



Understanding and Managing Risk in the Water Industry: Drought Preparedness and Response

David Radka, Director of Water Resources & Planning

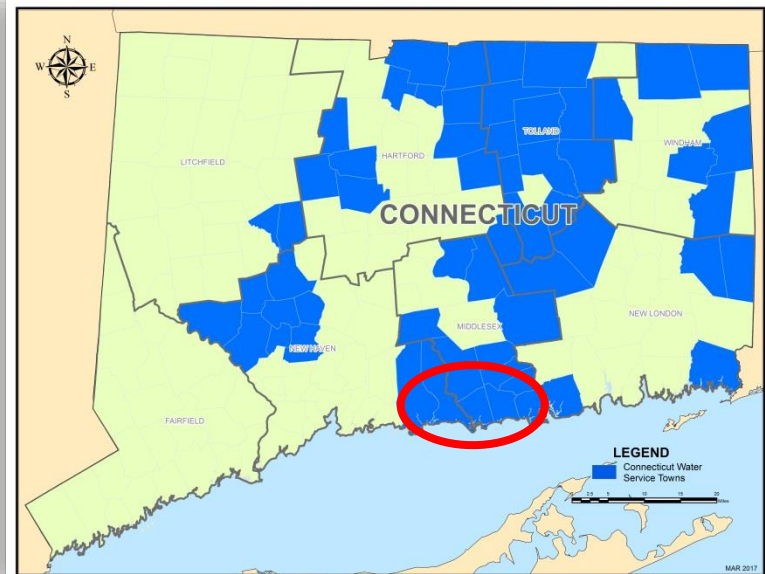
Topics

- CT's Regulatory Programs and Planning Tools to Mitigate Risk
- Connecticut Water's 2015 – 2016 Drought Experience



Connecticut Water

- Provide water service in 58 towns in CT
- Serve 100,000 customers; Over 300,000 people
- (30,000 customers in ME)
- 65 Systems
- 1,600 miles of main
- ~ 52 MGD Supply
- Shoreline System – 9 MGD
 - 4 MGD Surfacewater
 - 4 MGD Groundwater
 - 1 MGD Interconnection



