

AGENDA

1. Introductions & Drought Response Update: EOEEA, MEMA

2. Updates on Current Conditions and Impacts—DMTF member reports

- Hydrologic: DCR, USGS, NOAA-RFC
- Weather: NOAA-NWS
- Water Supply: DEP, MWRA, MWWA, DPU
- Environmental: DEP, DFG, MRA
- Agricultural: DAR
- Fire Danger: DCR
- Engineering/Infrastructure: DCR
- Public Health: DPH

3. Discussion

4. Recommendation



Hydrologic Conditions in Massachusetts

Drought Management Task Force

Anne Carroll and Viki Zoltay
DCR Office of Water Resources

August 12, 2020

Meeting Co-Chairs: EOEEA, MEMA



MA Drought Indices



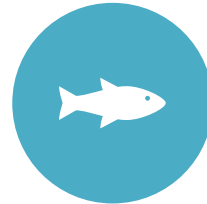
Precipitation (64)



Streamflow (59)



Groundwater (65)



Lakes and
Impoundments (17)



KBDI - Fire Danger
(16)



Crop Moisture
(national map)

Numbers in parentheses indicate number
of data points across the state

MA Drought Management Plan

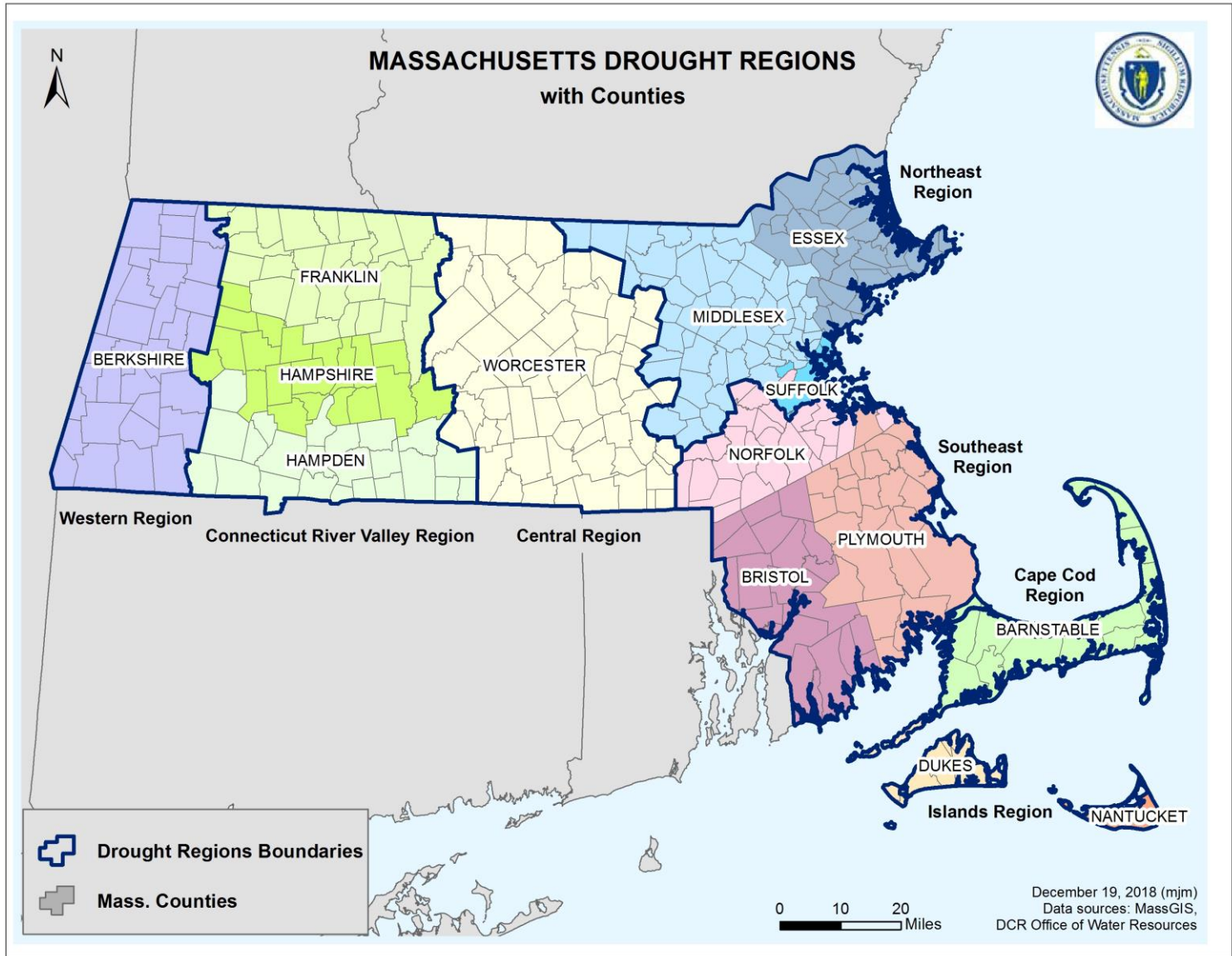
