection of riparian corridors; restoration of instream or riparian habitats; and improvements to water quality.

13. Stormwater management plans shall analyze and provide for major and minor flow routing and storage facilities in each watershed.

13.1 The plans shall examine existing City systems, watercourse flows (volumes and timing), natural detention areas, aquatic habitat values associated with receiving waters, existing routing and collection systems, etc.

13.2 Stormwater management plans shall define generalized flow patterns, including the hydraulic grade line (HGL: reflects the level to which stormwater may rise in an open channel or the pressure exerted by stormwater within a pipe or conduit) and the floodplain for minor (5-25 year) and major (25-100 year) storm flows.

13.3 Minor systems shall consist of underground conduits, manholes, open channels, watercourses, etc. to handle peak flows from a 5-year to 25-year return period storm, and meet the design criteria specified in the City's Engineering Standards and Specifications.

13.4 Major systems shall consist of overland flood paths, roadways, watercourses, etc. to handle design flows above minor systems up to the 100-year return period storm, and meet the design criteria specified in the Engineering Standards and Specifications.

13.5 The plans shall call for major flow routes to be initially and periodically "field checked" to ensure that such routes continue to direct flood volumes to appropriate receiving areas and do not endanger life or property.

13.6 Rainfall and runoff design criteria used to determine storm return periods shall be established in the Engineering Standards and Specifications, and shall be reviewed and revised as required.

14. A method for assessing the relative significance and sensitivity of watercourses in the city shall be developed.

14.1 The assessment method may be based on: the current status of the watershed with respect to development, impervious surface and riparian vegetation; the relative significance of the watercourse as fish and aquatic habitat (existing or potential); and the community "greenway" value (existing or potential) associated with the watercourse.

14.2 The assessment may assist with prioritizing stormwater planning and facility development, and determining appropriate levels of watercourse protection during development, as an interim measure until integrated stormwater management plans are in place.

Watercourse Restoration

15. In the course of planning, development or redevelopment of stormwater systems, opportunities to restore watercourses and aquatic habitat that were damaged in the past will be considered.

15.1 The City may partner with other government agencies and non-governmental organizations to identify and implement restoration activities.

EVENING COUNCIL

1998-NOV-23