FLOODPLAINS REIMAGINED
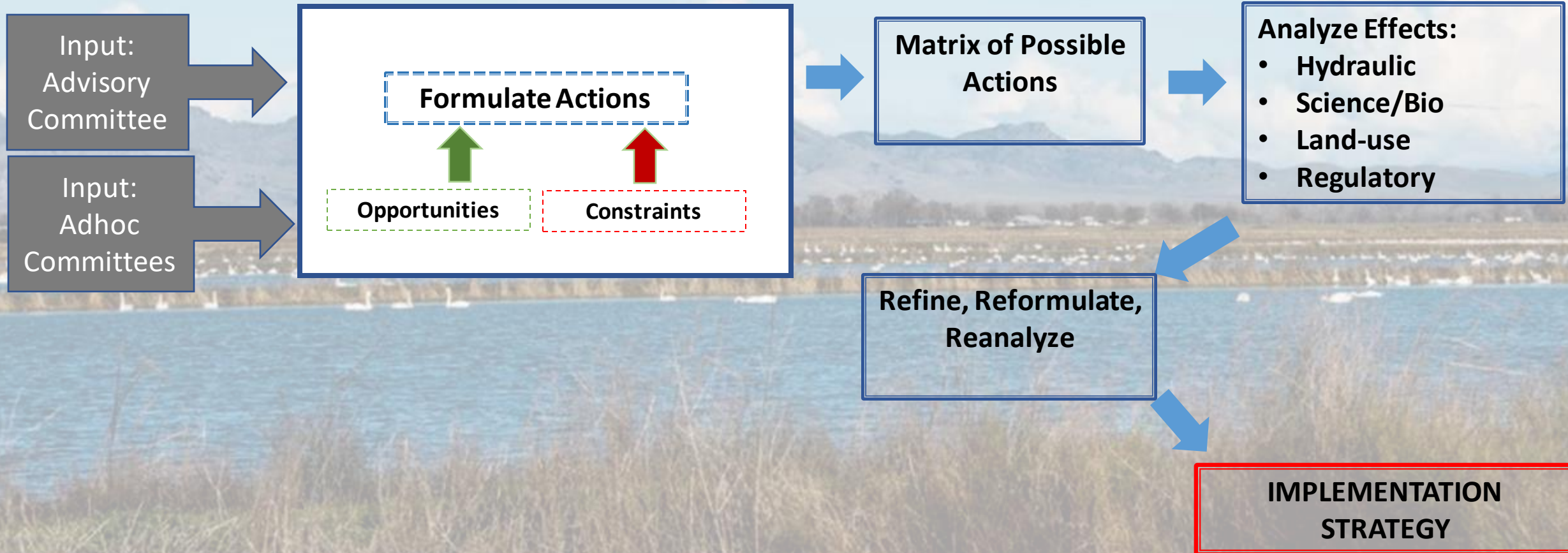# Landscape Scale Feasibility Study

