



# STORMWATER IMPACTS



- Urban Runoff



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- Charles River Dam Summer Cyanobacteria Algae Bloom

# STORMWATER IMPACTS



- Storm Drain in Muddy River Basin

# STORMWATER IMPACTS



- Ipswich River Fish Kill



# STORMWATER IMPACTS



- Spring 2006 Flood in Lowell

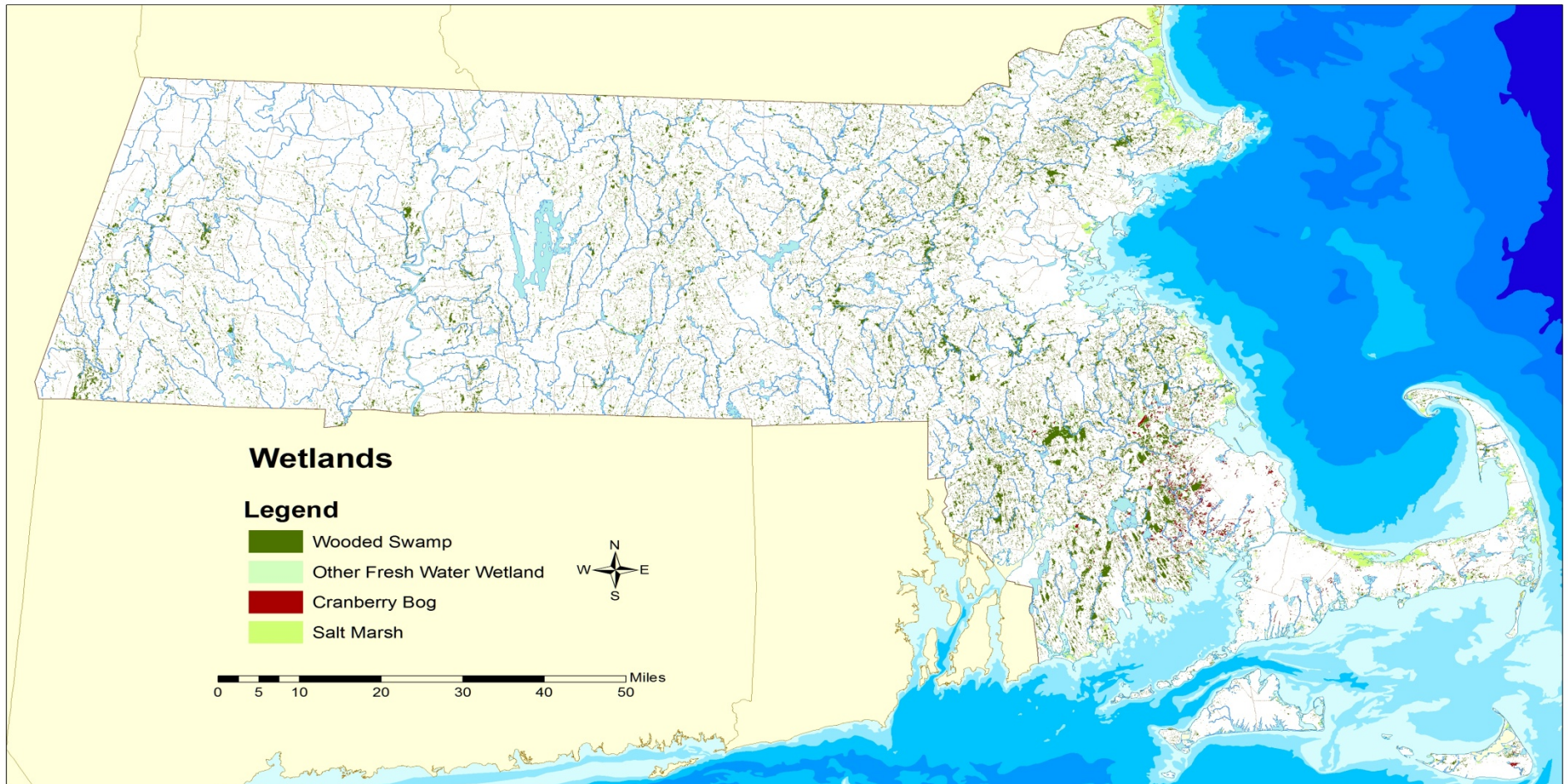
