

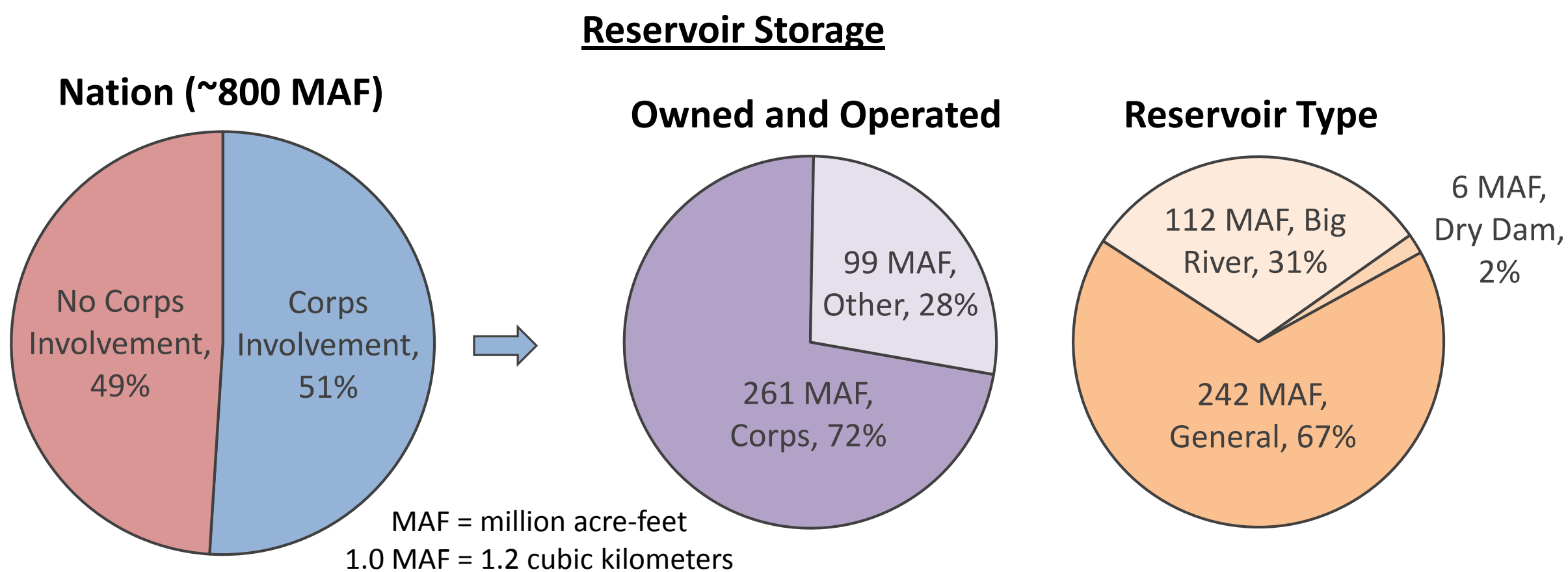
Sustainable Rivers

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Mission: Improve the health and life of rivers by changing dam operations to restore and protect ecosystems, while maintaining or enhancing other project benefits

Goal: Advance, implement, and incorporate environmental flow strategies at Corps reservoirs