Advisory Committee Meeting
12/8/2021 – 9 AM

Feasibility Study - Formulation

- **Study Goals & Objectives**

- **Decision Support Tools**

- **Evaluation Criteria**

- **Identify Potential Actions**

- **Assess Expected Benefits**

- **Receive Stakeholder Input**

- **Refine Actions**

- **Implementation Strategy**

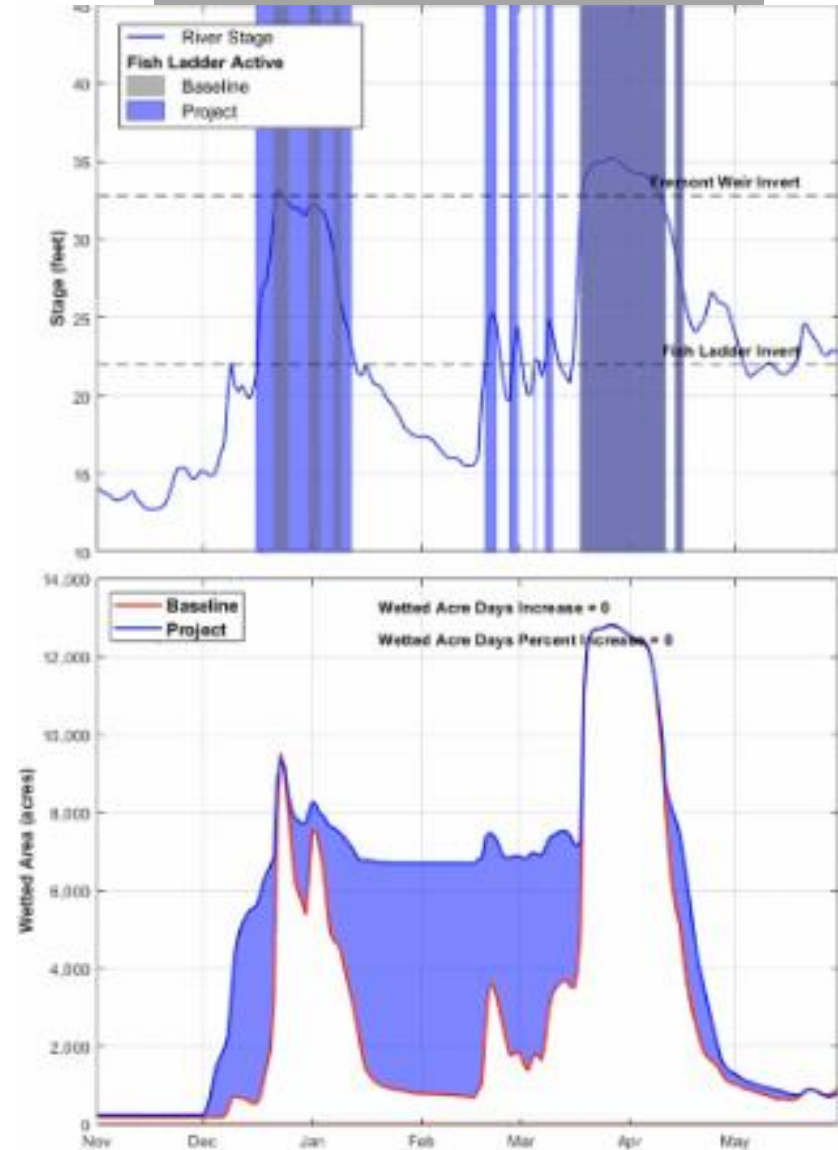# Study Development Tools

Study will develop tools to evaluate effectiveness and impacts of potential improvements and management actions

Study Development Tools

Decision support tools using Numerical and GIS based models

- *Hydrodynamic models*

- *Hydro-spatial tools to quantify habitat metrics*

- *GIS-based tools to evaluate landscape scale habitat metrics*

- *Data visualization tools*

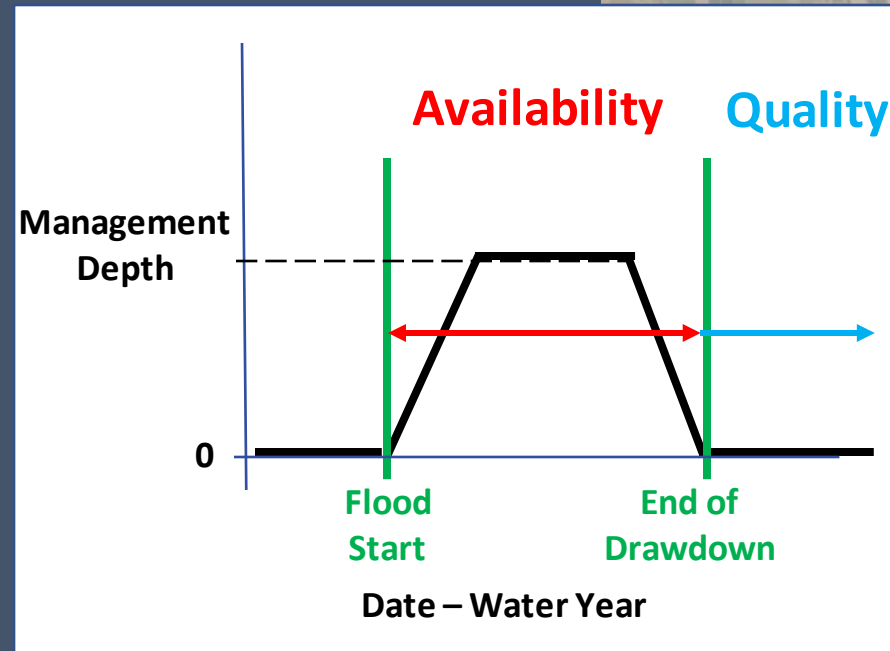# Tools to Access Evaluation Criteria

Land Use Impacts:

Agriculture:

- *Minimize impacts post Mar 15*

Managed Wetlands:

