



# MASSACHUSETTS RIVER OVERVIEW



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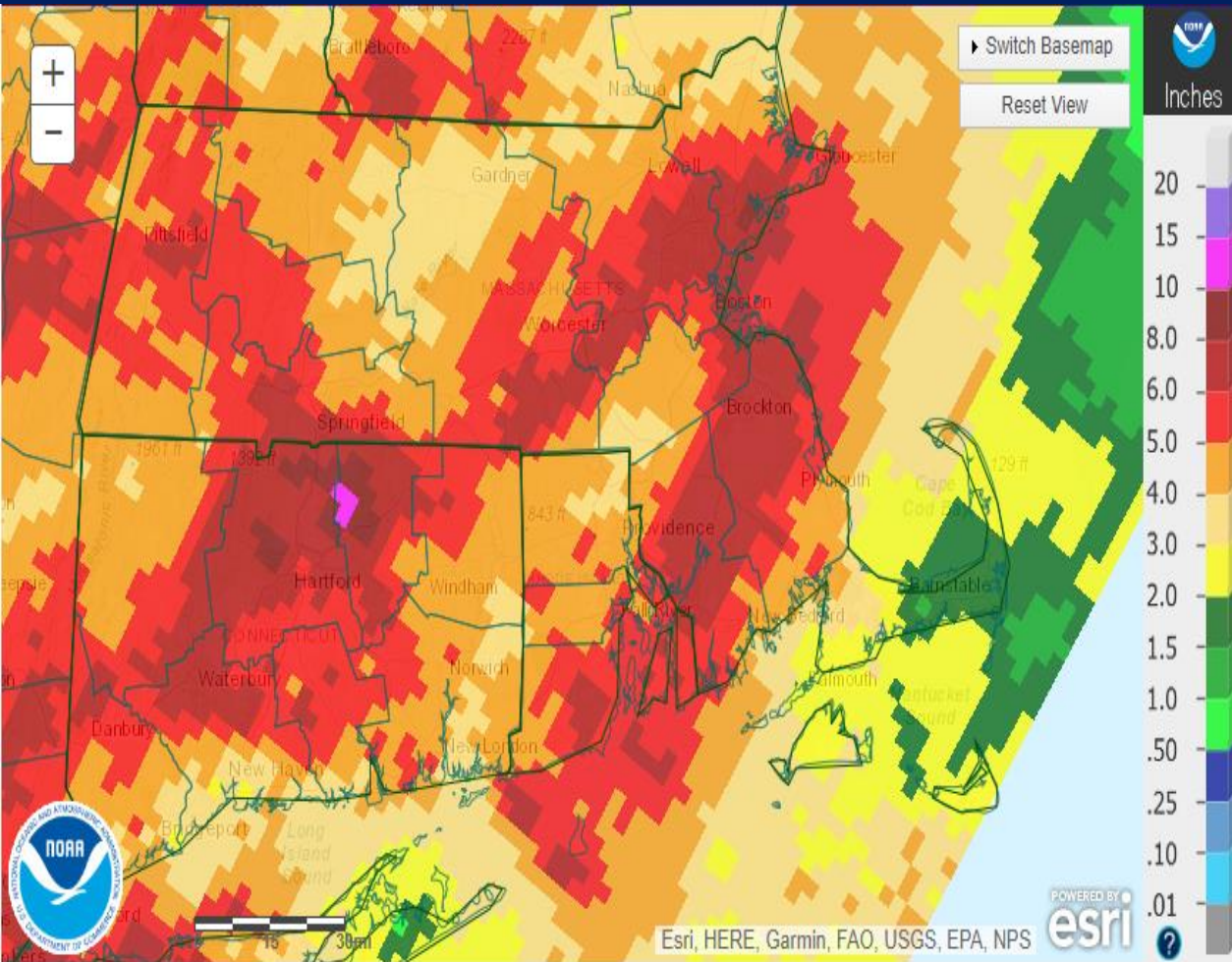
MA Drought Management Task Force

8 September 2021

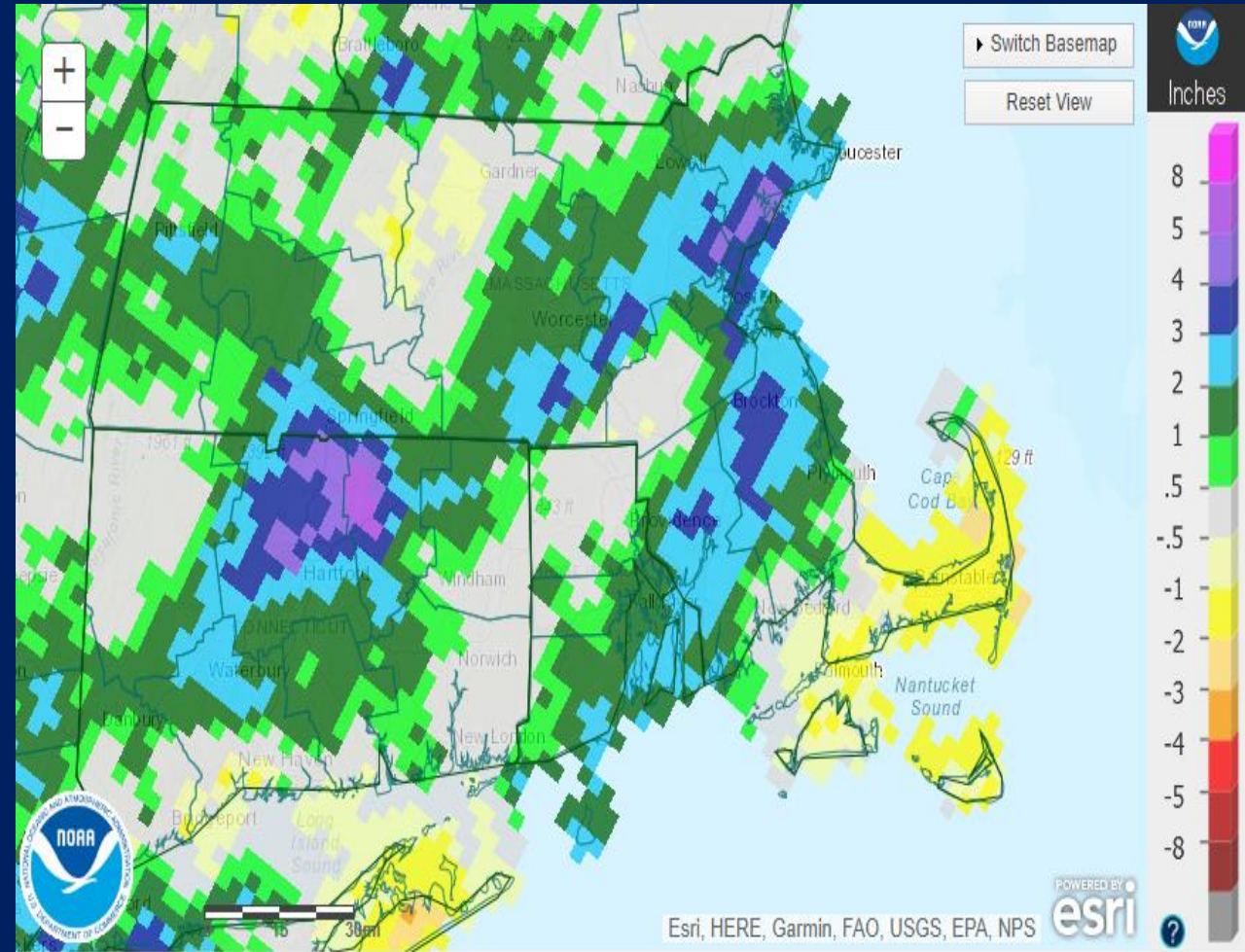
# OVERVIEW

- August 2021 Rainfall Review
- Ida Remnants Rainfall/Flooding
- Current River Flows
- Near Term Precipitation Forecast
- River Forecast Outlook
- Long Range Weather Forecasts
- Conclusions