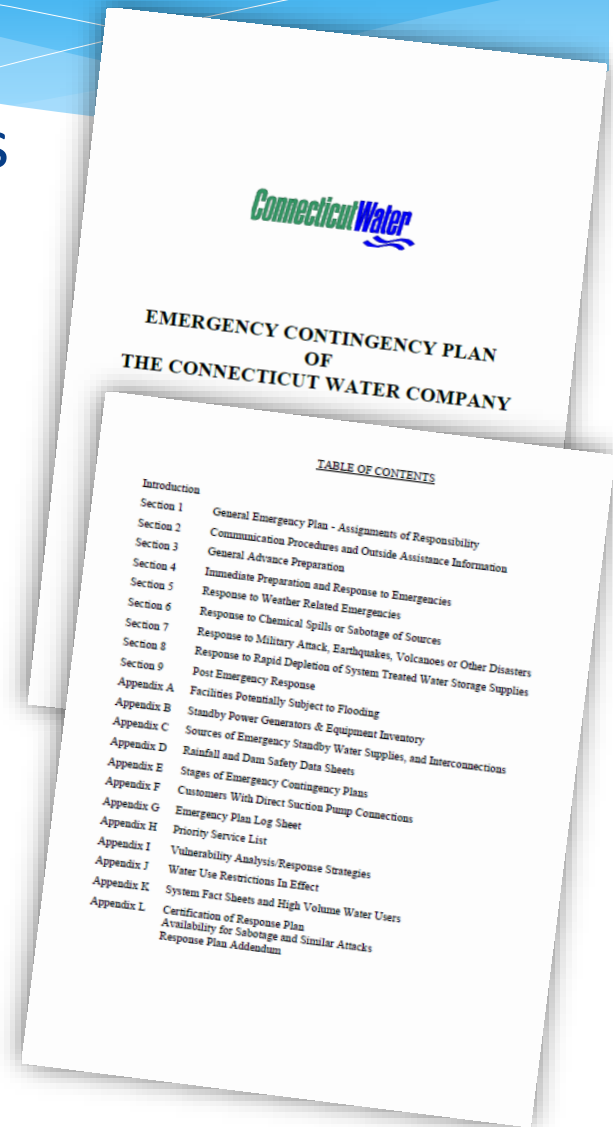
Planning

- Individual Water Supply Plan
 - ✓ 1,000 or more persons served
 - ✓ Comprehensive assessment – current & future conditions
 - ✓ Source safe yield adjusted for critical dry period
= Conservative estimate of available supply during drought conditions
- Water Utility Coordinating Committee (WUCC) Plan
 - ✓ Integrates utility available supply on regional scale
 - ✓ Identifies resiliency opportunities



Planning and Response

- Utility Emergency Contingency Plans
 - ✓ System Vulnerabilities
 - ✓ Emergency Triggers, incl. drought
 - ✓ Emergency Response Actions
 - ✓ Priority customers
- State Interagency Drought Plan
 - ✓ Assesses state/regional conditions
 - ✓ Public water one element



Ratemaking Tools to Help Manage Drought Response

- **Water Infrastructure Adjustment (WICA/WISC)**
Conserves water resources by reducing the frequency of distribution system leaks
- **Water Revenue Adjustment**
Removes conservation “disincentive”
- **Worked collaboratively with environmental interests to achieve shared goals**



Emergency Powers



Sec. 25-32b. Public drinking water supply emergency

DPH (in consultation with DEEP and PURA) may declare a public drinking water supply emergency upon receipt of information that a public water supply emergency exists, is imminent or can reasonably be expected to occur without the immediate implementation of conservation practices.

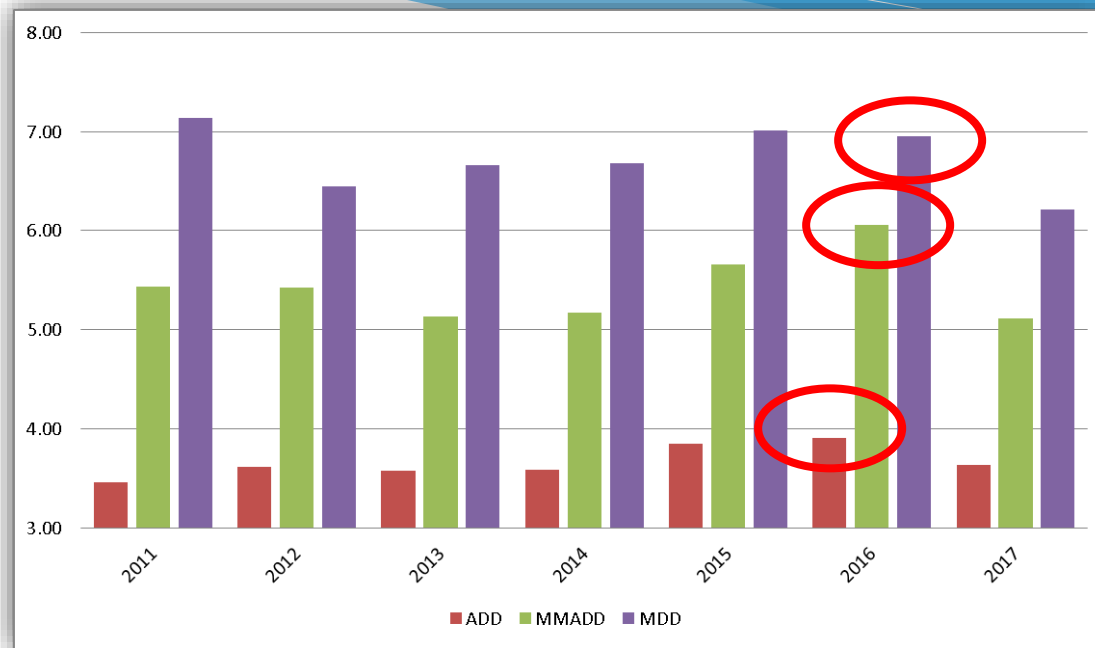
- *Authorize or order implementation of water conservation practices*
- *Authorize the sale, supply or taking of any waters*
- *Authorize the temporary interconnection of water mains for the sale or transfer of water among water companies*

