

# Results of 2023 Riparian Health Assessment



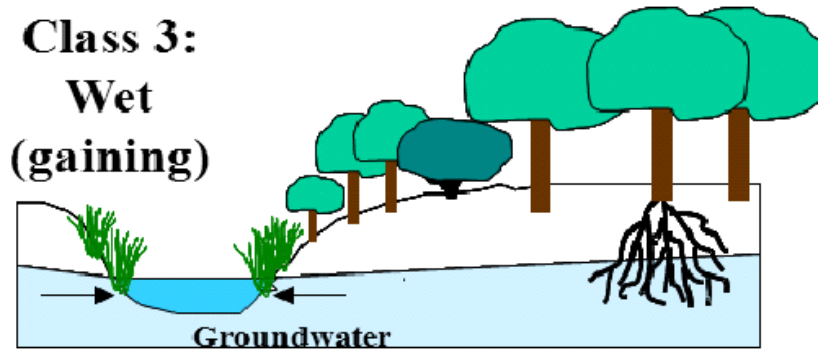


# How is Riparian Health Determined?

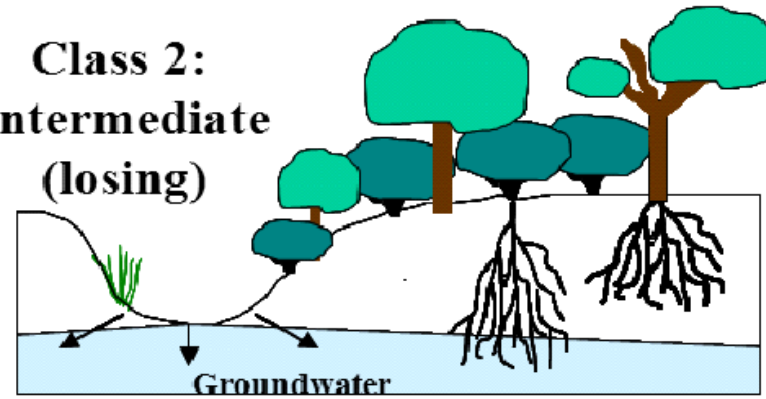
- ▶ Nine different vegetation measurements (“bioindicators”)
  - ▶ Quantitative scores for each of these nine bioindicators calculated for each reach
  - ▶ Overall score for each reach determined, then classified into one of three “Condition Classes”
  - ▶ This scoring system developed in 2002 for the San Pedro River



