



INUNDATION OF THE KISSIMMEE RIVER FLOODPLAIN DURING A POST-CONSTRUCTION INTERIM PERIOD

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KRRP Reconnected 14 miles of River Channel in 2001

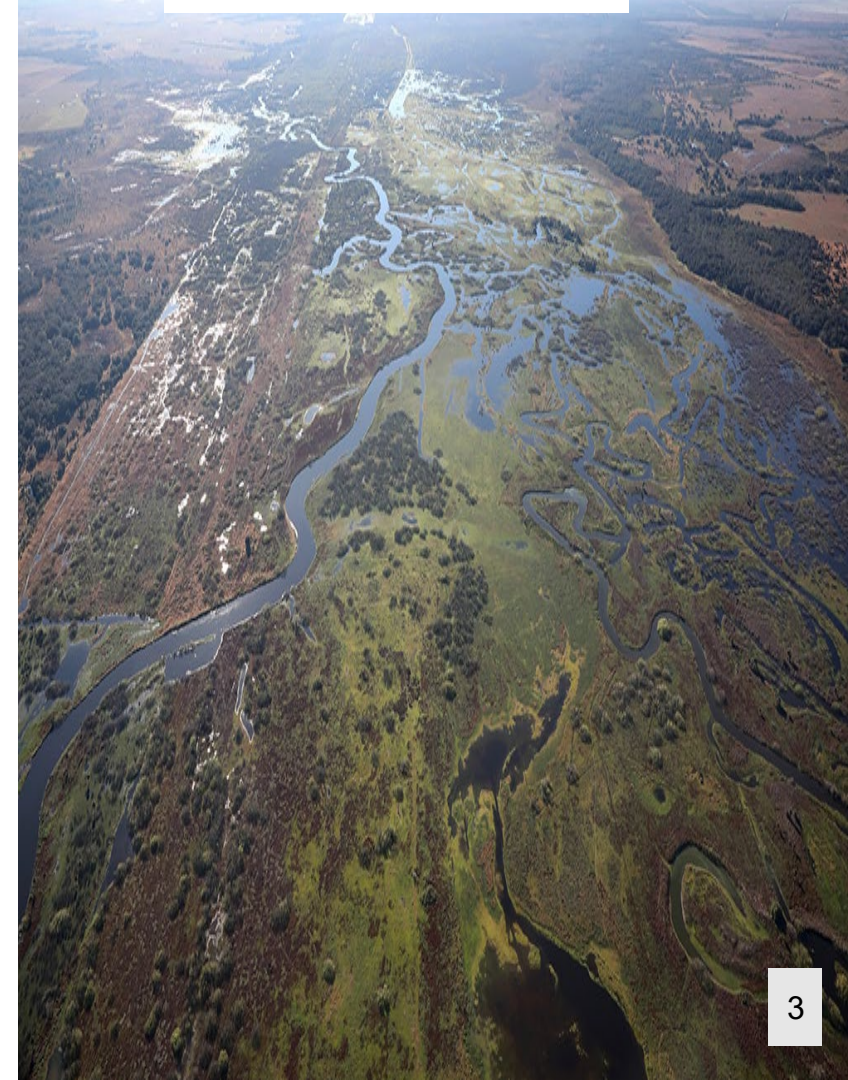
Pre-Channelization Kissimmee River



Channelized Kissimmee River



Post-Phase I KRRP





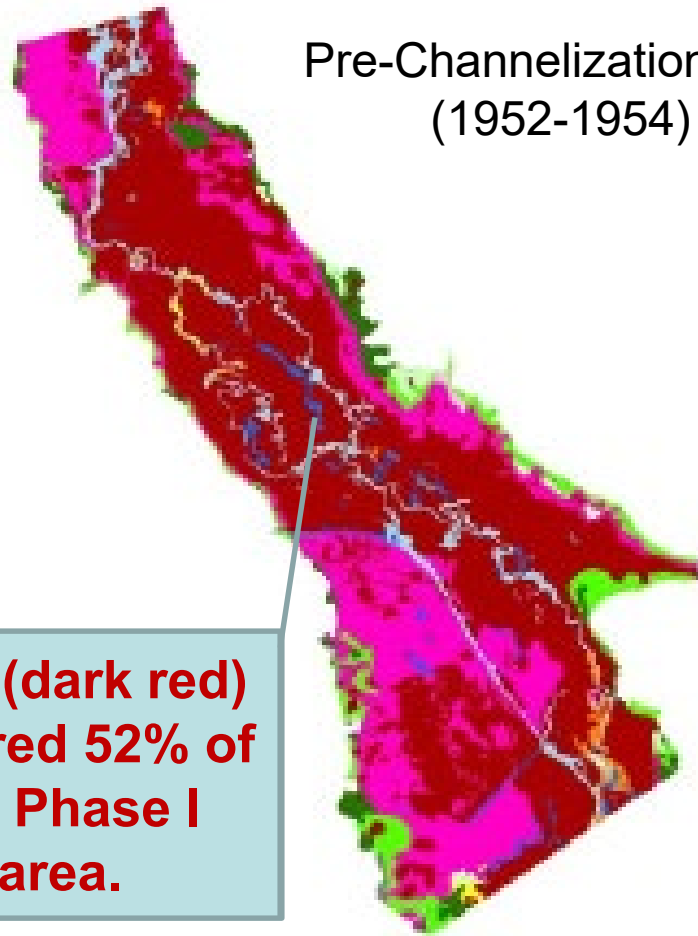
Objectives

- Review the importance of floodplain inundation in the pre-channelization Reference Period.
- Characterize inadequate floodplain inundation in the post-Phase I Interim Period.
- Describe the implementation of a new discharge plan that can improve floodplain inundation patterns during the Interim Period.