Sec. 22a-378. Water supply emergency

If a water supply emergency has been declared by the Governor or otherwise according to law, DEEP shall have the power to:

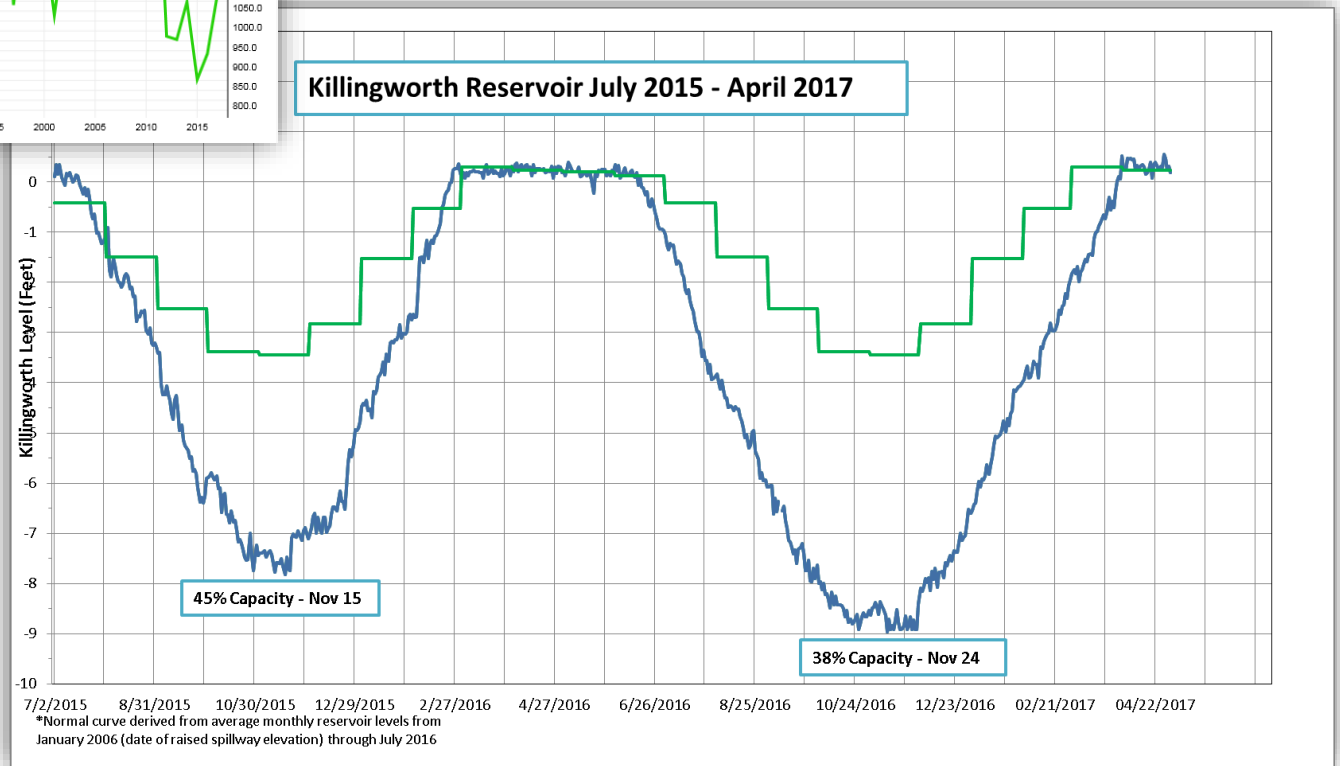
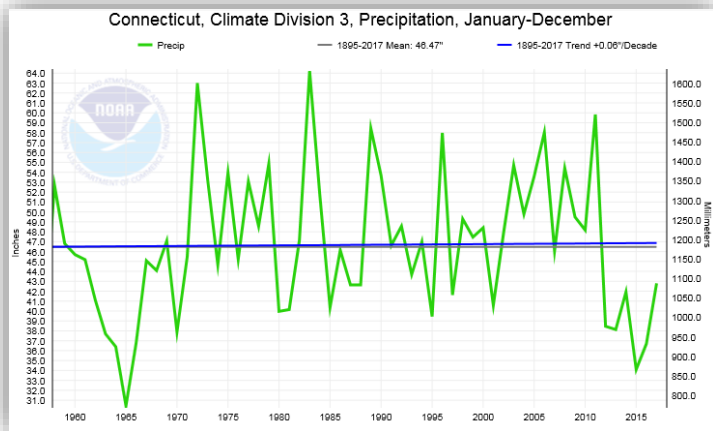
- *Authorize a person or municipality to divert such quantities of water as the commissioner deems necessary and proper to ease emergency conditions*