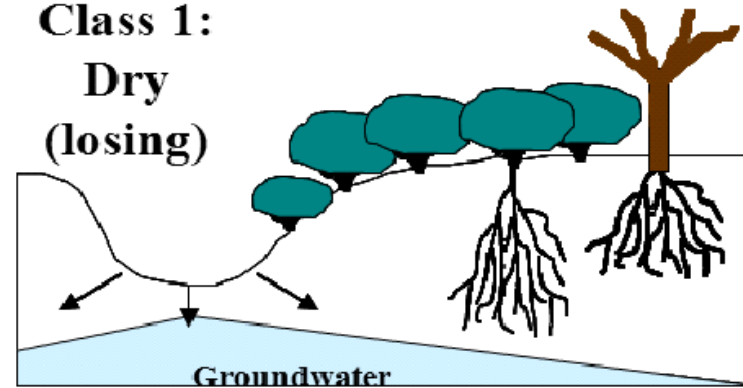
**Class 3:  
Wet  
(gaining)**



**Class 2:  
Intermediate  
(losing)**



**Class 1:  
Dry  
(losing)**



Groundwater Decline



*Tamarix*

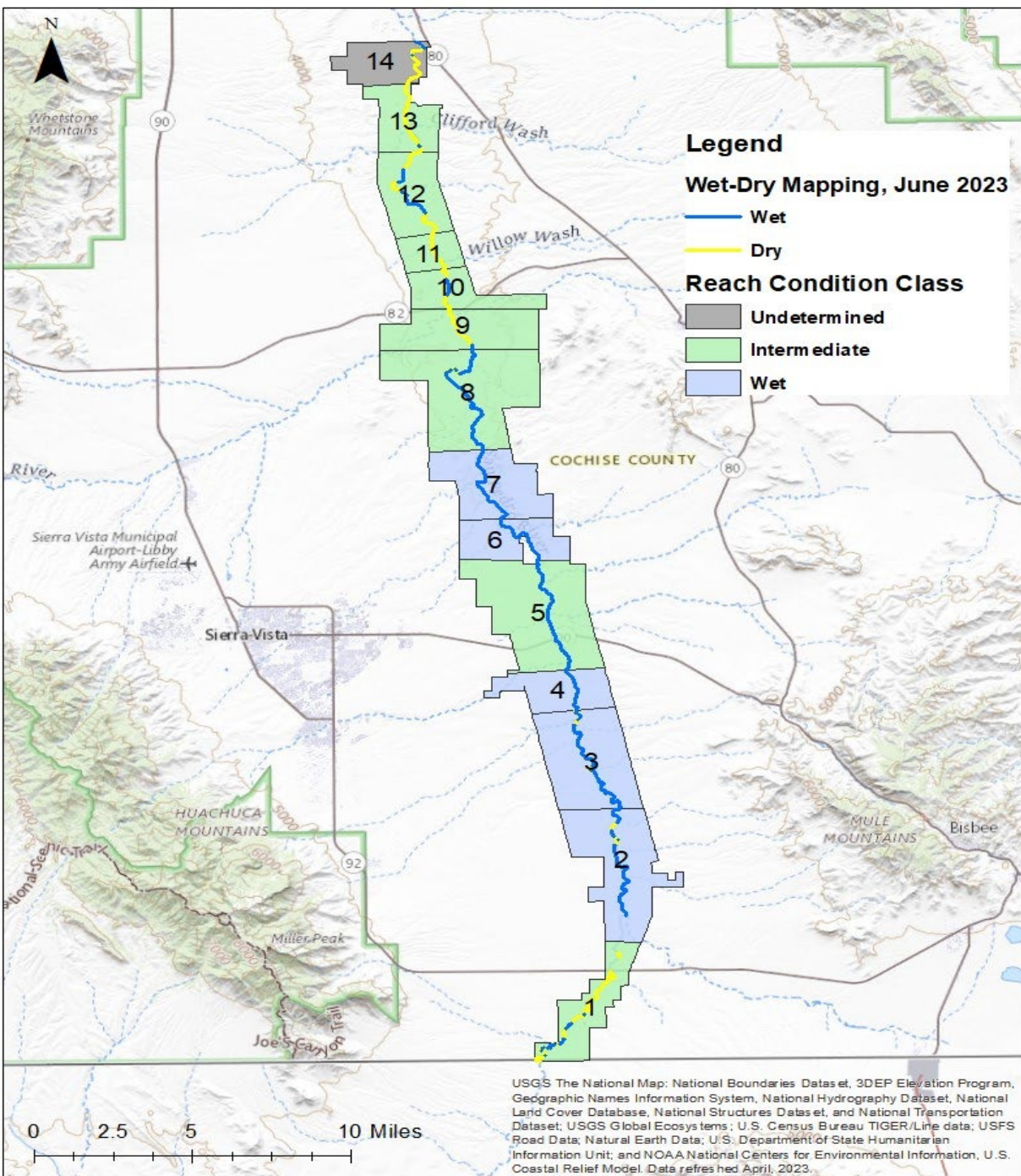


*Populus  
