MASSACHUSETTS RIVER OVERVIEW

Ronald S.W. Horwood
Sr. Meteorologist
National Weather Service
Northeast River Forecast Center
Norton MA

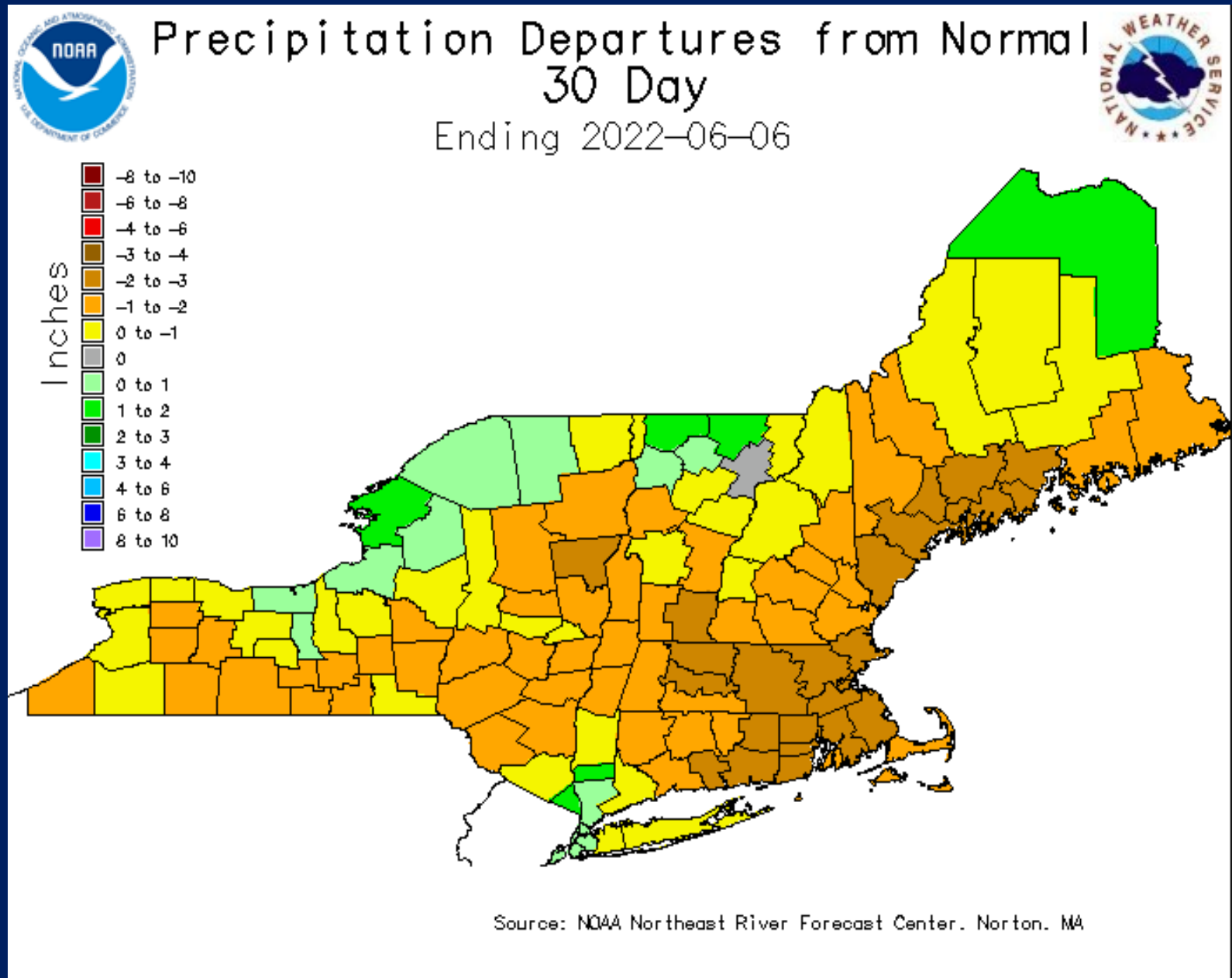
MA Drought Management Task Force
9 June 2022

OUTLINE

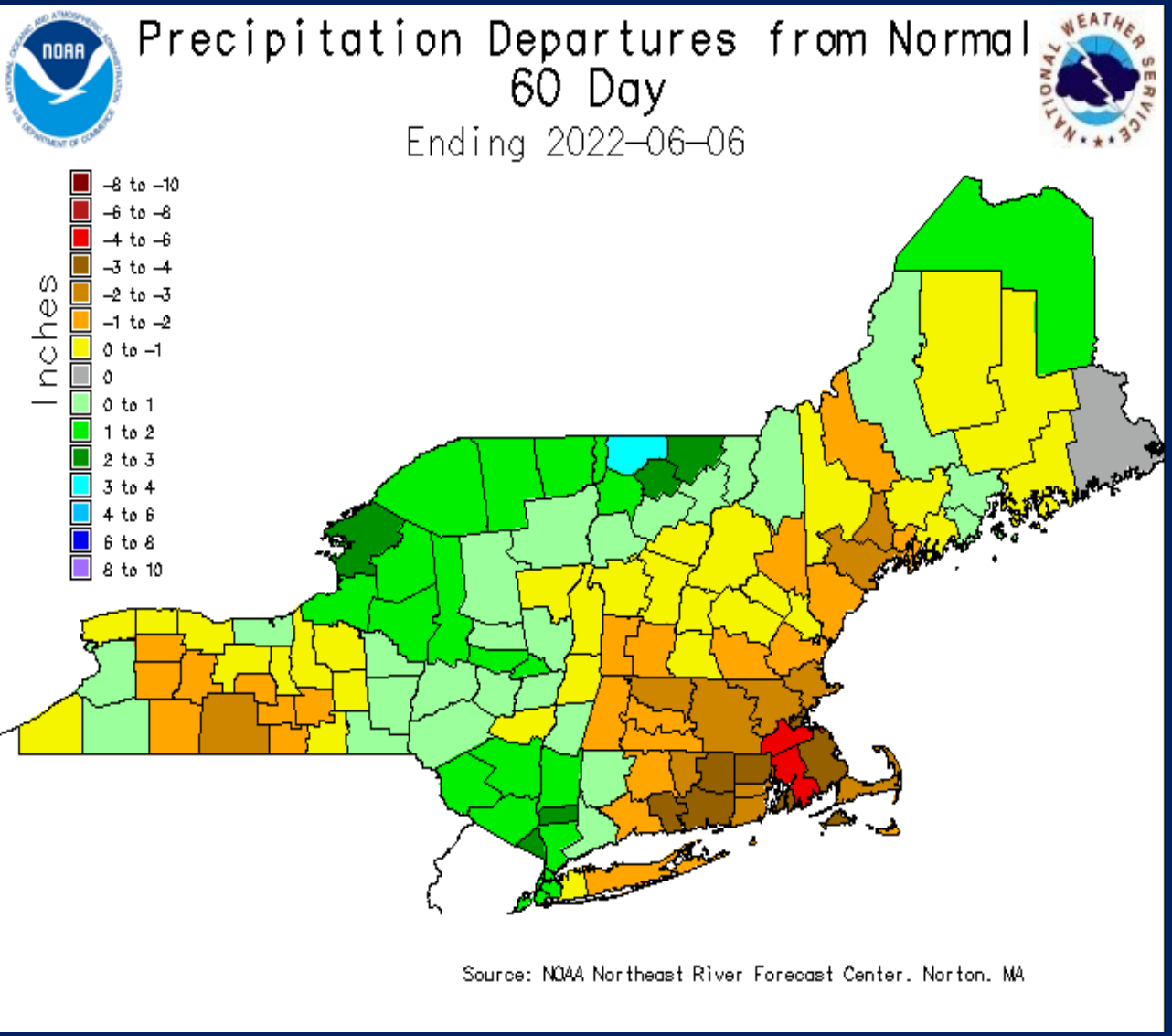
- Massachusetts Rainfall Departures – Spring 2022
- Current River Flows / Groundwater
- River Forecast Outlook
- Conclusions