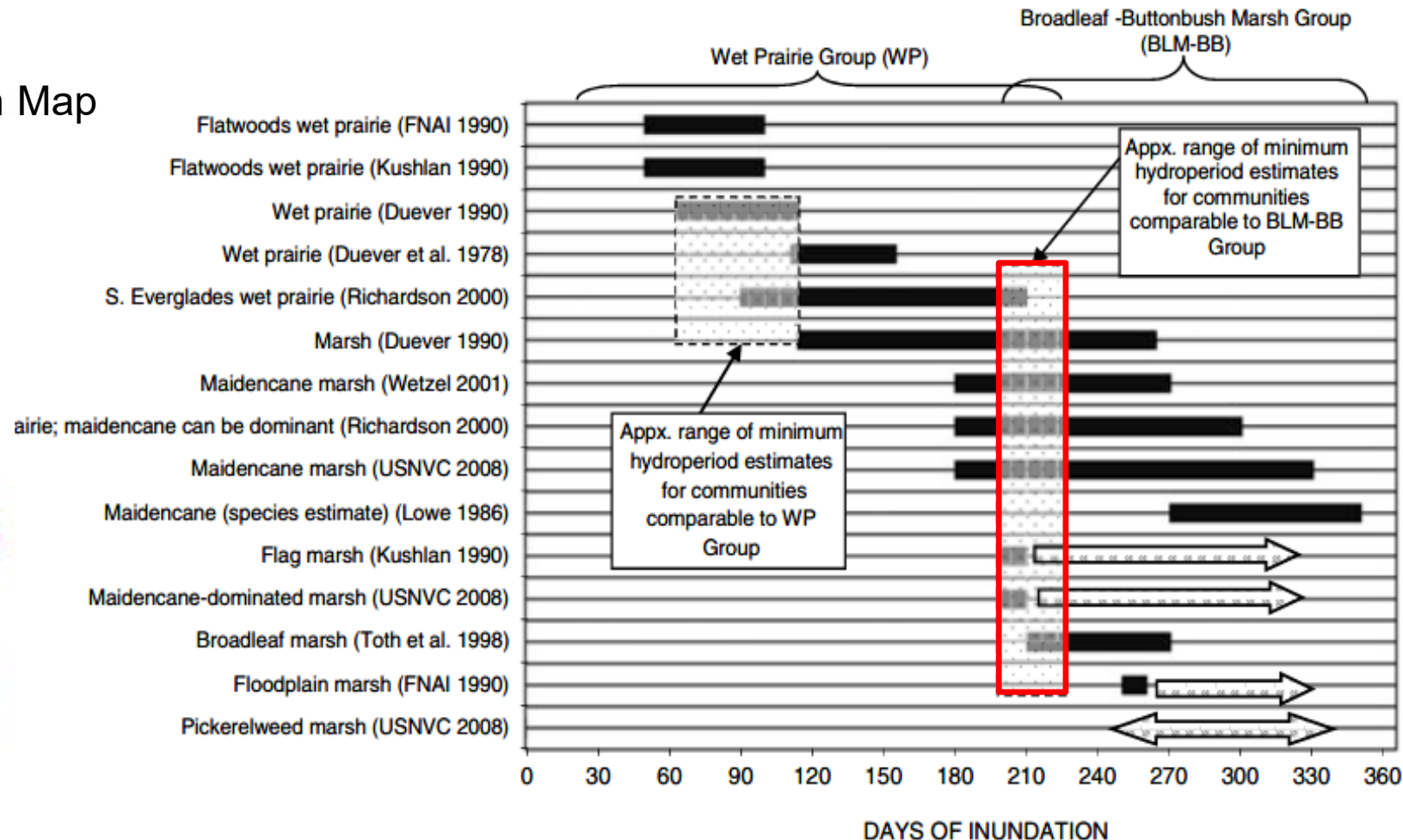


Broadleaf and Buttonbush Marsh (BLM), the Predominant Wetland Community in the Pre-Channelization Floodplain, Required Long Hydroperiods – ~210 days

Pre-Channelization Map (1952-1954)