# STORMWATER IMPACTS



- Water Quality Impairment

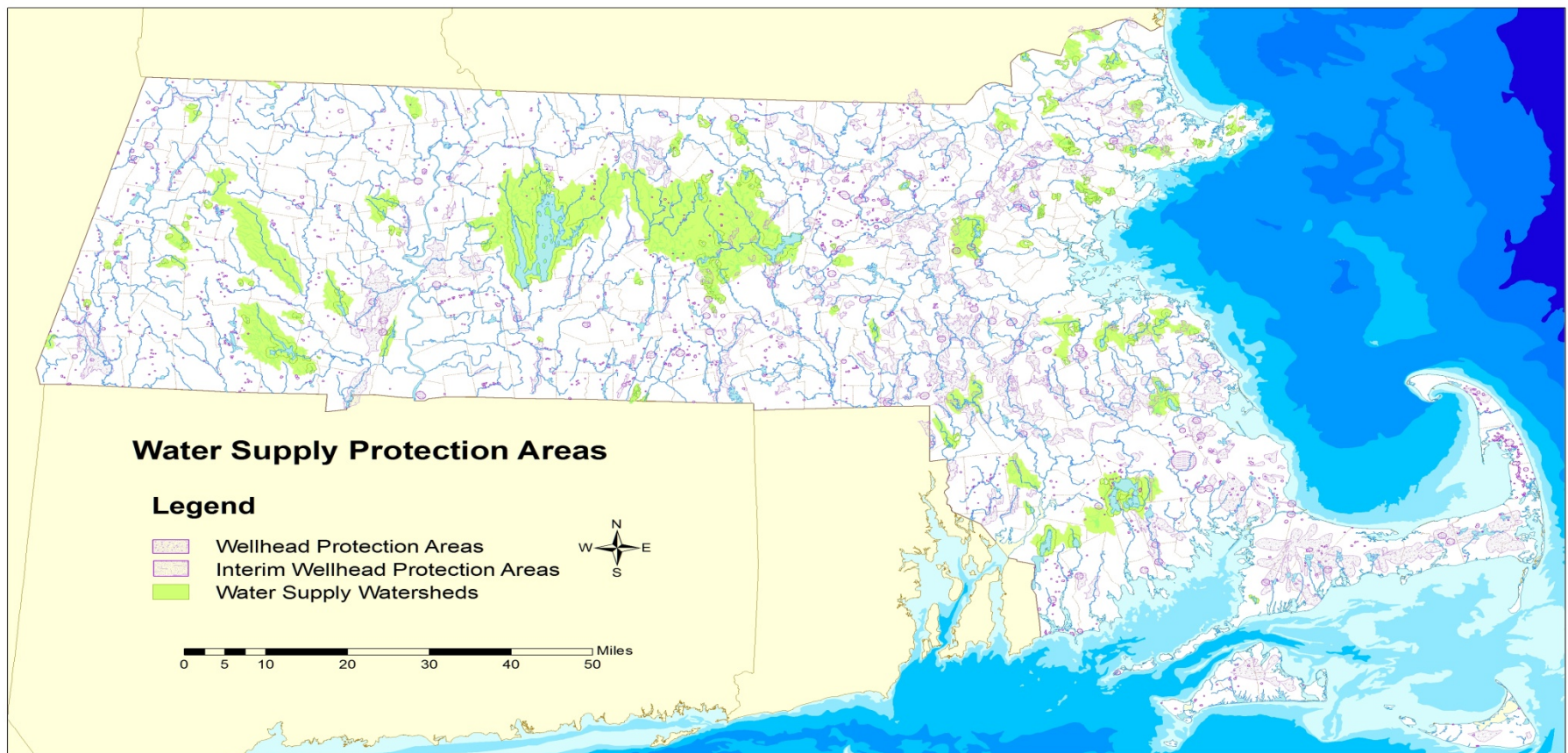


# WETLANDS

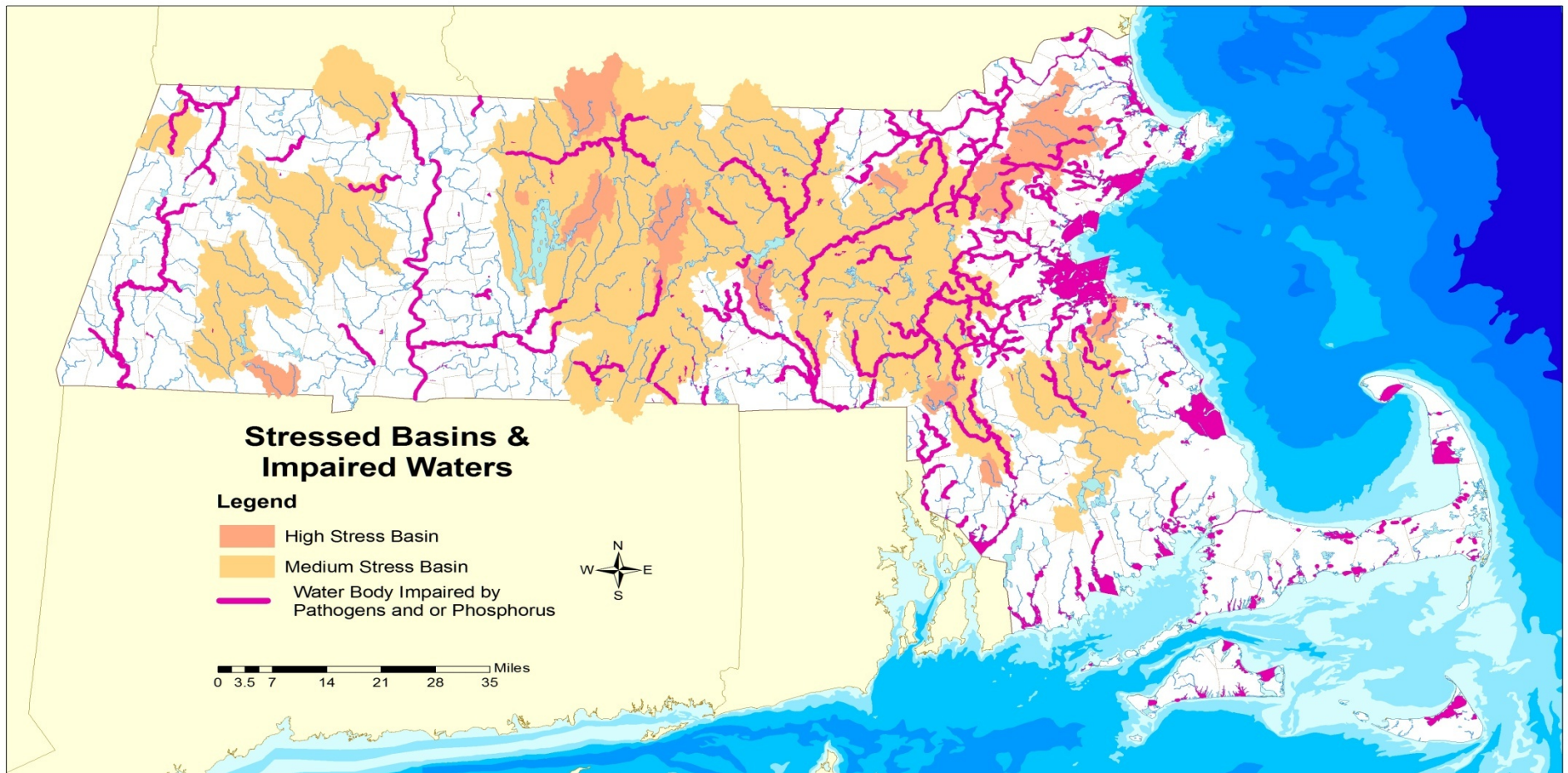




# WATER SUPPLY PROTECTION AREAS

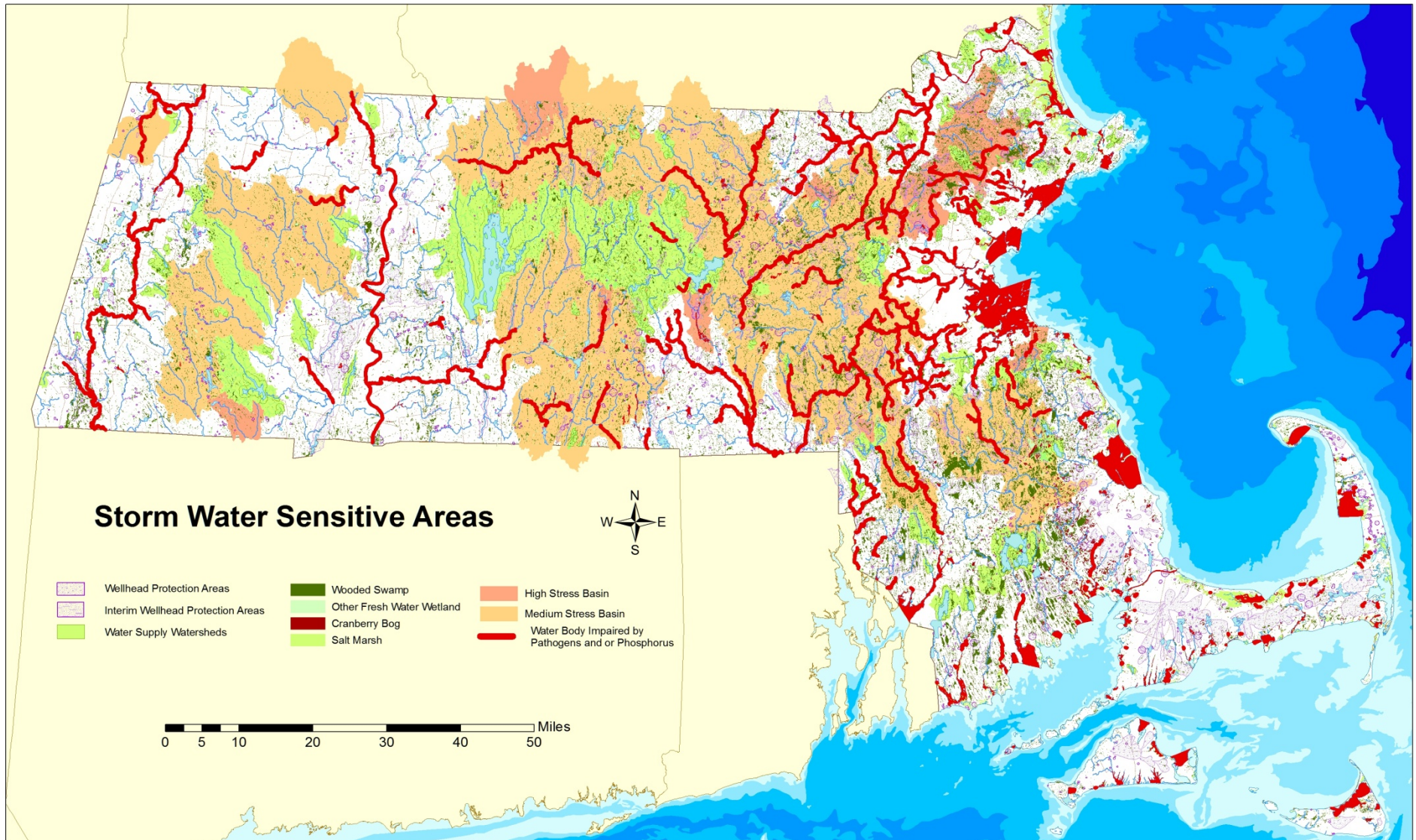


