

**City of Ellsworth
Chapter 56
Unified Development Ordinance**

**Article 10
Stormwater Management
Design and Construction Standards**



*Adopted : March 16, 2009 - effective May 7, 2009
Amended August 17, 2009
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1001 Purpose and Applicability

- 1001.1 **Purpose:** The purpose of this article is to better manage land development in order to protect, maintain, and enhance the public health, safety, and general welfare of the citizens of Ellsworth by establishing requirements and procedures to control the adverse impacts associated with stormwater runoff.
- 1001.2 **Applicability:** This Article shall apply to projects requiring Planning Board Review and to projects located in the Business Park Zoning District
- 1001.3 **Interpretation:** Nothing in this Article shall be construed to prevent the construction of stormwater management infrastructure which meet higher standards or use improved methods or materials of equivalents or higher quality.

1002 Authority, Administration and Legal Provisions

- 1002.1 **Authority:** This Article is enacted pursuant to 30-A M.R.S.A., Section 3001 Et. Seq.
- 1002.2 **Administration:** This Article shall be administered in general by the Planning Board or the Code Enforcement Officer, referred herein as *the Administrator*, and as described below:
- A. By the Planning Board for projects requiring Planning Board Approval per City of Ellsworth Code of Ordinance, Chapters 19, Land Use Ordinance and 28 Subdivision, and by the City Planner as specifically authorized in this Article.

The City Planner and its designee serve in advisory capacity to the Planning Board and are responsible to provide guidance to the applicant whose project requires Planning Board Review.
 - B. By the Code Enforcement Officer for projects requiring Code Enforcement Officer approval per Chapter 19 – Land Use Ordinance, Business Park Zoning District.
 - C. All enforcement of system construction shall be the responsibility of the Code Enforcement Officer.

- 1002.3 **Conflicts with Other Codes or Ordinances.** Whenever the requirements of this Article are in conflict with the requirements of any other lawfully adopted rule, regulation, ordinance, deed restriction or covenant, the more restrictive requirements shall govern.
- 1002.4 **Validity and Severability.** If any section, subsection, clause or phrase of this Article shall be found to be invalid or unconstitutional, such invalidity shall not affect the remaining provisions of this Article and to that end the provisions of this Article are hereby declared to be severable.
- 1002.5 **Penalties for Violation.** In accordance with Title 30-A M.R.S.A. Section 4452, any person, including but not limited to a landowner, a landowner's agent or a contractor, violating any provision of this ordinance shall, upon conviction, be fined not less than \$100.00 or more than \$2,500.00 for each such offense. Each offense shall constitute a separate offense for each day the violation occurs. Any violation of this Article shall be deemed to be a nuisance.
- 1002.6 **Remedies.** If any stormwater management system is erected, constructed, reconstructed, altered, repaired, converted, or maintained in violation of this Article, the Administrator or any other person who would be damaged by such violation, in addition to other remedies, may seek injunctive or any other appropriate relief in a civil proceeding.
- 1002.7 **Appeals.** Refer to City of Ellsworth Code of Ordinance, Chapter 19 - Land Use Ordinance, Article VII for appeals procedures.
- 1002.8 **Amendments.** Refer to and use City of Ellsworth Code of Ordinance, Chapter 19 – Land Use Ordinance, Article VIII Amendment Procedures for Major Conditional Use projects and Chapter 28 – Subdivision, Article XVI Appeals for subdivision projects.
- 1002.9 **Performance Guarantee:** Performance guarantees including surety bonds, money, or letters of credit may be required by the City Manager, the City Council, of the Planning Board in an amount sufficient to cover the cost of all or any of the improvements.
- 1002.10 **Professional/Peer Review:**
- A. **Request by City Planner:** When, in its advisory capacity to the Planning Board, the City Planner determines that the Ellsworth Technical Review Team does not have the expertise to ensure compliance with this article, the City Planner may ask the applicant for a peer review. The applicant may comply with the request or decide to ask for a determination by the Planning Board.
 - B. **Request by the Planning Board:** When the Planning Board determines that it and/or the Ellsworth Technical Review Team does not have the expertise to ensure compliance with this article it may require a peer review.
 - C. **Request by Code Enforcement Officer:** When the Code Enforcement Officer determines that s/he does not have the expertise to ensure compliance with this article it may require a peer review.