Salix*



Riverine  
marsh

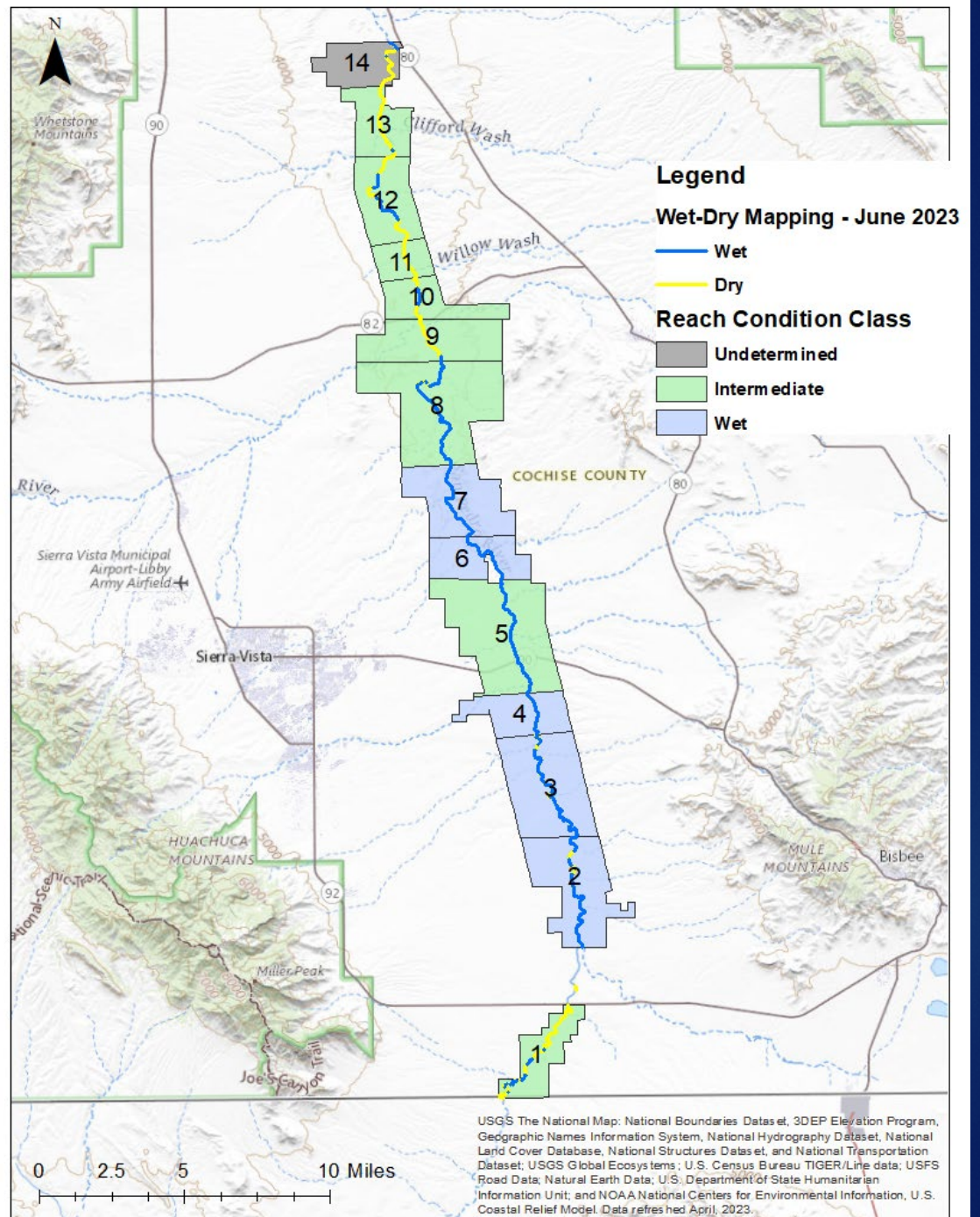
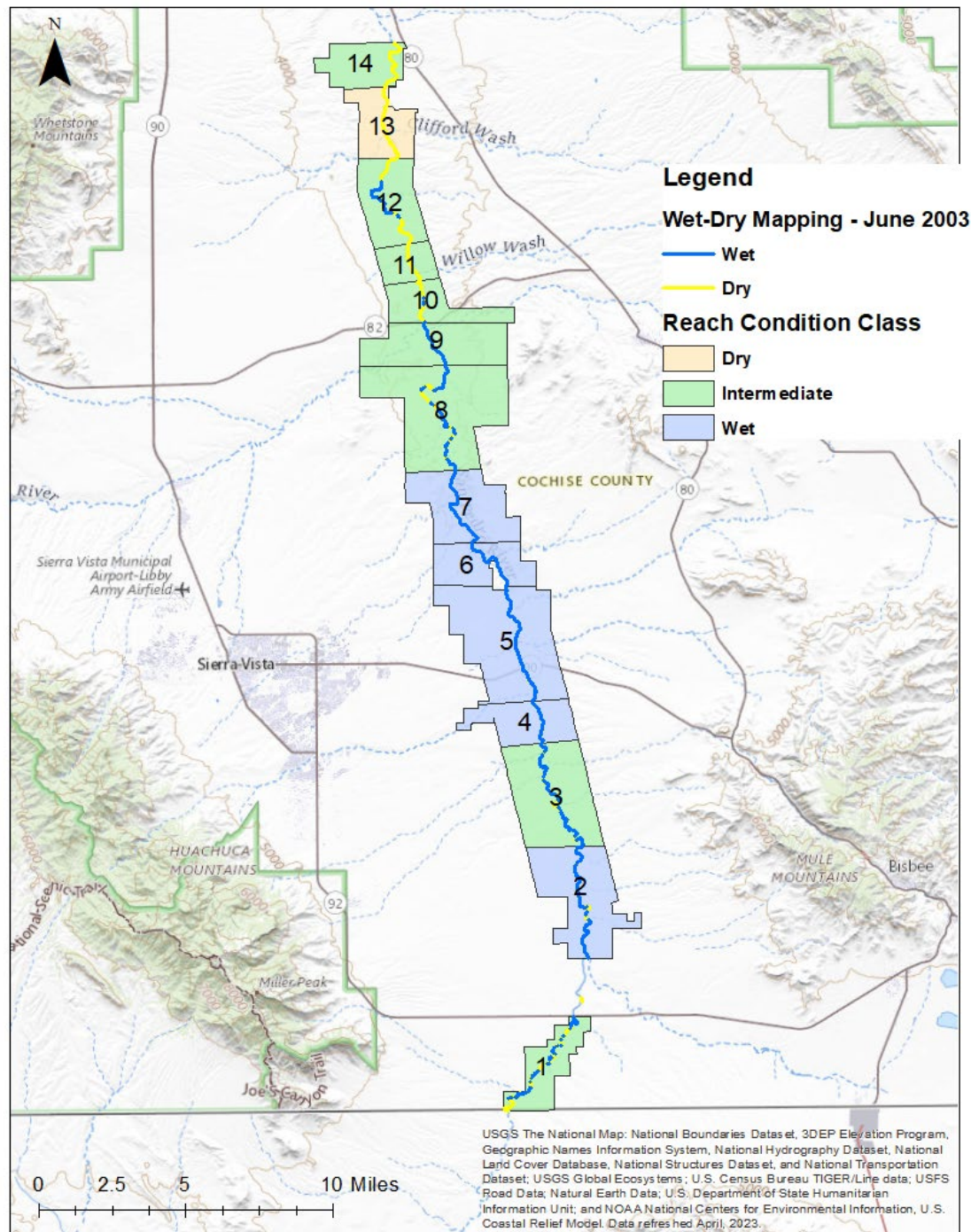