Drought Levels

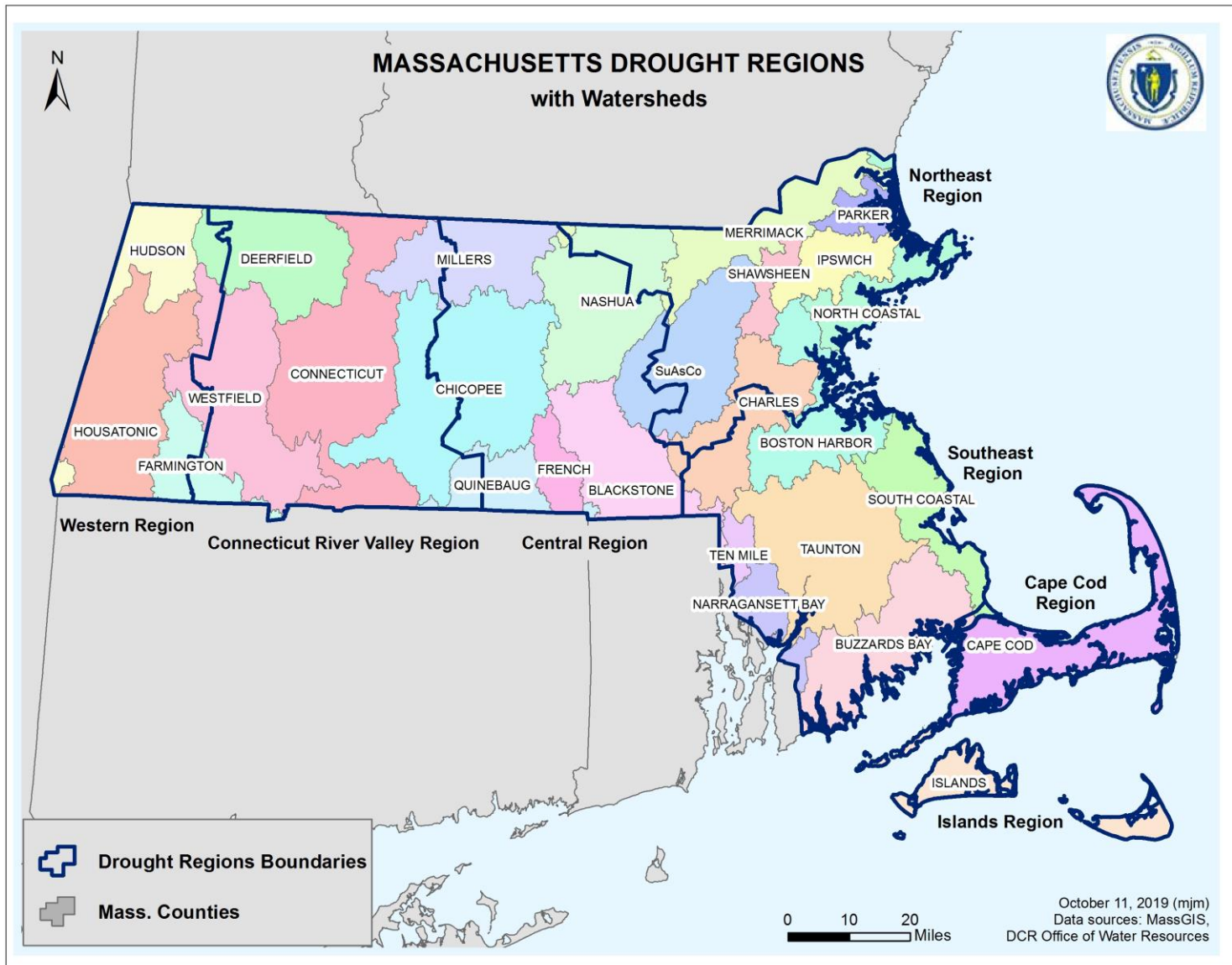


MA Drought Management Plan

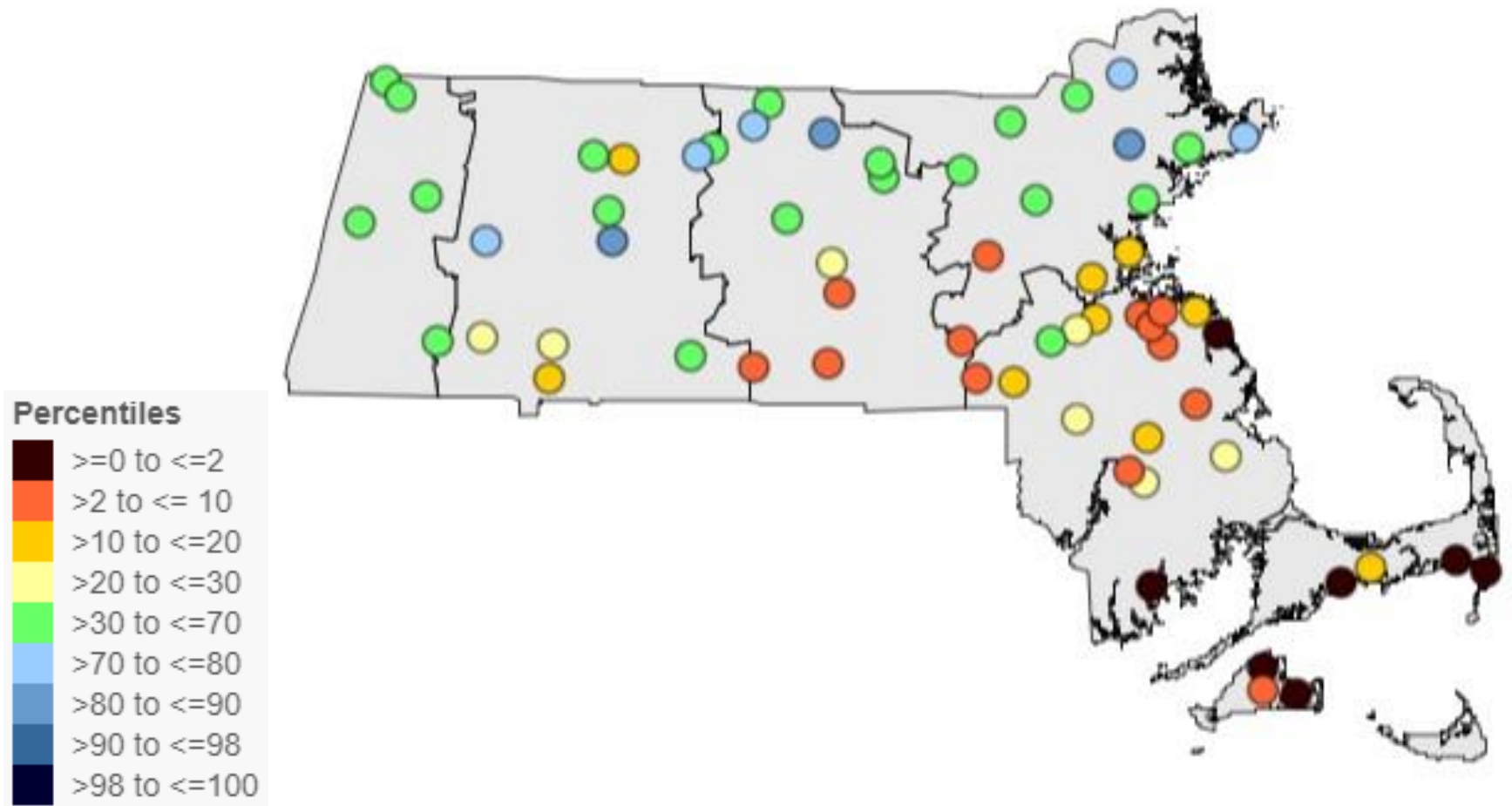
Drought Indices

Index Severity Level	Percentiles for: Precipitation, Streamflow, Lakes and Impoundments and Groundwater	Keetch- Byram Drought Index	Crop Moisture Index
0	>30 th percentile	< 200	> -1.0
1	≤30 and >20	200-400	≤-1.0 and > -2.0
2	≤20 and >10	400-600	≤-2.0 and < -3.0
3	≤10 and >2	600-700	≤ -3.0 and > -4.0
4	≤2	700-800	≤-4.0