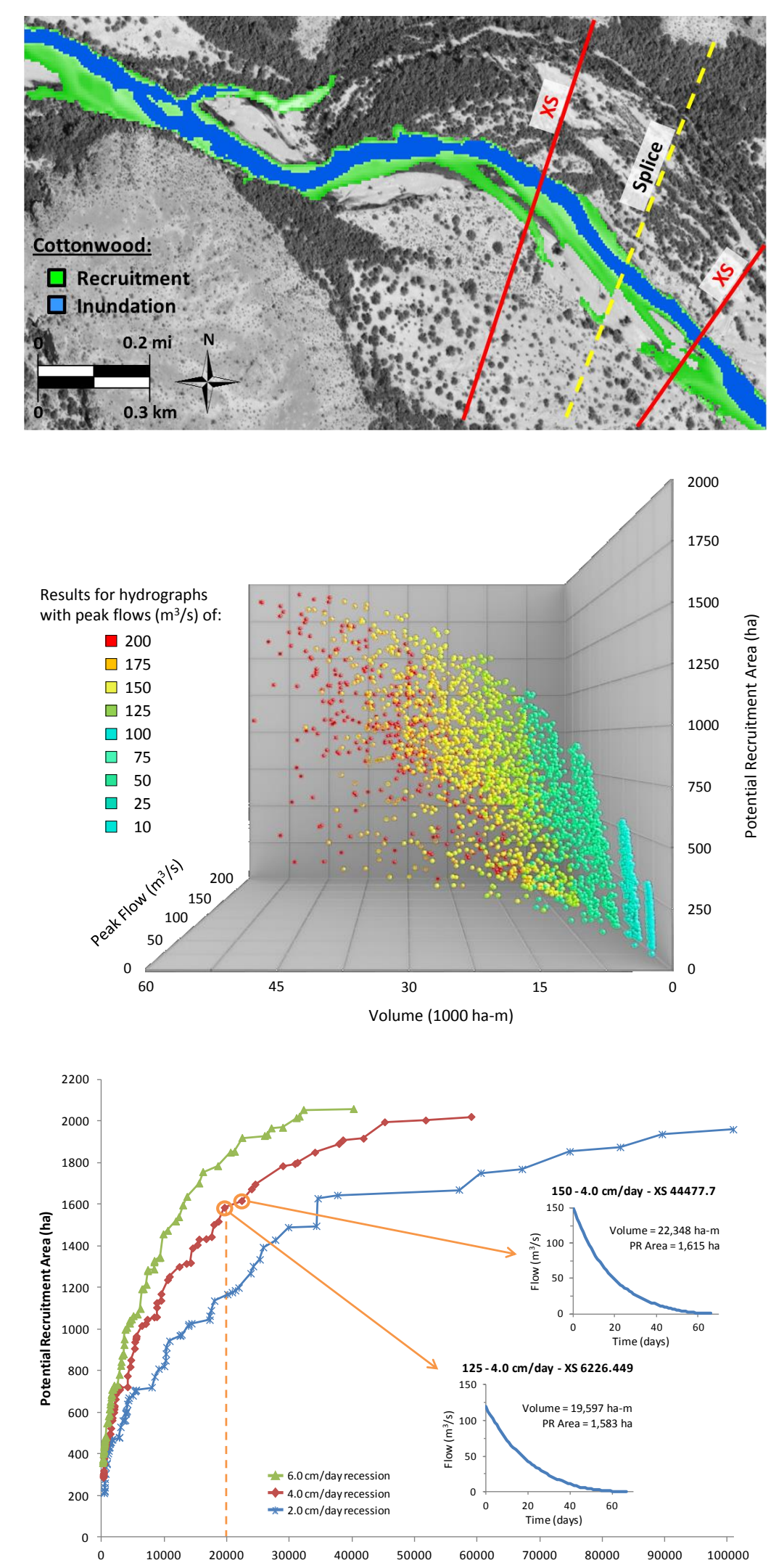
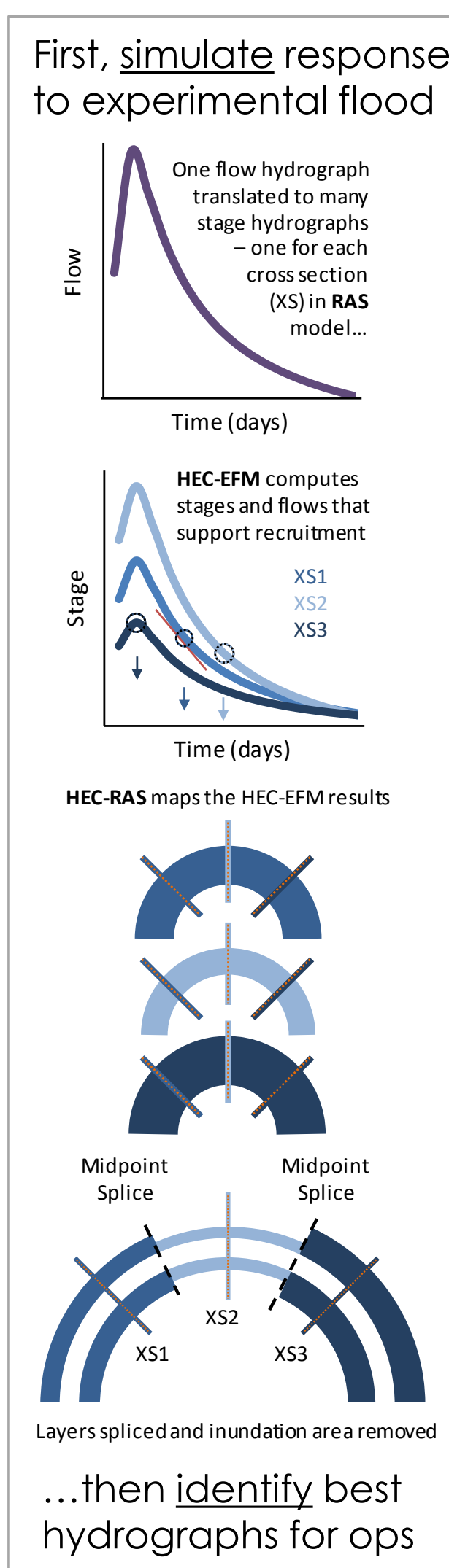
Existing Sites