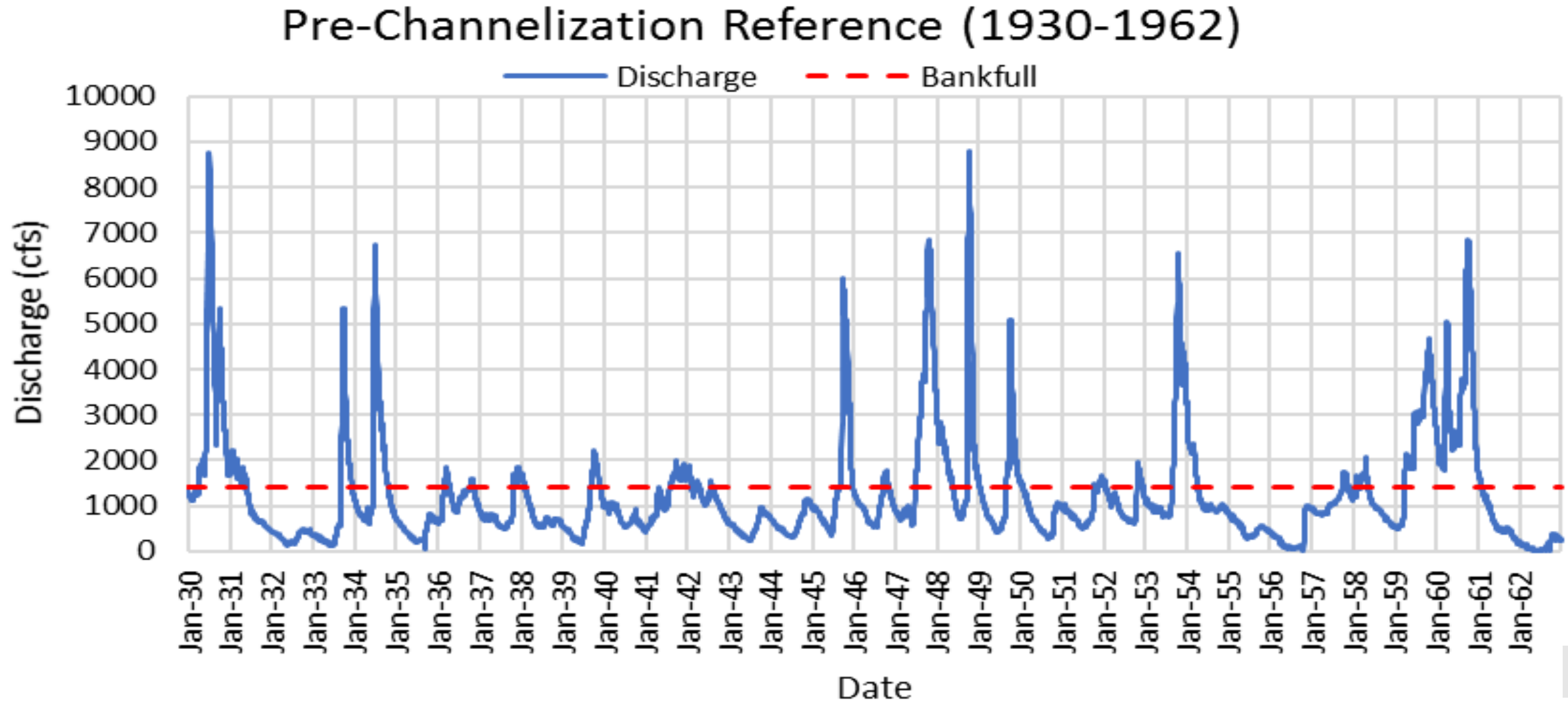


BLM (dark red) covered 52% of the Phase I area.



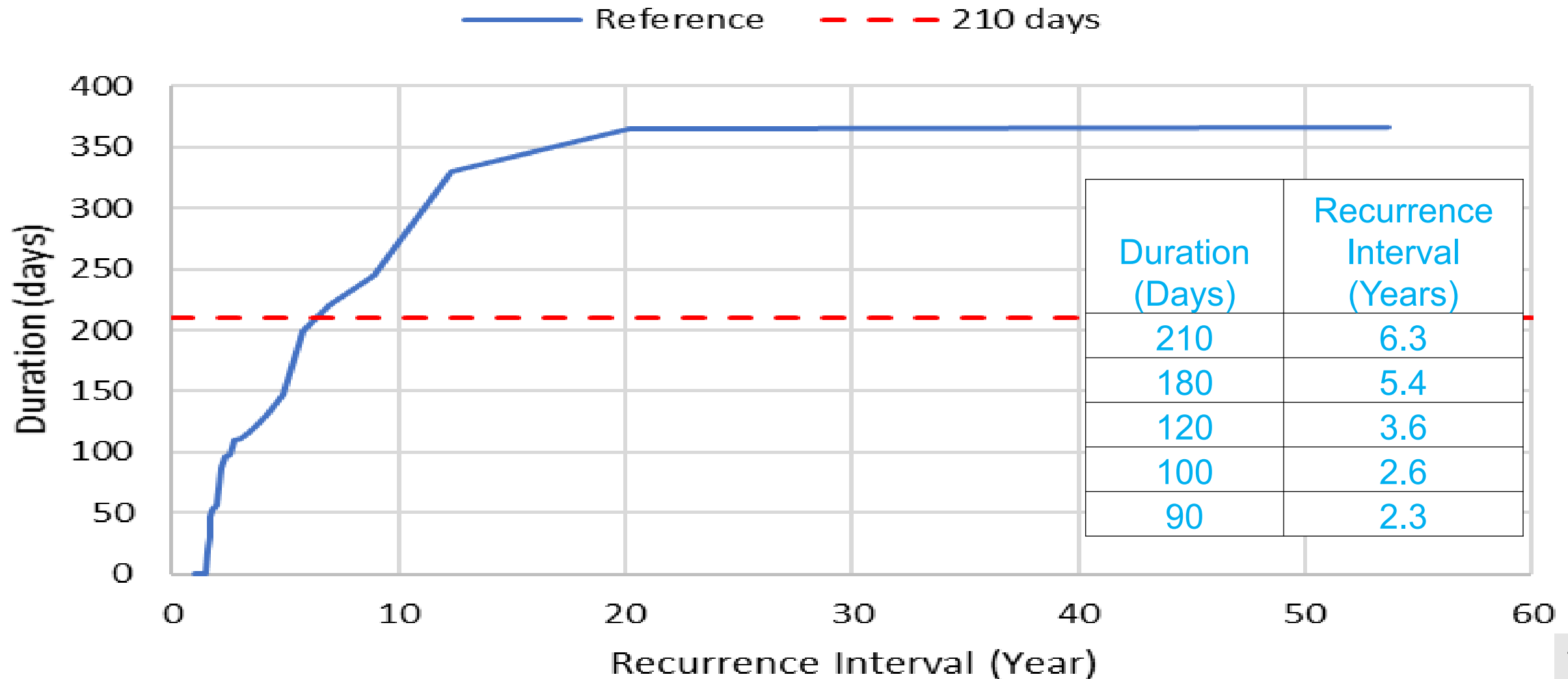


Prechannelization Discharge Exceeded Bankfull Frequently and for Long Periods of Time