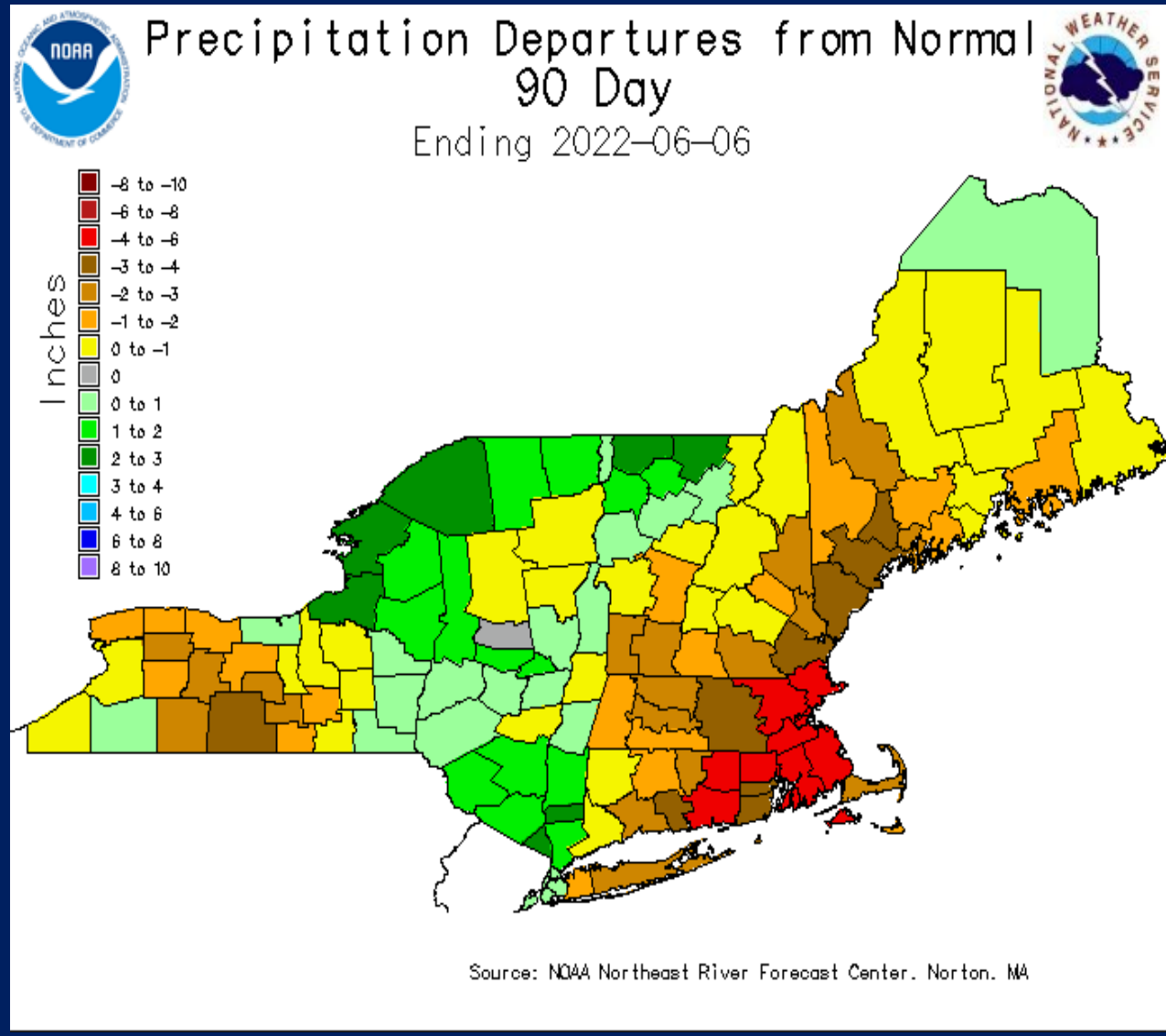
MASS RAINFALL DEPARTURES – SPRING 2022

- All of the Commonwealth received below normal rainfall during Spring 2022 (Mar…Apr and May).
  Boston -4.48”
  Worcester -2.04”
- The highest negative departures occurred in eastern sections of Massachusetts (Cape Cod fared marginally better).