# AUGUST 2021 RAINFALL REVIEW



- 3 to 6 inch rainfalls were common with higher spot totals especially across eastern/southeastern Massachusetts
- Most of the Cape and Islands saw just 1.5 to 3 inches

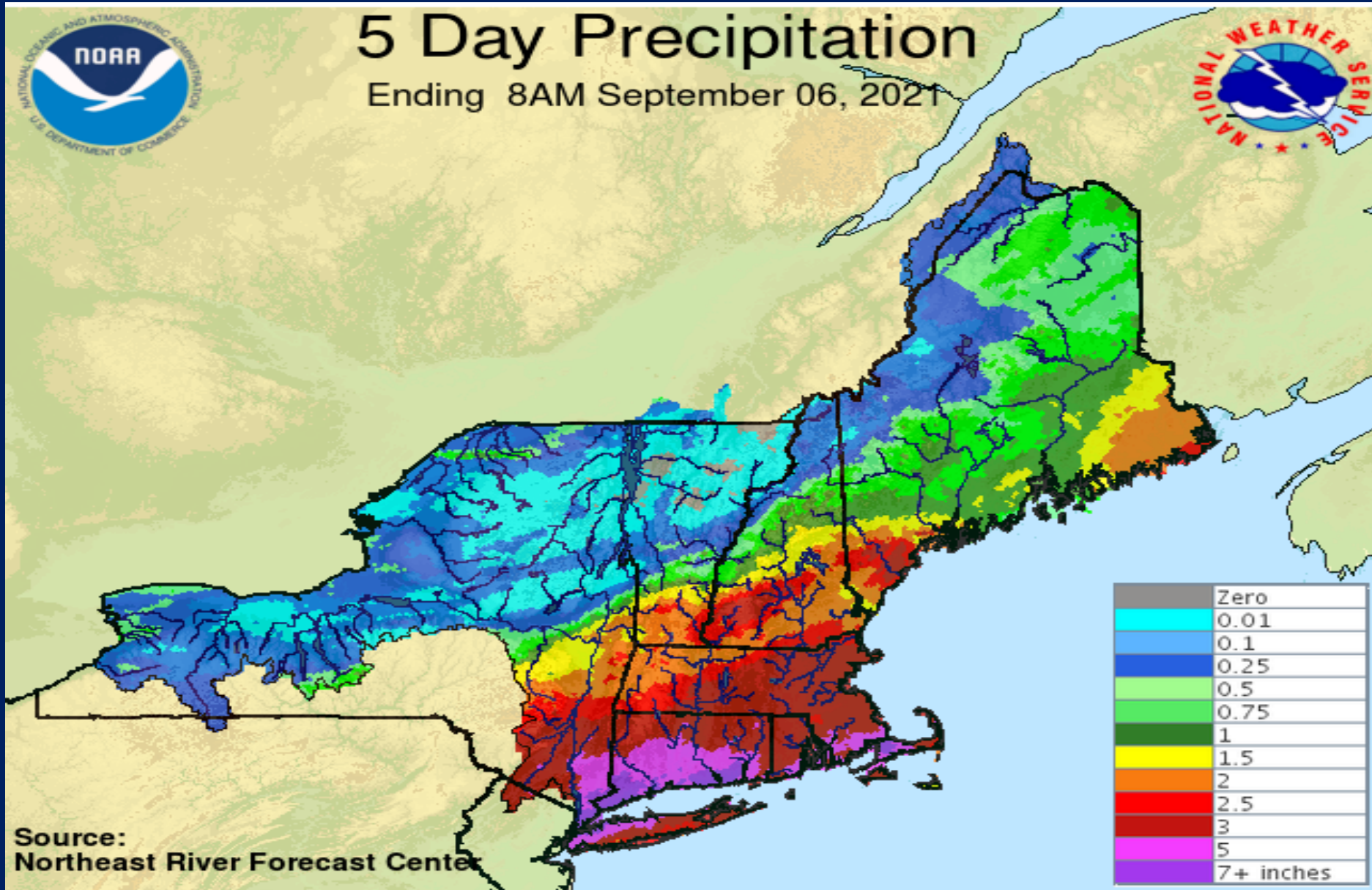


- Most of the Commonwealth saw near to above normal rainfall
- HYA-CHH 1-2+ inches below normal ( broken record )

