

An Update of James River Chlorophyll Criteria and their Implementation

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Criteria Assessment Protocol Workgroup Meeting
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The Virginia State Water Control Board and EPA have approved amendments to the James River chlorophyll special standard.

Amendments

- Modified magnitudes and frequency for the seasonal mean criteria
- Modified assessment methodology for seasonal mean criteria
- New short-duration criteria

Modified Seasonal Mean Criteria

(Not to be exceeded more than twice in a six year period)

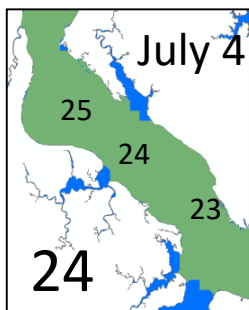
James River segment-season	Old Seasonal Mean Criteria (ug/L)	Updated Seasonal Mean Criteria (ug/L)
JMSTF2 – spring	10	8
JMSTF2 – summer	15	21
JMSTF1 – spring	15	10
JMSTF1 - summer	23	24
JMSOH - spring	15	13
JMSOH – summer	22	11
JMSMH - spring	12	7
JMSMH – summer	10	7
JMSPH – spring	12	8
JMSPH - summer	10	7

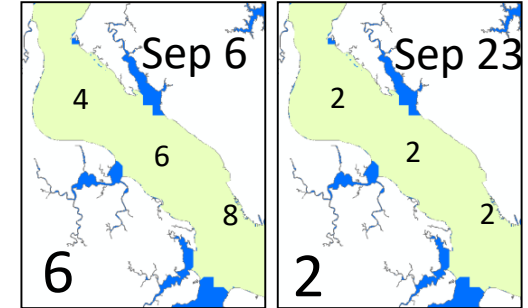
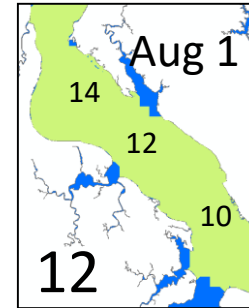
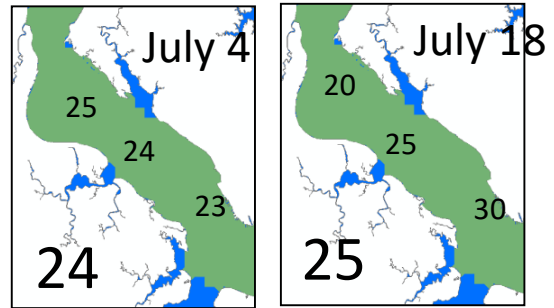
New Short-Duration Criteria
 (Not to be exceeded more than 10% of time over a six year period)

James River segment	Spatial Application	Magnitude (ug/L)	Duration
JMSTF2	Upstream boundary to river mile 95	--	--
JMSTF2	River mile 95 to downstream boundary	52	1-month median
JMSTF1	Upstream boundary to river mile 67	52	1-month median
JMSTF1	River mile 67 to downstream boundary	34	1-month median
JMSOH	Entire segment	--	--
JMSMH	Entire segment	59	1-day median
JMSPH	Entire segment	20	1-day median

Modified Assessment Methodology

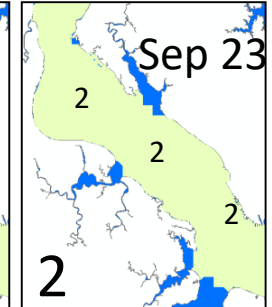
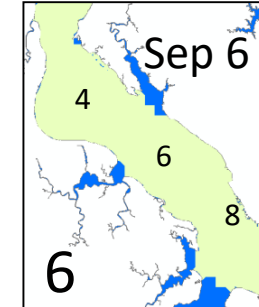
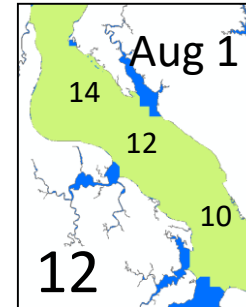
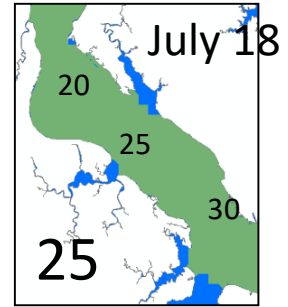
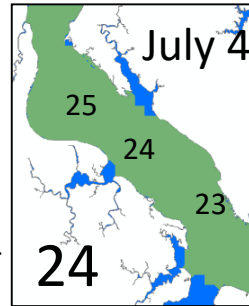
- No more spatial interpolation of monitoring data
- No more CFD or 10% space-time curve
- Six-year assessment period as opposed to three-year