- *Habitat Availability – minimize impacts flood up to drawdown*

- *Habitat Quality – minimize impacts post drawdown*
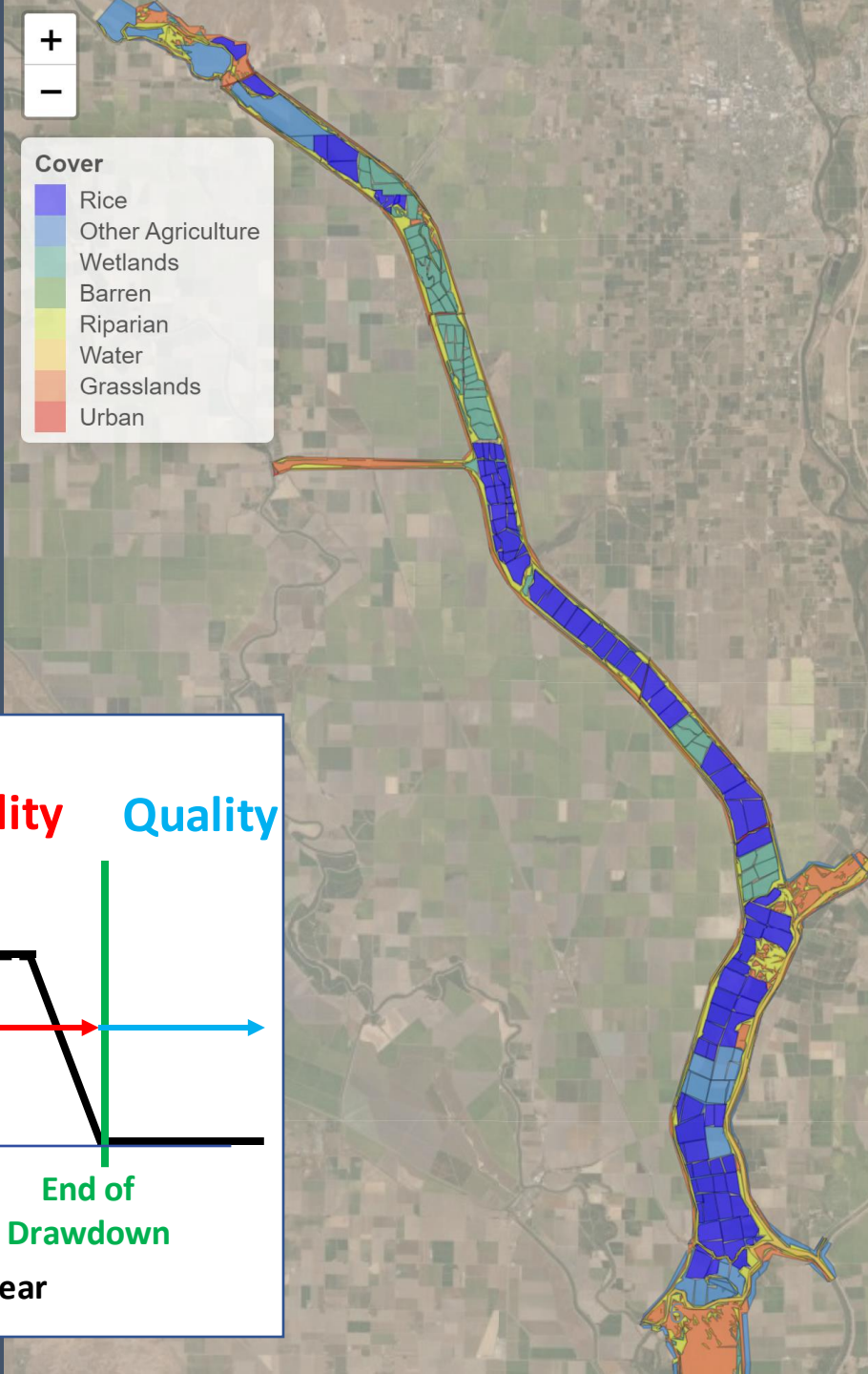
Tools to Access Evaluation Criteria Evaluation Criteria

Example Habitat Quantification:

Salmon:

- *Time: Nov 1- Jun 30*

- *Duration: 18-24 days*

- *Depth: 0.5' – 5.2'*

- *Velocity: < 0.8 ft/s, < 4 ft/s*

- *Cover, Management*

Waterfowl:

- *Time: Oct 1- Mar 30*

- *Depth: 4" – 18"*

- *Cover: non-riparian*

Shorebirds:

- *Time: all year*

- *Depth: < 4"*

- *Cover: non-riparian*

Management
- Unmanaged
- Managed Waterbirds (Private)
- Managed Waterbirds (Refuge)

Flow-2A 2016 Agriculture Land Use Impact

Flow-2A 2016 Managed Wetland Habitat Availability Impact

| Impact Type	Year	Baselines		Flow-2A
		Base-1A	Base-1B	Flow-2A
Agriculture Land	2013	342	342	342
	2016	191,133	196,383	196,383
Managed Wetland Habitat Availability	2013	144,195	145,747	145,747
	2016	141,524	144,905	145,149
Managed Wetland Habitat Quality	2013	42,079	39,489	38,957
	2016	56,911	59,043	59,043