# STRESSED BASINS AND IMPAIRED WATERS





# MASSACHUSETTS SENSITIVE AREAS

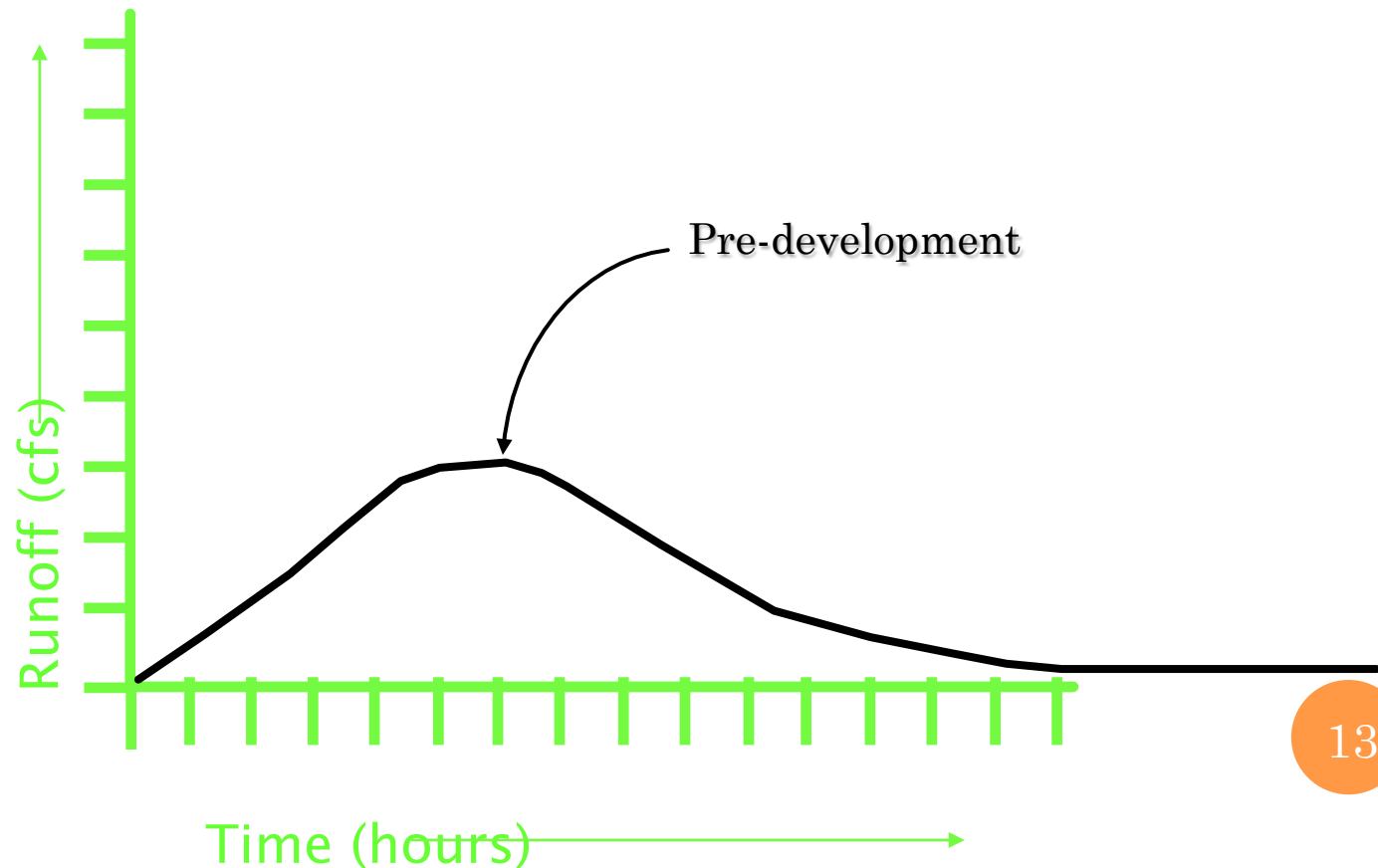


# WHY WORRY ABOUT IMPERVIOUS AREA?

- “. . . a unit increase in impervious cover resulted in a 5.5-percent decrease in the relative abundance of fluvial fish and a 2.5-percent decrease in fluvial-fish species richness.”
- Fluvial = related to rivers