2016 Demand – Shoreline System



- *Peak Day 0.23 MGD greater than 7 yr avg (+3%)*
- *Max Month Average Day Demand 0.63 MGD greater than avg (+12%)*
- *Average Day Demand 0.24 MGD greater than avg (+7%)*

Shoreline Surface Water 2015 – 2016 Drought



Conjunctive Use of Supplies

- *Able to shift production to Groundwater and Interconnection*
- *Supply options = Greater Resiliency*

Connecticut Water

92 West Main Street, Clinton, CT 06413

NEWS

"Connecticut Water Urges Voluntary Water Conservation"
Prolonged dry weather and drought conditions prompt conservation request

Clinton, Connecticut, October 17, 2016 – Persistent dry weather and continued drought conditions have prompted Connecticut Water Company to ask its customers across the state to step-up their voluntary measures to conserve water. Last July the company requested that all customers voluntarily reduce their water usage by 10% to extend the availability of existing supplies and to support the rivers and streams in the state.

Connecticut Water has continued to closely monitor its water supplies. While supplies in our reservoirs are lower than normal, we also have groundwater sources in nearly all of our water systems that provide operational flexibility so we are not solely dependent on our reservoirs for water supply.

The company continues to encourage all customers to reduce their water usage by 10% and is now asking customers in the communities of Guilford, Madison, Clinton, Westbrook and Old Saybrook to reduce their water usage by 15 percent.

According to the [U.S. Drought Monitor](#), more than 85% of Connecticut is considered to be in severe drought. Given the extended dry weather conditions and the outlook for below normal precipitation according to the [U.S. Seasonal Drought Outlook](#), the Company decided it was important to ask our customers to increase their conservation efforts.

David A. Connor, Director of Service Delivery, states, "We currently have an adequate supply of water for our customers' needs but we are taking these steps to ensure we will continue to have enough water for those needs should the drought continue. That's why we are asking all of our customers to continue to conserve water, and our customers in those shoreline communities, where we have had high summer demands and felt the drought's effects the most, to reduce their consumption by 15%. Should normal precipitation not materialize, this will position us to have sufficient water to meet the needs of our customers and put less stress on local water resources."