				% Differen
Impact Type	Year	Baselines		Flow-2A
		Base-1A	Base-1B	Flow-2A
Agriculture Land	2013		0.00%	0.00%
	2016		2.75%	2.75%	-0.03%	0.40%	0.00%	-0.16%	-4.30%	-4.30%	-0.09%	-5.99%
Managed Wetland Habitat Availability	2013		1.08%	1.08%	0.10%	0.80%	0.08%	-0.18%	-11.63%	-11.63%	-0.13%	6.93%
	2016		2.39%	2.56%	2.37%	-0.10%	0.01%	-0.17%	-8.86%	-8.96%	-0.01%	3.01%
Managed Wetland Habitat Quality	2013		-6.16%	-7.42%	-2.74%	-0.61%	-0.59%	-0.38%	-1.66%	-2.90%	0.12%	6.88%
	2016		3.75%	3.75%	-0.04%	0.15%	0.13%	-0.09%	-37.51%	-37.51%	-0.09%	-0.48%

Species	Year	Baselines		Flow-2A	
		Base-1A	Base-1B		
salmon	2013	172,437	173,869	174,005	
	2016	229,213	235,182	236,207	
shorebird	2013	39,883	39,635	39,612	
	2016	45,425	45,671	46,403	
waterfowl	2013	83,309	83,383	83,416	
	2016	93,540	93,784	95,515	

Accumulated

% Difference in Accu...

Species	Year	Base-1A	Base-1B	Flow-2A								
salmon	2013		0.83%	0.91%								
	2016		2.60%	3.05%								
shorebird	2013		-0.62%	-0.68%								
	2016		0.54%	2.15%								
waterfowl	2013		0.09%	0.13%	2.41%	4.29%	0.10%	0.01%	15.11%	18.46%	0.27%	-3.00%
	2016		0.26%	2.11%	4.31%	4.04%	0.22%	-0.23%	6.91%	8.64%	0.45%	-2.64%

Base-1B
2016

Salmon Rearing Suitability
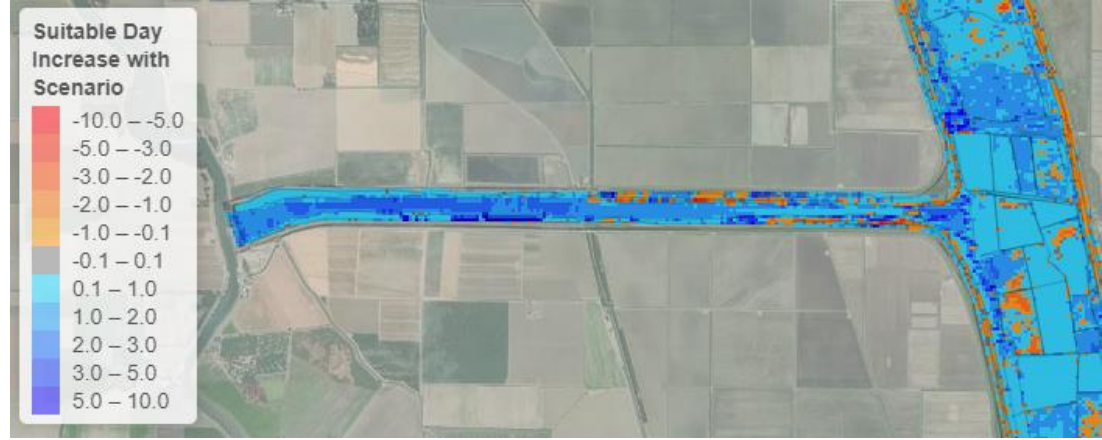
Flow-2A
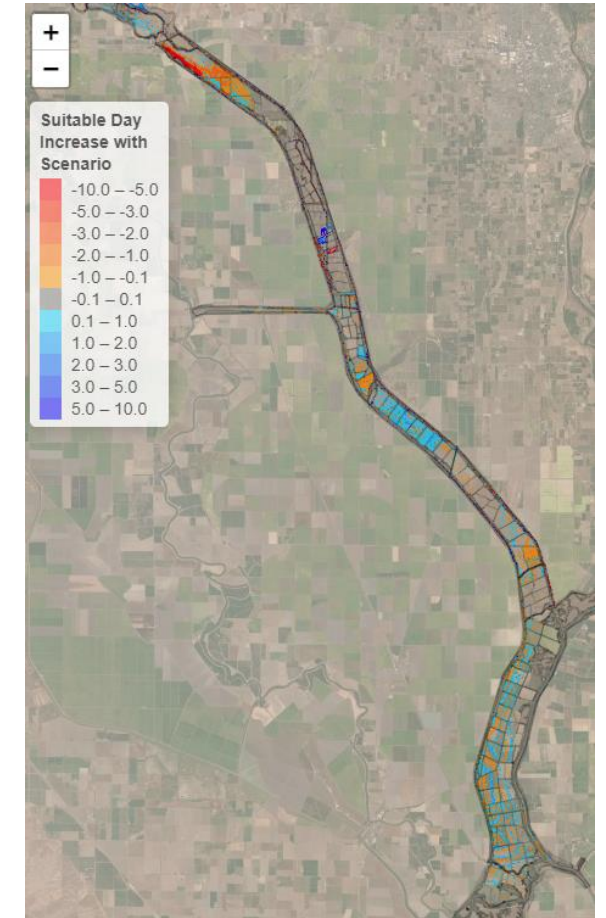2016

