





# Incorporating Drought Modeling and Prediction into Watershed Based Planning

## Virginia's Approach

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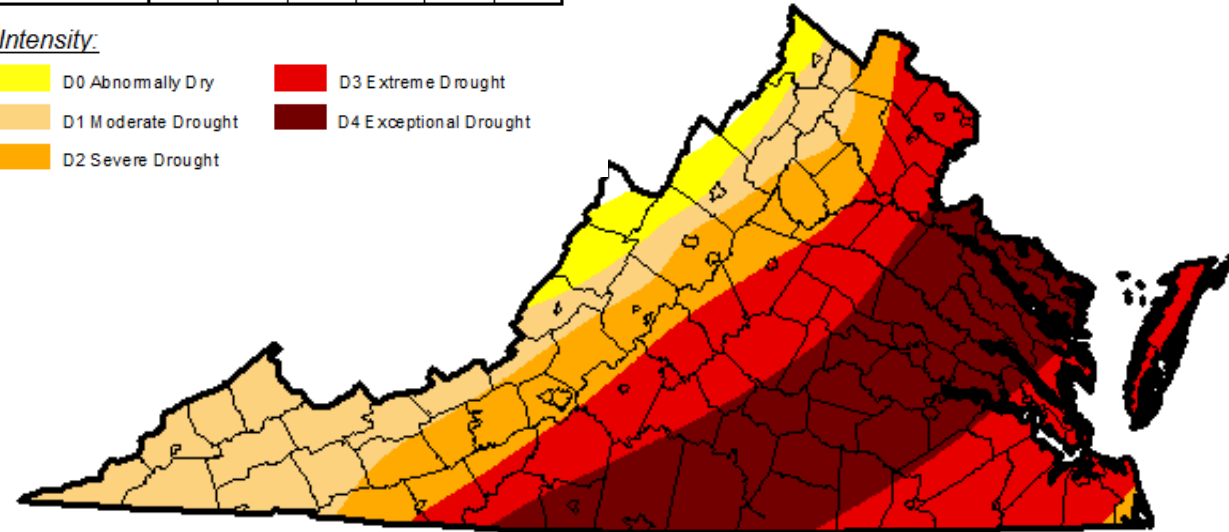
# Drought in Virginia

- ❖ Multiyear drought (1999-2002)
  - ❖ Impacted water supply across Virginia.
  - ❖ Established new Drought of Record for much of the state
  
- ❖ “Focusing Event” – for creation of new laws and regulation:
  - ❖ Executive Order creating the Virginia Drought Assessment and Response Plan
  - ❖ Legislation requiring Water Supply Planning Regulation

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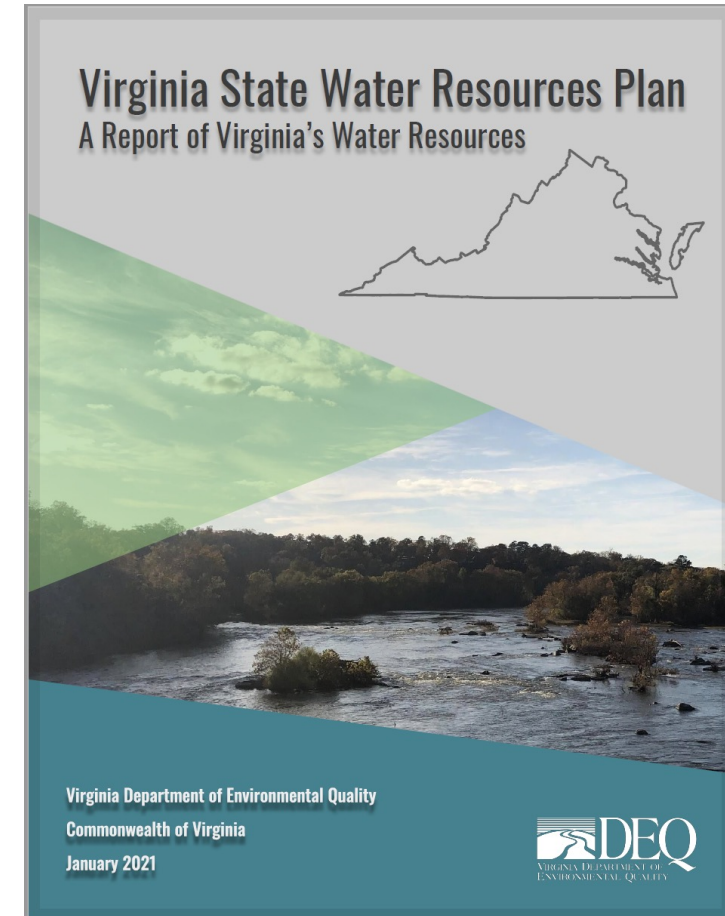
*Drought Conditions (Percent Area)*