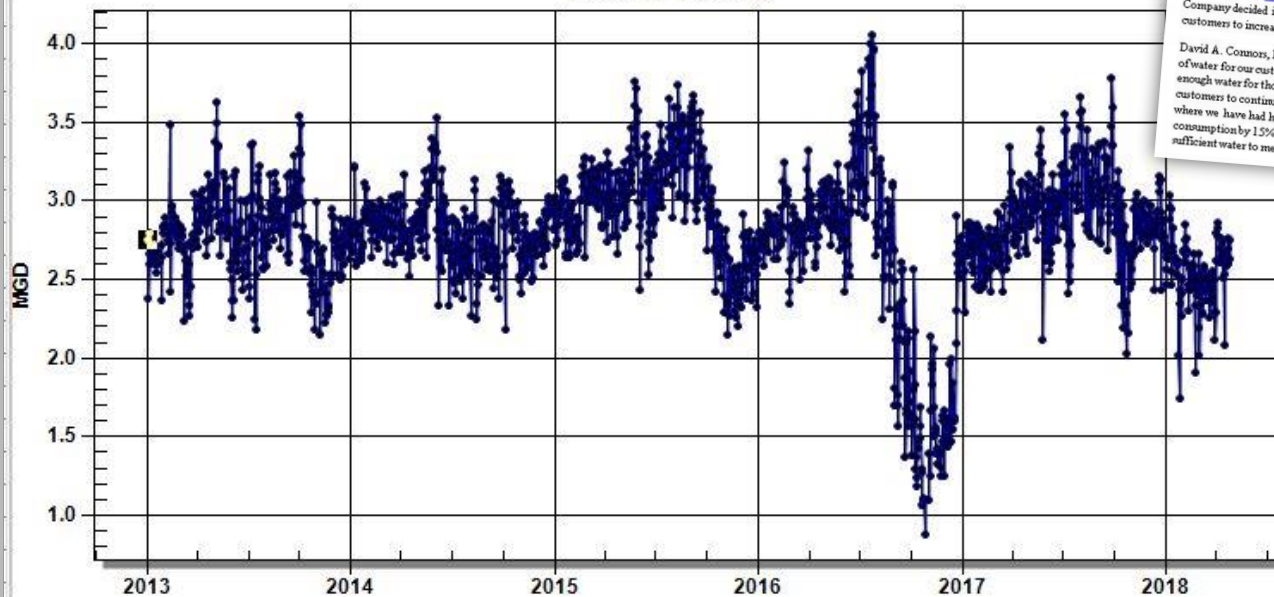


Overall, Connecticut Water Company's reservoirs are at approximately 65% of their capacity, which is less than normal but not at historically low levels. The Killbuckworth Reservoir is shown above.