Salmon Rearing Suitability
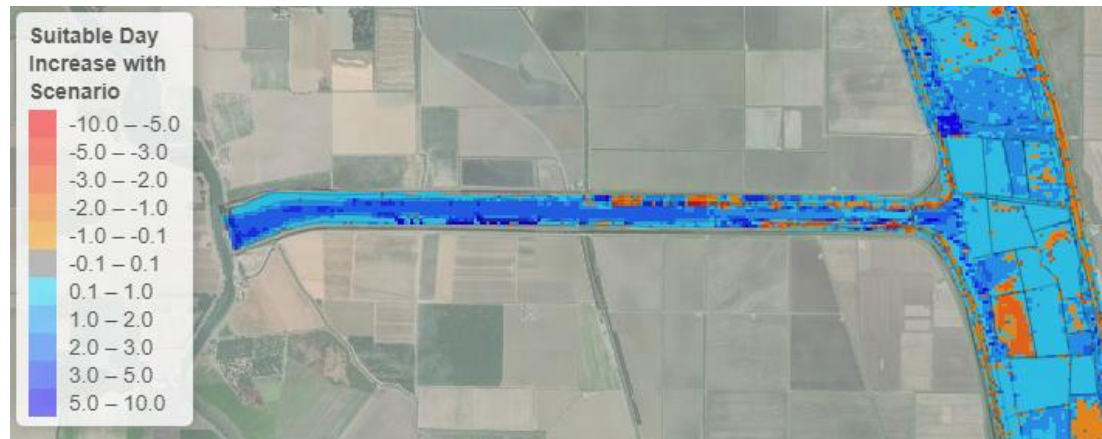
Accumulated Weighted Usable...

Species	Year	Baselines		Flow...		
		Base-1A	Base-1B	Flow-2A	Flow-1	Flo...
salmon	2013	172,437	173,869	174,005	174,166	1...
	2016	229,213	235,182	236,207	230,124	2...
shorebird	2013	39,883	39,635	39,612	41,406	
	2016	45,425	45,671	46,403	47,993	
waterfowl	2013	83,309	83,383	83,416	85,314	
	2016	93,540	93,784	95,515	97,570	

% Difference in Accumulated Weight...

Species	Year	Baselines		Flow...		
		Base-1A	Base-1B	Flow-2A	Flow-1	Flo...
salmon	2013		0.83%	0.91%	1.00%	0...
	2016		2.60%	3.05%	0.40%	-0...
shorebird	2013		-0.62%	-0.68%	3.82%	1...
	2016		0.54%	2.15%	5.65%	2...
waterfowl	2013		0.09%	0.13%	2.41%	4...
	2016		0.26%	2.11%	4.31%	4...

Flow-1 2016 Shorebird Suitability
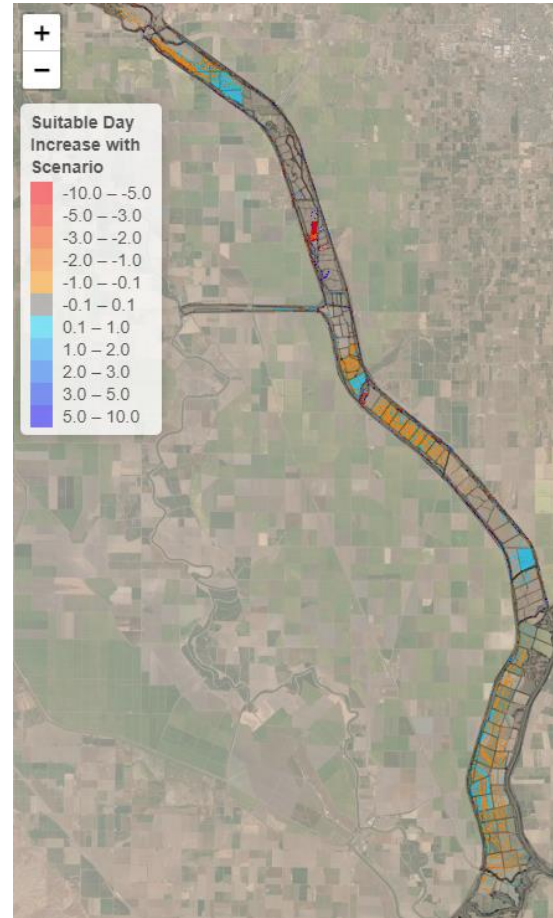
Flow-1 2016 Waterfowl Suitability

