

# U.S. Fish and Wildlife Service Bay-Delta Plan Phase 1 Revised SED Review



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# USFWS Phase 1 SED Review

## Overview

- Fish and habitat flow-related needs
- Measurable Goals and Objectives
- Adaptive Management



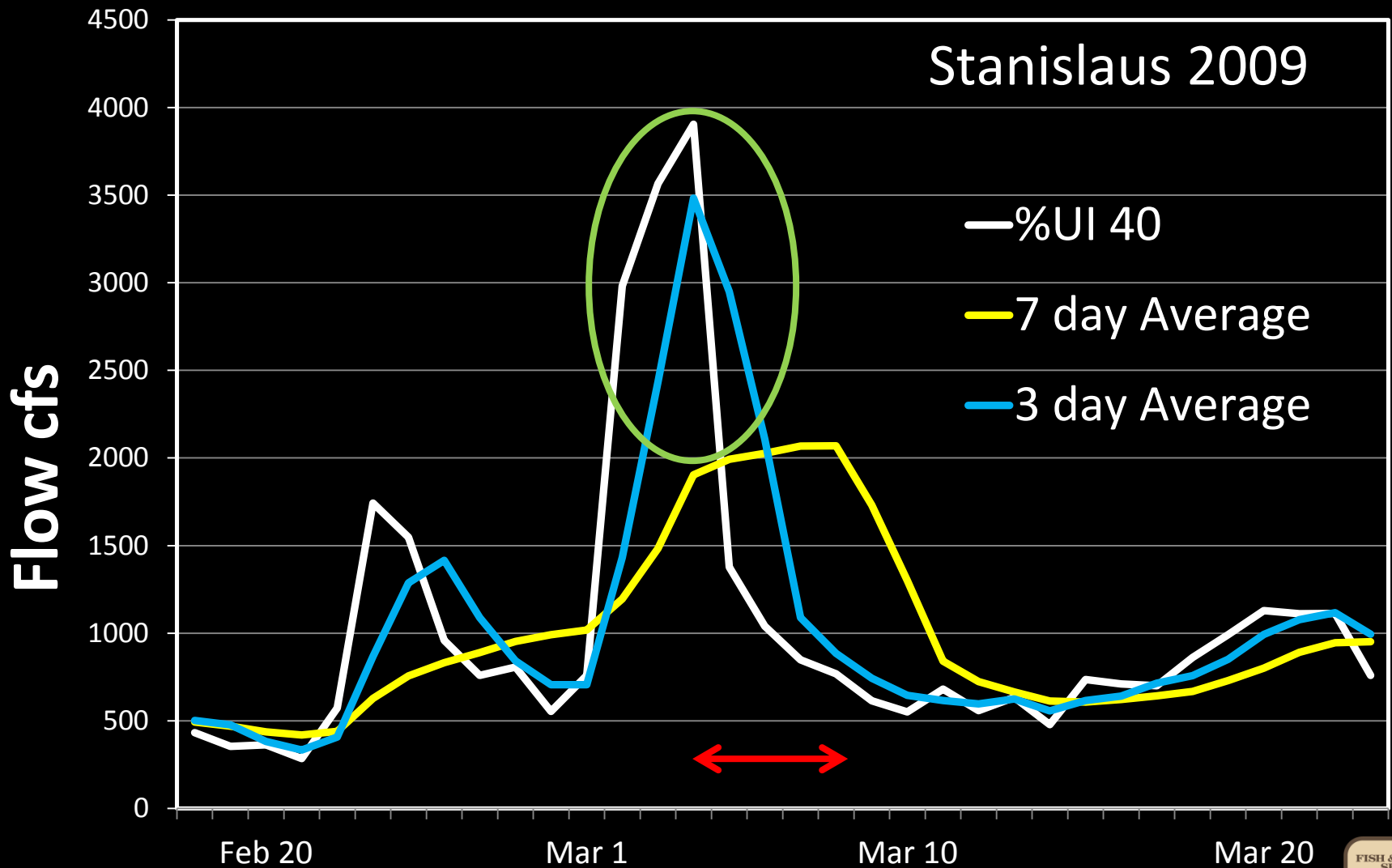
# Timing and Extent of Flow

Utilizing a 7-day running average may:

- **Decouple managed releases** from full-suite of storm-related benefits
- **Limit spatial and temporal extent** of beneficial habitat connection/expansion