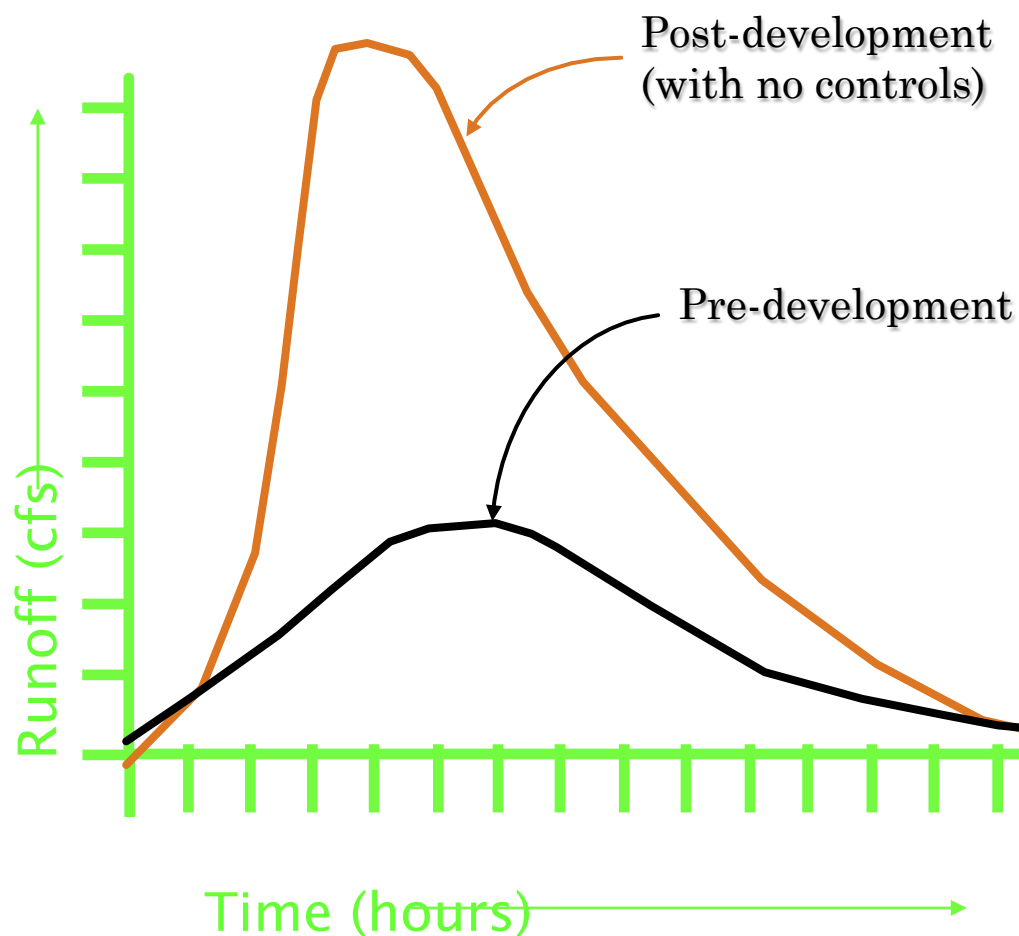


# How Development Alters Stream Flows



Developed by  
David Nyman,  
CEI  
Environmental

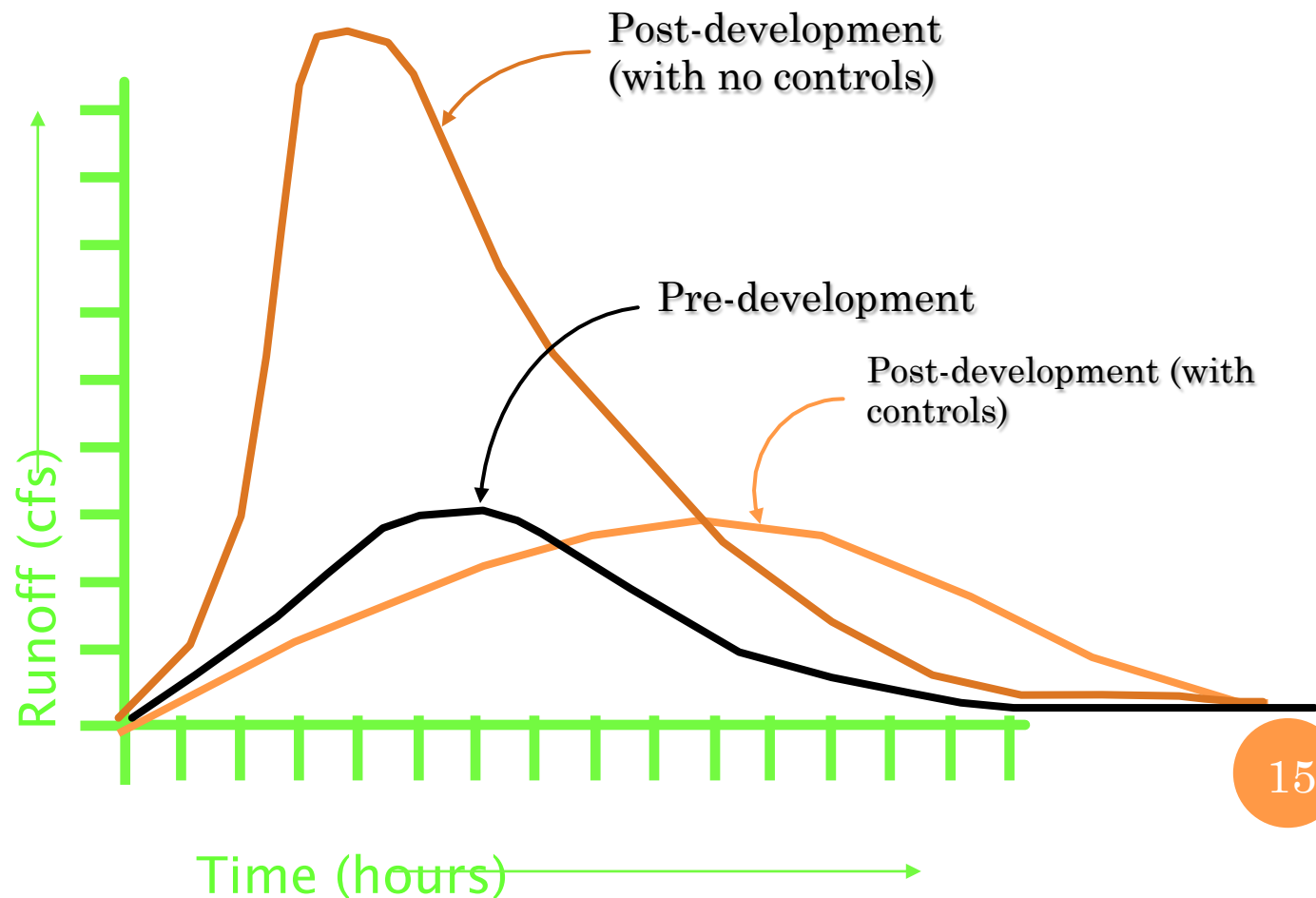
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# COMING THEMES

- “Keep it On Site”
  - Managing Impervious Surface
  - 1” rules
- TMDLs – from development to implementation
- Local SW integrating with other programs
  - SWMI example
- From stormwater piping to distributed systems
  - Site Design
  - Pollution Prevention
  - Low Impact Development BMPs
- Wrapped into EPA Draft MS4 permit



Aerial view of the Jordan Cove development.



# Bioretention Cells, Wilmington





# Bioretention Cell, Chestnut Hill





# Stone Filter Strip, Lee





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*"No, Thursday's out. How about never—is never good for you?"*

# REGIONAL COOPERATION AT ITS BEST- CMRSWC

- Central Massachusetts Regional Stormwater Coalition
  - originally 13 Towns – now 28 Towns
- Goal: better/more efficient cheaper stormwater management = less cost to taxpayers