# REMNANTS OF IDA

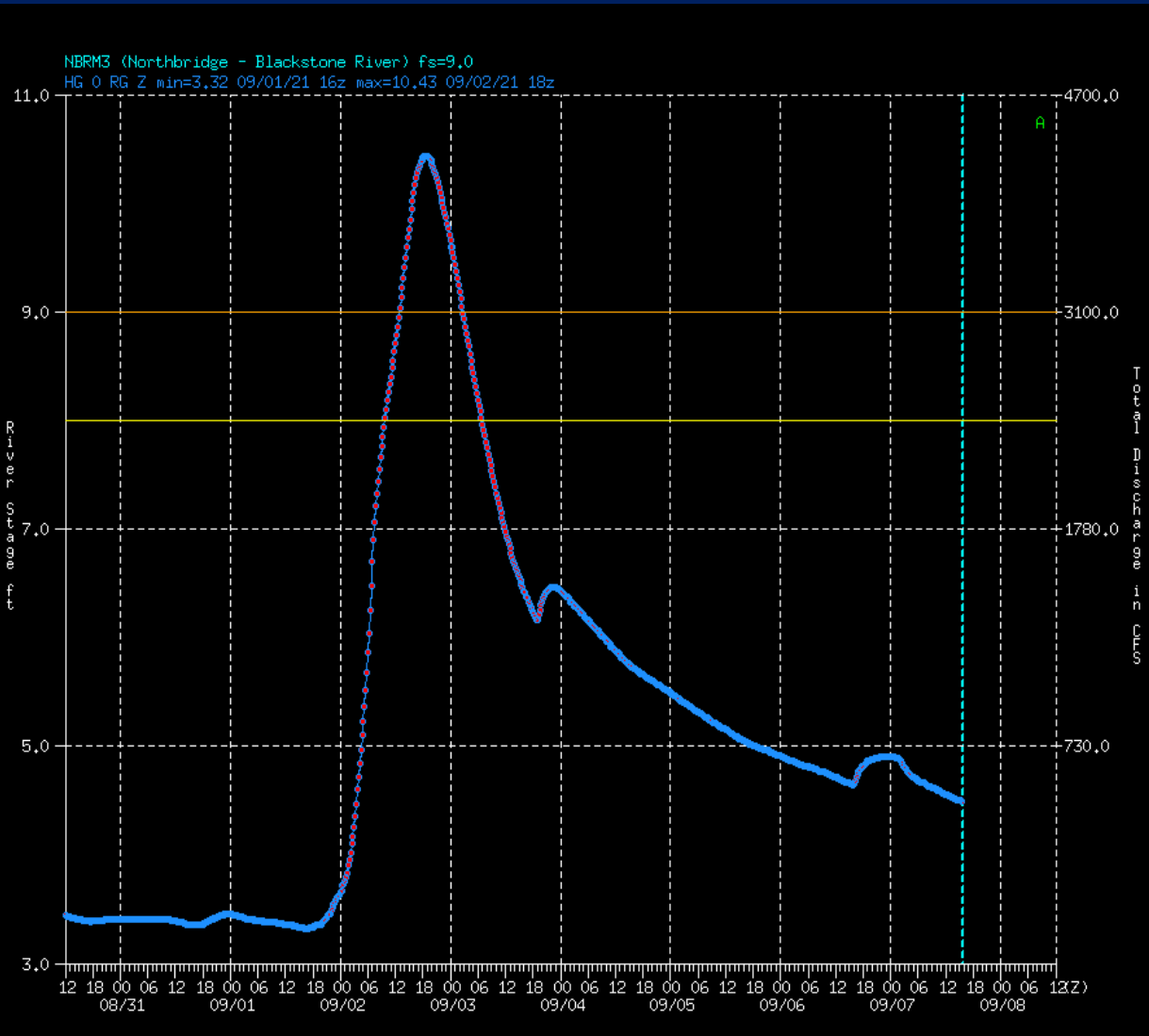
- Tracked across far southern New England from 1-2 September 2021
- 4 to 8 inches of rainfall occurred across southeast Massachusetts including the upper part of Cape Cod
  - Lower Cape only saw 1-2 inches in the worst drought areas near Chatham
- Widespread Flash Flooding across eastern and southeastern Massachusetts
- Minor flooding occurred on several mainstem rivers ( moderate to major flooding was just to our south in Connecticut )
- Isolated weak tornadoes near the warm front on Cape Cod

# REMNANTS OF IDA – cont

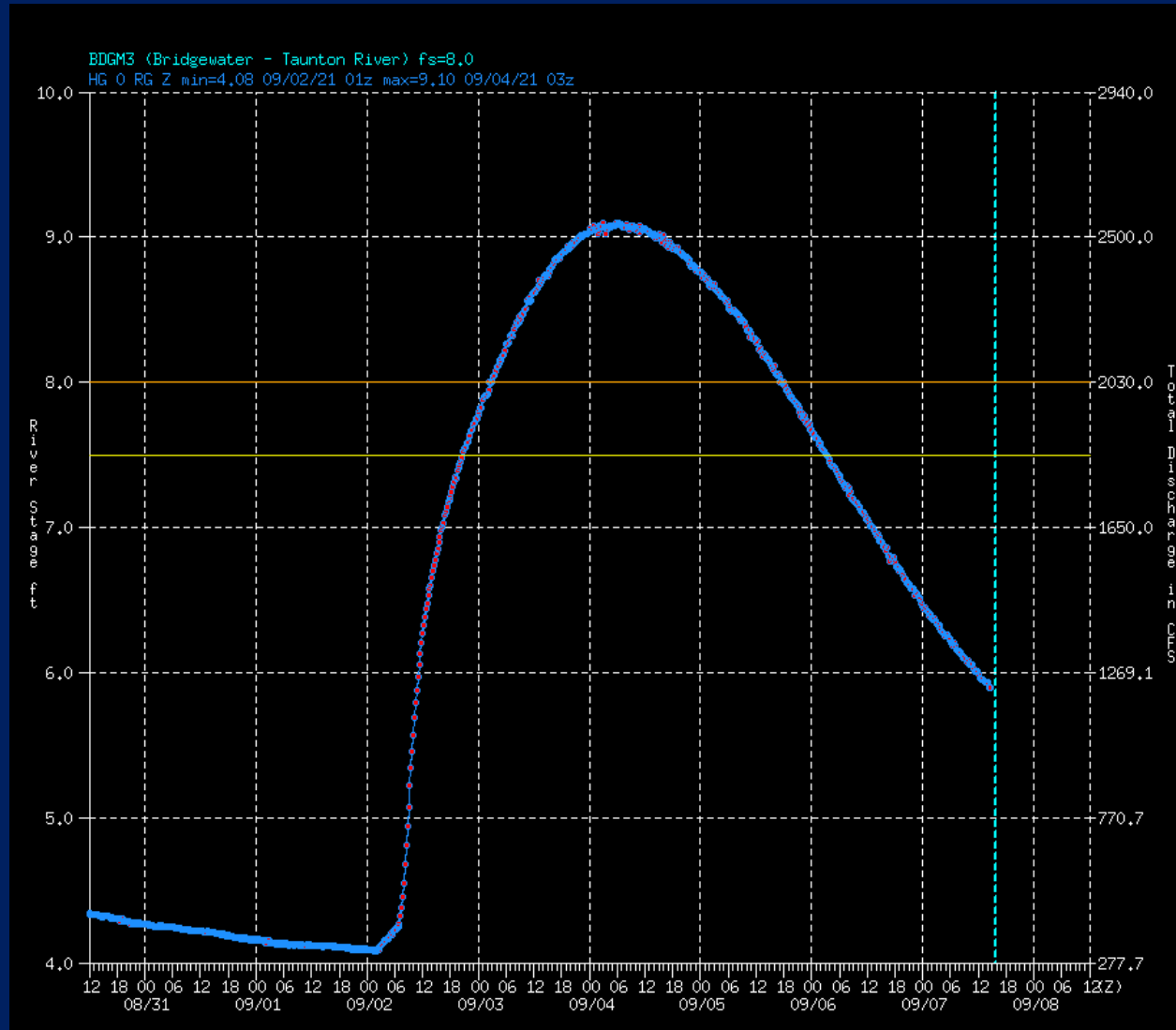


Roughly 2 months of rainfall in one day across Upper Cape Cod and the Massachusetts south coast.