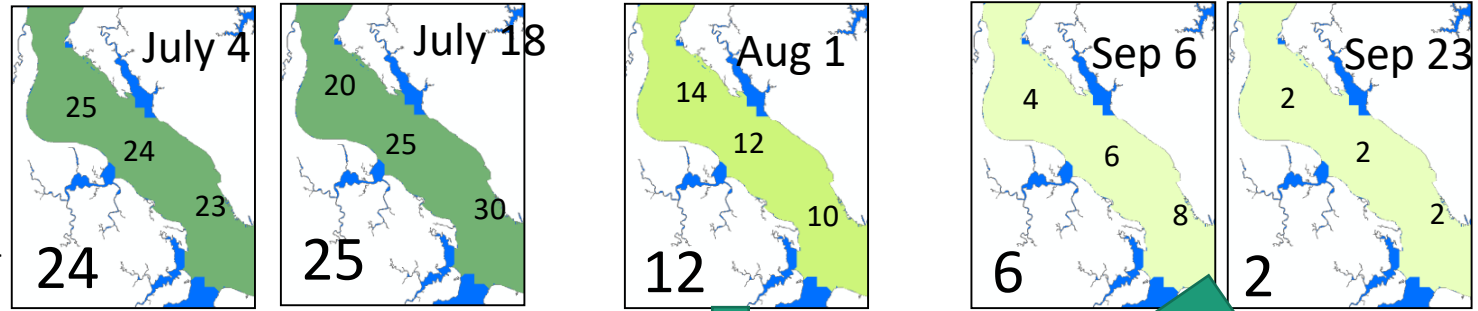
1-Day Median Criteria (MH and PH)

(Samples pooled over a day-
MEDIAN)



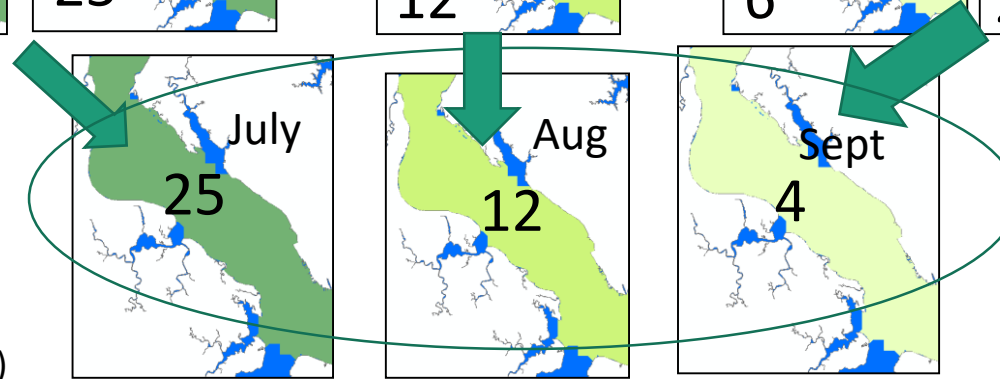
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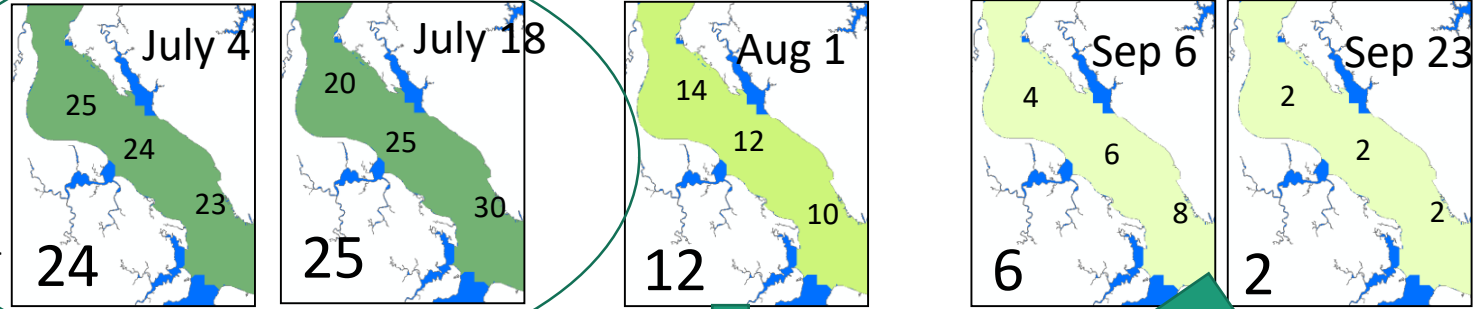
1-Month Median Criteria (TF segments)