Man-1A 2013
Salmon Suitability
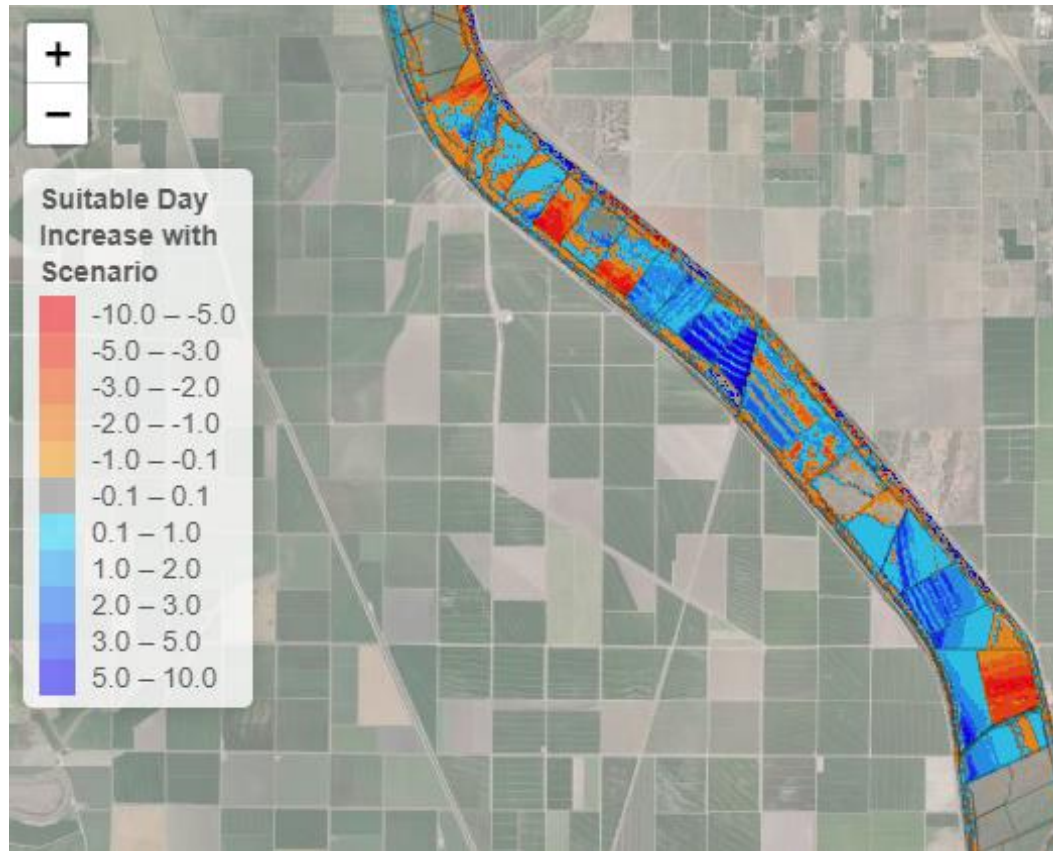
Species	Year
salmon	2013
	2016
shorebird	2013
	2016
waterfowl	2013
	2016

Species	Year
salmon	2013
	2016
shorebird	2013
	2016
waterfowl	2013
	2016

| | Management Actions | | | Vegetation |
ow-5	Man-1A	Man-1B	Man-2	Management
71,740	170,698	170,755	172,377	175,755
28,396	228,721	228,926	229,028	231,155
39,737	50,255	51,801	39,905	39,548
45,231	51,342	51,930	45,468	45,360
83,320	89,370	91,976	83,536	80,808
93,329	96,081	97,641	93,959	91,069

| seline | | | | |
| | Management Actions | | | Vegetation |
ow-5	Man-1A	Man-1B	Man-2	Management
40%	0.90%	0.94%	-0.03%	1.92%
36%	0.46%	0.55%	-0.08%	0.85%
37%	30.03%	34.03%	0.06%	-0.84%
43%	15.93%	17.26%	0.09%	-0.14%
01%	15.11%	18.46%	0.27%	-3.00%
23%	6.91%	8.64%	0.45%	-2.64%

Data Visualization Tools

Summary Statistics – Management Unit

Sutter/Tisdale Bypass - Hydraulic Scenarios

Field
Field 30 - Unmanaged, Rice

Field Overlay
Cover

Overlay Water Year
-

Overlay Reference Scenario
-

Select a field from the map below

Cover
Rice
Other Agriculture
Wetlands
Barren
Riparian
Water
Grasslands
Urban

Field 30 - Unmanaged, Rice

Leaflet | Tiles © Esri — Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, UPR-EGP and the GIS User Community

Summary Statistics   Project Info

Selected Unit Information

Field Number: 30
Land Owner: Central Land Co
Cover: Rice
Floodplain Management: Un