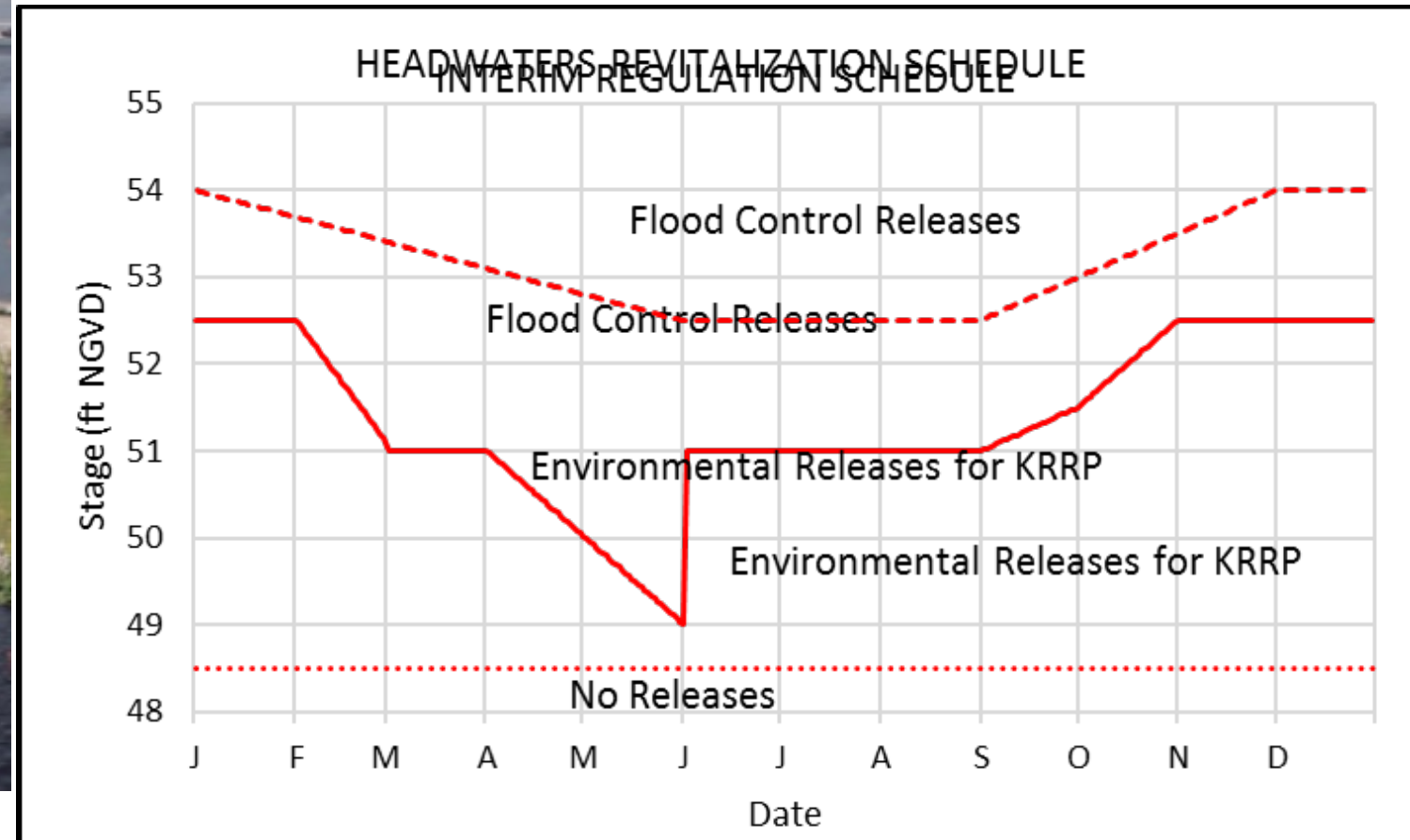
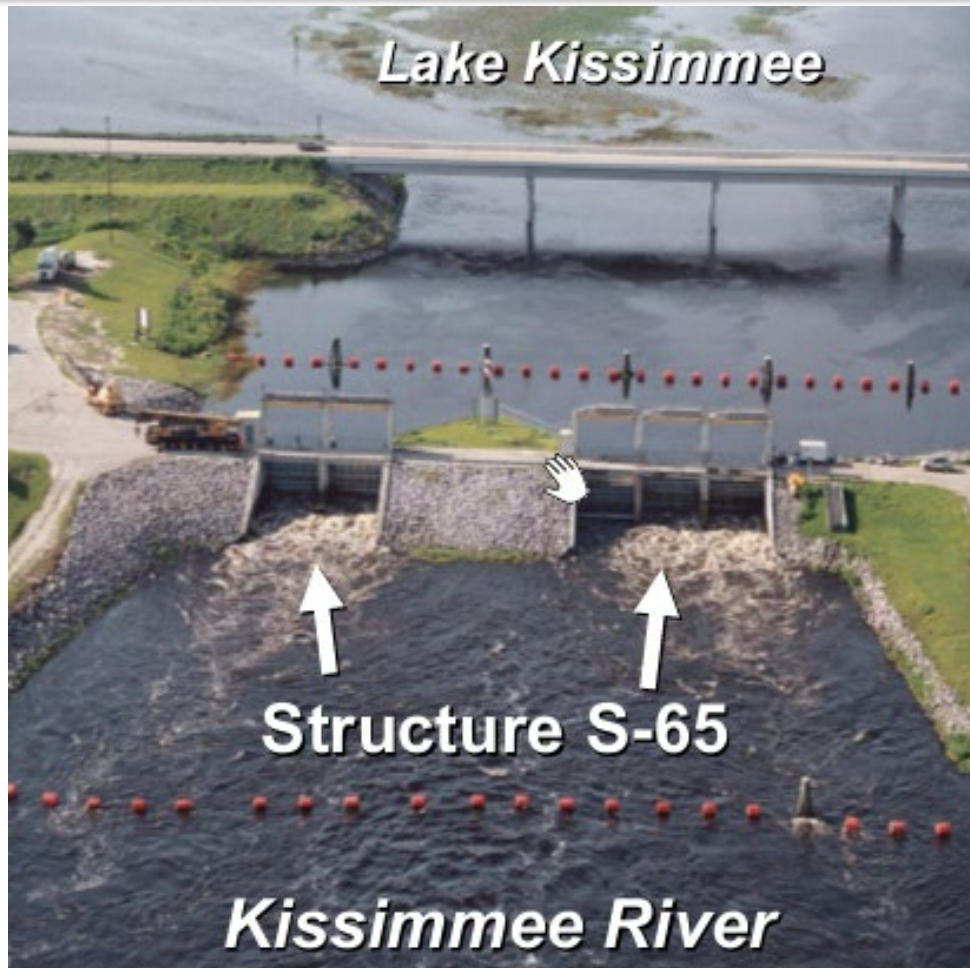