(Daily values pooled over a month -MEDIAN)



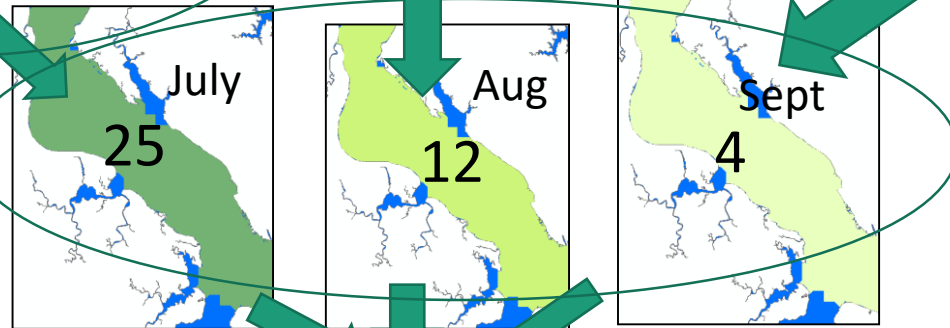
1-Day Median Criteria (MH and PH)

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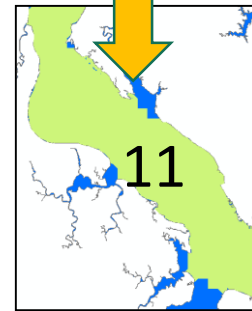
1-Month Median Criteria (TF segments)

(Daily values pooled over a month -MEDIAN)