Plot Selection
Cumulative Days - All WY

Summary Statistics - C

Total Days Impacted

30
25
20
15
10
5
0

2013   2016

Flow-1
Flow-2A
Flow-3
Flow-4
Flow-5
Man-1A
Man-1B
Man-2
Veg-1
Veg-2

Select field to view data for in dropdown menu or map

cbec
eco engineering

Sutter/Tisdale Shiny App

Summary Statistics – Plot

Data shown in plot window for selected unit based on selections in drop downs above plot

Sutter/Tisdale Bypass - Hydraulic Scenarios

Summary Statistics   Project Info

Selected Unit Information

Field Number: 30
Land Owner: Central Land Co
Cover: Rice
Floodplain Management: Unmanaged

Plot Selection
Cumulative Days - All WY

Impact Assessment Type
Agriculture

Water Year Selection
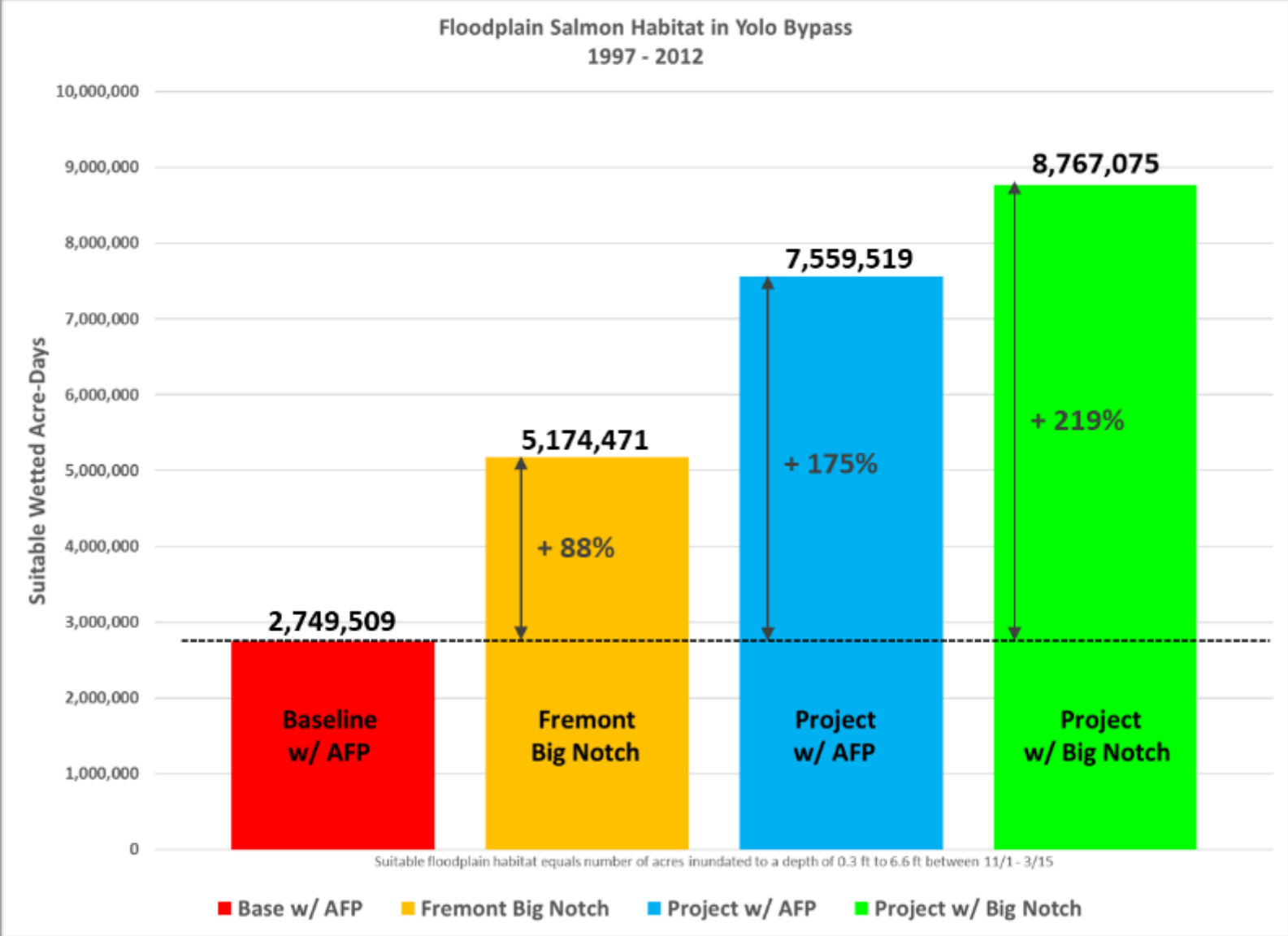2013

Summary Statistics - Cumulative Days - All Water Year

Next WY

Cumulative Days of Agriculture Impacts