Reference Period Discharge Exceeded Bankfull for 210 Consecutive Days Every 6.3 Years On Average



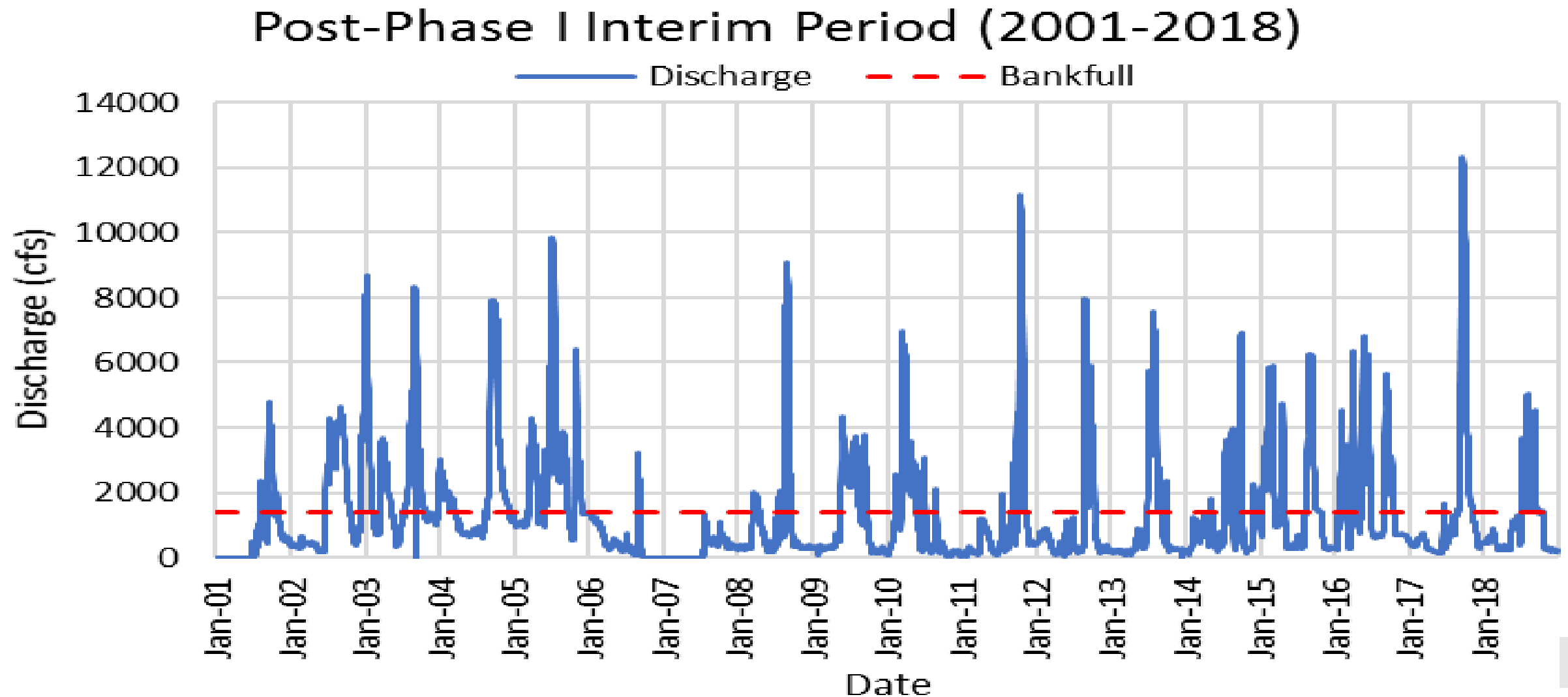


Realization of Ecological Benefits of Restoration is Dependent on Flow Management