- D. Hiring of Expert Consultant for Peer Review: Per the above sub-sections A through C, the City may choose to hire an expert consultant to review any submission of an application. The consultant shall report as to the compliance or non-compliance with this Article, and report, if applicable, of procedures which will result in compliance. The selected consultant shall estimate the cost of such review and the applicant shall deposit with the City the full estimated cost, which the City shall place in an escrow account. The City shall pay the consultant from the escrow account and reimburse the applicant if funds remain after payments are completed. To be selected, the consultant shall be fully qualified to provide the required information and shall be mutually acceptable to the Administrator or the City Planner and the applicant.
- E. Hiring of Expert, Request for Additional Studies: Only the Planning Board may require the applicant to undertake any additional study, which it deems reasonable and necessary to ensure that the requirements of this Article are met. The costs of all such studies shall be borne by the applicant.

1003Plan Submittals:

- 1003.1 **Documents**. The stormwater management system shall be presented in a narrative and on site plans showing at a minimum:
- A. A narrative describing the details of how the stormwater will be managed.
 - B. The contour lines shown on the plan shall be at an interval of no more than 2 feet.
 - C. For the Basic Standards, refer to the Maine Department of Environmental Protection Chapter 500, Section 8.C and provide submittal for both the erosion and sedimentation control plan and the inspection and maintenance plan.
 - D. For the General Standards, refer to the Maine Department of Environmental Protection Chapter 500, Section 8.D with the exception of Section 8.D.(5).
 - E. For the Phosphorus Standards, refer to the Maine Department of Environmental Protection Chapter 500, Section 8.D with the exception of Section 8.D.(3).
 - F. For the Flooding Standards, provide:
 - i. Pre- and post-development sub-catchments, time of concentration lines, general water flow lines and ground cover.
 - ii. Show all existing and proposed culverts, swales, catch basins, detention or retention area and conveyance devices.
 - iii. Site specific Best Management Practices (BMP's) to be used for the project.
 - G. A stormwater management system maintenance plan and referring note stated on the plan, as well as a Copy of the Declaration and Covenants for any homeowners association charged with the long-term maintenance of the stormwater system.

- H. Any related State and Federal permits or permit application.
- I. A copy of the Notice of Intent for Construction Activity filled out and submitted to the MDEP.

1003.2 **Required Submittal Copies:**

- A. **CEO-approved project:** The applicant shall submit two copies of all material to the Code Enforcement Officer.
- B. **Planning Board-approved project:** The applicant shall submit copies of all material to the City Planner or designees as described below:
 - i. Thirteen (13) copies of the following materials:
 - a) The stormwater management system plan and narrative per this Article.
 - b) Pre- and post-development conditions and drainage diagrams.
 - c) Documentation of application for all related State and/or Federal permits.
 - d) A summary of the stormwater design calculations.
 - ii. Three (3) copies of the stormwater calculations and any State or Federal approvals.
 - iii. The City Planner reserves the right to request more copies as the need may arise.

1004 Stormwater Management Design Standards

1004.1 **Stormwater Management:** Adequate provision shall be made for disposal of all stormwater generated, and any drained groundwater through a management system of swales, culverts, under-drains, buffers, storm drains, etc. The stormwater management system shall be designed to conduct stormwater flows to existing drainageways. The intent of this article is for all stormwater management systems to meet the following objectives: effective pollutant removal; cooling; channel protection; flood control.

Where a street or site is traversed by a stream, river, or surface water drainageway, or where the Administrator determines that surface water runoff to be created should be controlled, there shall be provided easements or drainage rights-of-way with swales, culverts, catch basins or other means of channeling surface water.

1004.2 **Professional Design:** Stormwater management plans and systems shall be designed by an engineer registered in the State of Maine.

Design Criteria:

A. **All stormwater management systems** shall be designed consistent with M.R.S.A 38 § 420-C and 420-D and the most recent version of the Maine Department of Environmental Protection Stormwater Management Rules (Chapters 500 and 502) and with the following volumes: *Volume I: Stormwater Management Manual*, *Volume II: Phosphorus Control in Lake Watershed: A Technical Guide to Evaluating New Development*; and *Volume III: BMPs Technical Design Manual* as specified below with the exception Chapter 500 Flooding Standards.