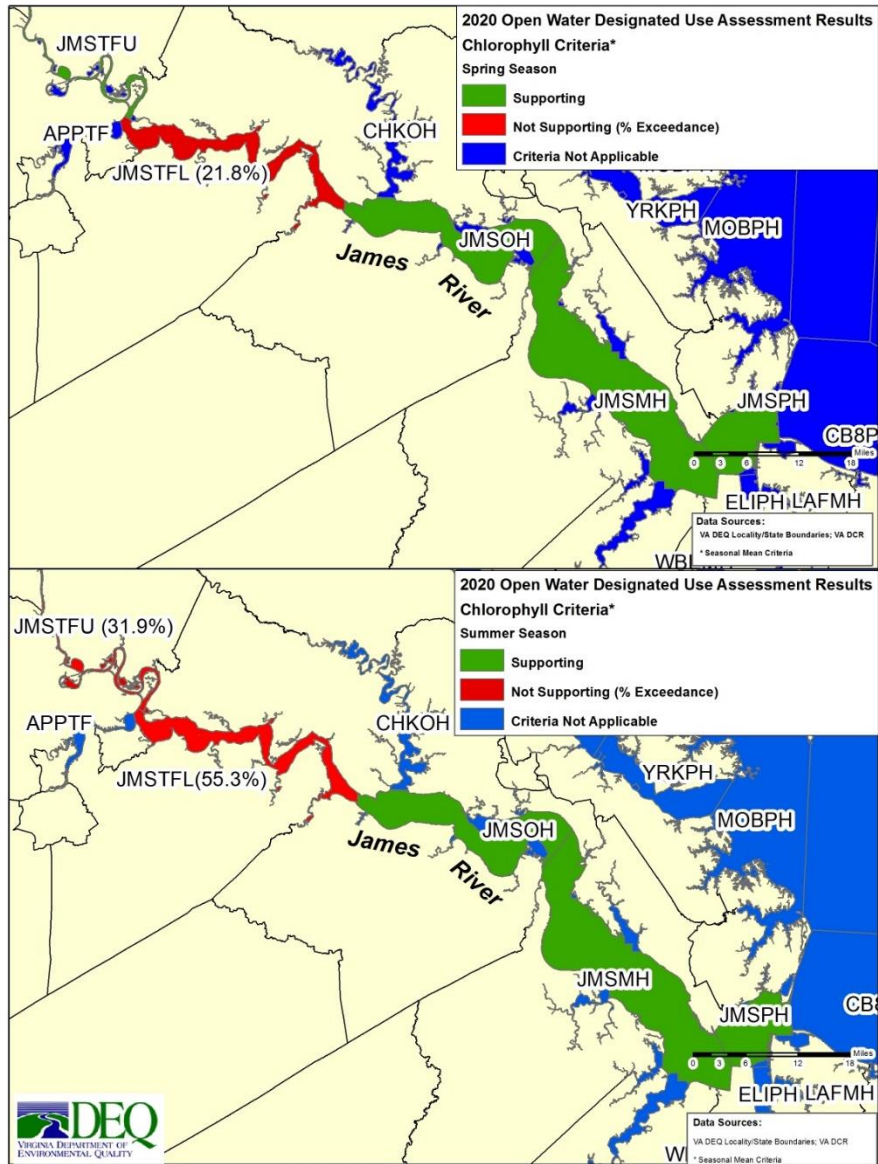


Seasonal Mean Criteria (All JR segments)

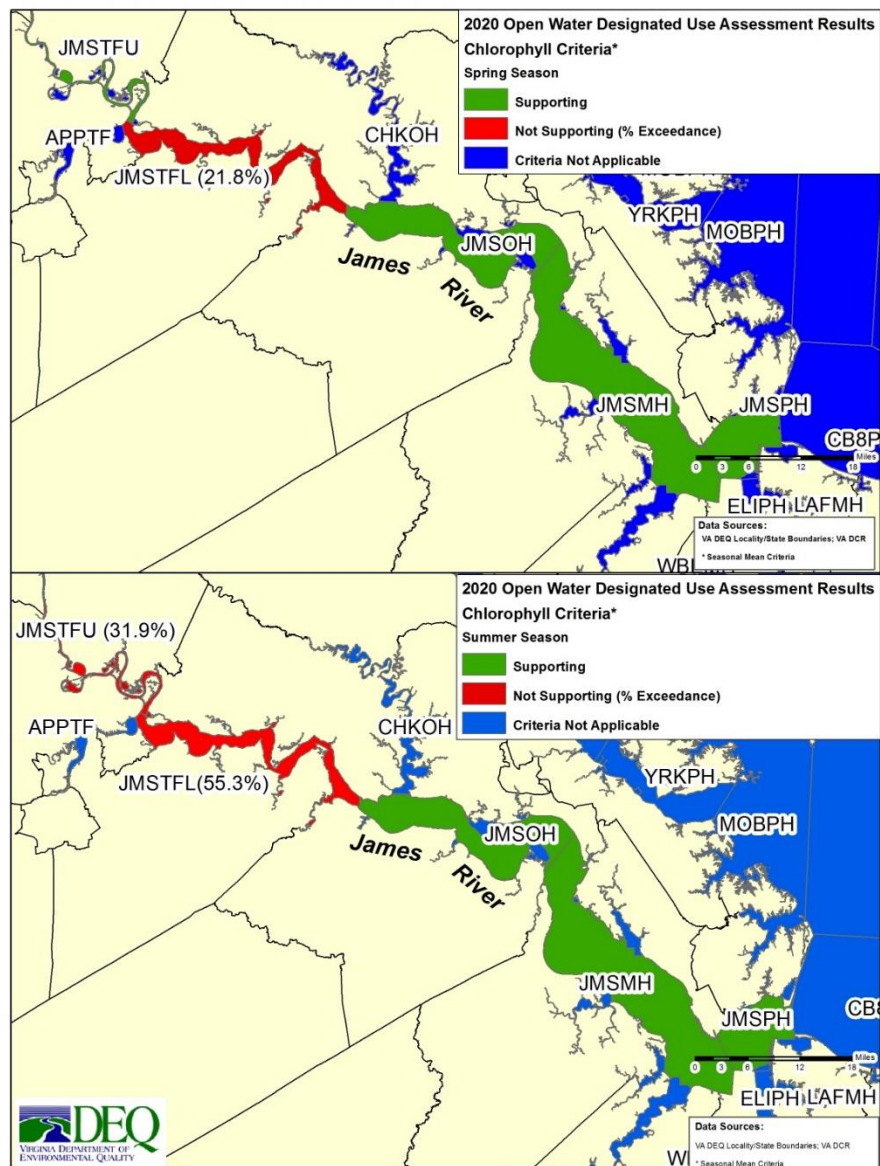
(Monthly values pooled over a season -GEOMETRIC MEAN)