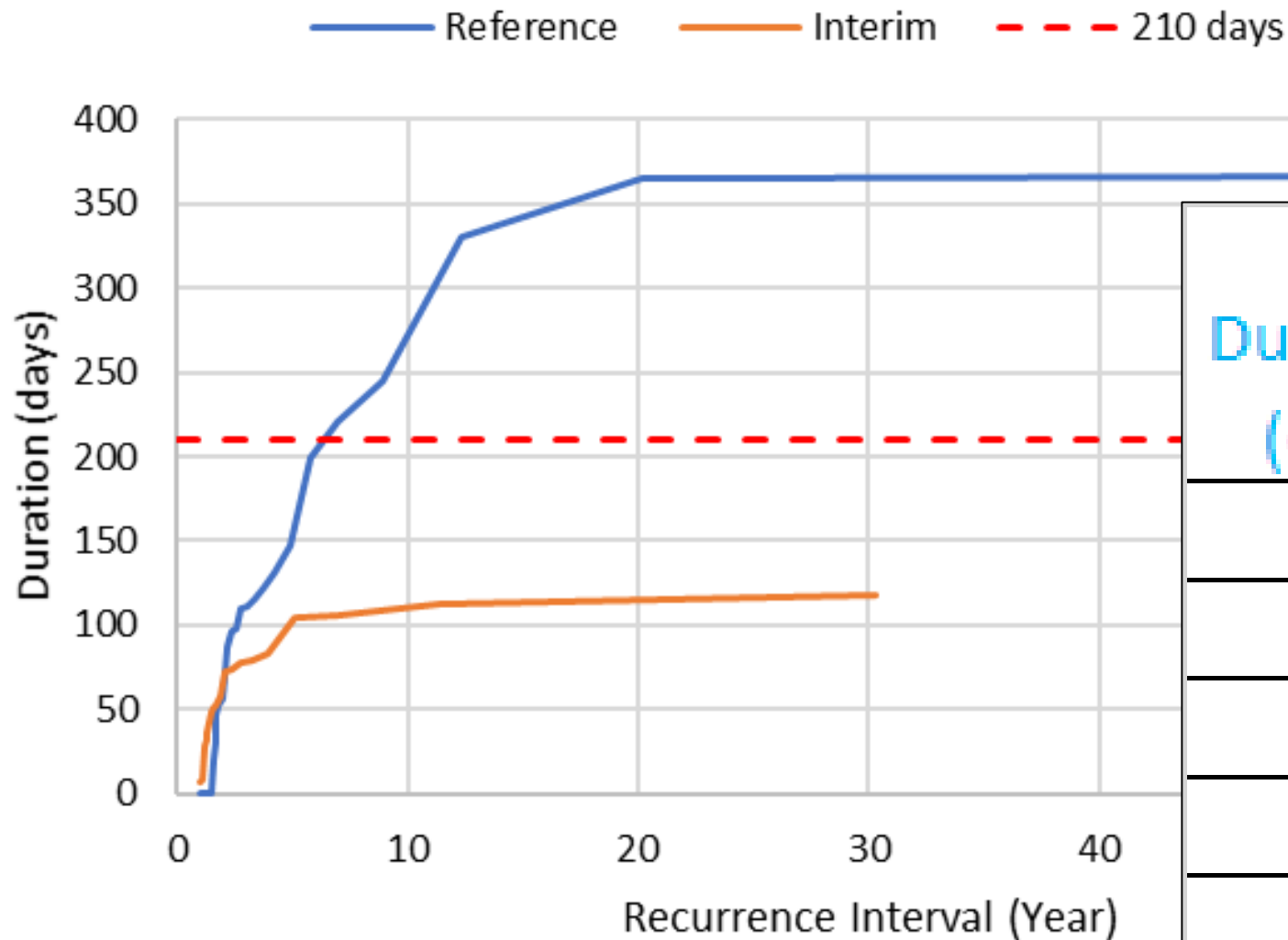


Interim Discharge Is Flashy





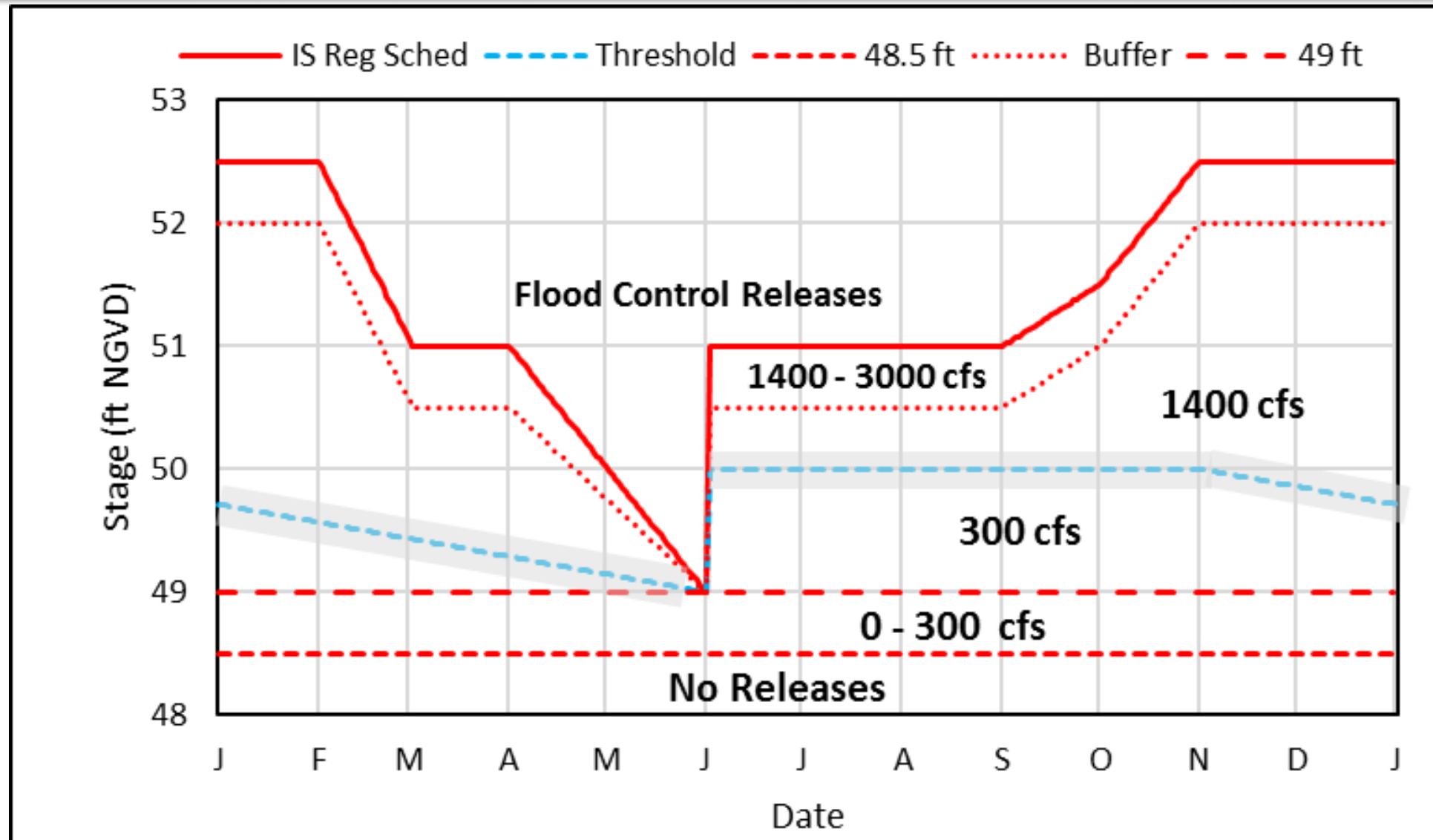
Interim Bankfull Discharge Less Than 120 Days