# REMNANTS OF IDA - cont



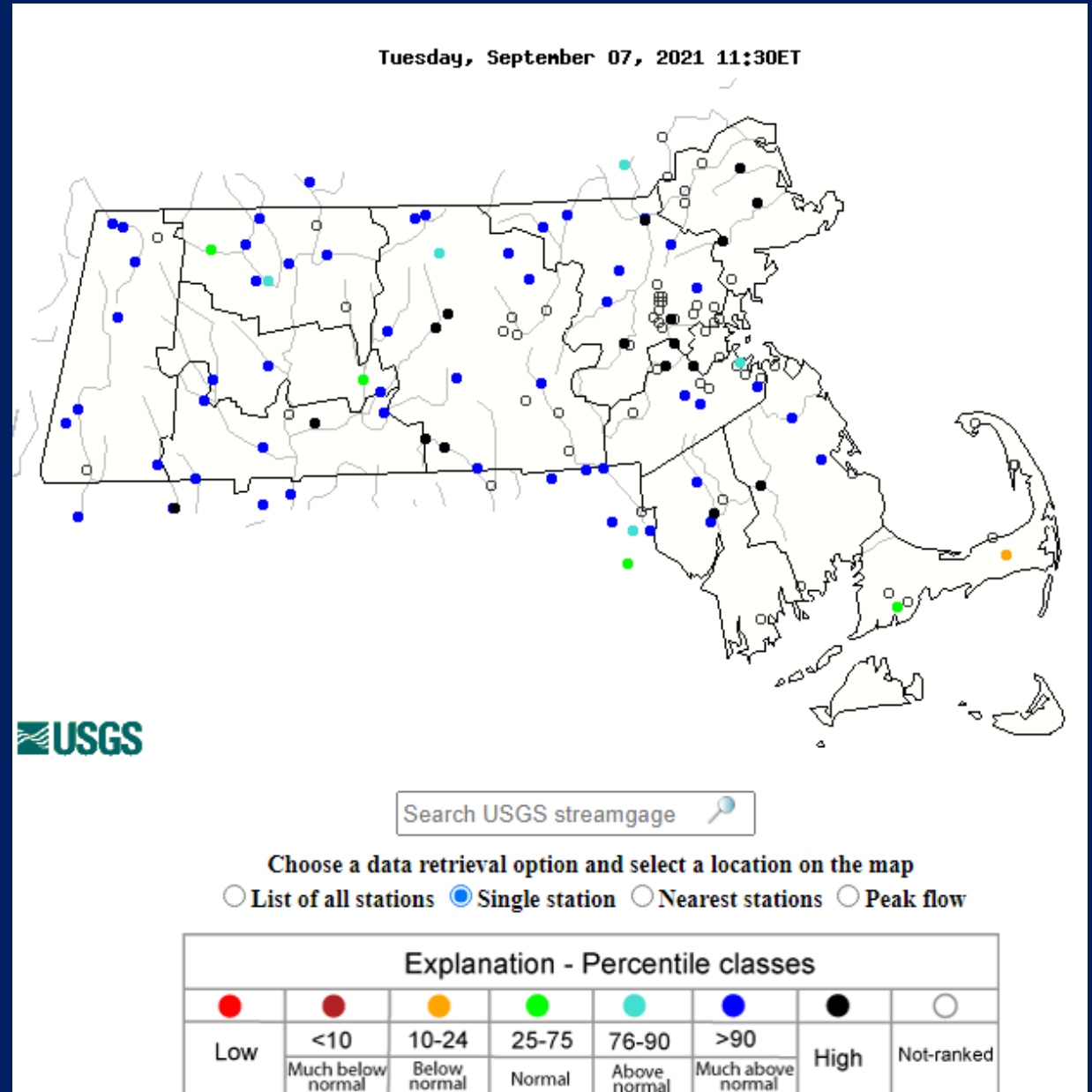
Blackstone River at Northbridge



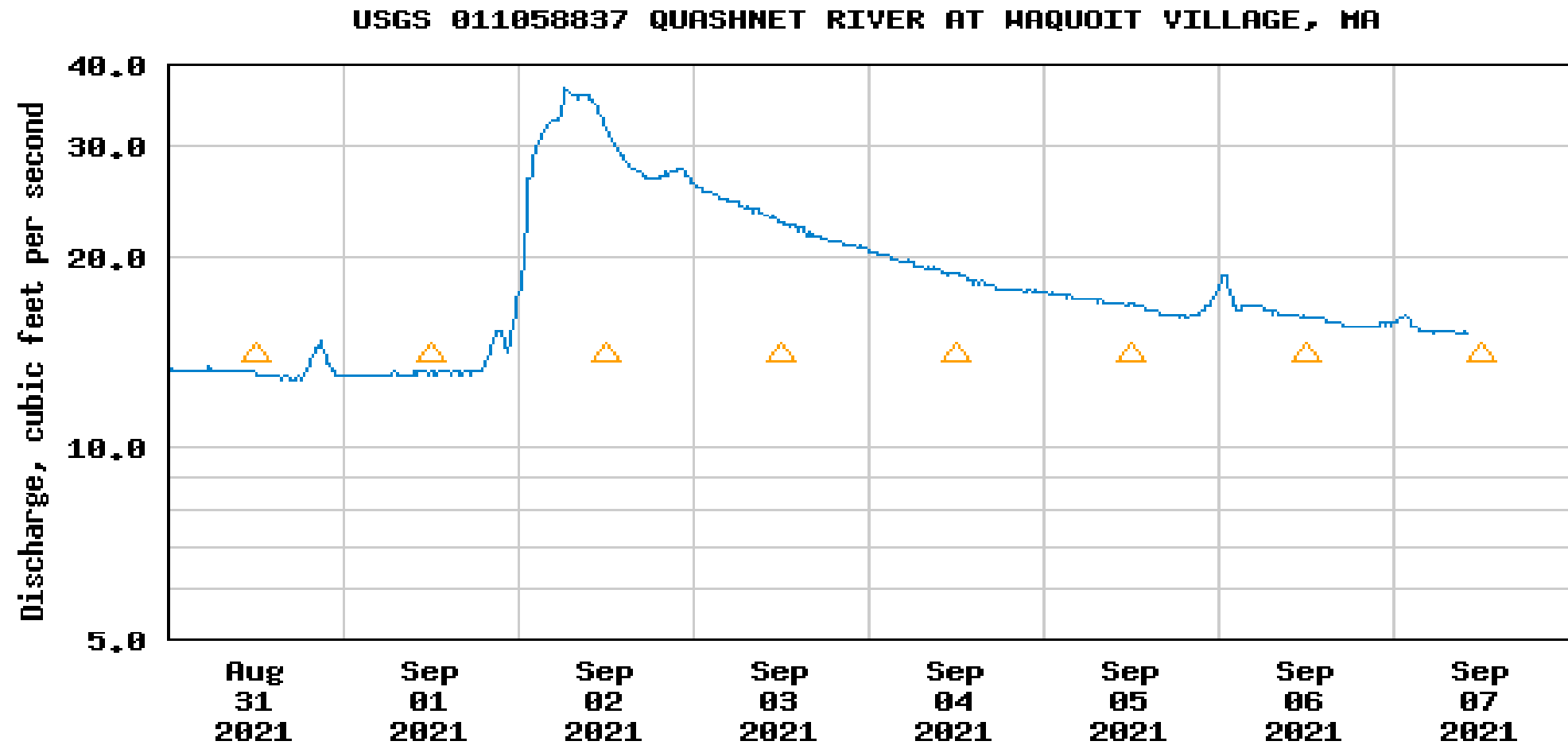
Taunton River near Bridgewater

# CURRENT RIVER FLOWS

- Flows continue above to much above normal except across Cape Cod where they range from near to below normal for early September