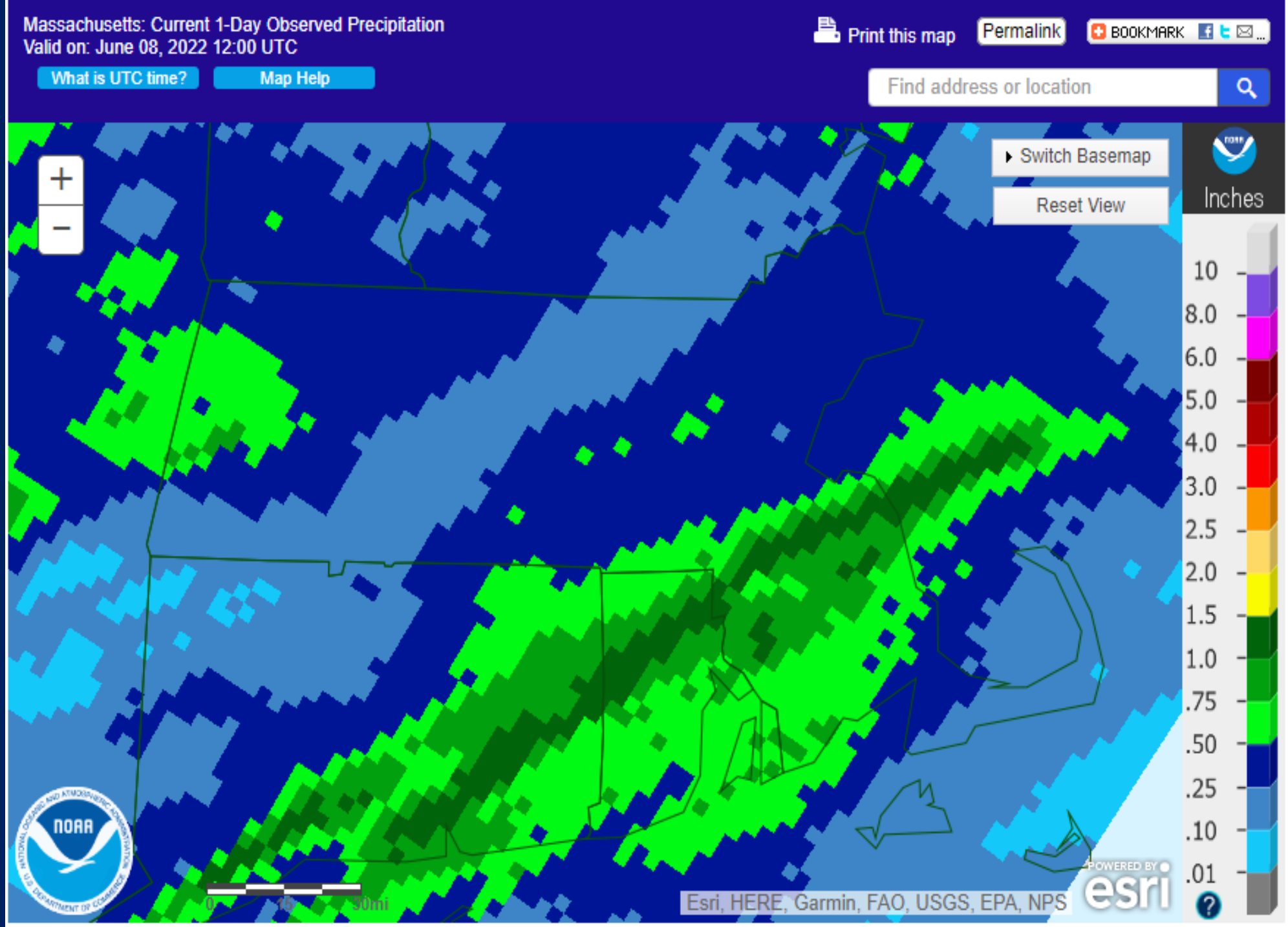


MASS RAINFALL DEPARTURES – SPRING 2022



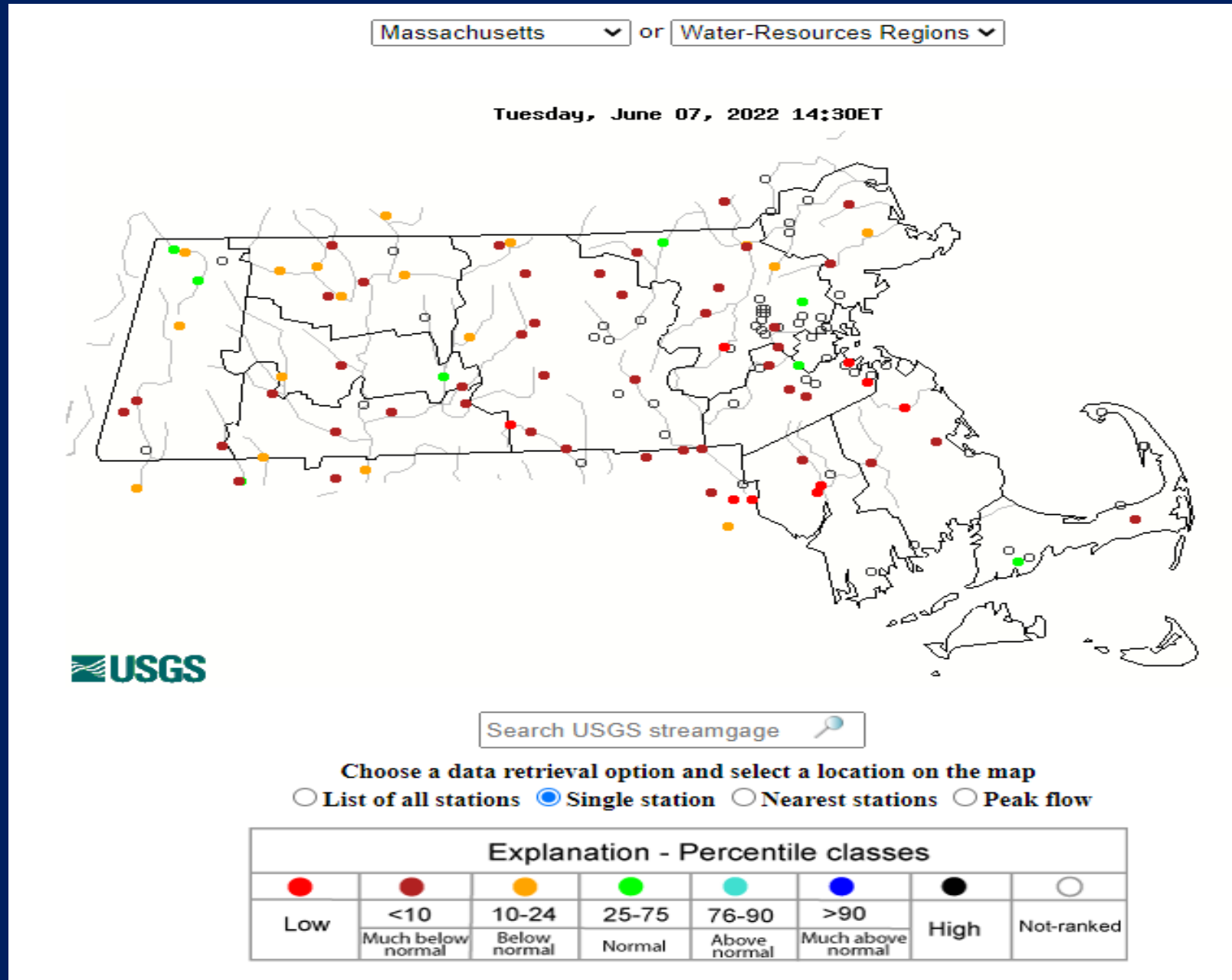


- 24-hour rainfall ending 8AM EDT 8 June



CURRENT RIVER FLOWS

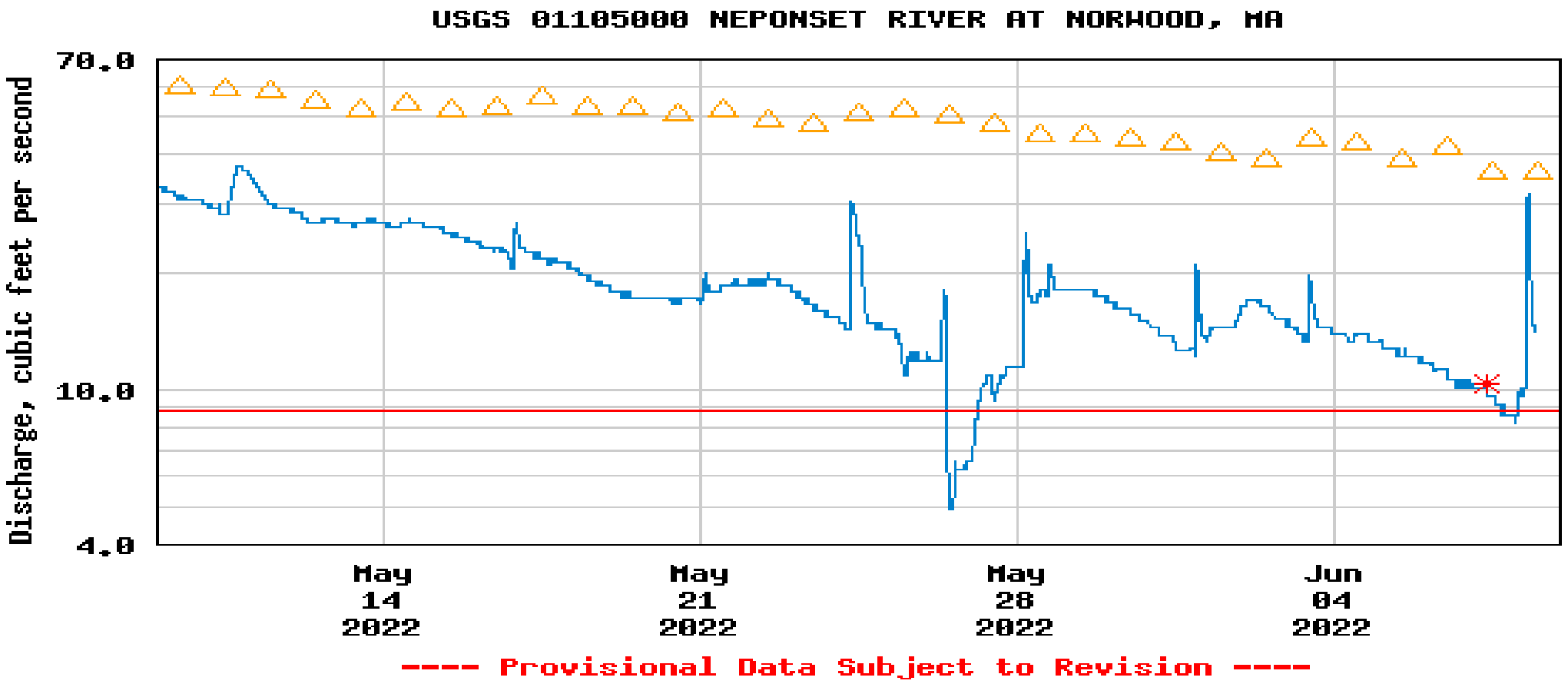
- Flows were below to much below normal across the State as of 7 June 2022.
- Several record low daily flows (bright red circles) were observed across southeast Massachusetts where the drought is emerging most rapidly.