# Timing and Extent of Flow



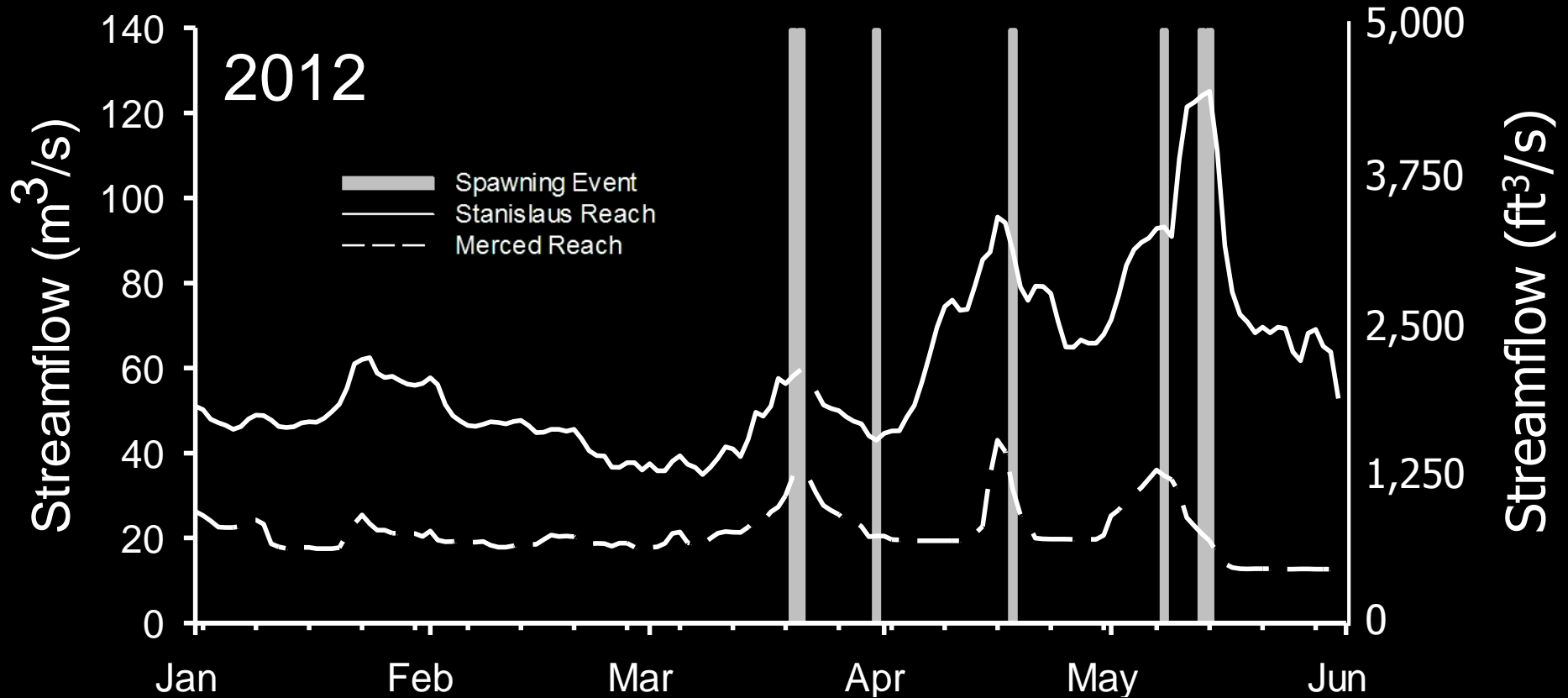
# Multi-species Benefits (Sturgeon)

Recent FWS (2011-2016) studies:

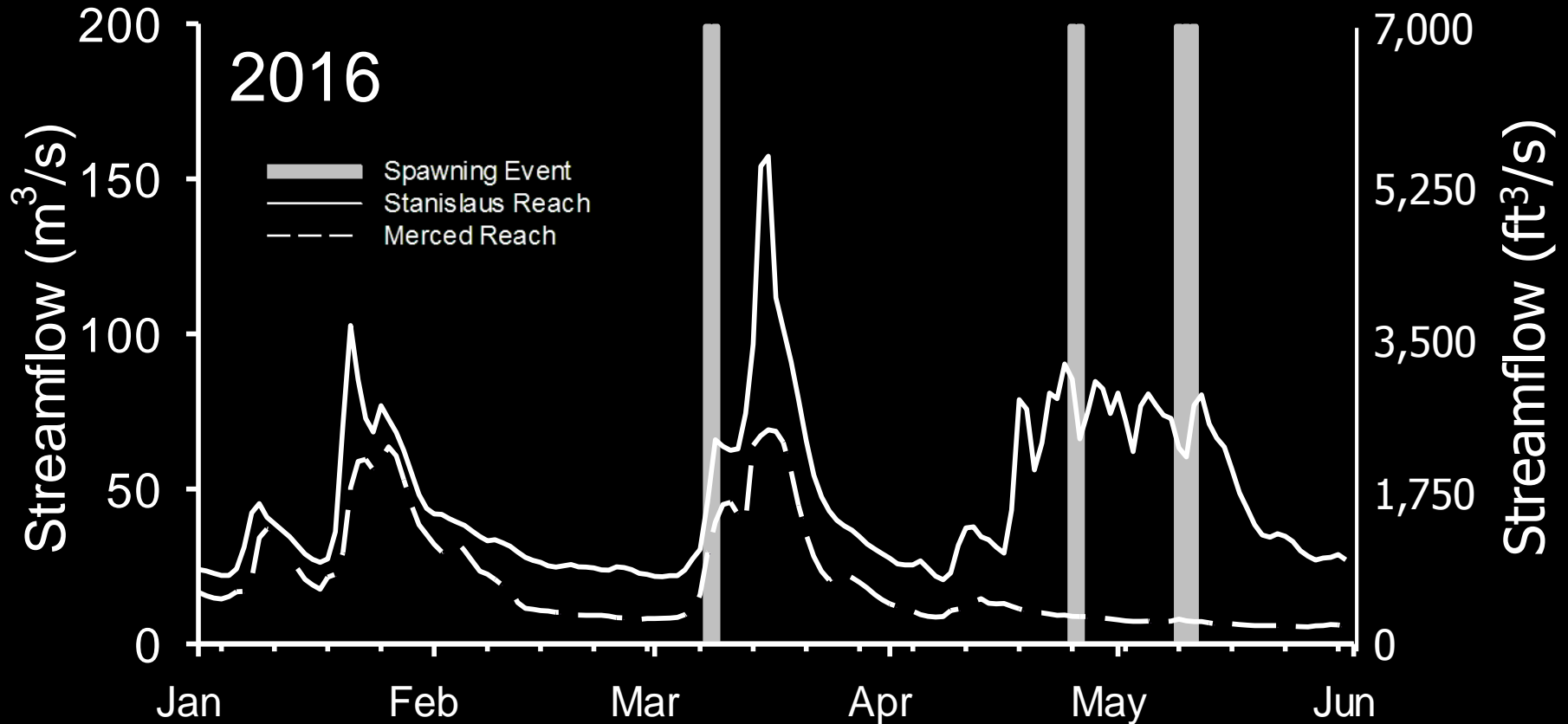
- Adult White Sturgeon are present in the SJR every year
- Successful spawning may be cued with **modest flow increases**, even in relatively dry years