# Quashnet River at Waquoit Village

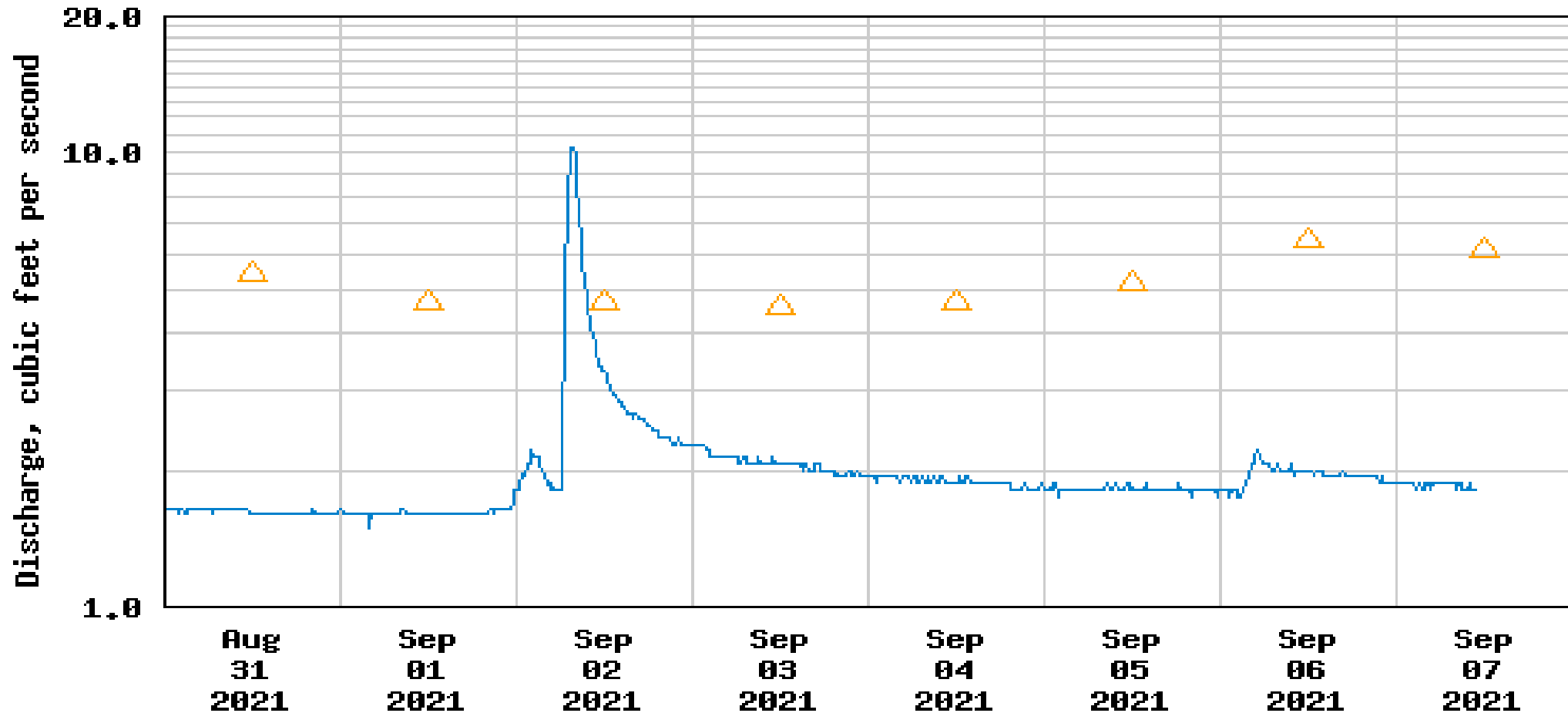


△ Median daily statistic (32 years) — Discharge



# Herring River at North Harwich

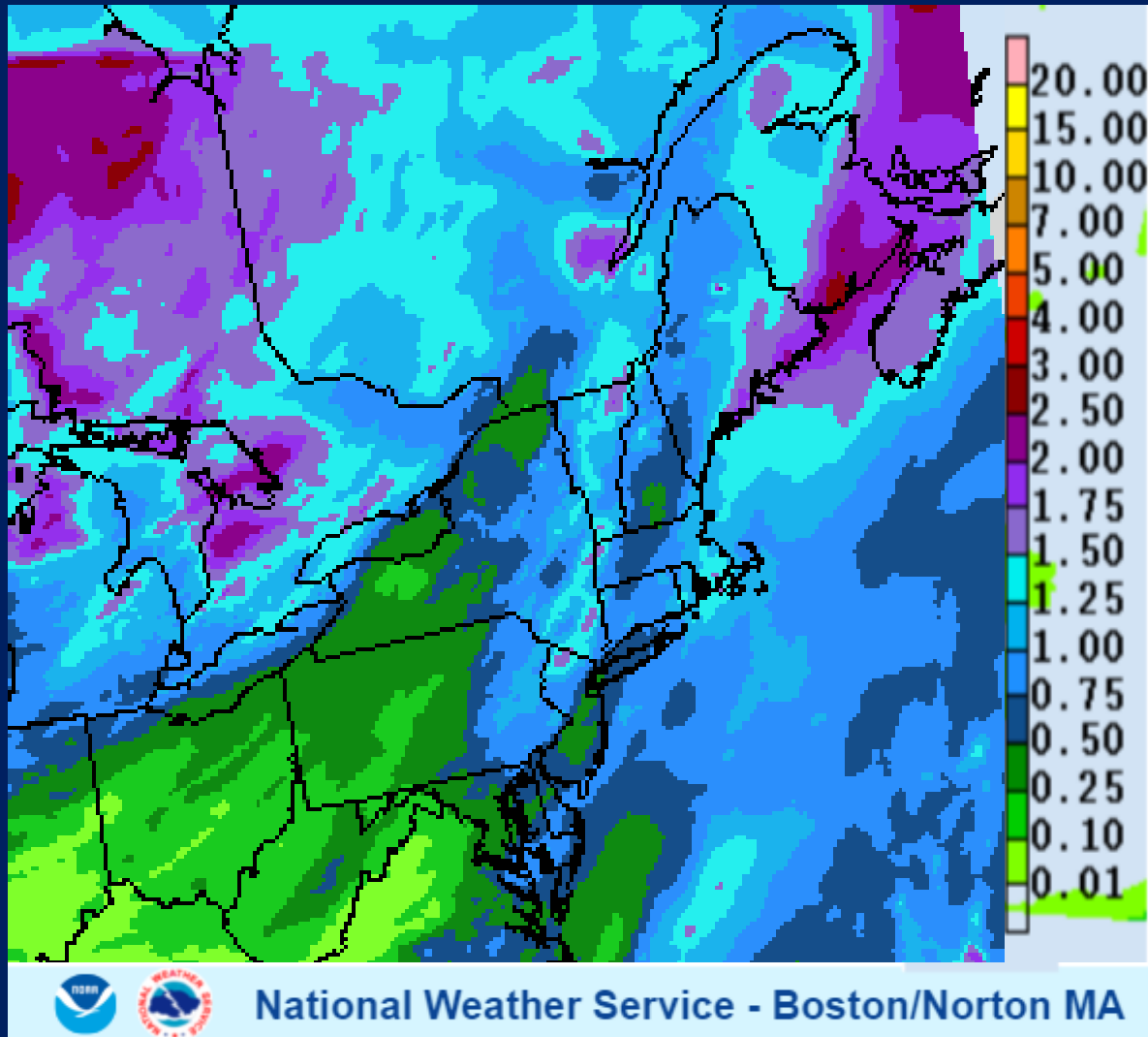
USGS 01105880 HERRING RIVER AT NORTH HARWICH, MA