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	0.79	99.21	94.15	74.28	57.99	28.61
<b>Last Week</b> <i>8/20/2002</i>	1.23	98.77	92.14	73.47	56.39	30.53
<b>3 Months Ago</b> <i>5/28/2002</i>	13.89	86.11	56.73	37.61	7.40	0.00
<b>Start of Calendar Year</b> <i>1/1/2002</i>	0.00	100.00	98.60	36.16	0.00	0.00
<b>Start of Water Year</b> <i>9/25/2001</i>	97.33	2.67	0.00	0.00	0.00	0.00
<b>One Year Ago</b> <i>8/28/2001</i>	100.00	0.00	0.00	0.00	0.00	0.00



# Water Supply Planning and State Water Resources Plan

- ❖ Statute requires a comprehensive state and local planning process that ensures adequate safe drinking water AND protects all other beneficial uses.
- ❖ Local/Regional Water Supply Plans
- ❖ State Water Resources Plan

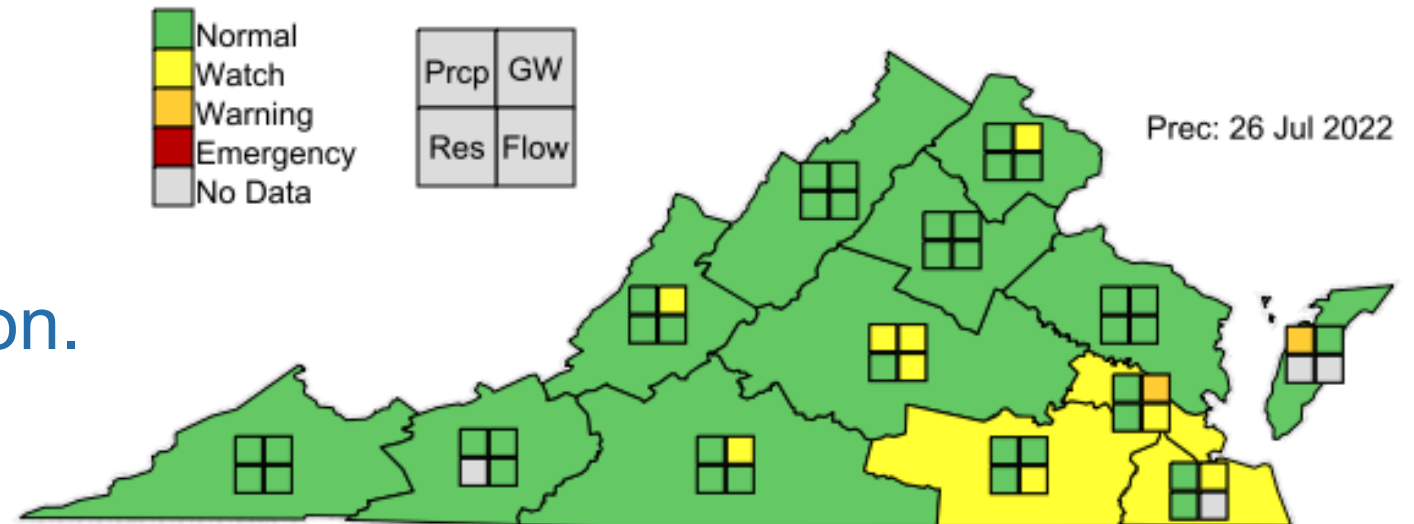


# Local Drought and Contingency Plans

❖ Localities must include in Plans. Designed to foster data driven local drought decisions

- Local metrics that directly relate to their sources
- Graduated with responses that fit the conditions.
- Tied into withdrawal permits issued by the state.