# 2023 SPRNCA Riparian Health

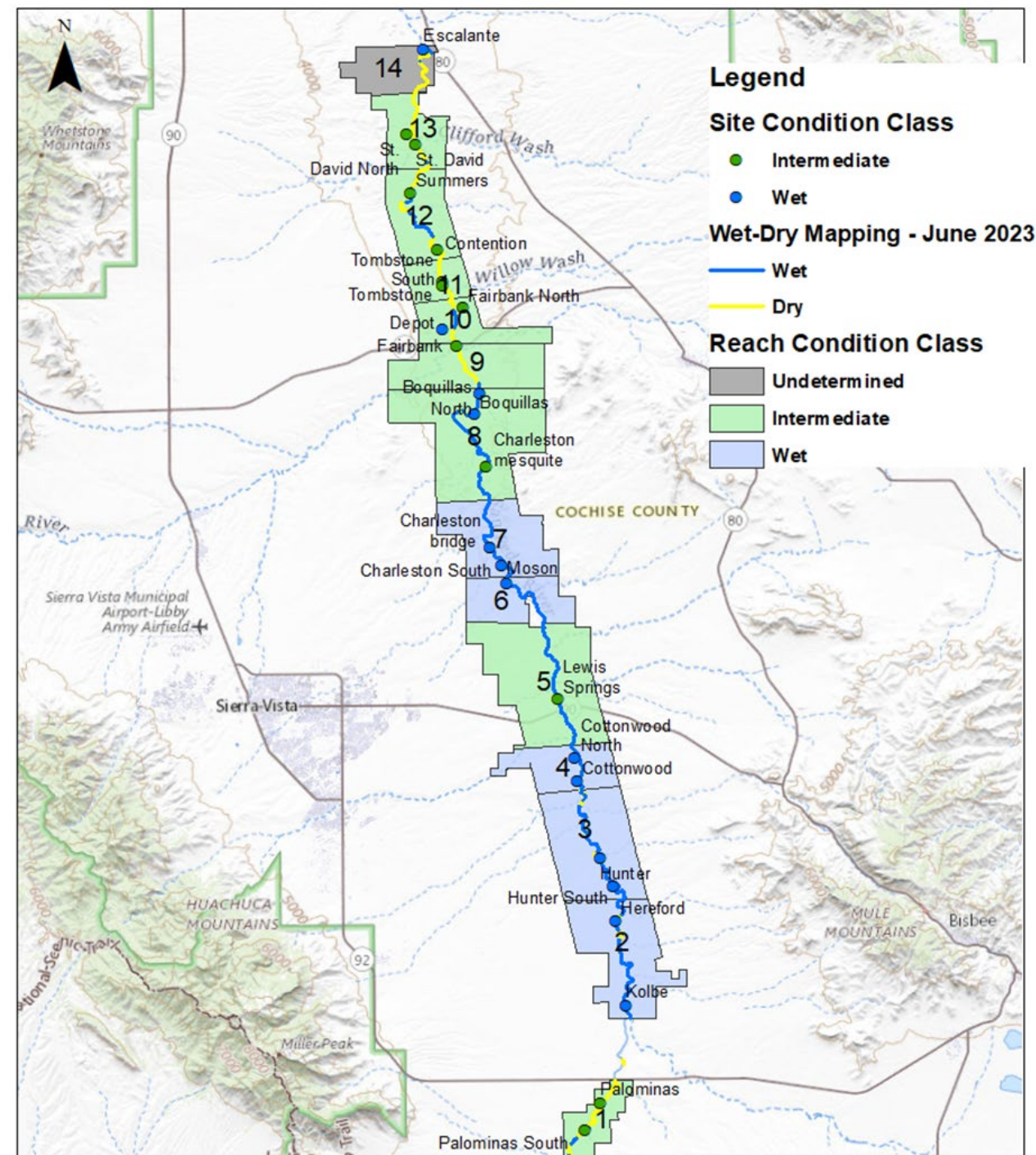
From: Dixon and Robertson, 2024







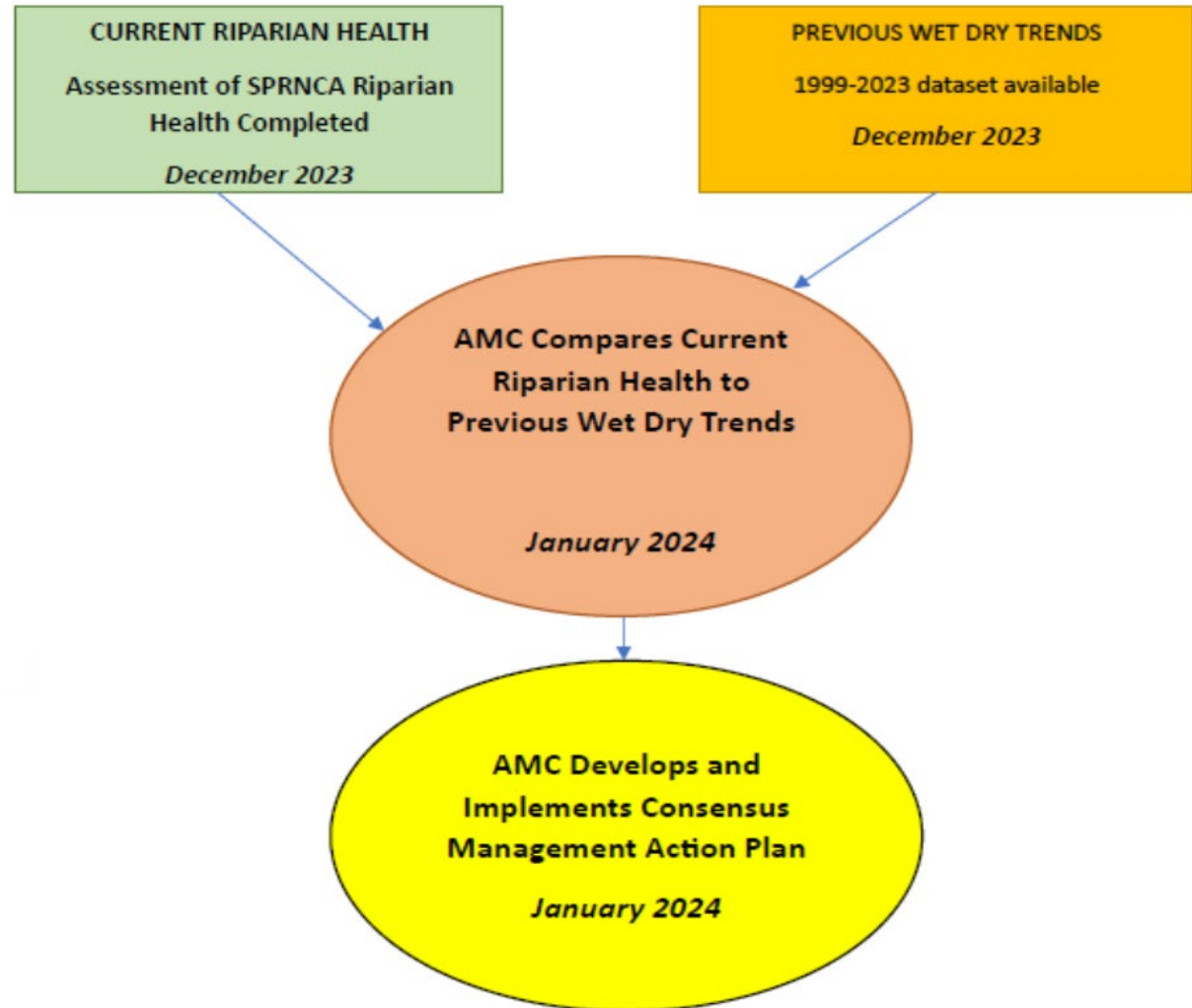
# Comparison: 2002-2023



- Reaches 1, 2, 4, 6, 7, 8, 9, 10, 11, 12  
No change
- Reach 3 changed to Class 3 (+)
- Reach 13 changed to Class 2 (+)
- Reach 5 changed to Class 2 (-)
- Reach 14 undetermined (?)