B. **The City of Ellsworth Flooding Standard** requires post-development runoff locations and types to provide the same or less of an impact as those existing in the pre-development condition. Post-development discharge points from a property shall be in the same general location and be of the same type (i.e.: sheet flow, shallow concentrated, etc) as the pre-development discharge locations and types or create an improvement to existing conditions. The Flooding Standards require a stormwater management plan designed to limit peak flow to predevelopment levels for the 2-year and the 25-year, 24-hour duration, storm frequencies, based on the most recent rainfall data for Hancock County, Maine.

A waiver from the Flooding Standard may be granted by the Planning Board upon determination that all downstream drainageways have the capacity and stability to receive the project's runoff plus any off-site runoff also passing through the system, and drainage easement are secured. The Planning Board shall also make determination that the areas expected to be flooded by the 2-year and 25-year, 24-hour storm do not pose any health and safety issues such as, but not limited to, the flooding of primary access roads to the project and public roads or an undue burden (i.e. significant difficulty or expense) to property owners likely to suffer specific harm.

C. **All projects located outside the watershed of a Great Pond or within the watershed of Leonard Lake** as shown on the Official City of Ellsworth Watershed Map, shall comply with the most recent version of the Maine Department of Environmental Protection Stormwater Management Rules: Basic Standards, General Standards, and the City of Ellsworth Flooding Standards.

D. **All projects located within the watershed of a Great Pond and outside the watershed of Leonard Lake** as shown on the Official City of Ellsworth Watershed Map, shall comply with the most recent version of the Maine Department of Environmental Protection Stormwater management Rules: Basic Standards, Phosphorus Standards, and the City of Ellsworth Flooding Standard.

The Planning Board shall not, as part of the required phosphorus control plan, allow an increase in phosphorus loading beyond the level allowed by the Maine Department of Environmental Protection. Furthermore, no phosphorus mitigation credits or compensation are allowed unless the project triggers the Stormwater Law or Site Law.

- E. Where an accessway is to be built or upgraded, and may become a public way, the crossing of the stream by the accessway shall be designed to accommodate a 50-year storm event plus a 25% increase in capacity if the potential exists for upstream development.
- 1004.4 **Drainage easements** for existing water courses or proposed drainageways shall be provided at least 30 feet wide, conforming substantially to the lines of existing natural drainage.
- 1004.5 **Upstream drainage**: The stormwater management system shall be designed to accommodate upstream drainage, taking into account existing conditions and approved planned developments not yet built and shall include a surplus design capacity factor of 25% if the potential exists for an increase in upstream runoff.
- 1004.6 **Downstream Capacity**: The storm drainage shall not overload existing or planned storm drainage systems downstream.
- 1004.7 **Catch basins** shall be installed where necessary and located at the curb line of accessways or as required elsewhere.
- 1004.8 **Subsurface drainage**: Where soils require a subsurface drainage system, the drains shall be installed and maintained along with the stormwater drainage system.
- 1004.9 **Outlets** shall be stabilized against soil erosion by using the Maine Department of Environmental Protection Maine Erosion and Sediment Control BMPs (latest edition) such as stone riprap or other suitable materials to reduce stormwater velocity.
- 1004.10 **Landscaped Buffer**: Detention or retention areas created for the stormwater management system shall be landscaped and buffered from adjacent properties if the total area (including the inside of the embankments) is greater than 10,000 square feet.
- 1004.11 **Erosion Control**: An erosion and sedimentation plan shall be submitted as part of any Stormwater Management Plan and for all projects. The procedures outlined in the plan shall be implemented during the site preparation, construction and clean-up stages of the project. The applicant/owner shall be responsible for implementing the plan.
- 1004.12 **State Permitting**: All projects shall meet the requirements of Maine Department of Environmental Protection permitting.
- 1004.13 **Inspection**: Prior to final completion and acceptance of the site work portion of a project, or the issuance of a Certificate of Occupancy, the Design Engineer of the stormwater management system shall provide to the Code Enforcement officer a letter stating that they have examined the site and are satisfied that the site and stormwater system are built according to approved plans and will function as intended. The Code Enforcement Officer may require as built-plans where changes have been made from original designs.