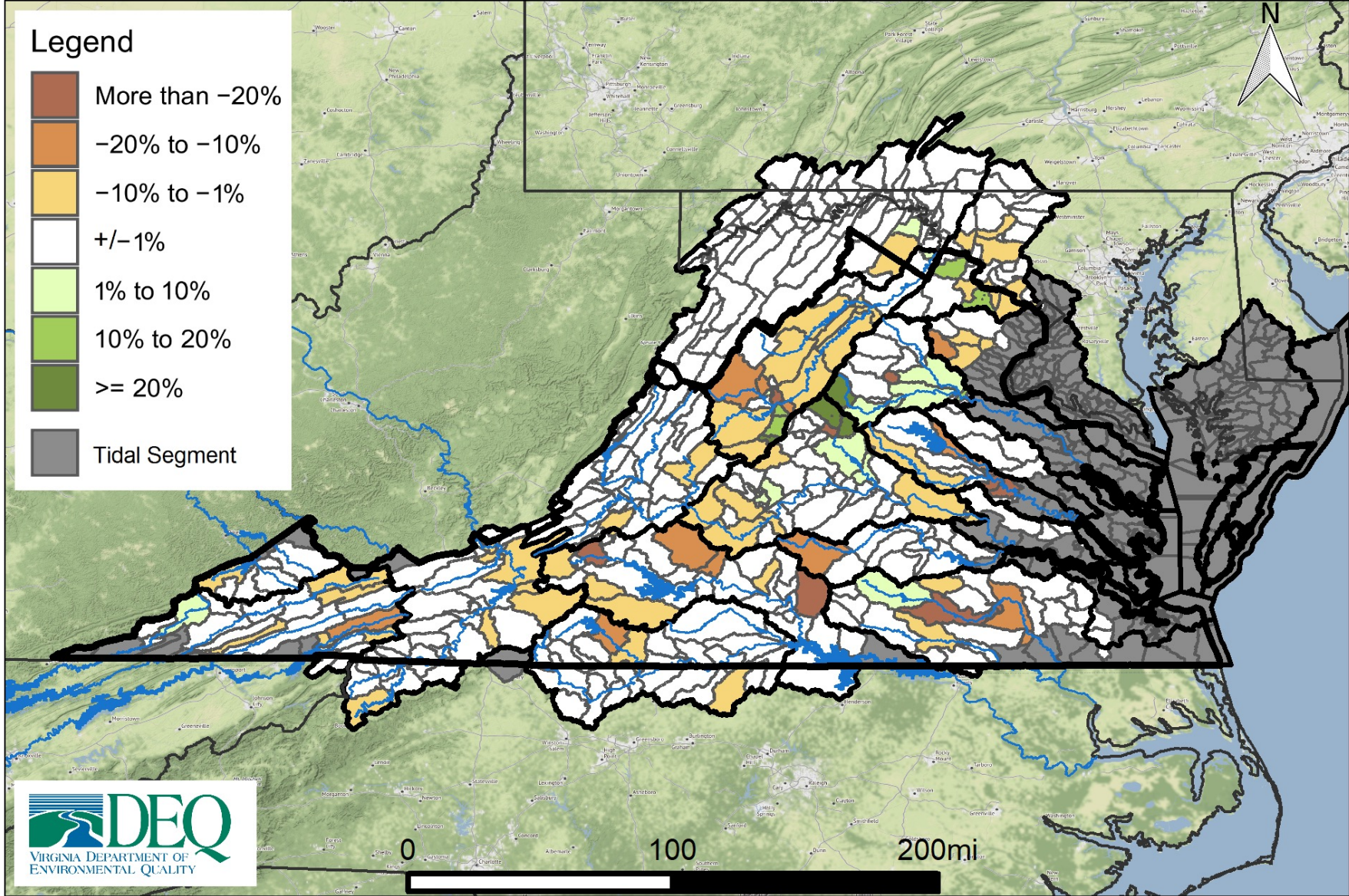
❖ Interagency task force manages monitoring, coordination & communication.