CURRENT RIVER FLOWS - cont

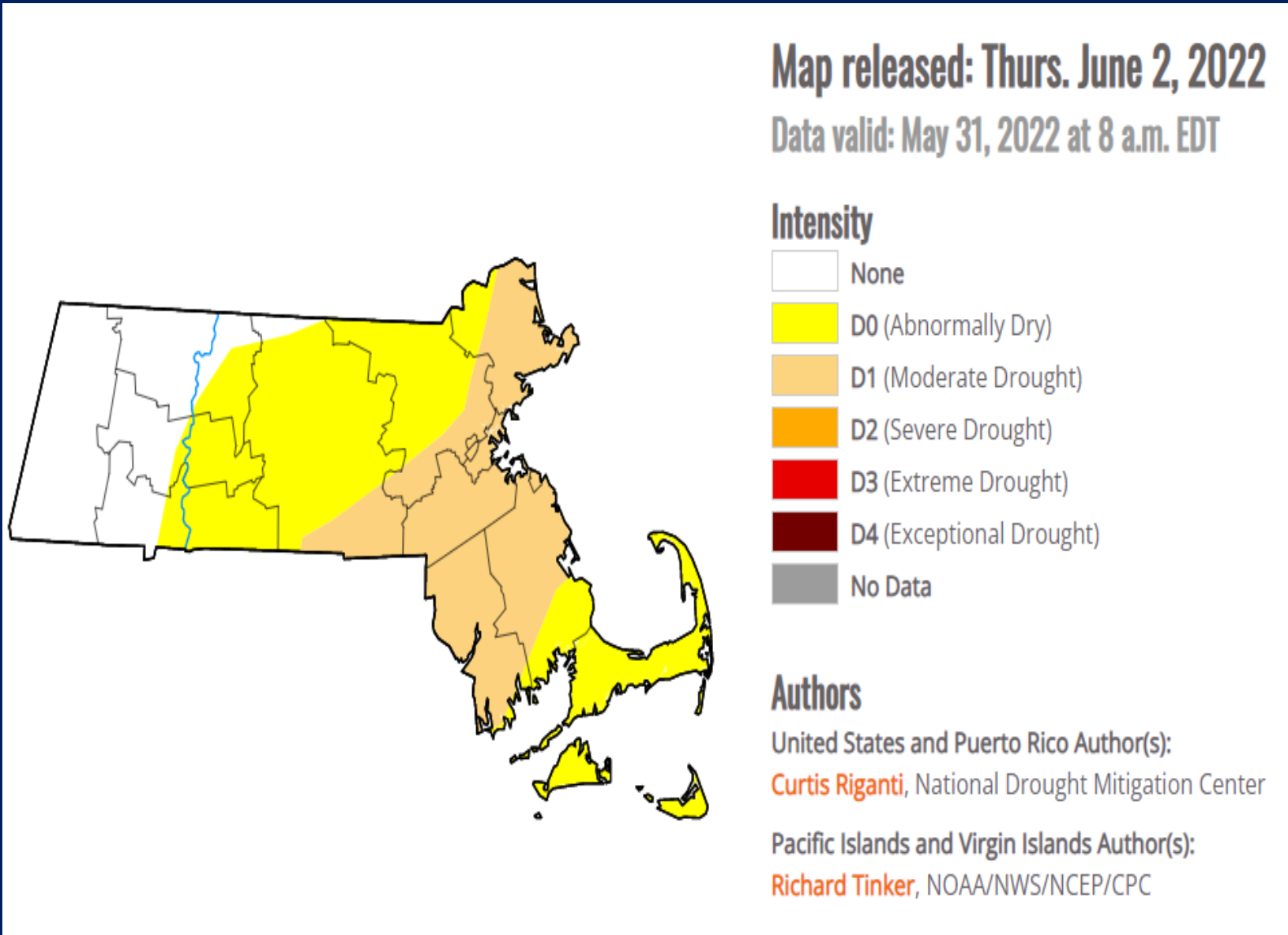
Discharge, cubic feet per second

Most recent instantaneous value: 14.6 06-08-2022 11:00 EDT



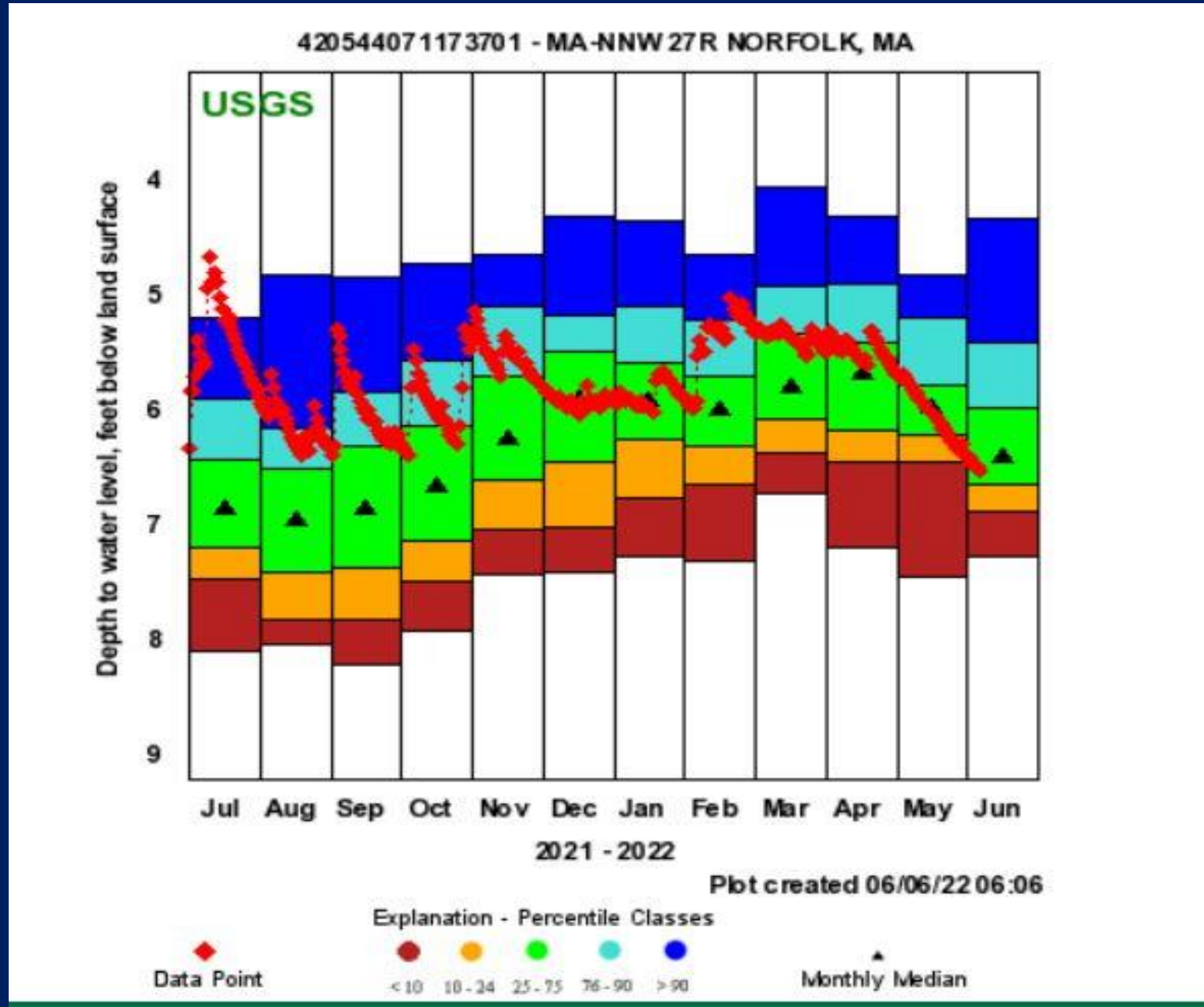
CURRENT RIVER FLOWS - cont

- Current USDM D1 corresponds nicely to the areas with record low daily flows.



GROUNDWATER

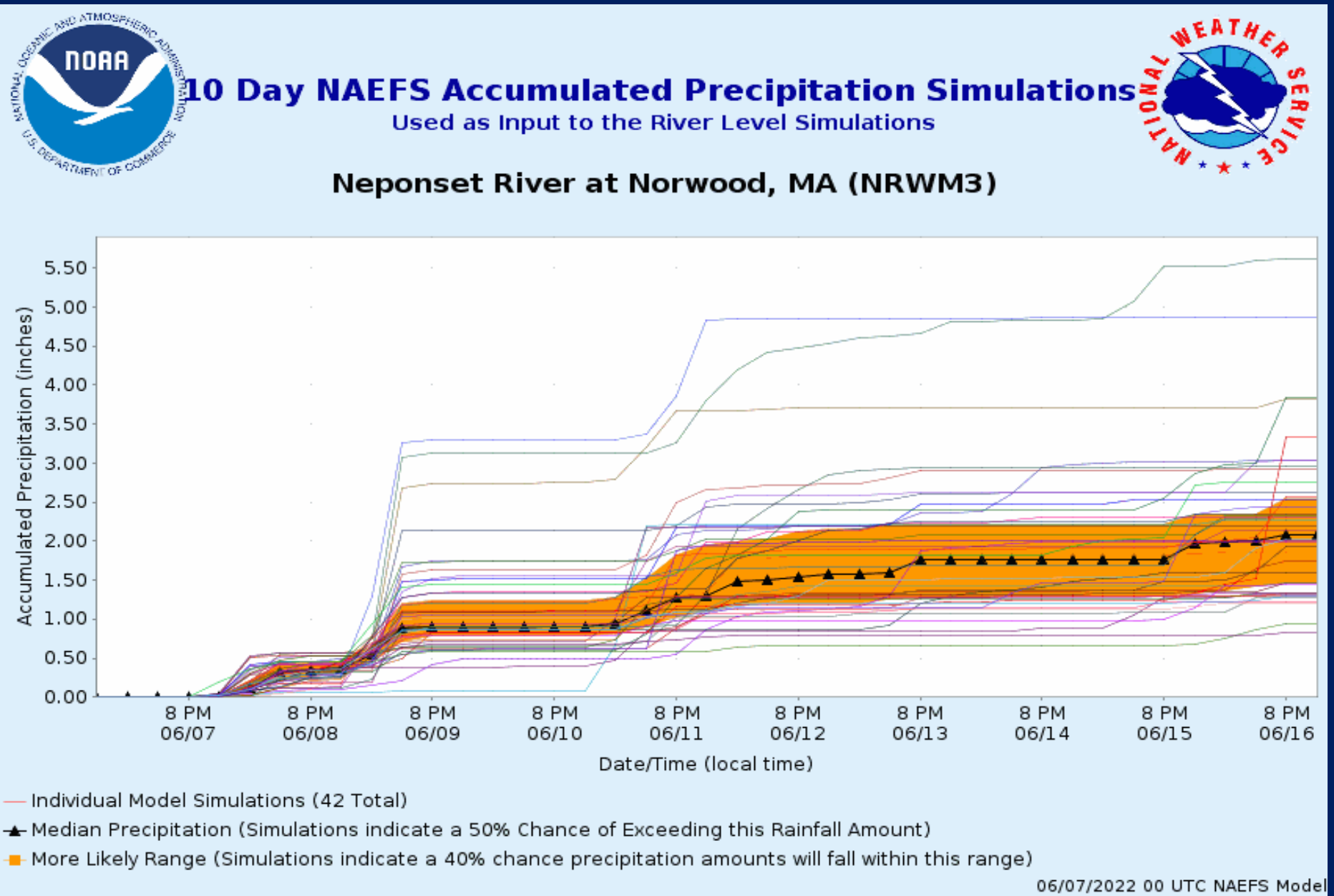
- Groundwater levels across the Commonwealth are in much better shape than surface flows. Even the shallow wells in the current drought areas are holding near normal although beginning to decline.



NAEFS ENSEMBLE RIVER FORECAST OUTLOOK

- A 42 member ensemble run for all NERFC forecast points to give us an idea of the possible range of river flows.
  - Basically 42 slightly different initial conditions lead to 42 different forecasts based on rainfall and temperature.
- Will show results for the Neponset River at Norwood (NRWM3) and the Westfield River at Westfield (WSFM3).