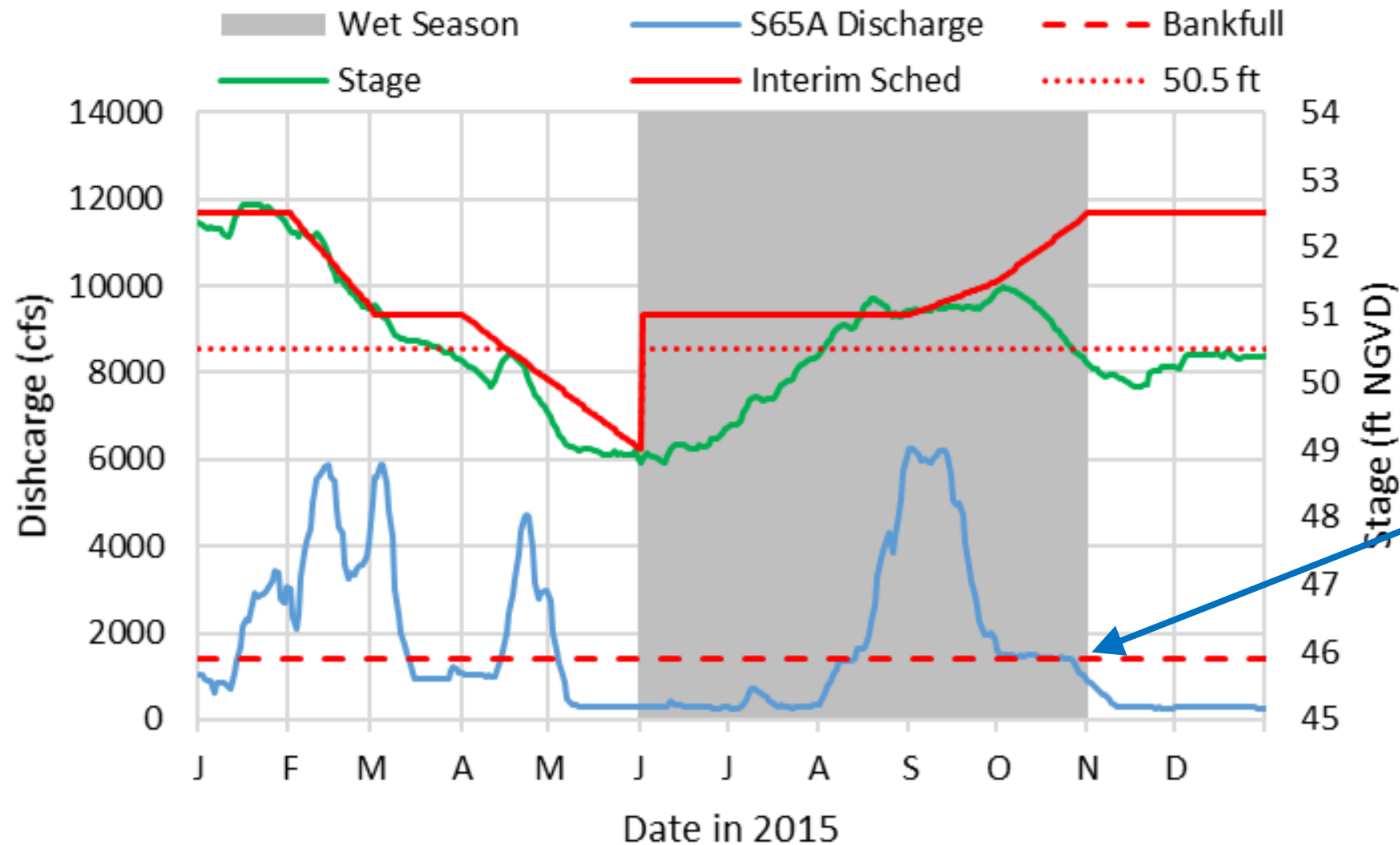
Duration (day)	Recurrence Interval (year)	
	Reference	Interim
210	6.3	N/A
180	5.4	N/A
120	3.6	N/A
100	2.6	4.8
90	2.3	4.3