Environmental Flow Process

Advance → Implement → Incorporate

Season	Monsoon	Tropical	Winter-Spring	Dry								
Floods	Bill Williams River, below Alamo Dam Large Floods Small Floods Monsoon Forage (High) >28 to 57 cms >1.5 year •Herbaceous growth •Litter decomposition •Avoid disturbance of amphibians and reptiles Monsoon Forage (Low) >2.8 to 14 cms >1.2 year •Herbaceous growth	Non-native Fish Flush and Riparian Rework •>850 cms •>1.25 year •<2 day duration •Remove non-native fish •Change distribution of woody vegetation •Create off-channel habitat Riparian Recruitment >283 to 850 cms >1.5-10 year >2 day flood with gradual recession >Post-peak recede at <2.5 cm per day •Minimize tamarisk •Scour channel •Cottonwood and willow recruitment Winter Forage >127 to 142 cms >1:3 year •Herbaceous growth •General cleansing •Remove beaver dams Native Fish Spawning >5.7 to 11 cms >1:1 year >2-4 week duration •Native fish spawning										
		>0.57 to 1.4 cms (typical low flow) • maintain aquatic habitat and established riparian vegetation >0.57 cms (minimum low flow); up to 2 months; rare; gradual rates of change • fragment aquatic habitat to favor native species										
Low Flows	>0.57 to 1.4 cms (typical low flow) • maintain aquatic habitat and established riparian vegetation >0.57 cms (minimum low flow); up to 2 months; rare; gradual rates of change • fragment aquatic habitat to favor native species											
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun



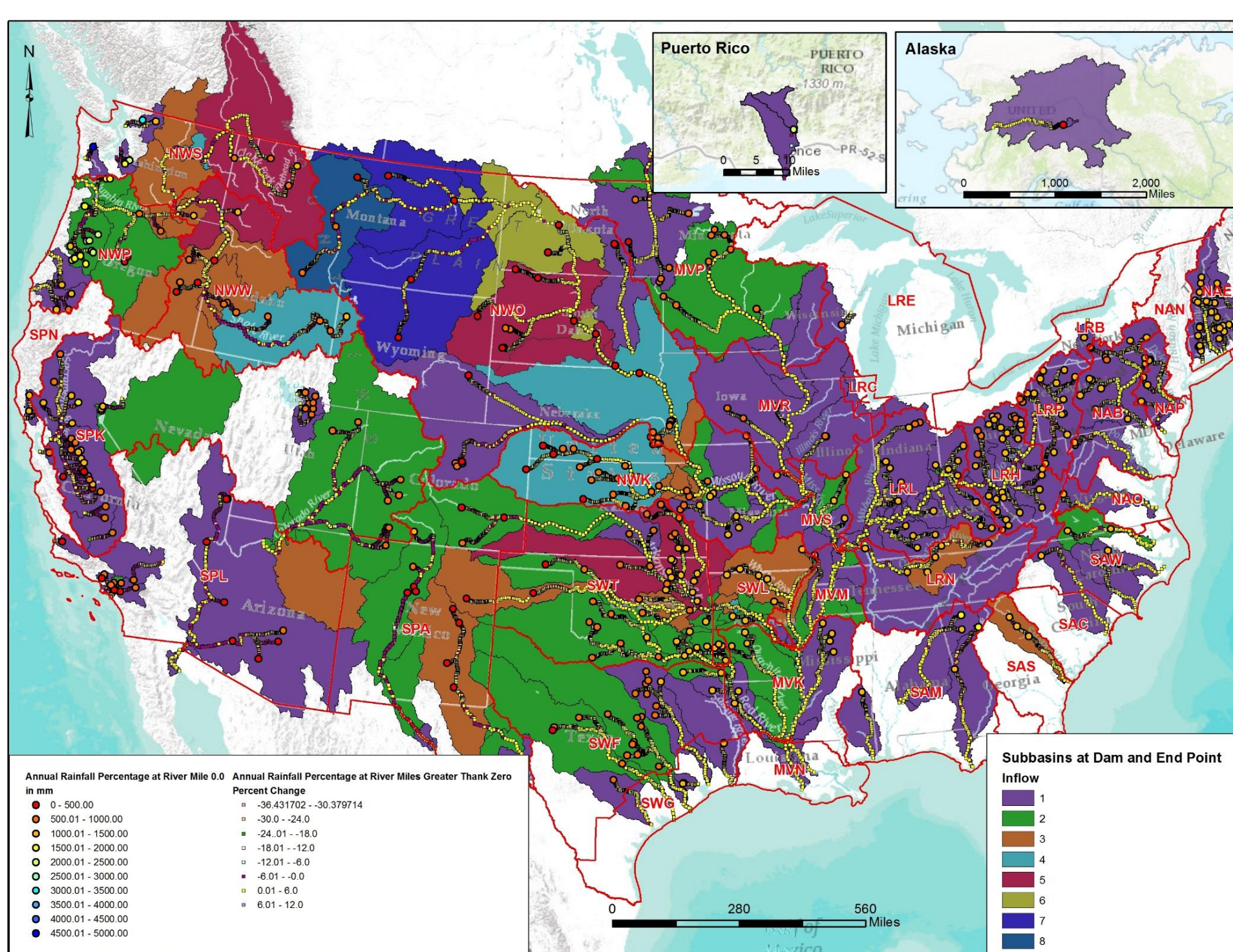
What are “Environmental Flows”?

Ecological: The quantity, timing, and quality of water flows required to sustain freshwater and estuarine ecosystems and the human livelihoods and well-being that depend on these ecosystems (Brisbane Declaration).