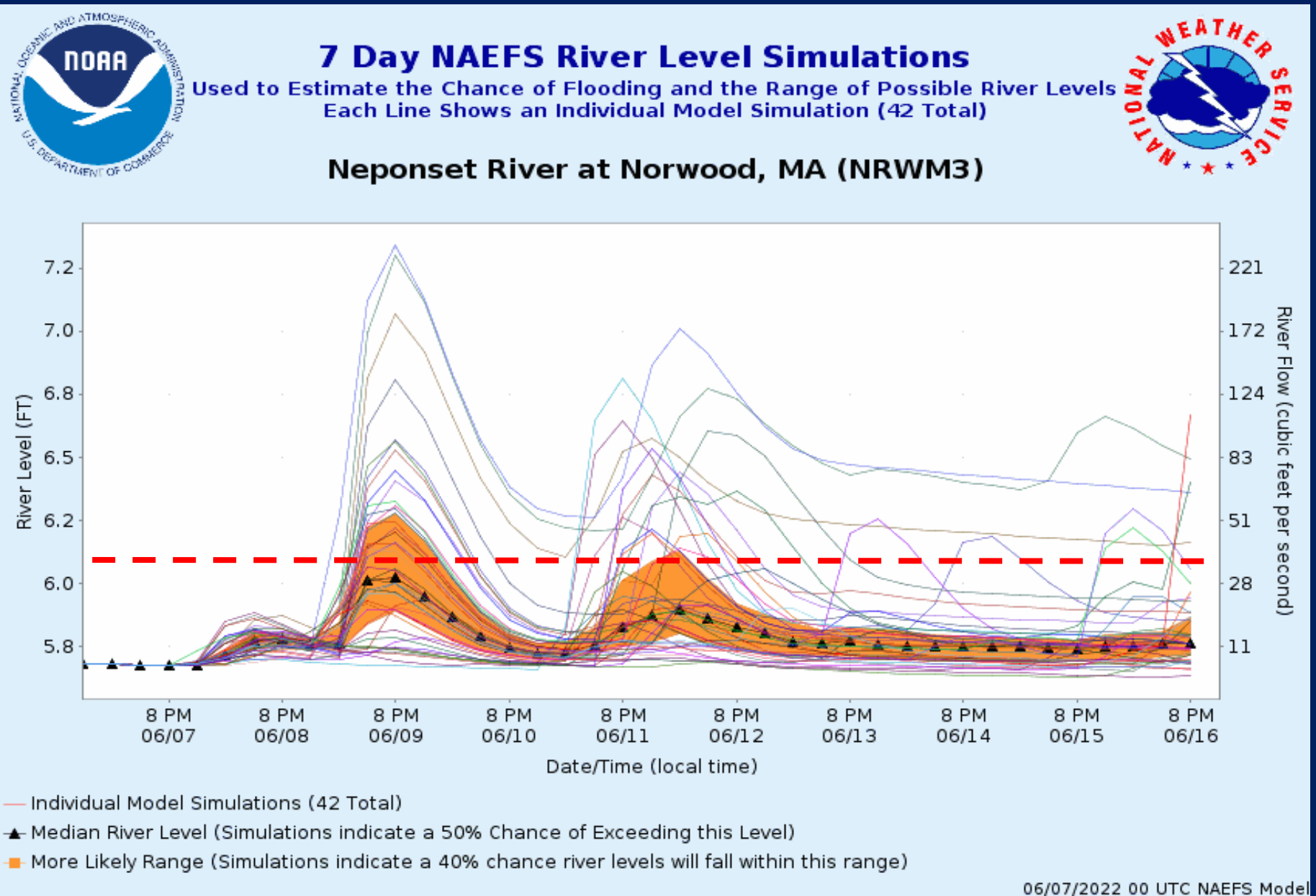
NAEFS – NRWM3



Rainfall forecasts are clustered in the 1.00 – 2.00 inch range over the next 10 days.

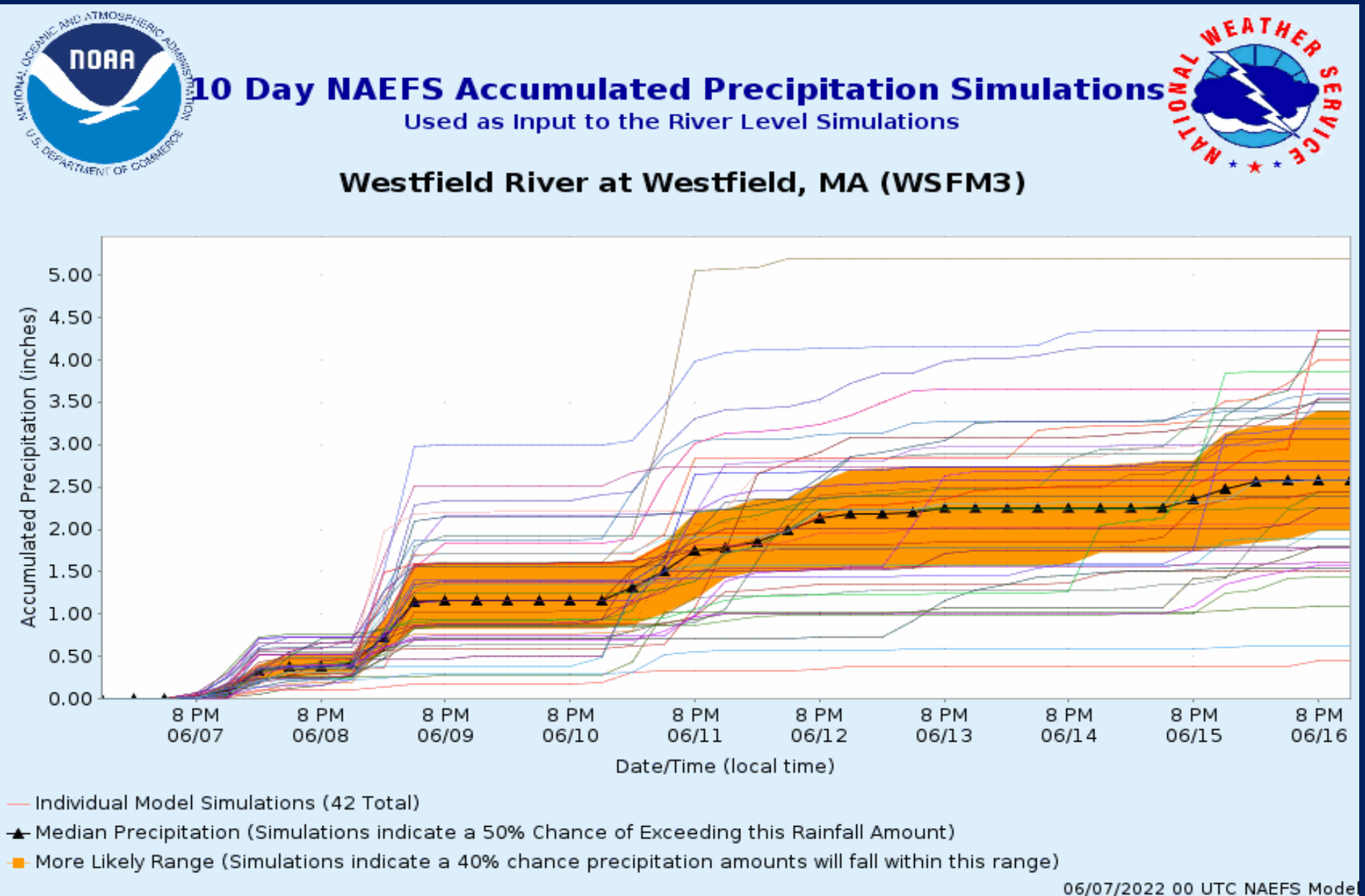
A few outlier solutions suggest 4+ inches of rainfall.