1005 Construction Materials and Standards

- 1005.1 **General.** All Construction shall be done in a workmanlike manner and be free from defects and deficiencies. The Code Enforcement officer shall examine the workmanship and have the authority to require removal or replacement of materials not considered satisfactory.
- 1005.2 **Stormwater Management Best Management Practices** (BMP's) shall be designed, built and maintained as specified in the Maine Department of Environmental Protection Maine Erosion and Sediment Control BMPs (latest edition).
- 1005.3 **Drain Inlet Alignment** shall be straight in both horizontal and vertical alignment unless specific approval of a curvilinear drain is obtained in writing from the City Highway Foreman.
- 1005.4 **Changes In Alignment:** Catch Basins shall be provided at all changes in vertical or horizontal alignment and at all junctions. On straight runs, catch basins shall be placed at a maximum of 400-foot intervals.
- 1005.5 **Manholes:** Manholes shall be a precast concrete truncated cone section construction meeting the requirements of ASTM Designation C 478 or precast concrete manhole block construction meeting the requirements of ASTM Designation C 139, radial type. Manhole sections shall have lapped joint construction and support H-20 loading (unless higher loading required for specific application). Bases may be cast in place 3,000 psi 28 day strength concrete or may be of precast, reinforced concrete, placed on a compacted foundation of uniform density. Metal frames and traps shall be set in a full mortar bed with frames and covers meeting the requirements of ASTM A48 Class 30 for gray iron castings. Covers shall be non-rocking, 24-inch diameter and have 3-inch lettering indicating the use (i.e. DRAIN). Frames and Grates shall be of heavy duty construction weighing not less than 300 pounds and machined on both vertical and horizontal seating surfaces.
- 1005.6 **Precast Concrete Catch Basins:** ASTM C 913, precast, reinforced concrete; designed according to ASTM C 890 for A-16 (AASHTO HS20-44), heavy-traffic, structural loading, with provision for Bell-and-spigot or tongue-and-groove joints formed on machine rings to ensure accurate joint surfaces.
- 1005.7 **Joint Sealants:** ASTM C 990, bitumen or butyl rubber.
- 1005.8 **Grade Rings:** Include 2 or 3 reinforced-concrete rings, of 6-inch to 9-inch total thickness that match 24-inch diameter frame and grate.
- 1005.9 **Maximum Trench Width** at the pipe crown shall be the outside diameter of the pipe plus 2 feet.
- 1005.10 **Pipe Connectors:** ASTM C 923, resilient, of size required, for each pipe connecting to base section.\
- 1005.11 **Pipe Sizing:** The minimum pipe size for any culvert or storm drainage pipe shall be 15 inches. Smaller pipes may be incorporated into a storm-water management plan if required for detention or retention requirements. If smaller pipes are used the developer shall provide a maintenance plan and schedule that will allow the pipes to provide adequate flow.

1005.12 **Pipe (culvert) Bedding and Backfill:** Pipes shall be bedded and backfilled in a fine granular material, containing no stones larger than 3 inches, lumps of clay, or organic matter, reaching a minimum of 6 inches below the bottom of the pipe extending to 6 inches above the top of the pipe. Bedding material shall be graded per Table 1006.12.

Sieve Designation	% By Weight Passing Square Mesh Sieves
3-inch square mesh	100%
1/4 inch	25-70%
#40	0-30%
#200	0-7%

1005.13 **Reinforced Concrete Pipe:** Reinforced concrete pipe shall meet the requirements of ASTM Designation C-76 (AASHTO M 170). Pipe classes shall be required to meet the soil and traffic loads with a safety factor of 1.2 on the .01-inch crack strength with a Class B bedding. Joints shall be of the rubber gasket type meeting ASTM Designation C 443-70. Perforated concrete pipe shall conform to the requirements of AASHTO M 175 for the appropriate diameter. Elliptical pipe shall conform to the requirements of AASHTO M207M/M207. Pipe arch shall conform to the requirements of AASHTO M206M/206.

1005.14 **Corrugated Metal Pipe:** Aluminum coated corrugated steel pipe and special fittings such as elbows, tees, and wyes shall conform to the requirements of the Maine Department of Transportation Standard Specifications, Subsection 707.10 (Type 2), Aluminum Coated (Type 2) Corrugated Steel Pipe. Pipe gauge shall be as required to meet the soil and traffic loads with a deflection of not more than 5%. Fittings shall be fabricated to types required and according to same standards as pipe. Connecting bands shall be standard couplings made for corrugated-steel pipe to form soil-tight joints.