Precipitation – SPI July

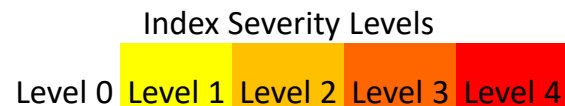


Precipitation Index – SPI

July

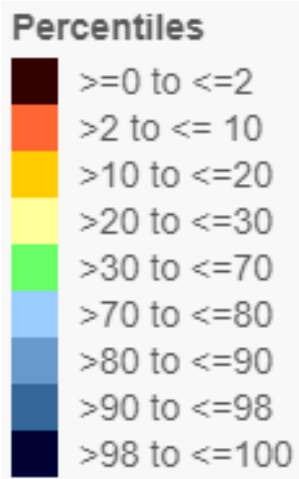
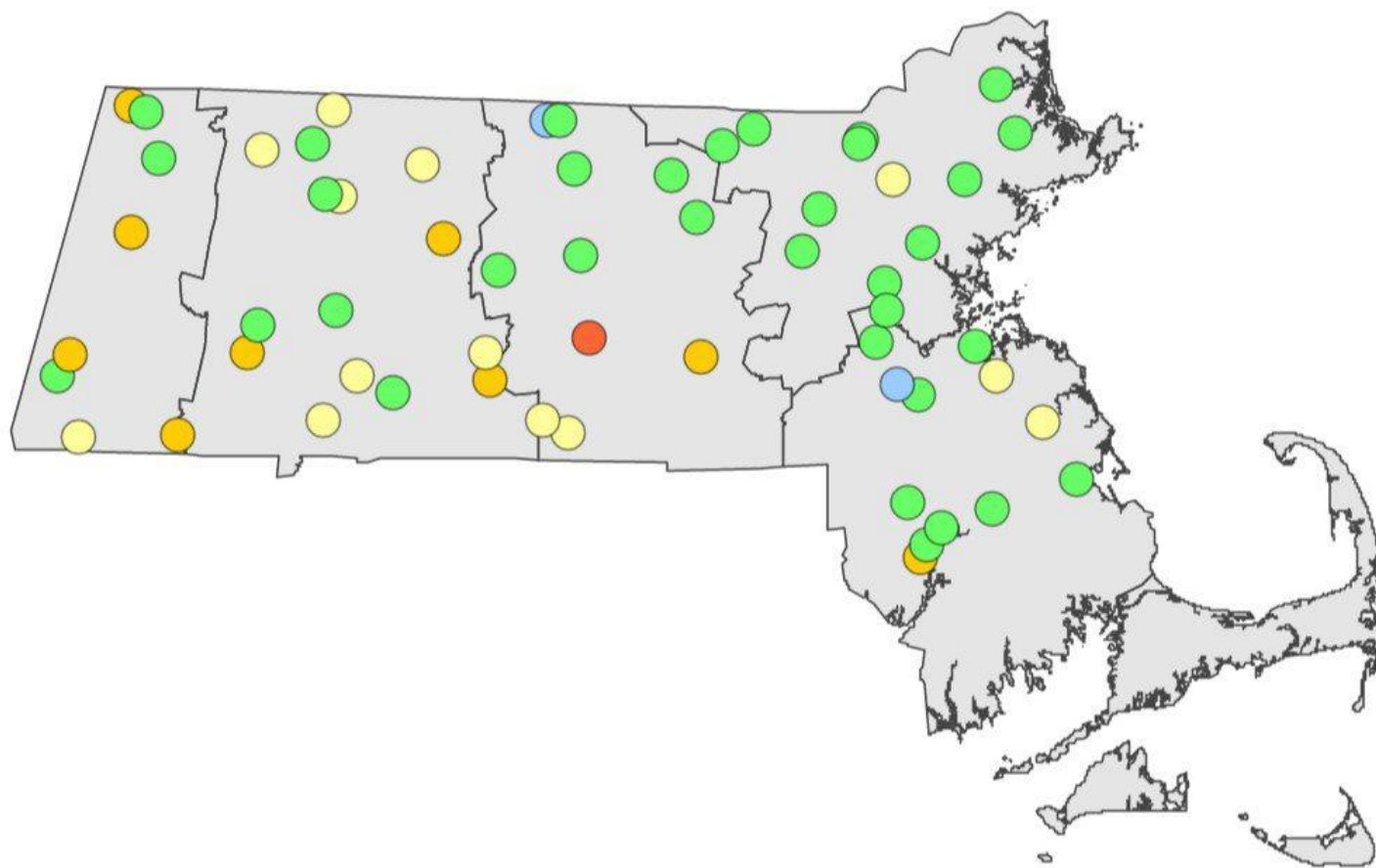
Drought Region	Number of Sites	JULY SPI 1*	SPI 2	SPI 3	SPI 6	SPI 12
Western	5	0.18	-0.62	-1.11	-0.34	-0.11
CT River Valley	10	-0.52	-0.92	-1.16	-0.79	-0.51
Central	12	0.06	-0.83	-1.21	-0.45	-0.10
Northeast	12	0.07	-0.55	-0.86	-0.55	-0.47
Southeast	18	-1.15	-0.37	-0.59	-0.21	0.06
Cape Cod	4	-2.05	-2.01	-2.01	-0.81	-0.12
Islands	3	-1.77	-1.56	-0.77	0.10	0.31