△ Median daily statistic (36 years) — Discharge

# NEAR TERM PRECIPITATION FORECAST

Precipitation Forecast Through 8 am Tue 9/14/21



- Greatest rainfall chances Wed night-Thursday.
- Forecast rainfall: 0.5 to 1.5 inches of rain. Localized higher amounts up to 2 inches
- Dry Friday through the weekend
- Mainly dry early next week
- Near to slightly above seasonable temperatures
- Normal highs mid 70s
- Normal lows around 60

# 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 Sudbury River at Saxonville ( SAXM3 ) and the Charles River at Dover ( DOVM3 )

# NAEFS – SAXM3

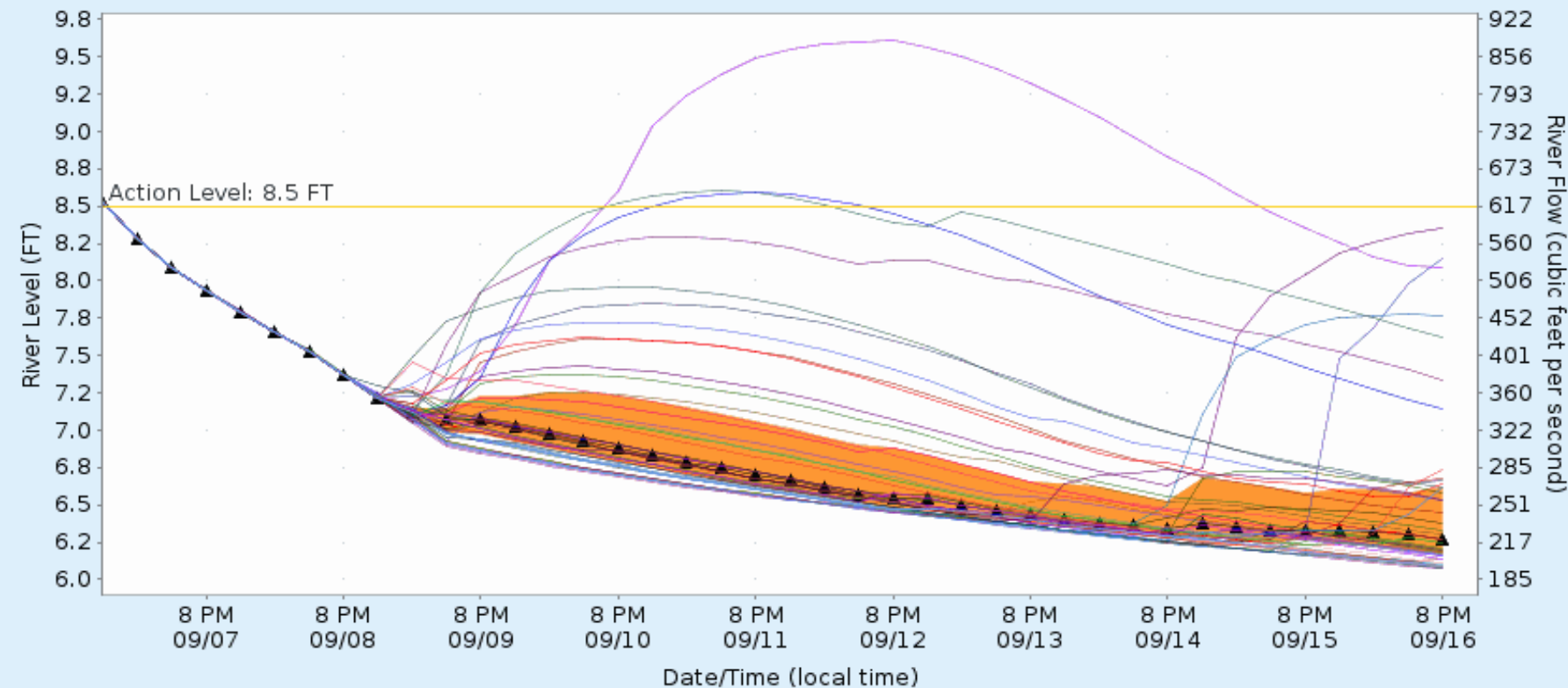


## 7 Day NAEFS River Level Simulations

Used to Estimate the Chance of Flooding and the Range of Possible River Levels  
Each Line Shows an Individual Model Simulation (42 Total)



### Sudbury River at Saxonville, MA (SAXM3)



- Individual Model Simulations (42 Total)
- ▲ Median River Level (Simulations indicate a 50% Chance of Exceeding this Level)
- More Likely Range (Simulations indicate a 40% chance river levels will fall within this range)

Uncertainty due to possible convection Wednesday night and Thursday.

Median flow for early September is off the bottom of the graph at 40 CFS.