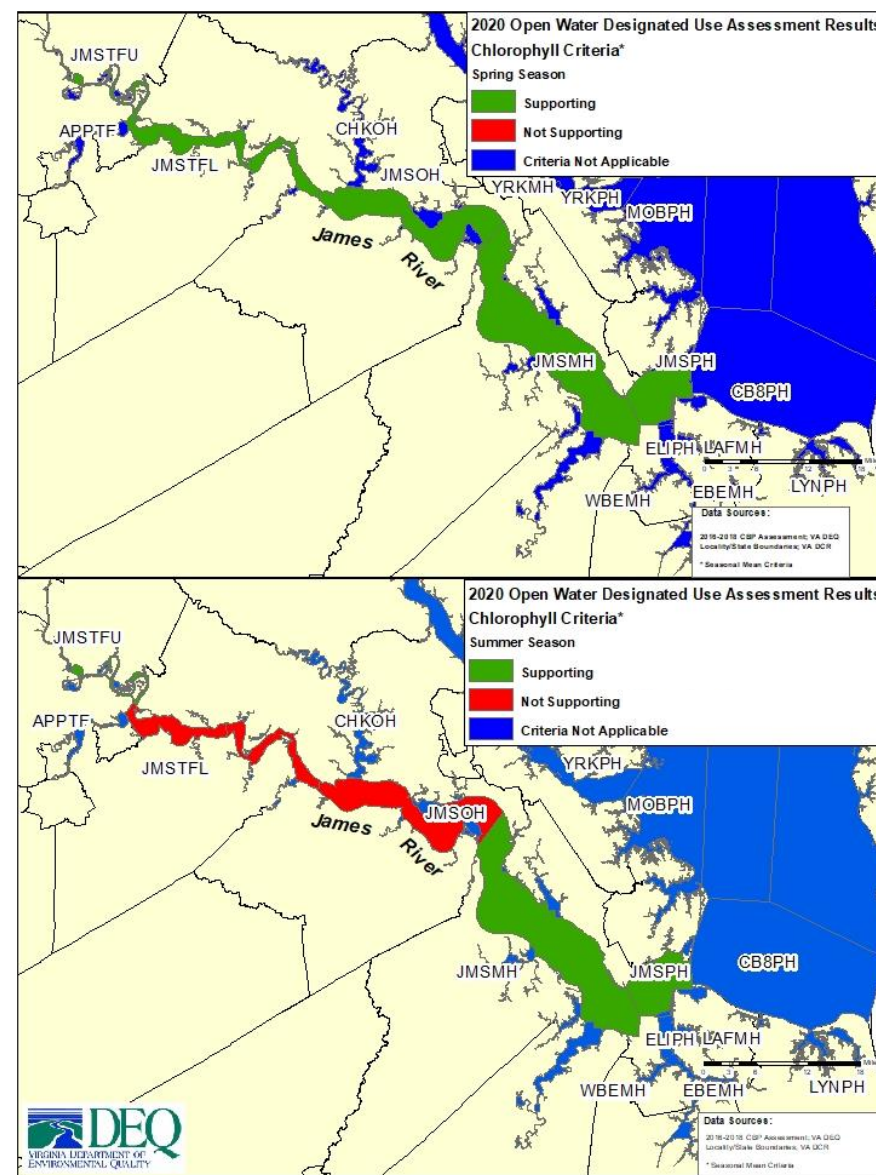
The updated chlorophyll standard is easier to attain than the original standard
but we still have some way to go.



Draft 2020 IR assessment results (“old”
criteria and CFD)



Draft 2020 IR assessment results (“old” criteria and CFD)