12/2/2012 20:15, 0.882

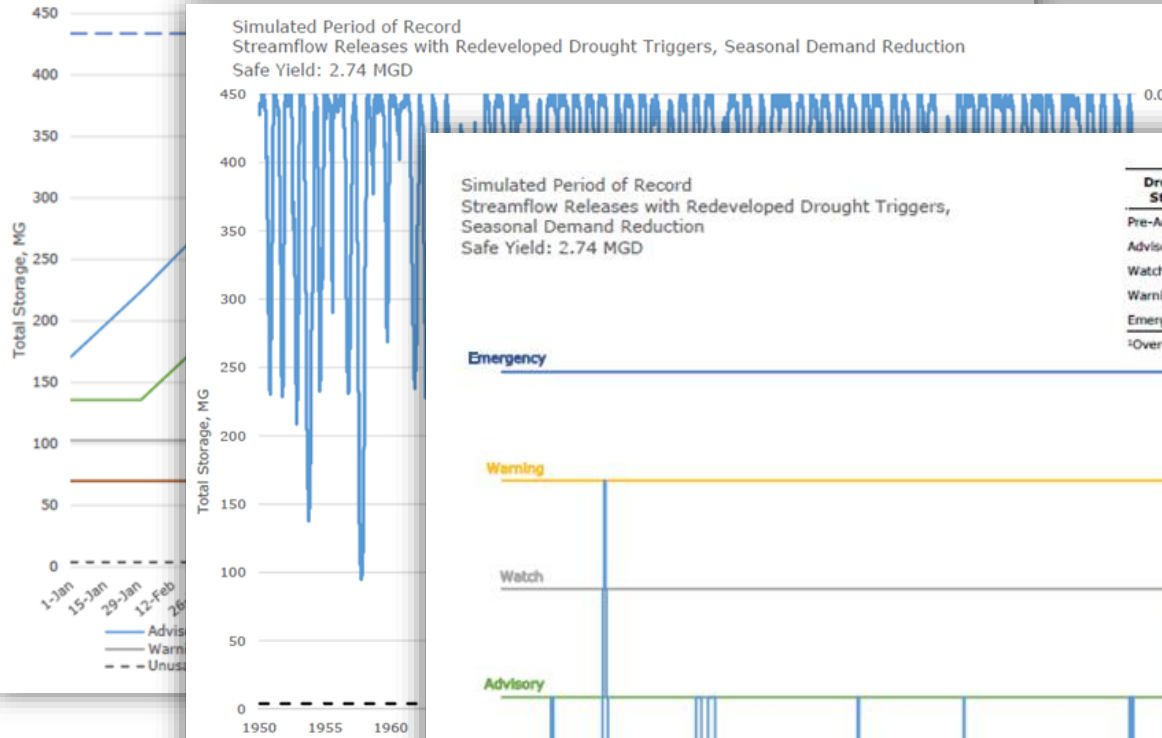
MacKenzie Production

01/01/2013 - 04/25/2018



Reservoir Drought Triggers

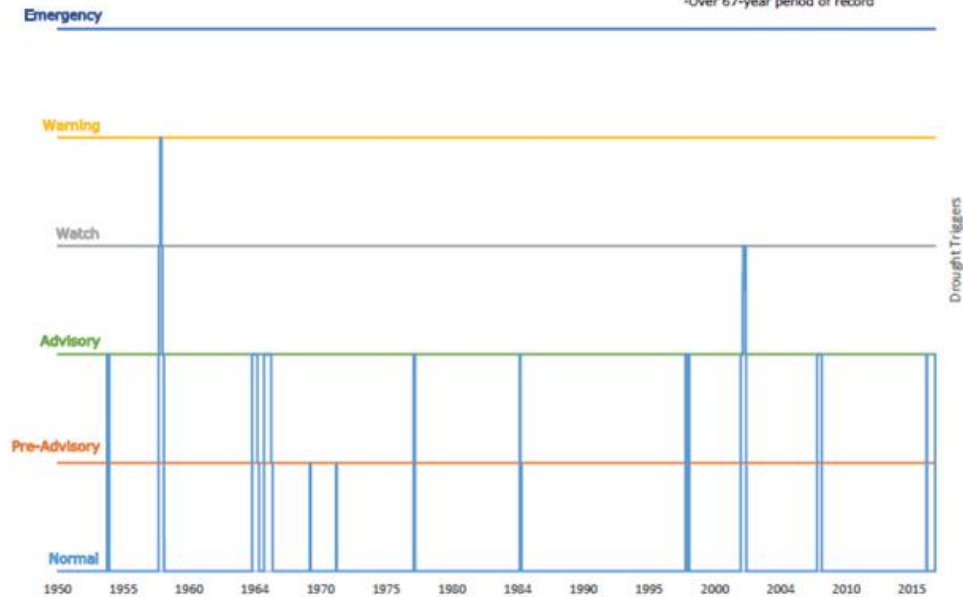
Proposed Drought Triggers for Streamflow Release Reductions
 Days storage remaining assumes 1.1 mgd withdrawal from Sept. through May,
 and 2.9 mgd average withdrawal from June through August



Simulated Period of Record
 Streamflow Releases with Redeveloped Drought Triggers,
 Seasonal Demand Reduction
 Safe Yield: 2.74 MGD

Drought Status	Status Frequency ¹	Longest Duration (days)
Pre-Advisory	6	41
Advisory	14	201
Watch	3	75
Warning	1	38
Emergency	0	0

¹Over 67-year period of record





Questions?

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