*1-month SPI is for informational purposes only, not for drought determination



Streamflow

Percentiles of Monthly Median for July



Streamflow Index - July

By Drought Region

- April - All regions at Index Severity Level 0
- May - All regions at Index Severity Level 0
- June - Western, CT River Valley, Central Level 3; Northeast Level 2; Southeast Level 0

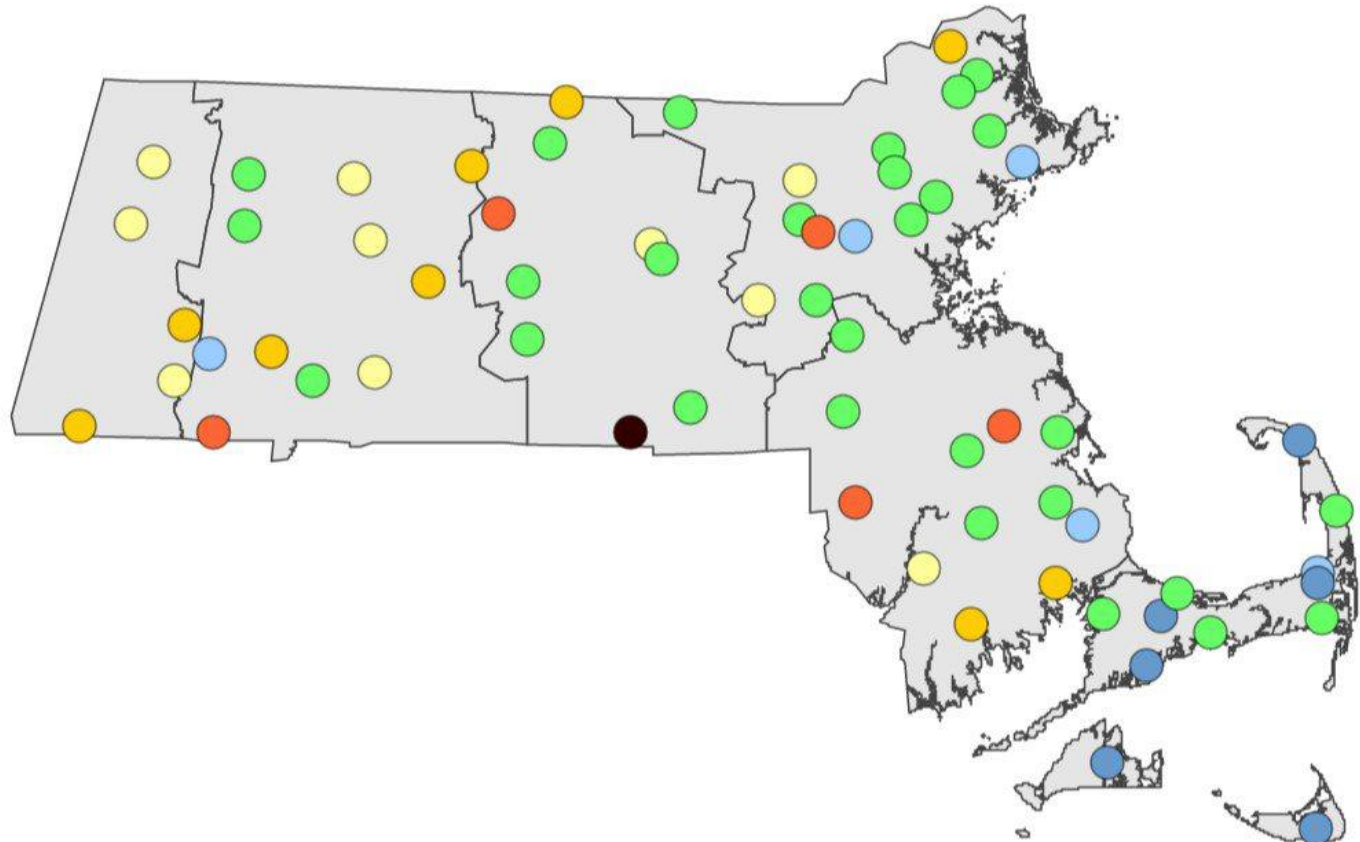
REGION	TOTAL GAGES REPORTING FOR JULY	≥0 TO ≤2 PERCENTILE	>2 TO ≤10 PERCENTILE	>10 TO ≤20 PERCENTILE	>20 TO ≤30 PERCENTILE	>90 PER-CENTILE	MEDIAN OF INDIVIDUAL GAGE PERCENTILES	DMP INDEX SEVERITY
WESTERN	8	0	0	4	1	0	22	1
CT RIVER VALLEY	15	0	0	3	7	0	27	1
CENTRAL	11	0	1	1	2	0	36	0
NORTHEAST	13	0	0	0	1	0	45	0
SOUTHEAST	12	0	0	1	2	0	46	0

Notes: Not all gages report in all months due to ice, beaver dams or other conditions. Streamflow index is not applicable to Cape Cod and the Islands.