# 30 Day Low Flow (Percent Change 2020 to 2040)

## Modeling Drought

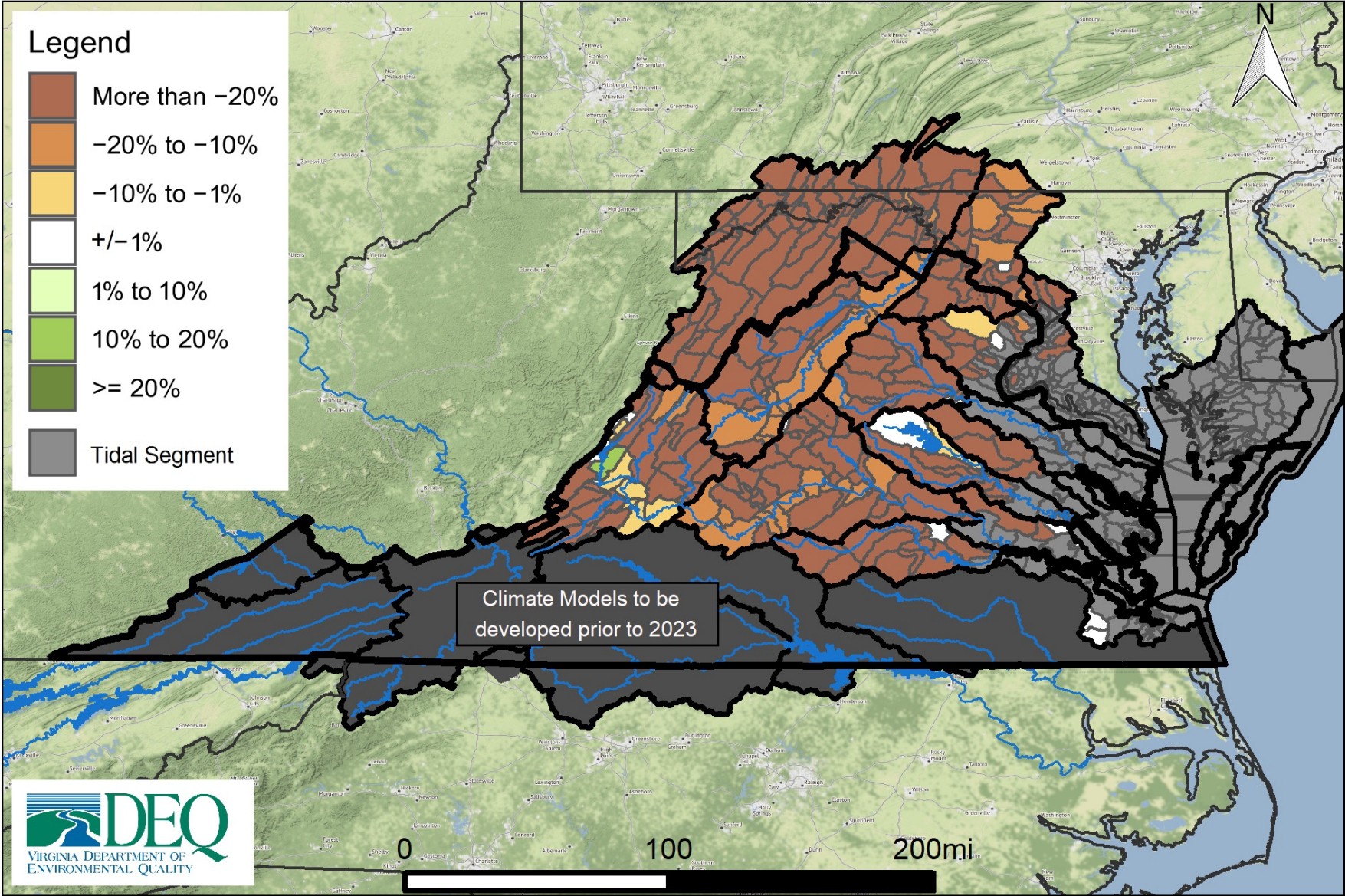
- ❖ Local demands and current meteorology simulated at ~Huc10
- ❖ Drought Metrics:  
Acute (30 Day Low Flow)  
Chronic (90 Day Low Flow)
- ❖ How does drought look with increasing demands?