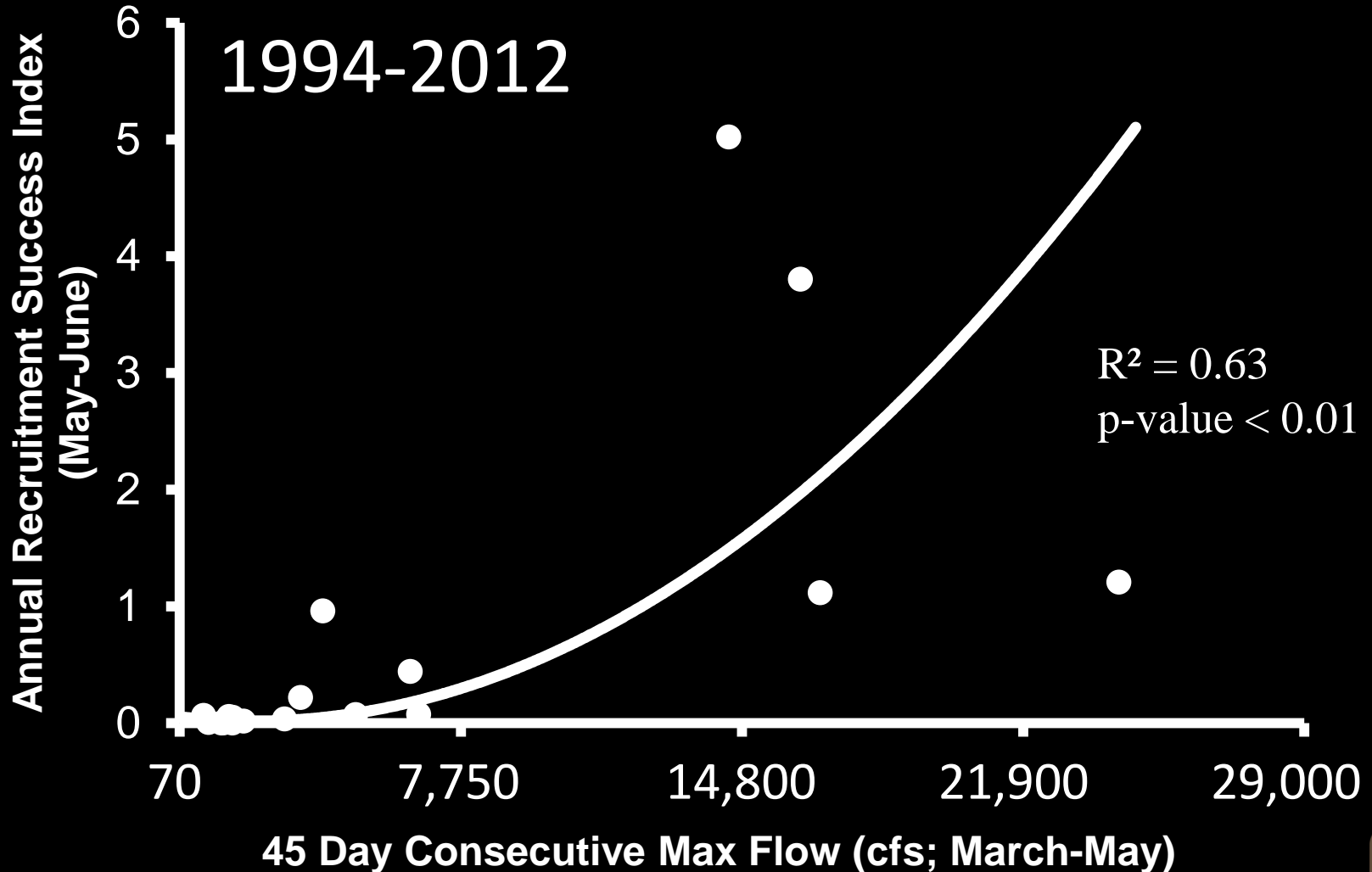
# Multi-species Benefits (Sturgeon)



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# Multi-species Benefits (Splittail)