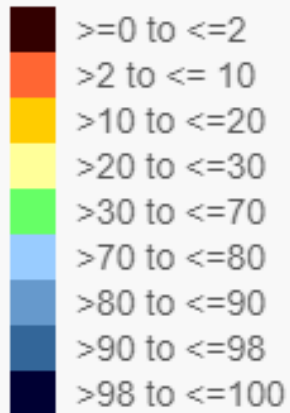
Index Severity Levels



Groundwater Wells Percentiles July



Percentiles



8/12/2020

Groundwater Index - July

By Drought Region

- April - All regions at Index Severity Level 0
- May - Western Region at Index Severity Level 1
- June - Western & Central Level 1; CT River Valley Level 2

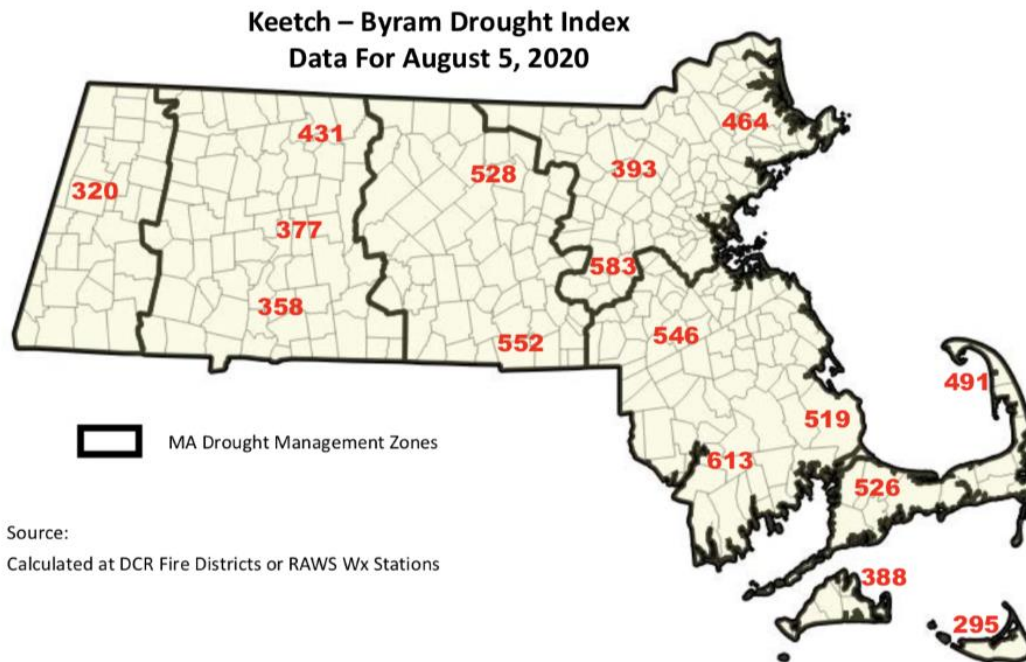
REGION	TOTAL WELLS REPORTING FOR JULY	≥0 TO ≤2 PERCENTILE	>2 TO ≤10 PERCENTILE	>10 TO ≤20 PERCENTILE	>20 TO ≤30 PERCENTILE	>90 PERCENTILE	MEDIAN OF INDIVIDUAL GAGE PERCENTILES	DMP INDEX SEVERITY
WESTERN	5	0	0	2	3	0	22	1
CT RIVER VALLEY	11	0	1	3	3	0	28	1
CENTRAL	10	1	1	1	2	0	30	1
NORTHEAST	15	0	1	1	1	0	47	0
SOUTHEAST	12	0	2	2	1	0	35	0
CAPE COD	10	0	0	0	0	0	70	0
ISLANDS	2	0	0	0	0	0	84	0

Index Severity Levels

KBDI

As of **August 5, 2020:**

- Drought Index Severity **Level 1: Western, Islands**
- Drought Index Severity **Level 2: CT River Valley, Central, Northeast, Cape Cod**
- Drought Index Severity **Level 3: Southeast**



Index Severity Level	KBDI Range
0	<200
1	200 to <400
2	400 to <600
3	600 to <700
4	700 to <800