- Now 4 other Regional SW Coalitions have formed
- Q: How Does Working Together Now Affect Costs?
  - EPA study 3 Upper Charles Towns: increase 150% - 400%
  - WPI student finding in CMRSWC: increase 125% - 175%

# SELECTED MA TOWNS WITH STORMWATER UTILITIES

- Ayer
  - Utility adopted 2011; fee not yet set
- Westfield
  - Utility adopted 2010
  - Annual fees: residences - \$20; businesses \$100 - \$640
- Newton
  - Utility adopted 2006
  - Annual Fee: residences - \$25; all others \$150
- Reading
  - Utility adopted 2006
  - Annual Fee: residences - \$40; others – variable based on impervious surface (\$40.00/ 3,210 sq. ft.)



# RESOURCES

- Coming MS4 permit draft
  - [http://www.epa.gov/region1/npdes/stormwater/MS4\\_MA.html](http://www.epa.gov/region1/npdes/stormwater/MS4_MA.html)
- Massachusetts Stormwater Handbook
  - <http://www.mass.gov/eea/agencies/massdep/water/regulations/massachusetts-stormwater-handbook.html>
- CMRSWC
  - <http://centralmastormwater.org/Pages/index>
- MA Stormwater Coordinator
  - [Frederick.Civian@state.ma.us](mailto:Frederick.Civian@state.ma.us)