Results using updated criteria and WQS assessment methodology

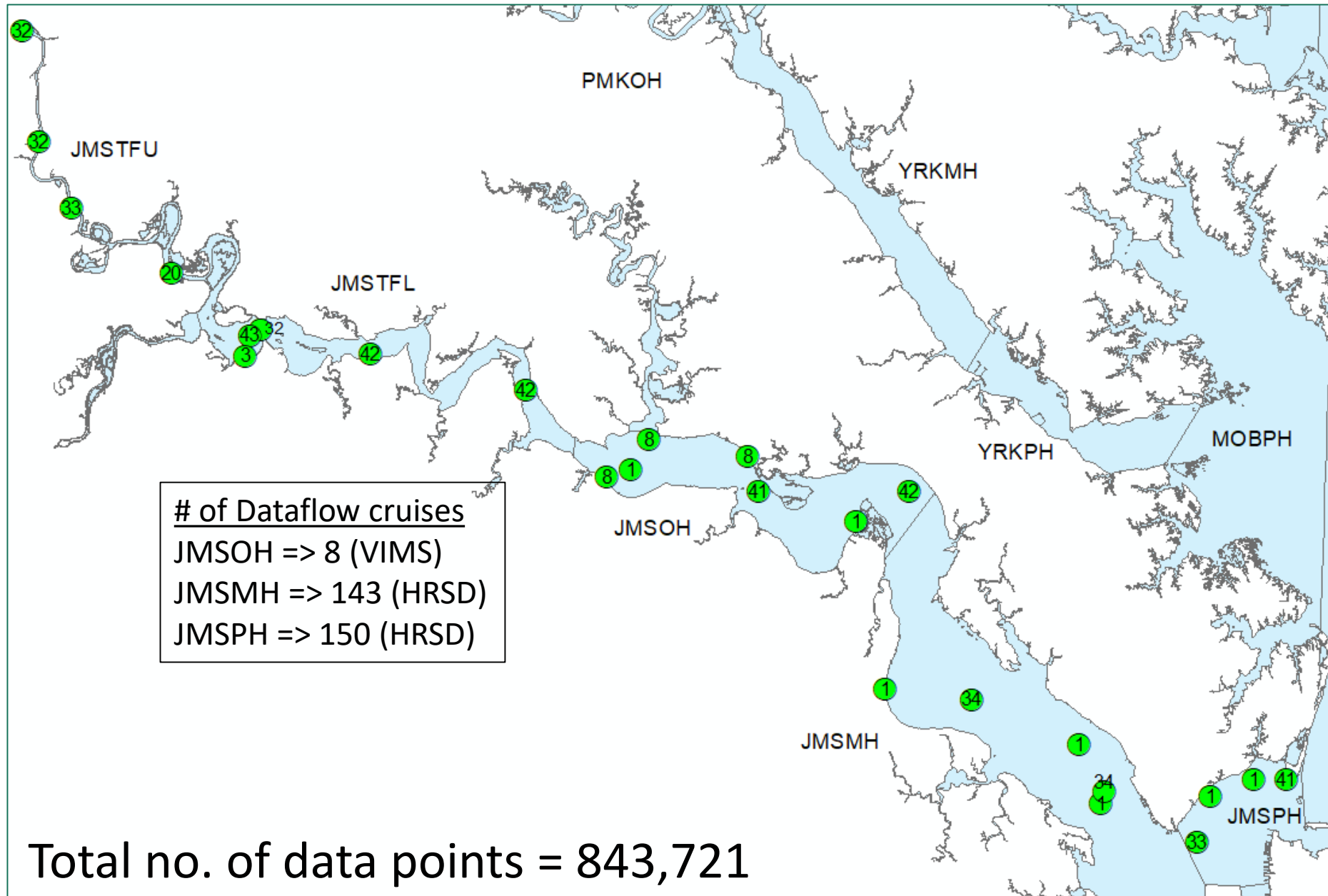
	fixed station datasets		Dataflow + fixed station datasets		
SPRING	Seasonal Means (ug/l)				
Year	JMSTFU(8)	JMSTFL (10)	JMSOH (13)	JMSMH(7)	JMSPH(8)
2013	5	6	4	8	5
2014	4	6	12	6	9
2015	5	7	11	7	6
2016	3	8	5	4	6
2017	4	18	8	4	4
2018	3	7	9	6	6
SUMMER	Seasonal Means(ug/l)				
Year	JMSTFU(21)	JMSTFL(24)	JMSOH(11)	JMSMH(7)	JMSPH(7)
2013	19	22	7	5	6
2014	13	16	13	6	6
2015	20	35	13	3	6
2016	11	30	9	4	6
2017	25	29	7	5	6
2018	14	32	12	4	5
Short-Duration Criteria Exceedance Frequency					
lower JMSTFU(52)	upper JMSTFL(52)	lower JMSTFL(34)	JMSMH(59)	JMSPH(20)	
0%	6%	17%	1%	1%	

Segments with more than two exceedances of the same criterion

- JMSTFL (summer)
- JMSOH (summer)

JMSTFL fails one of its applicable short-duration criteria

No. of surface chl samples collected at each station during the spring and summer 2013-2018



The status of the tidal James with respect to the updated James River chlorophyll criteria will be presented in the 2022 IR.

Questions?