1005.15 **Corrugated Plastic Pipe:** Pipe culverts and storm drains so designated shall conform to the requirements of Maine Department of Transportation Standard Specifications, Subsection 603 and 706.06 (special provisions). Corrugated Polyethylene pipe will meet the requirements of AASHTO M294 (ASTM F2648 may also be used with regard to pipe materials for all Polyethylene pipe) type S, Dual Wall. Corrugated Polyethylene pipe (and fittings) for Underdrain shall conform to AASHTO M252, slot perforated, for 6-inch diameter and to AASHTO M294 for 12-inch to 30-inch. Pipe to be used for Underdrain Type C shall be perforated in accordance with the applicable requirements of AASHTO M36/M36M Type III, Class I perforations. Pipe shall be corrugated with an integrally formed smooth waterway and be non-perforated or perforated as indicated on the drawings. Installation shall include all necessary boots, gaskets and adapters required to provide a soil-tight connection at all manholes, joints and fittings. Pipe shall have integral bell-and-spigot joint meeting the requirements of ASTM F 477 or approved equal.

1005.16 **Cast Iron Catch Basin Frames and Covers** shall be cast of material conforming to the requirements of ASTM A48 Grade 30 and be of uniform quality, free from blowholes, porosity, hard spots, shrinkage distortion or other defects. They shall be smooth and well-cleaned by shotblasting or other approved method. They shall be of heavy duty construction weighing not less than 400 pounds and machined on both vertical and horizontal seating surfaces. Frames shall be 4-flange unless inlet curb inlet

is specified, in which case they shall be 3-flange. Grates shall be non-rocking and be of appropriate entry configuration for the intended location.

1005.17 **System Cleaning:** Upon completion of system construction, each catch basin or manhole shall be cleaned of all accumulation of silt, debris or foreign matter and shall be kept clean until final acceptance.

1005.18 **Alternative Catch Basins and Manholes:** Alternative materials for catch basins and manholes may be submitted for approval to the Administrator. Such submittals shall be reviewed on a case-by-case basis and may require an independent professional review to determine applicability and long term durability.

1006 Definitions:

Accessway: Any public or private street, right-of way, or driveway used to enter or leave a public or private street or adjacent land using an on-road vehicle. All streets are considered accessways but not all accessways are considered streets. This general definition notwithstanding, when “accessways” are mentioned, the regulations of this Article do not apply to certain accessways, as defined and listed in Section 901.2 Applicability, unless they are specifically noted as being included in a particular provision or section.

Adverse Impact: A negative consequence for the physical, social, or economic environment resulting from an action or project.

Driveway, Commercial: Any accessway serving a commercial use generating less than 50 average daily traffic (ADT).

Driveway, Residential: A means of access from a public or private road which will serve no more than two dwelling units.

Engineer: Professional Engineer licensed to practice in the State of Maine.

Drainageway: A natural or man-made channel or course within which surface discharge of water may occur. Drainageways include, but are not limited to rivers, streams and brooks (whether intermittent or perennial), swales ditches, pipes, culverts, and wetlands with localized discharge of water.

Great Pond: any inland body of water which in a natural state has a surface area in excess of 10 acres, and any inland body of water artificially formed or increased which has a surface area in excess of 30 acres. For the purposes of this Article, Ellsworth’s Great Ponds are: Branch Lake, Graham Lake, Green Lake, Jesse Bog, Little Duck Pond, Little Rocky Pond, Lower Patten Pond, Upper Patten Pond, Wormwood Pond and Leonard Lake.

MDEP: Maine Department of Environmental Protection

MDOT: Maine Department of Transportation

Peak Flow: The greatest rate of flow in a drainageway, measured as volume per unit of time, resulting from a storm of specified frequency and duration.

Stormwater: The part of precipitation, including runoff from rain or melting ice and snow, that flows across the surface as sheet flow, shallow concentrated flow, or in drainageways.

Stormwater Management Plan: A comprehensive plan including notes, plans, specifications and details which, when implemented, provides methods, structures and mechanisms intended to manage stormwater on a site. The plan also incorporates methods, techniques, designs, practices and other means to control erosion and sedimentation.

Stream: A river, stream, or brook as defined in the Natural Resources Protection Act at 38 M.R.S.A § 480-B.

Two (2-), 25-, and 50-year, 24-hour storm: A precipitation event with a 50% (for two year), 4% (for 25 year) or 2% (for 50 year) probability of being equaled or exceeded during any twenty-four hour period during any given year.

Watershed: The land area that drains, via overland flow, drainageways, waterbodies or wetlands to a given waterbody or wetland.