# NAEFS – DOVM3

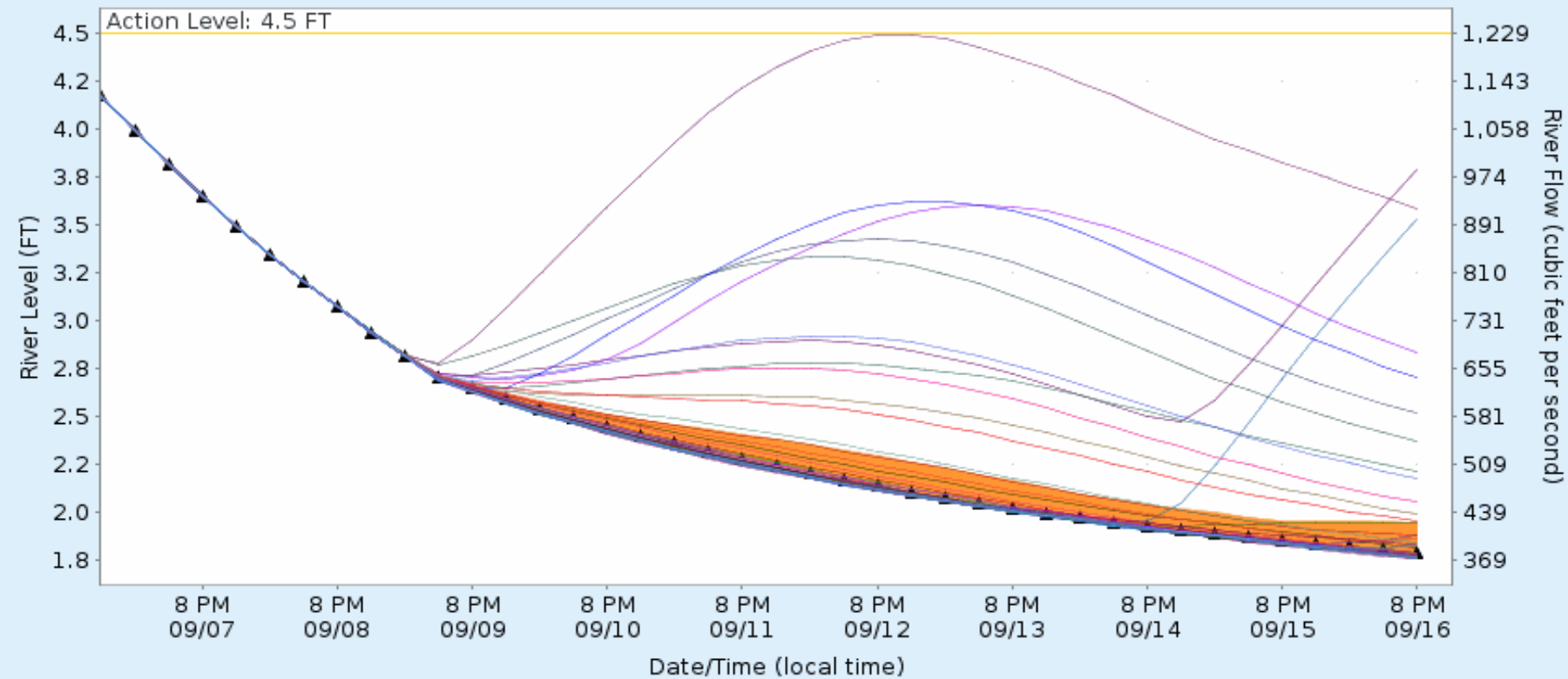


## 7 Day NAEFS River Level Simulations

Used to Estimate the Chance of Flooding and the Range of Possible River Levels  
Each Line Shows an Individual Model Simulation (42 Total)



### Charles River at Dover, MA (DOVM3)

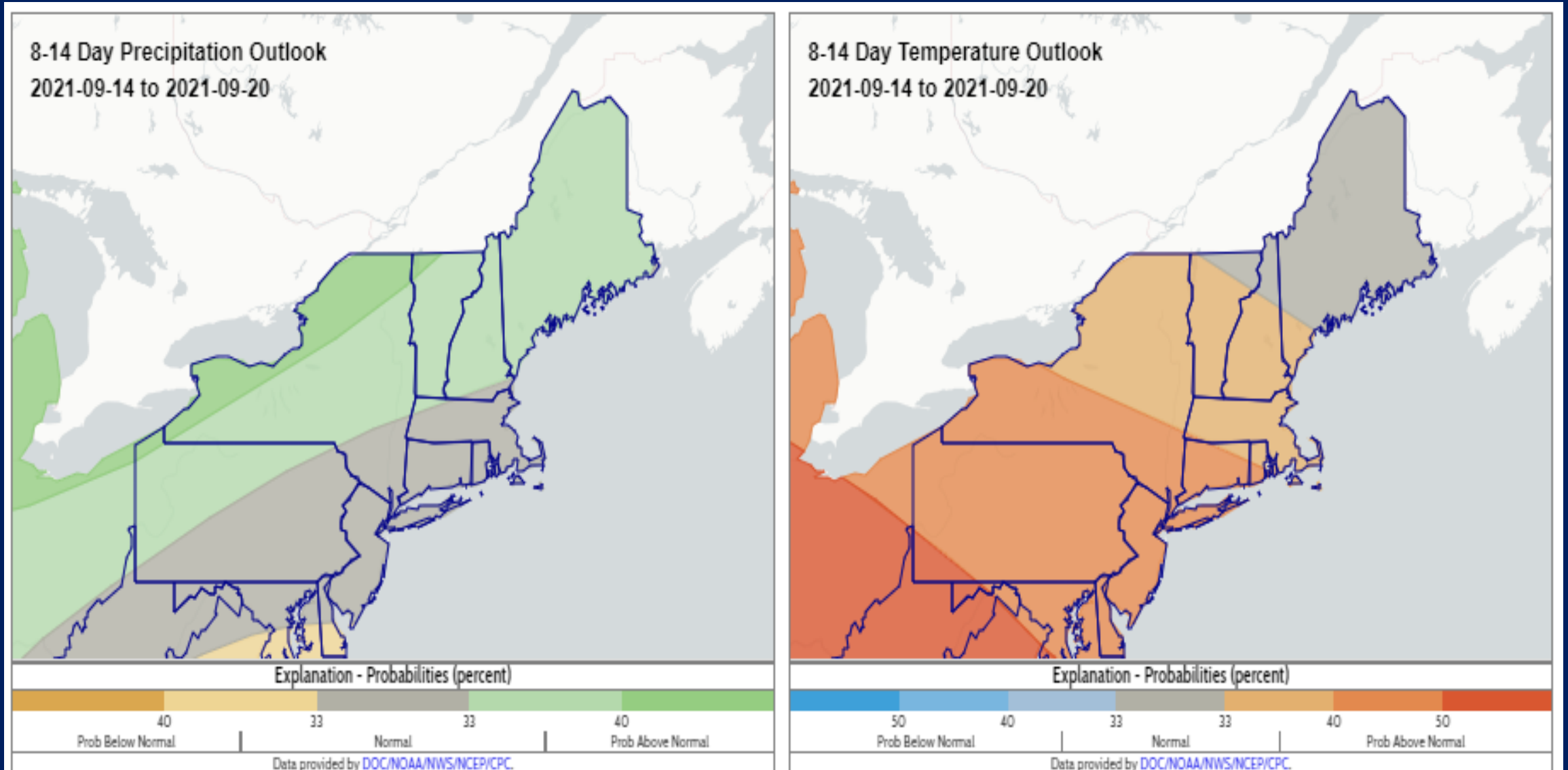


- Individual Model Simulations (42 Total)
- ▲ Median River Level (Simulations indicate a 50% Chance of Exceeding this Level)
- More Likely Range (Simulations indicate a 40% chance river levels will fall within this range)

Again...tremendous uncertainty in the short term rainfall forecast from yesterday ( highly unusual )