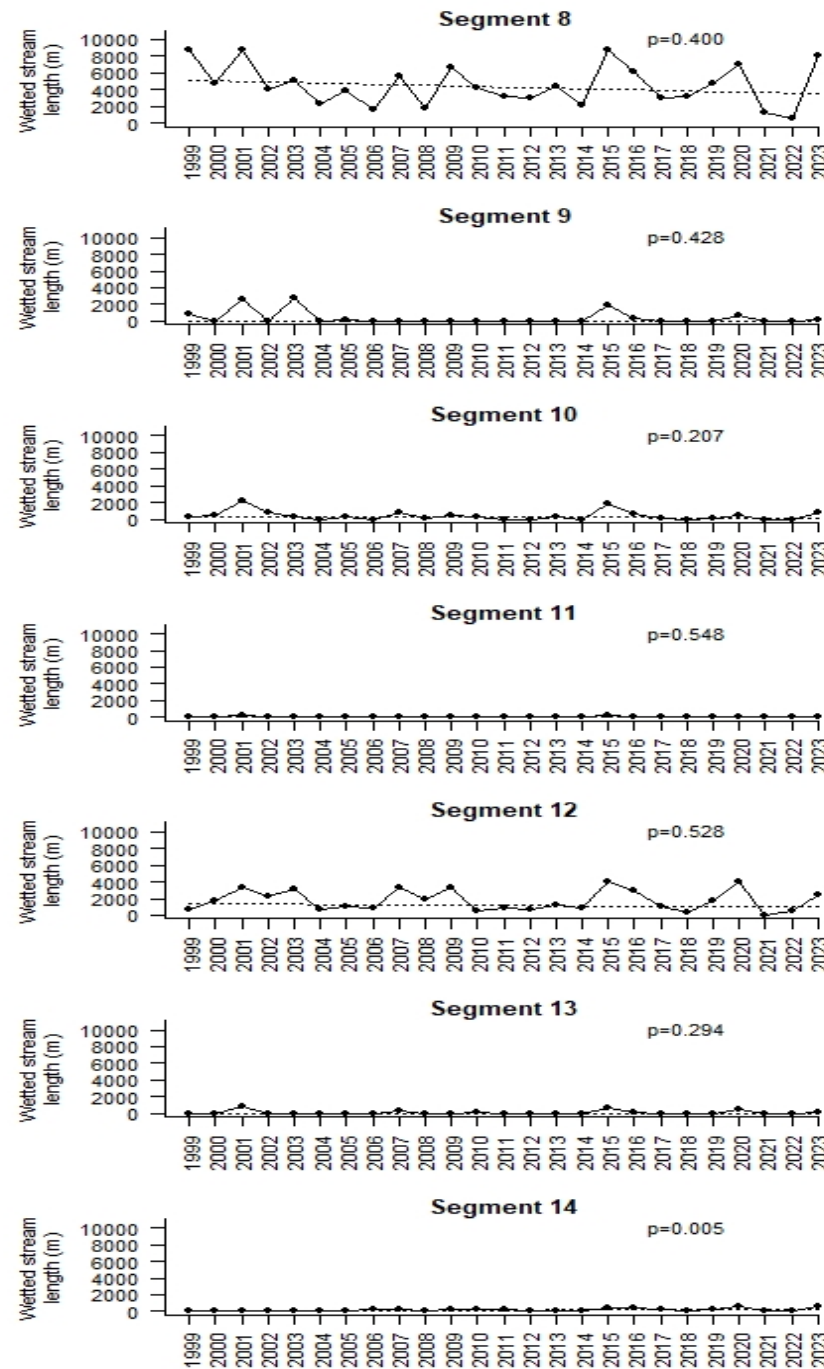
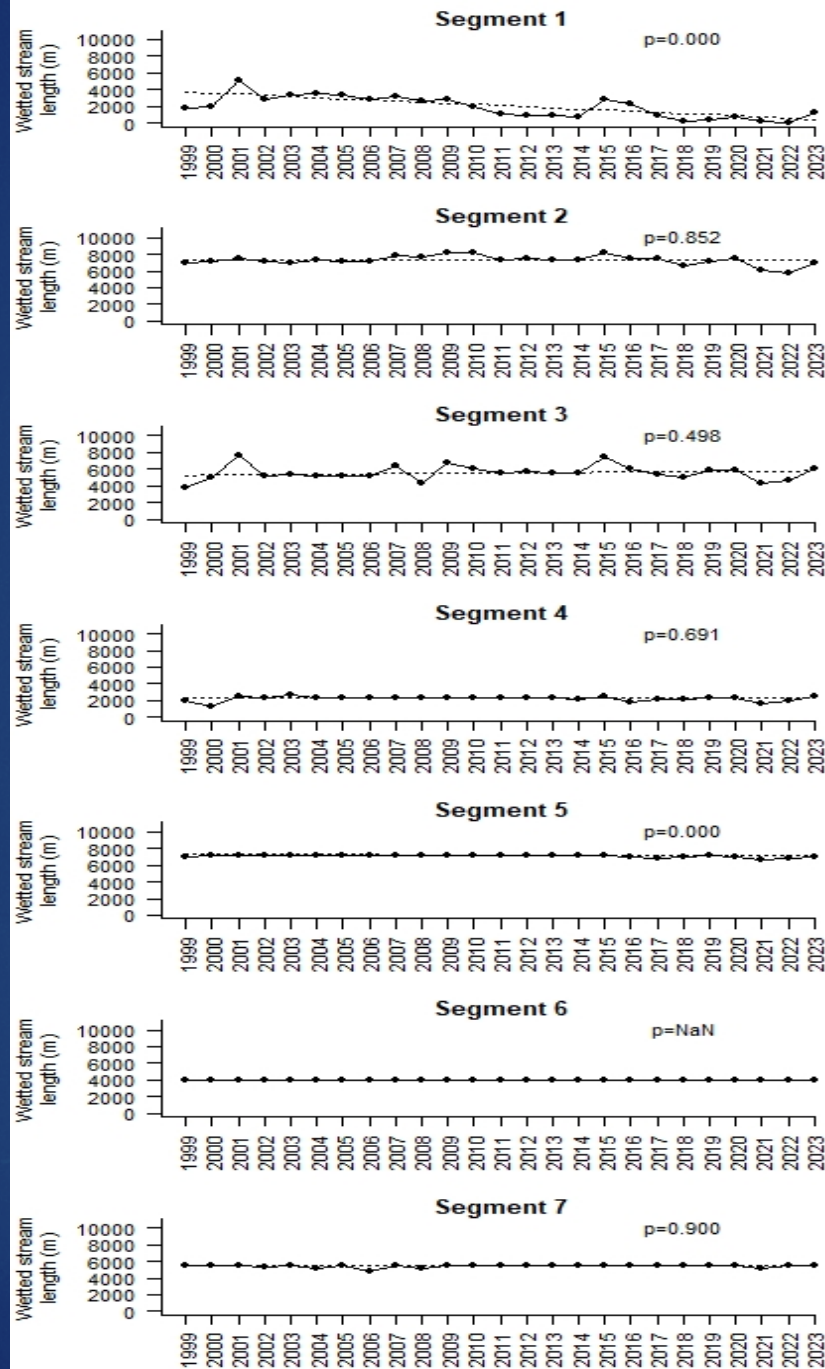
# Interim Decision Matrix for 2024



