Stream Flow Regulations in Connecticut: A Progress Report

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Lake Placid, NY
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Connecticut Department of Energy and Environmental Protection
Public Act 05-142
AN ACT CONCERNING
THE MINIMUM WATER FLOW REGULATIONS

DEP Commissioner shall adopt regulations for stream flow that...

- apply to all rivers and streams
- based on **best available science**
- balance human and ecological needs

*Process of adopting the regulation*....

- 2005-2011 workgroups and public process
- regulation effective December 12, 2011
Workgroups Met from 2005 - 2009

Commissioner’s Advisory Group

Scientific – Technical Workgroup

Policy – Implementation Workgroup

• Broad Group of Stakeholders including other state agencies, USGS, USEPA, Nature Conservancy, Trout Unlimited, Rivers Alliance, Water Utilities, and Universities
Scientific –Technical Committee

Committee consisted of a diverse group of scientists from multiple backgrounds

Hydrogeologists

Retirees

Geomorphologists

Fisheries Biologists

Water Resource Engineers

Stream Ecologists

Scientific –Technical Committee
1. **Natural Hydrograph** is Important
   - The more water that is used for human uses, the more the hydrograph is altered
   - The more the hydrograph is altered, the more it impacts aquatic life

2. **Bioperiods** - seasonal flow variation linked to biological processes

3. **Biological Condition Gradient** as Unifying Theme
Humans Alter the Natural Hydrograph

Graph showing streamflow (cfs) from December to November, with two lines representing natural and altered conditions.
Mt Hope River Annual Hydrograph with Six Bioperiods

- Overwinter
- Habitat Forming
- Clupeid Spawning
- Salmonid Spawning
- Resident Spawning
- Rearing and Growth
Biological Condition Gradient *

Biological Integrity

Natural

Fair

Poor

Degraded

1. Natural structural, functional, and taxonomic integrity is preserved.
2. Structure & function similar to natural community with some additional taxa & biomass; ecosystem level functions are fully maintained.
3. Evident changes in structure due to loss of some rare native taxa; shifts in relative abundance; ecosystem level functions fully maintained.
4. Moderate changes in structure due to replacement of sensitive ubiquitous taxa by more tolerant taxa; ecosystem functions largely maintained.
5. Sensitive taxa markedly diminished; conspicuously unbalanced distribution of major taxonomic groups; ecosystem function shows reduced complexity & redundancy.
6. Extreme changes in structure and ecosystem function; wholesale changes in taxonomic composition; extreme alterations from normal densities.

Watershed, habitat, flow regime and water chemistry as naturally occurs.
Chemistry, habitat, and/or flow regime severely altered from natural conditions.

Stream flow Classes and Narrative Standards

1. Natural Flow Condition – Rivers for River Fish
2. Minimal Alteration of Flow – Rivers for some River Fish
3. Moderate Alteration – Rivers for some Fish – water for many uses
4. Highly altered – need to implement best management practices
## Statewide Release Rules

<table>
<thead>
<tr>
<th>Bioperiod</th>
<th>Effective Dates</th>
<th>Minimum Required Release</th>
<th>Antecedent Period Dry</th>
<th>Antecedent Period Wet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overwinter</td>
<td>Dec 1 - Feb 28/29</td>
<td>Bioperiod Q99</td>
<td></td>
<td></td>
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<tr>
<td>Habitat Forming</td>
<td>Mar 1 – Apr 30</td>
<td>Bioperiod Q99</td>
<td></td>
<td></td>
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<tr>
<td>Clupeid Spawning</td>
<td>May 1 – May 31</td>
<td>Bioperiod Q95</td>
<td></td>
<td></td>
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<tr>
<td>Resident Spawning</td>
<td>June 1 – June 30</td>
<td>Bioperiod Q90</td>
<td></td>
<td></td>
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<tr>
<td>Rearing and Growth</td>
<td>July 1- Oct 31</td>
<td>Bioperiod Q80</td>
<td></td>
<td>Bioperiod Q50</td>
</tr>
<tr>
<td>Salmonid Spawning</td>
<td>Nov 1 – Nov 30</td>
<td>Bioperiod Q90</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Class 4 – goal of Class 3 to maximum extent practicable with approved site specific release.

Class 1 - free flowing
Class 2 - 75% of natural inflow
Class 3 -

- Class 2
- Class 3
- Class 4
StreamStats

USGS StreamStats Website
http://water.usgs.gov/osw/streamstats/connecticut.html
What Does the Regulation Do for Connecticut?

- Stream flow classes and standards
- Statewide presumptive release rule
- Blueprint for flow management

Statewide stream flow classification
Procedures to Classify Waters

Consider Factors that Affect Natural Stream Flow
- GIS Data Layers
- Diversions
- Dams
- Impervious Cover
- Return Flow
- Unique Factors

Map Initial Stream Flow Class After Consultation with DPH

Propose Stream Flow Classifications and Solicit Comment
- 90 day Notice in Paper and DEP Website
- Comments and Final Document on DEEP Website

Adopt Stream Flow Classifications
Factors to Consider for Classification

Certainty Factors For Class 3
- Downstream of Public Water Supply Reservoir
- Intersection of Level A Aquifer
- Public Water Supply with significant investment

Hydrologic Stressors
- Impervious Cover
- Return Flow
- Dams
- Diversions

Site Specific Factors
- State C&D Plan
- Plant and Animals
- Anadromous Fish
- Trout Management Areas
- Wild and Scenic Areas
- Reference USGS Gages
- Practicality of Restoring Flow
- Any other relevant factor
Certainty Factors Related to Public Water Supply
Hydrologic Stressors

IC

Return Flow

Dams

Diversions
Consider Other Factors
Administrative Process

Step 1
- DEEP Proposes Draft Classifications
  - consult DPH
  - Now

Step 2
- Public Participation
  - informational meetings
  - public notice, 90 day comment period, post comments on website
  - April-June

Step 3
- Prepare Reasons for Decision Document
  - consult DPH, assistance from OPM, DECE, DOA, publish on website
  - Summer

Step 4
- Notice of Adoption
  - publish in Law Journal
  - Fall

Connecticut Department of Energy and Environmental Protection
Blueprint for Future Water Allocation