# 30 Day Low Flow (Percent Change 2020 to Dry Climate Change)

## Modeling Drought

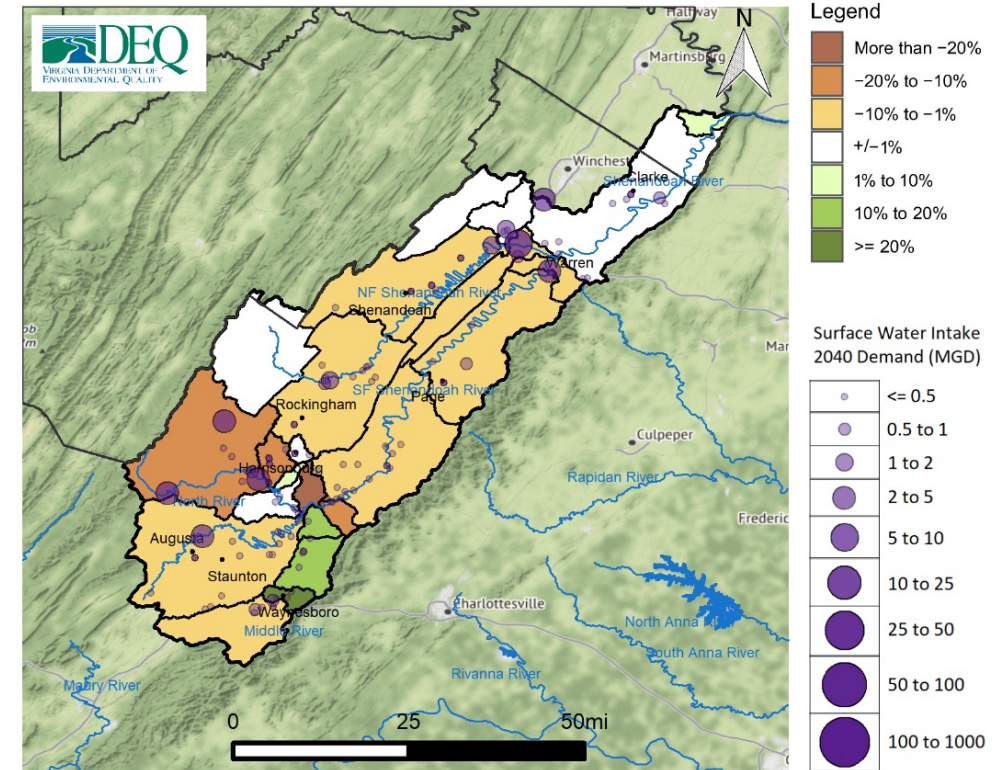
- ❖ Local Demands w/ Dry Climate
- ❖ Evaporation increasing
- ❖ Timing/Rates of Precip will Change
- ❖ Planning must consider droughts more severe than DOR.



# Lessons Learned – Connecting Drought Modeling to Water Supply Planning

- ❖ Local data as a shared starting point
- ❖ Locally meaningful scale
- ❖ Locally meaningful (facility level) metrics
  - ❖ “Potential Unmet Demand”

30 Day Low Flow (Percent Change 2020 to 2040)  
Potomac Shenandoah





# Questions?

Feel free to follow up for more info on the plan or drought in Virginia.

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