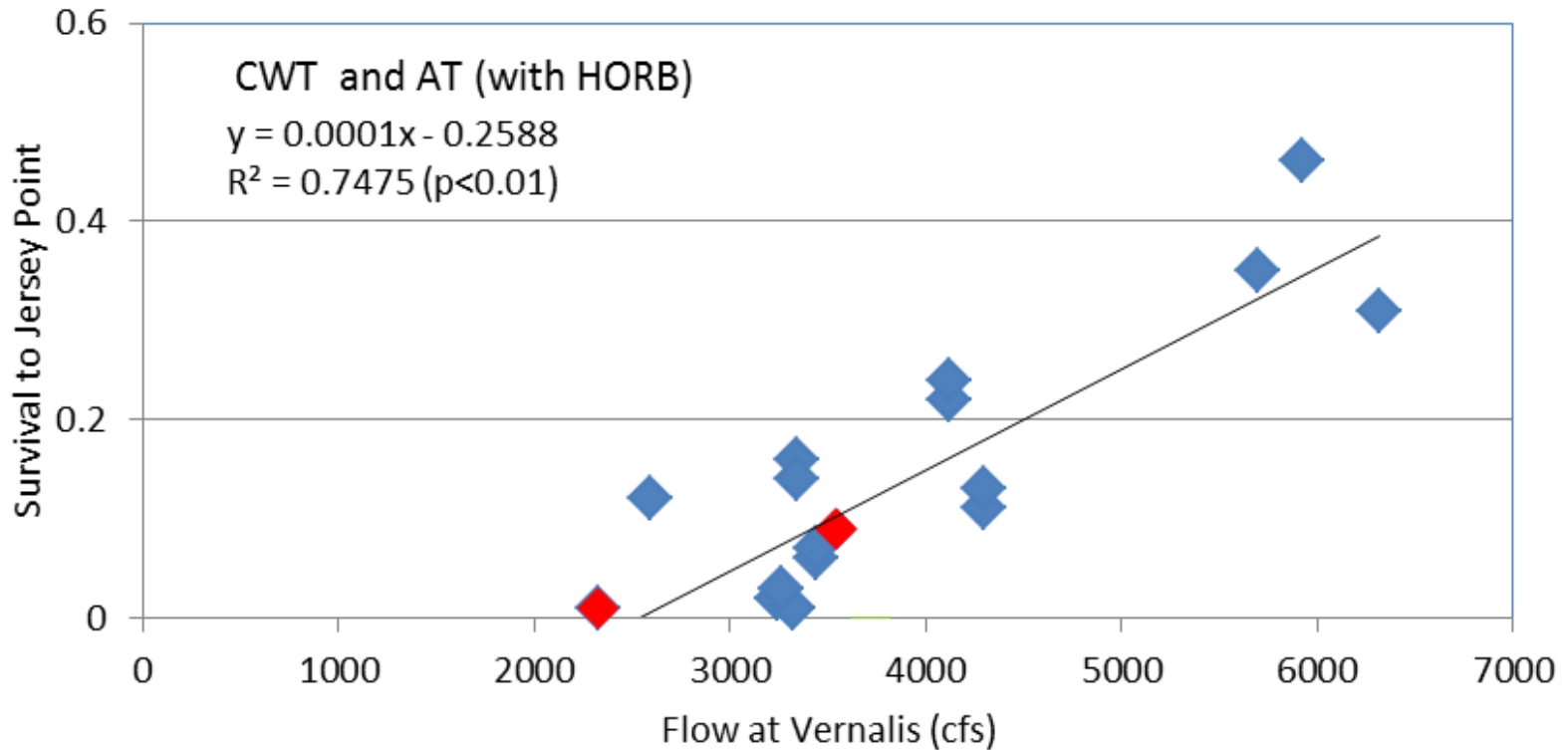
# Year-round Fish Needs and Fate of Water

- CV steelhead, other Chinook runs, Sturgeon and other native fish have **additional needs outside** of the February-June window
- Downstream/ultimate fate of water released is crucial



# Year-round Fish Needs and Fate of Water

Survival from Durham Ferry and Mossdale to Jersey Point versus flow with HORB in place (CWT and 2012 acoustic tags)



# Measurable Goals and Objectives

- Numeric goals and objectives for **all beneficial uses** needed for effective comparisons and accountability
- Tracking progress toward narrative goals and objectives can be challenging and ineffective
- Narrative **Salmon Protection Objective** from the revised SED may be challenging to achieve with 40% UF



# Measurable Goals and Objectives

Estimated Volumes (AF) and Percentages of UF – 53% Increase in Natural Production					
	Wet	Above Normal	Below Normal	Dry	Critical
Stanislaus	604,286	487,578	422,911	384,882	334,899
	33%	38%	48%	60%	73%
Tuolumne	877,247	673,275	549,579	510,996	435,634
	29%	32%	37%	44%	50%
Merced	513,068	394,518	340,966	279,861	241,566
	32%	38%	47%	52%	61%

Source – Recommended Streamflow Schedules To Meet the AFRP Doubling Goal in the San Joaquin River Basin (AFRP 2005)