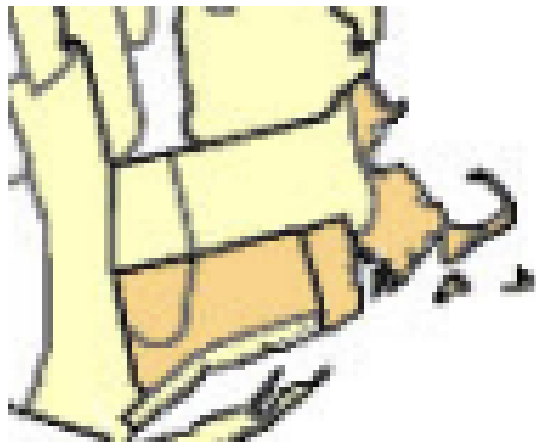
Fire Danger Index indicating dryness in the top 8" of soil.
Data provided by the DCR Fire Chief

Crop Moisture Index

The CMI map week ending **August 1, 2020** shows:

Drought Index Severity **Level 1** for: **Western, CT River Valley, & Central Regions**

Drought Index Severity **Level 2** for: **Northeast, Southeast, Cape Cod, & Islands Regions**



Index Severity Level	Crop Moisture Index
0	> -1.0
1	≤ -1.0 and > -2.0
2	≤ -2.0 and > -3.0
3	≤ -3.0 and > -4.0
4	≤ -4.0

The CMI shows the **short-term need versus available water** in a shallow soil profile and responds quickly to changing conditions. This indicator is **relevant during growing season**.

https://www.cpc.ncep.noaa.gov/products/analysis_monitoring/regional_monitoring/cmi.gif

Lakes & Impoundments

July

Drought Region	Number Reporting	Percentile	DMP Index Severity
Western	2	25	Level 1
CT River Valley	2	31	Level 0
Central	4	33	Level 0
Northeast	6	26	Level 1
Southeast	2	15	Level 2
Cape Cod	1	65	Level 0
Islands	NA	NA	NA

Western, NE, & SE Regions reservoirs are lower than usual; does not reflect water supply status

Summary of Drought Indices by Drought Region

July 2020

Drought Indicator	Western	CT River Valley	Central	Northeast	Southeast	Cape	Islands
Precipitation	Level 2	Level 2	Level 2	Level 2	Level 1	Level 3	Level 3
Streamflow	Level 1	Level 1	Level 0	Level 0	Level 0	N/A	N/A
Groundwater	Level 1	Level 1	Level 1	Level 0	Level 0	Level 0	Level 0
Lakes/ Impoundments	Level 1	Level 0	Level 0	Level 1	Level 2	Level 0	N/A
Crop Moisture Index	Level 1	Level 1	Level 1	Level 2	Level 2	Level 2	Level 2
KBDI - Fire Danger	Level 1	Level 2	Level 2	Level 2	Level 3	Level 2	Level 1

