

#### **4.2 Stormwater Management Measures**

The ESD planning techniques and practices and structural stormwater management measures established in this Ordinance and the Design Manual shall be used, either alone or in combination in a stormwater management plan. A developer shall demonstrate that ESD has been implemented to the MEP before the use of a structural BMP is considered in developing the stormwater management plan.

A. ESD Planning Techniques and Practices.

1. The following planning techniques shall be applied according to the Design Manual to satisfy the applicable minimum control requirements established in section 4.1 of this Ordinance:
  - (a) Preserving and protecting natural resources;
  - (b) Conserving natural drainage patterns;
  - (c) Minimizing impervious area;
  - (d) Reducing runoff volume;
  - (e) Using ESD practices to maintain 100 percent of the annual predevelopment groundwater recharge volume;
  - (f) Using green roofs, permeable pavement, reinforced turf, and other alternative surfaces;
  - (g) Limiting soil disturbance, mass grading, and compaction;
  - (h) Clustering development; and
  - (i) Any practices approved by the Administration.
  
2. The following ESD treatment practices shall be designed according to the Design Manual to satisfy the applicable minimum control requirements established in section 4.1 of this Ordinance:
  - (a) Disconnection of rooftop runoff;
  - (b) Disconnection of non-rooftop runoff;
  - (c) Sheetflow to conservation areas;
  - (d) Rainwater harvesting;
  - (e) Submerged gravel wetlands;
  - (f) Landscape infiltration;

- (g) Infiltration berms;
- (h) Dry wells;
- (i) Micro-bioretenion;
- (j) Rain gardens;
- (k) Swales;
- (l) Enhanced filters; and
- (m) Any practices approved by the Administration.

3. The use of ESD planning techniques and treatment practices specified in this section shall not conflict with existing State law or local ordinances, regulations, or policies. Garrett County and its municipalities shall modify planning and zoning ordinances and public works codes to eliminate any impediments to implementing ESD to the MEP according to the Design Manual.

B. Structural Stormwater Management Measures.

1. The following structural stormwater management practices shall be designed according to the Design Manual to satisfy the applicable minimum control requirements established in Section 4.1 of this Ordinance.

- (a) Stormwater management ponds;
- (b) Stormwater management wetlands;
- (c) Stormwater management infiltration;
- (d) Stormwater management filtering systems; and
- (e) Stormwater management open channel systems.

2. The performance criteria specified in the Design Manual with regard to general feasibility, conveyance, pretreatment, treatment and geometry, environment and landscaping, and maintenance shall be considered when selecting structural stormwater management practices.
3. Structural stormwater management practices shall be selected to accommodate the unique hydrologic or geologic regions of the state and county.

- C. ESD planning techniques and treatment practices and structural stormwater management measures used to satisfy Section 3.2B and the minimum requirements in section 4.1 of this Ordinance must be recorded in the land records of Garrett County and remain unaltered by subsequent property owners (see Section 9.2). Prior approval from the Garrett County Stormwater Management Office shall be obtained before any stormwater management practice or structural stormwater management measure is altered.

- D. Alternative ESD planning techniques and treatment practices and structural stormwater measures may be used for new development runoff control if they meet the performance criteria established in the Design Manual and all subsequent revisions and are approved by the Administration. Practices

used for redevelopment projects shall be approved by Stormwater Management Office.

- E. For the purposes of modifying the minimum control requirements or design criteria, the owner/developer shall submit to Stormwater Management Office an analysis of the impacts of stormwater flows downstream in the watershed. The analysis shall include hydrologic and hydraulic calculations necessary to determine the impact of hydrograph timing modifications due to the proposed development upon a dam, highway, structure, or natural point of restricted stream flow. The point of investigation is to be established with the concurrence of Stormwater Management Office, downstream of the first downstream tributary whose drainage area equals or exceeds the contributing area to the project or stormwater management facility.