

# REGIONAL WATERSHEDS SMARTCODE MODULE

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*Don't you realize that the sea is the home of water?  
All water is off on a journey unless it's in the sea,  
and it's homesick, and bound to make its way home  
someday.*

Zora Neale Hurston

### **REGIONAL WATERSHEDS FOR ARTICLE 2**

This Module is numbered to correlate with Article 2 in the base SmartCode. The current sections and subsections may be replaced with these if the jurisdiction wishes to create a more integrated regional planning scheme. Depending upon the jurisdiction and the timing of code adoption, it may be more effective to include the language from this Module and/or the entirety of Article 2 in the Comprehensive/General Plan rather than within the body of a calibration of the SmartCode. If sections are used in both documents, calibrators must ensure that the language matches or is compatible. In any case, it is important that the language be regulatory, not merely advisory.

(Note: If a later version than SmartCode Version 9.2 has been released, it may already incorporate some or all of this Module.)

Other Modules are available for Comprehensive/General Plan "bridges" to the SmartCode. There are also several Transect-based Modules by different authors addressing stormwater issues. They include Natural Drainage Standards, the Light Imprint Stormwater Matrix, the Sustainable Urbanism Stormwater Table SU7, the Landscaping Module, the Flood Hazard Mitigation Standards, and the Riparian and Wetland Buffers Module.

In addition, the Complete Streets Thoroughfare Standards, the Sprawl Retrofit Module, the Bicycling Module, and the Public Frontage Standards in the base code may affect and be affected by the standards in this Regional Watersheds document. Although all are correlated to the Transect and SmartCode, calibrators using multiple Modules should take care not to create conflicts or redundancies in standards and definitions, and should employ the strategies most appropriate for their local and state sustainability and stormwater programs.

For freeware downloads of the above-referenced SmartCode Modules, please visit the Center for Applied Transect Studies (CATS) at [www.Transect.org](http://www.Transect.org).

## ARTICLE 2. REGIONAL SCALE PLANS REGIONAL WATERSHEDS

- 2.1.2 Regional Plans shall integrate the largest practical geographic area, overlapping property lines as necessary and municipal boundaries if possible, and encompassing the regional watersheds.
- 2.1.5 A Regional Watershed Management Plan ("RWMP") shall be prepared that analyzes existing watershed patterns, delineates existing critical watershed issues and identifies key remediation strategies for those issues. The RWMP shall provide incentives for compact urban patterns, infill, and redevelopment and shall balance those incentives through stricter requirements for lower density areas. The RWMP shall provide methods for achieving overall improvements to the watershed character and avoiding cumulative regional watershed hydromodification by development.
- 2.2.8 A system for the gradual Transfer of Stormwater Mitigation (TSM) shall be established and administered for the purpose of transferring stormwater mitigation activities from the Growth Sectors to the Open Sectors; from higher Transect Zones to lower Transect Zones, or from Infill, Greyfield, or Brownfield sites to Greenfield sites.
- 2.2.9 Regional Watershed Management Plans ("RWMP") shall conform to the following general sequence:
- a. Adequate and appropriate base maps shall be compiled for the region showing topography, soil types, cover types, rainfall distributions, parcel configurations, development patterns, and known Stormwater Hazard Areas.
  - b. The existing conditions for the regional watersheds shall be modeled using standardized hydrological methods such as the USDA's Technical Release 55. At a minimum, the 2-year, 25-year and 100-year Storm Events shall be modeled.
  - c. The Natural Cover Condition for the regional watersheds shall be modeled.
  - d. Stormwater Hazard Areas shall be identified through the analyses of subsections 2.2.9a, 2.2.9b, and 2.2.9c, and by historical records. These areas shall be ranked by severity of potential damages to health, safety, and urban and environmental welfare.
  - e. Appropriate community-based remediations for the highest ranked Stormwater Hazard Areas shall be developed. This may require hydrological analysis and value engineering of alternatives; and may involve short, medium, and long-term solutions involving both private and public entities. The hydrological analysis for these remediations should show significant hydrograph improvements as compared to the existing condition for the watersheds, and show progress in the direction of the Natural Cover Condition hydrograph in terms of time of concentration, runoff rate, runoff volume, and water quality.
  - f. Recommendations shall be made for the Sector Plan based on the RWMP results, especially as regards lands recommended for Preserved Open Sector (2.3.2), Reserved Open Sector (2.4.2) and Infill Growth Sector (2.8.2).
  - g. A stormwater analysis shall be conducted for New Community Plans (Article 3) and Infill Community Plans (Article 4) by the procedures detailed in those Articles, and the RWMP shall be revised and updated to incorporate those analyses and regulations.
- 2.6.1 (add) These areas have a limited capability to support the infrastructure categories of 2.8.2 without significantly impacting the environmental categories of 2.4.2.
- 2.7.1 (add) These areas have a high capability to support the infrastructure categories of

## **SMARTCODE ANNOTATED**

*These annotations are advisory only. The SmartCode itself appears only on the right side of each spread.*

### **REGIONAL WATERSHEDS**

#### **DEFINITIONS OF TERMS**

Examples of Natural Cover Condition ratings may include "oak-aspen, good condition", or "grassland or range, poor condition".

Not every Stormwater Hazard Area would be considered a Special Flood Hazard Area (SFHA) by FEMA, though all SFHA is a subset of the designation Stormwater Hazard Area. See the Flood Hazard Mitigation Module for transect-based provisions for SFHAs.

- 2.8.2 without significantly impacting the environmental categories of 2.4.2.
- 2.8.2 The Infill Growth Sector shall consist of the aggregate of the following categories:
- a. Transit
  - b. Thoroughfare network
  - c. Water System
  - d. Sewer System
  - e. Stormwater System
  - f. Dry Utility Systems
  - g. Civic Spaces
  - h. Buildings

## REGIONAL WATERSHEDS DEFINITIONS OF TERMS FOR ARTICLE 7

**Natural Cover Condition:** conditions that existed prior to significant alterations by humans.

**Storm Event:** a 24-hour rainstorm. Storm Events are rated as having a percentage chance of occurrence in any given year. The 2-year Storm Event has a 50% chance, the 25-year Storm Event has a 4% chance, and the 100-year Storm Event has a 1% chance.

**Stormwater Hazard Areas:** land areas that are subject to hazards due to precipitation and that are subject to flooding, moisture-induced landslides, avalanches, high groundwater, tidal waves, etc. The hazards may be either natural or caused by humans.

**Transfer of Stormwater Mitigation (TSM):** a method of mitigating the hydrological effects of Urbanization in one area by improving the hydrological performance of another area of the same watershed.

**TSM:** see **Transfer of Stormwater Mitigation**