		<i><b>Wet Dry Mapping Trends (Wetted Length)</b></i>		
		<i><b>Significant Improvement</b></i>	<i><b>No Change</b></i>	<i><b>Significant Decline</b></i>
<b>CURRENT CLASS</b>	<b>3</b>	MOU Objectives satisfied	MOU Objectives satisfied	Additional monitoring and management will be considered
	<b>2</b>	MOU Objectives satisfied	Objectives may be satisfied, potential additional monitoring and management may be considered	Additional monitoring and action required
	<b>1</b>	MOU Objectives satisfied	Objectives may be satisfied, potential additional monitoring and management should be considered	Additional monitoring and action required

# Interim Decision Matrix for 2024





Courtesy:  
The Nature Conservancy,  
2024



# Wet Dry 2023 Results

- ▶ 25 years measuring wetted length of SPRNCA
- ▶ Mann Kendall Trend Analysis:
  - ▶ Test to determine the presence of a statistically significant trend
  - ▶ 1999-2023 Results:
    - ▶ SPRNCA Reach 1: Decreasing trend with greater than 99% confidence (decline in wetted length)
    - ▶ SPRNCA Reach 5: Decreasing trend with greater than 99% confidence (decline in wetted length)
    - ▶ SPRNCA Reach 14: Increasing trend with greater than 99% confidence (improvement in wetted length)
    - ▶ All other SPRNCA reaches, no trend



# Status of Reach 1

- ▶ Intermediate Class 2 Riparian Health and not perennial for a long time
- ▶ Decline in wetted length (wet dry mapping) in this reach has persisted over several years
  - ▶ Led to prioritization of the Bisbee Effluent Recharge Project by the CCRN
  - ▶ Additional monitoring and action required: This result was expected



# Status of Reach 5-Hydrology

- ▶ Formerly a Class 3 reach, now Class 2
- ▶ Wetted length decline in reach is slight, and recent. Still a largely perennial reach
- ▶ Regional groundwater benefits from EOP in this area
- ▶ Alluvial groundwater at Lewis Springs
  - ▶ Mean groundwater depth= .92 m
  - ▶ Groundwater fluctuation less than .5 m
  - ▶ Groundwater maximum depth less than 2 m
- ▶ Additional monitoring and action required: This result was NOT expected



# Status of Reach 5-Vegetation

- ▶ Vegetation Sampling in this reach:
  - ▶ Almost a “perfect score” except for two bioindicators:
    - ▶ Absolute cover hydric perennials
    - ▶ Relative cover of hydric perennials
  - ▶ All bioindicators intended to reflect short-term hydrologic conditions
  - ▶ Could these two bioindicators at this site be reflecting impacts of local flood disturbance, instead of changes in water availability?





Lewis Springs sampling location-May 2023





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<i><b>CURRENT CLASS</b></i>	<b>3</b>	MOU Objectives satisfied	MOU Objectives satisfied	Additional monitoring and management will be considered
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# Interim Decision Matrix for 2024



SPRNCA Reach	2023 Condition Classes	1999-2023 Wet Dry Trend	2024 Decision Matrix Results
	<i>Class 1, 2, 3</i>	<i>Significant Improvement, No Change, Significant Decline</i>	<i>MOU Objectives Satisfied (Yes/No) Monitoring and/or management needs</i>
14	Undetermined	Improvement	Add riparian health transect
13	2 (Improvement)	No Change	Additional monitoring and management may be considered
12	2 (No Change)	No Change	Additional monitoring and management may be considered
11	2 (No Change)	No Change	Additional monitoring and management may be considered
10	2 (No Change)	No Change	Additional monitoring and management may be considered
9	2 (No Change)	No Change	Additional monitoring and management may be considered
8	2 (No Change)	No Change	Additional monitoring and management may be considered
7	3 (No Change)	No Change	MOU Objectives Satisfied
6	3 (No Change)	No Change	MOU Objectives Satisfied
5	2 (Decline)	Decline	Additional Monitoring and Action Required
4	3 (No Change)	No Change	MOU Objectives Satisfied
3	3 (Improvement)	No Change	MOU Objectives Satisfied
2	3 (No Change)	No Change	MOU Objectives Satisfied
1	2 (No Change)	Decline	Additional Monitoring and Action Required

# Interim Decision Matrix for 2024