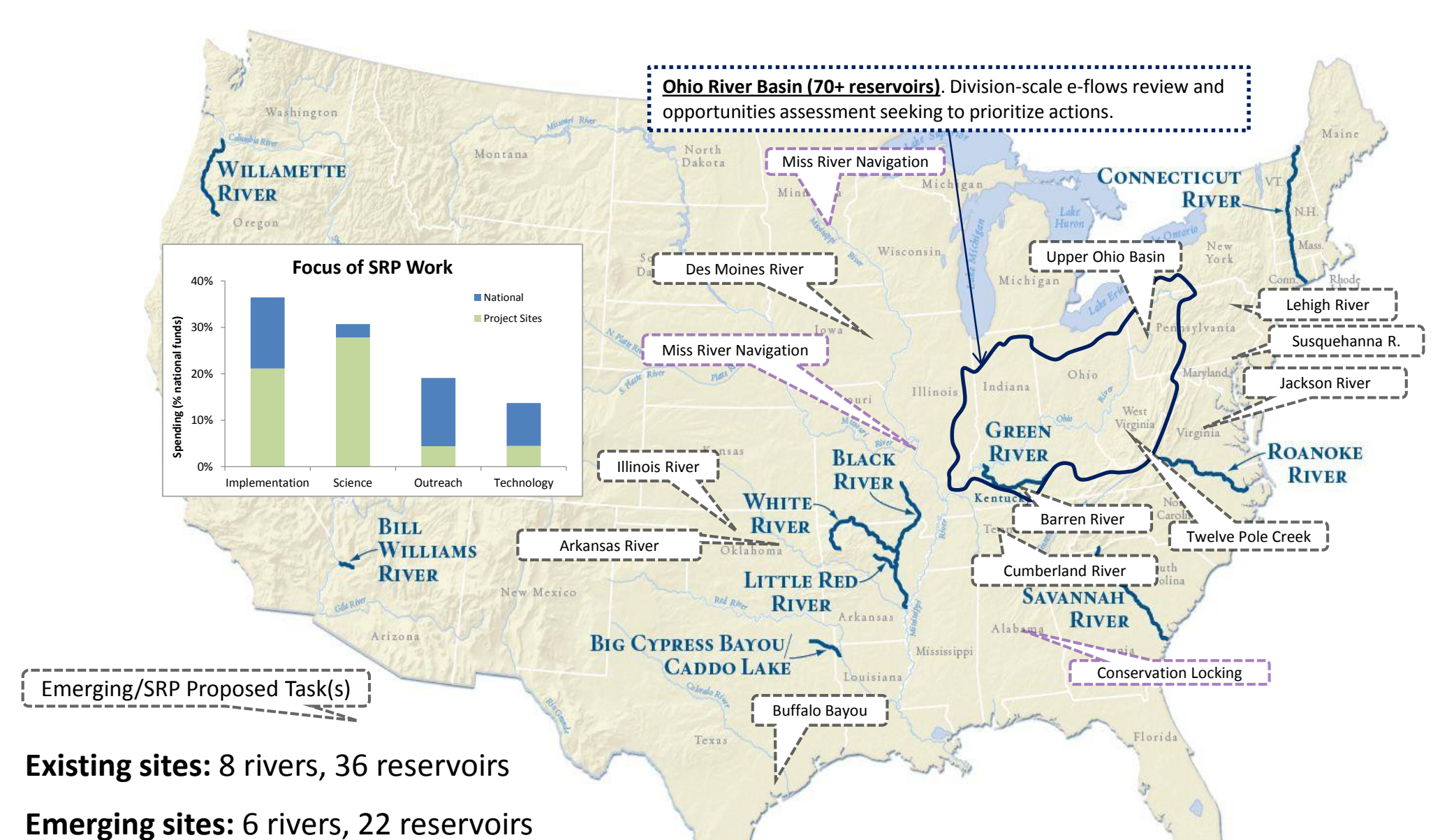
Operational: Management decisions that manipulate water and land-water interactions to achieve ecological or environmental goals (Corps workgroup).

Future Directions

National Prioritization



Existing and Emerging Sites



Advance, implement, incorporate e-flows