NAEFS – NRWM3



Most all solutions suggest river flows will be higher in 10 days than they were entering this week but below the median flow for early June.

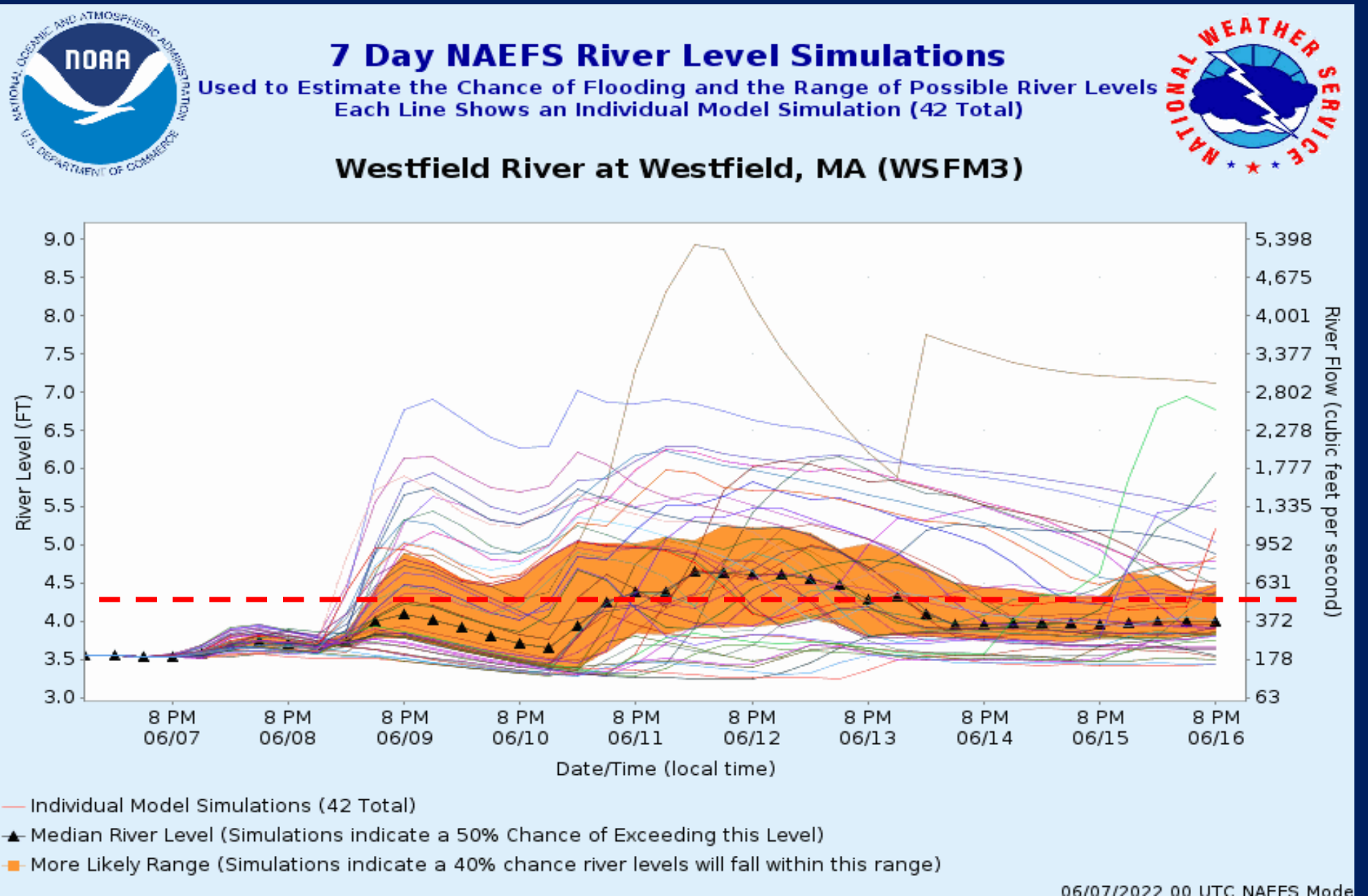
NAEFS – WSFM3



Rainfall is projected to be a bit higher here…between 1.50 and 3.00 inches.

There is more uncertainty with less clustering around the median.

NAEFS – WSFM3



- Flows in 10 days are likely to be closer to the median compared to Norwood.

CONCLUSIONS

- Most rivers and streams should see flow increases over the next 10 days due to the expected wet weather pattern.
- Groundwater is holding on despite the recent dryness.
- Eastern Massachusetts continues to be at the highest risk for drought expansion as we are entering the hottest part of the year with significant precipitation deficits.
- No excessive heat is indicated over the next 10 days.

weather.gov/nerfc