The 1400 cfs Discharge Plan Was Proposed For 2015 Wet Season to Provide Longer and More Continuous Periods of Floodplain Inundation Needed for Restoration



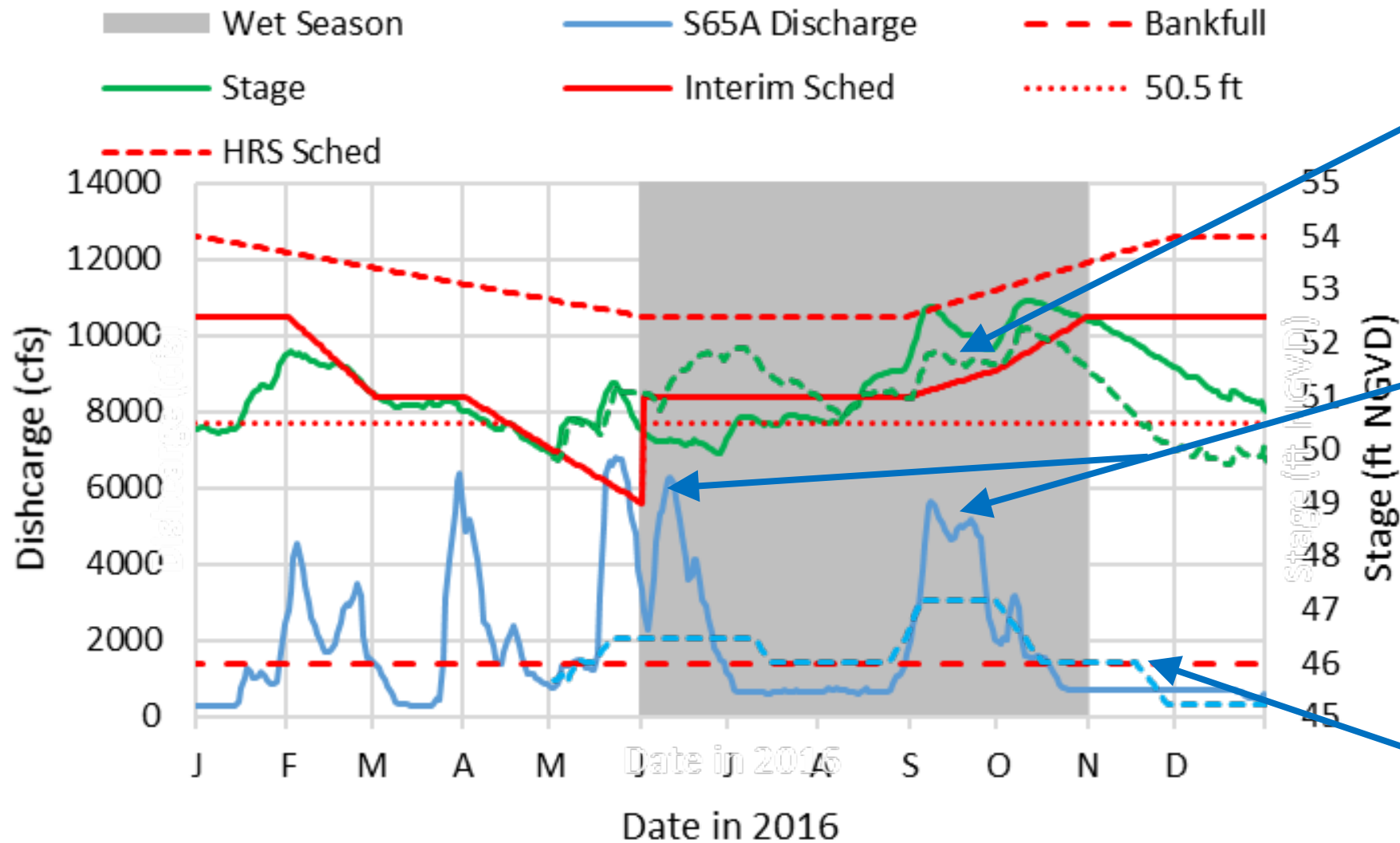
2015 Wet Season: Single 75 day Event



**Discharge
Held at
Bankfull
for 30
days**



2016 Wet Season – Plan Not Implemented - But What If It Had Been



Lower lake stage in the simulation (dashed) relative to observed (solid line) did not require large flood control releases.

Observed (solid line) showed a 50-day event and a 36-day event.

Simulation (dashed line) of the discharge plan shows that the two observed events could have been connected to create single 192-day event.



Outcomes from Recommending the Discharge Plan

Wet Season	Status	Event Number	Above Bankfull Duration (days)			Increase Due to Discharge Plan (%)
			Flood Control	Held at Bankfull	Total	
2015	Implemented	1	45	30	75	67
2016	Not Implemented	1	50	-----	50	-----
		2	30	-----	30	-----
2017	Implemented	1	58	17	75	29
2018	Implemented	1	81	24	105	30



Use of the 1400 cfs Discharge Plan

- Improved floodplain inundation during the Interim Period.
- Consolidated bankfull discharge events.
- Increased the duration of bankfull discharge events by 30-70%.
- May result in hydroperiods comparable to pre-channelization especially when combined with the additional storage of the new schedule.
- Helps keep lake stage below the regulation schedule and reduces the need for large flood control releases that may be harmful to the Kissimmee River and lower lake stage more quickly.