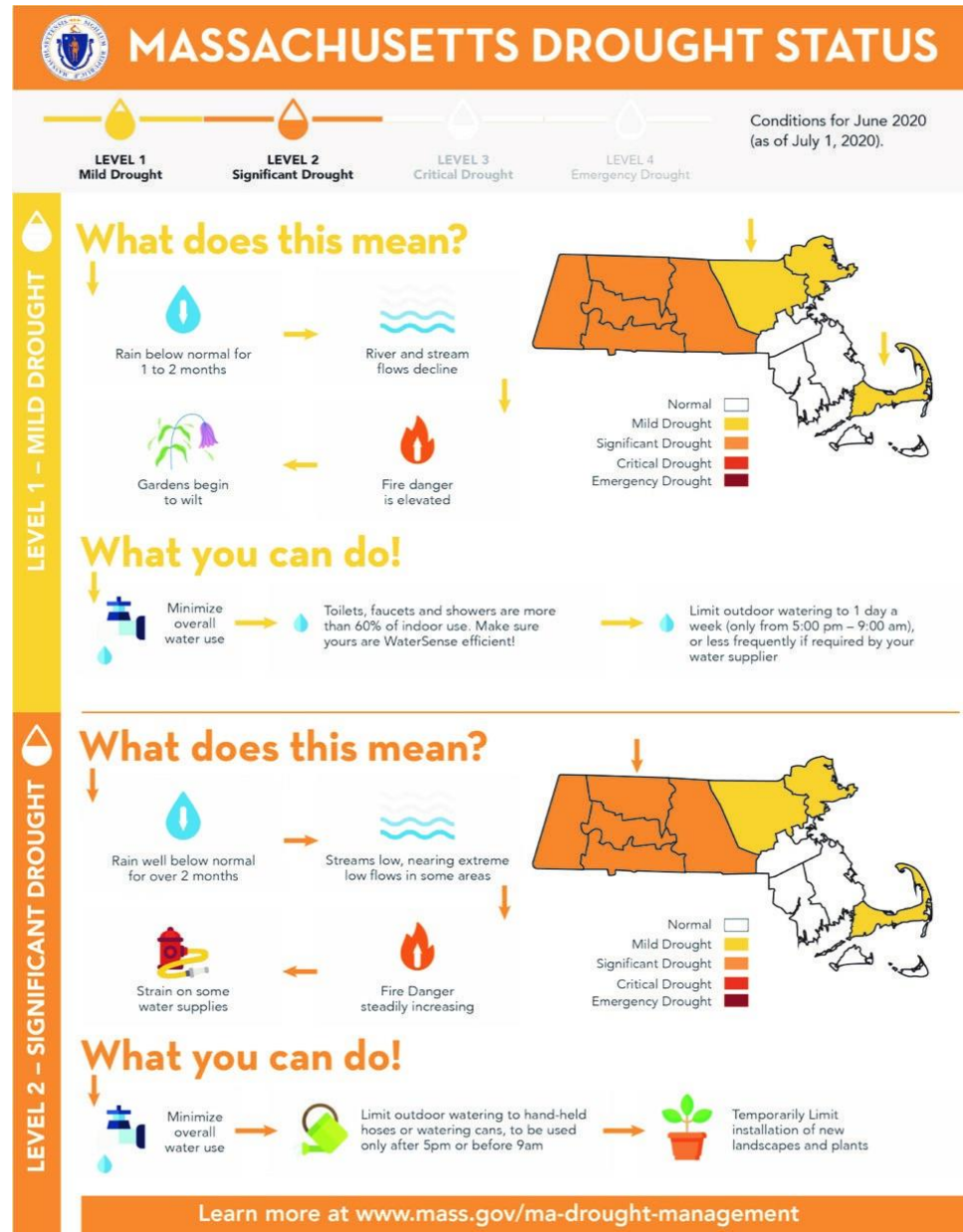
Lakes & Impoundments Index does not reflect water supply status.

This summary is provided for informational purposes. No changes in drought status are official until the Drought Management Task Force convenes and makes a recommendation accepted by Secretary of the Executive Office of Energy and Environmental Affairs. Data are preliminary and not final until all data are reported.

DMTF Deliberation

Drought Infographics

8/12/2020





LEVEL 2 - SIGNIFICANT DROUGHT



LEVEL 1
Mild Drought

LEVEL 2
Significant Drought

LEVEL 3
Critical Drought

LEVEL 4
Emergency Drought



**MASSACHUSETTS
DROUGHT STATUS**
Conditions for June 2020
(as of July 1, 2020).



Normal	
Mild Drought	
Significant Drought	
Critical Drought	
Emergency Drought	

What does this mean?



Rain well below normal
for over 2 months



Streams low, nearing
extreme low flows
in some areas



Fire Danger
steadily increasing



Strain on some
water supplies

What you can do!



Minimize overall water use



Limit outdoor watering to
hand-held hoses or watering cans,
to be used only after 5pm
or before 9am



Temporarily Limit installation of
new landscapes and plants

Learn more at www.mass.gov/ma-drought-management



LEVEL 1 - MILD DROUGHT



LEVEL 1
Mild Drought



LEVEL 2
Significant Drought



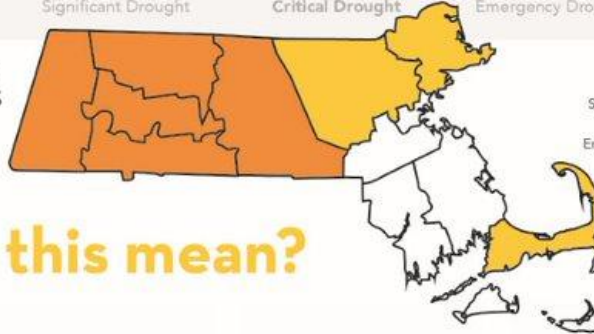
LEVEL 3
Critical Drought



LEVEL 4
Emergency Drought



**MASSACHUSETTS
DROUGHT STATUS**
Conditions for June 2020
(as of July 1, 2020).



Normal 
Mild Drought 
Significant Drought 
Critical Drought 
Emergency Drought 

What does this mean?



Rain below normal
for 1 to 2 months



River and stream
flows decline



Fire danger
is elevated



Gardens begin
to wilt

What you can do!



Minimize overall
water use



Toilets, faucets and showers are more than 60% of indoor use. Make sure yours are WaterSense efficient!



Limit outdoor watering to 1 day a week (only from 5:00 pm – 9:00 am), or less frequently if required by your water supplier for people, fire protection, and wildlife

Learn more at www.mass.gov/ma-drought-management