# Measurable Goals and Objectives

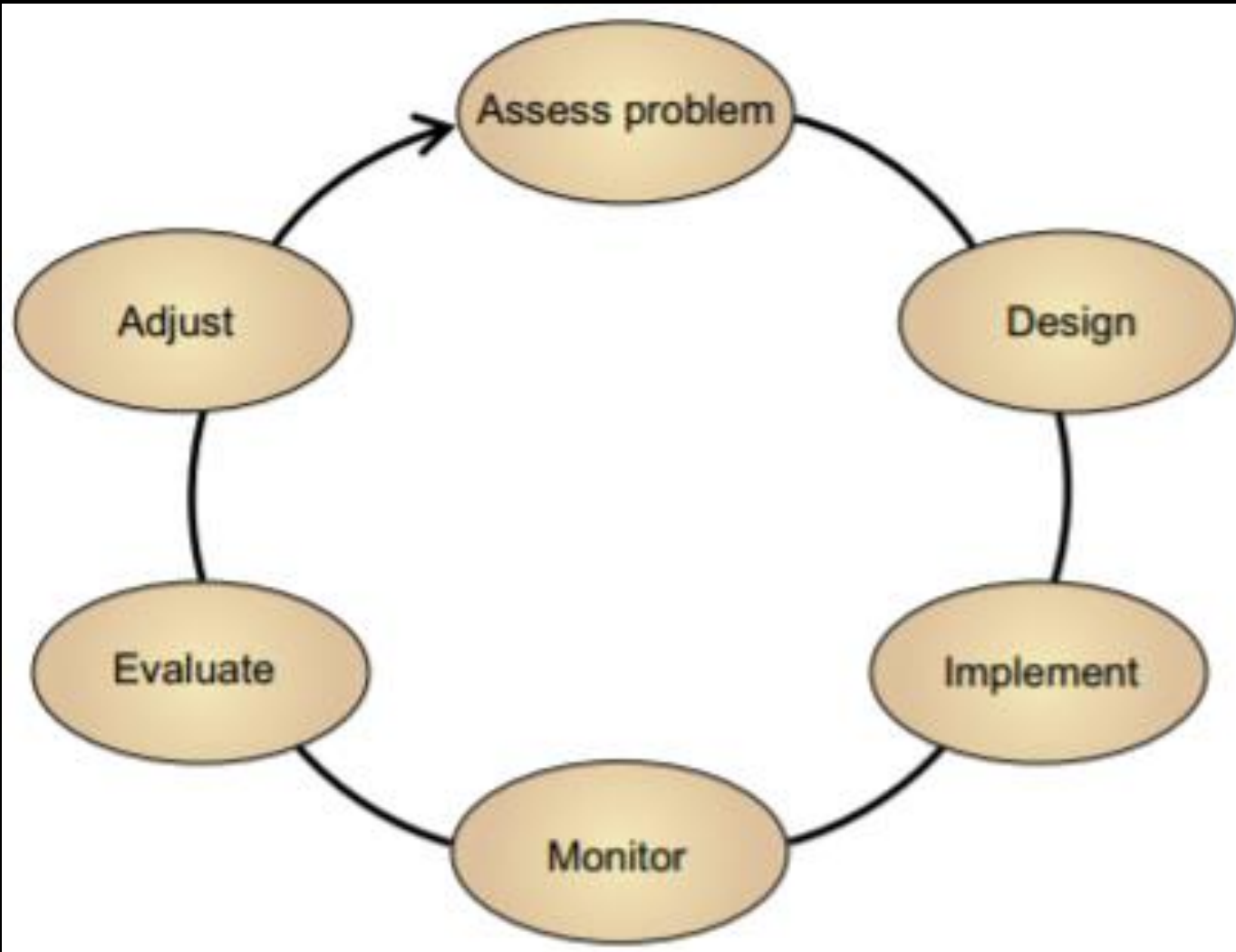
Species	Target
Chinook Salmon, all races	990,000
Fall run	750,000
Late-fall run	68,000
Winter run	110,000
Spring run	68,000
Steelhead	13,000
Striped bass	2,500,000
American shad	4,300
White sturgeon	11,000
Green sturgeon	2,000

River	Target
Sacramento River	-----
Fall run	230,000
Late-fall run	44,000
Winter run	110,000
Spring run	59,000
Clear Creek	7,100
Feather River	170,000
Yuba River	66,000
American River	160,000
Mokelumne River	9,300
<b>Stanislaus River</b>	<b>22,000</b>
<b>Tuolumne River</b>	<b>38,000</b>
<b>Merced River</b>	<b>18,000</b>

*Source – Final Restoration Plan for the Anadromous Fish Restoration Program: A Plan to Increase Natural Production of Anadromous Fish in the Central Valley of California (AFRP 2001)*



# Adaptive Management



Source – *Adaptive Management: The US Department of Interior Technical Guide* (U.S. DOI 2009)



# USFWS Phase 1 SED Review

## Recommendations

- **Consider fish and habitat flow-related needs for all native fish species, throughout their life cycles**
- **Define measureable goals and objectives**
- **Further define the process and refine decision space**