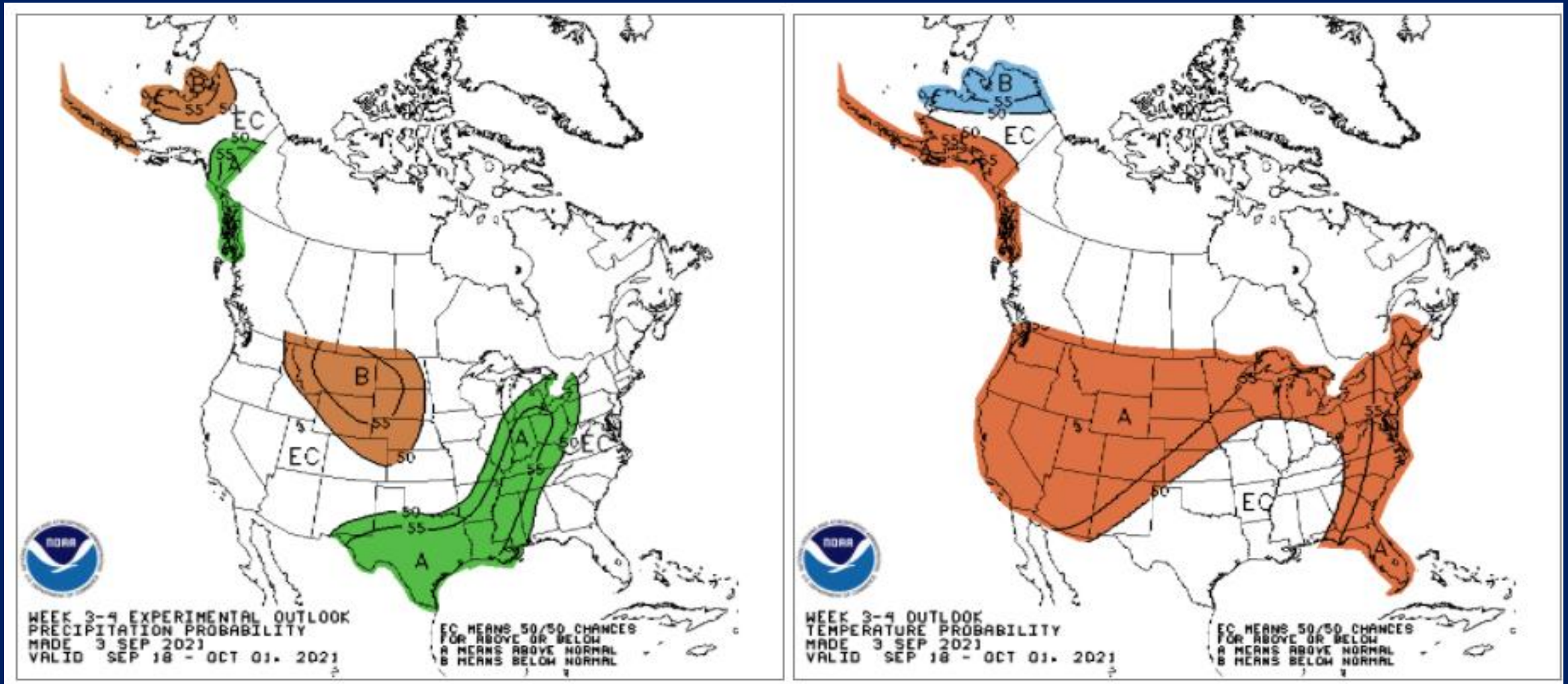
Median flow is below the bottom of the graph at 50 CFS

# Outlook for September 14-20



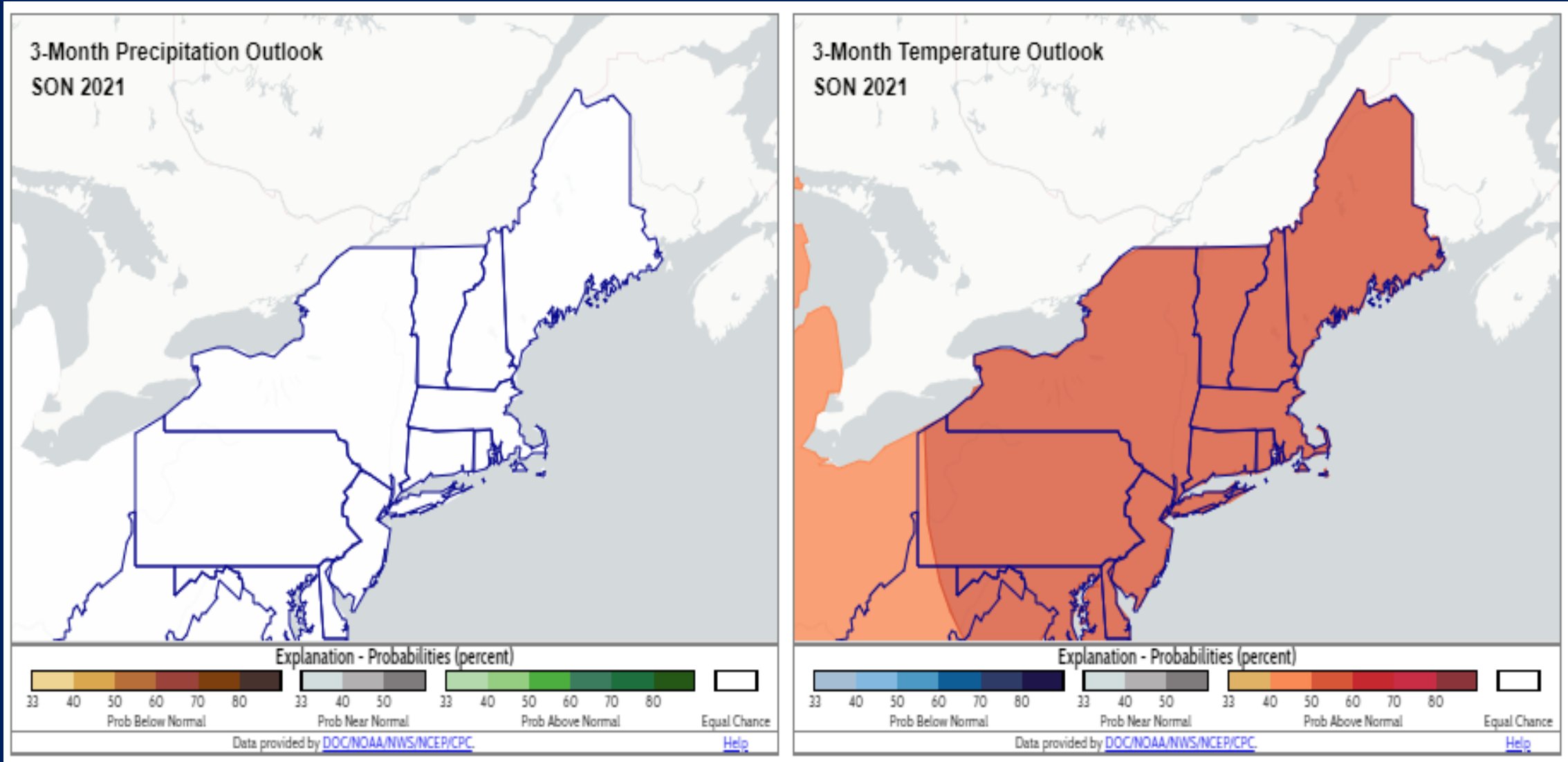
# Outlook for Sept 18 – Oct 1

This Week 3-4 Outlook is issued weekly on Fridays



National Weather Service - Boston/Norton MA

# Outlook for Sep/Oct/Nov





# CONCLUSIONS

- Most rivers and streams will remain comfortably above normal through September due to continued excessive rainfall.
- Outer portions of Cape Cod continue to see stressed rivers...streams and groundwater...especially in the stretch from Harwich to Chatham.
- Little threat for any type of drought expansion away from Cape Cod and Nantucket into October.