Field - 30

Total Days Impacted

2013   2016

Base-1A
Base-1B
Base-1Bi
Flow-1
Flow-3A
Flow-3
Flow-4
Flow-5
Man-1A
Man-1B
Man-2
Veg-1
Veg-2
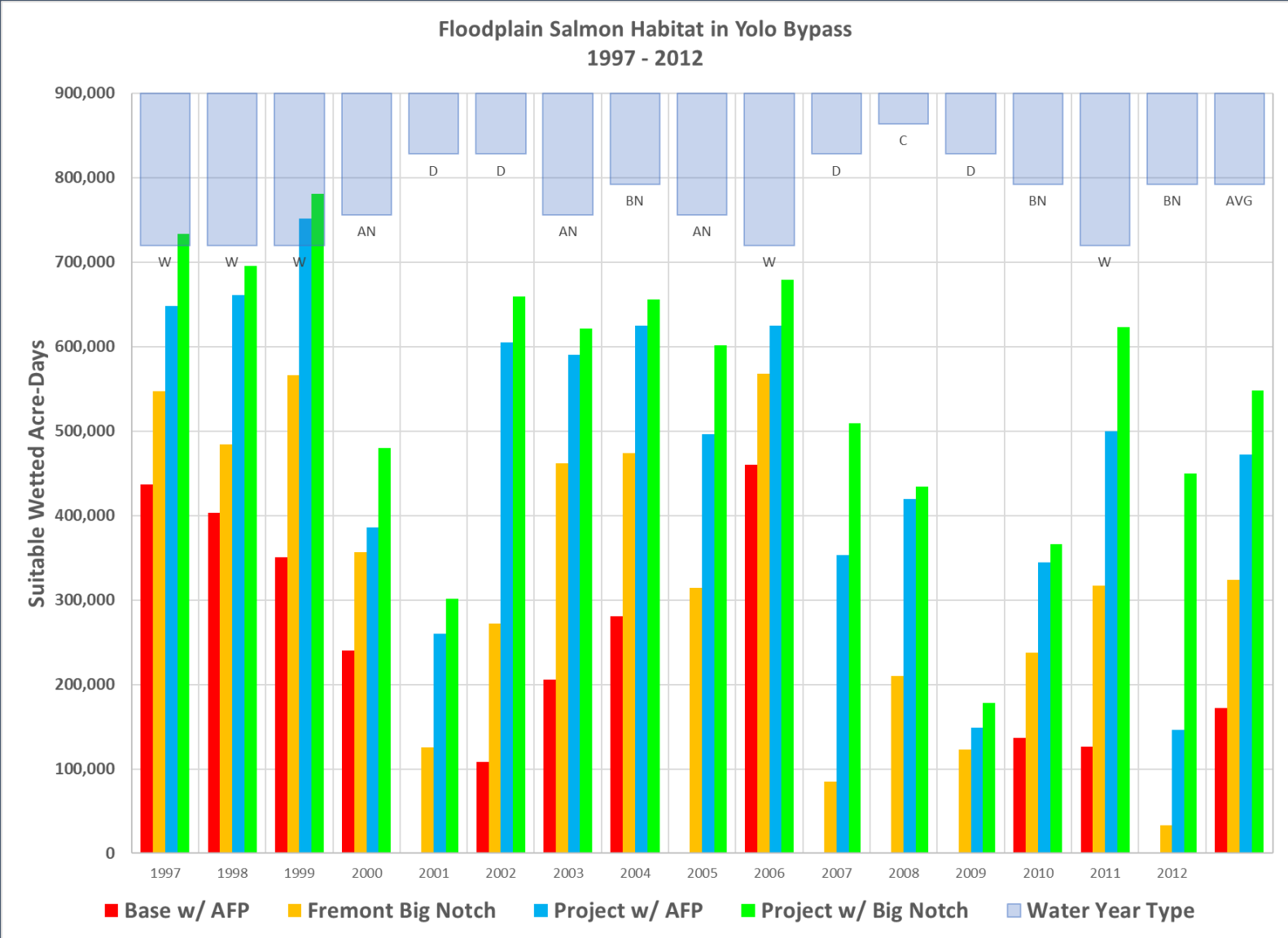
Leaflet | Tiles © Esri — Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, UPR-EGP, and the GIS User Community

cbec
eco engineering

Sutter/Tisdale Shiny App

Plan Development Tools Examples

Floodplain Salmon Habitat in Yolo Bypass
1997 - 2012

Plan Development Tools Examples

Floodplain Salmon Habitat in Yolo Bypass
1997 - 2012

Plan Development Tools Examples

Schedule

Activity	Fall/Winter 2021/22	Spring 2022	Summer 2022	Fall/Winter 2022/23	Spring 2023
Stakeholder Engagement					
Establish Existing Conditions & Identify Opportunities					
Develop & Evaluate Actions					
Refine Actions					
Implementation Strategy					
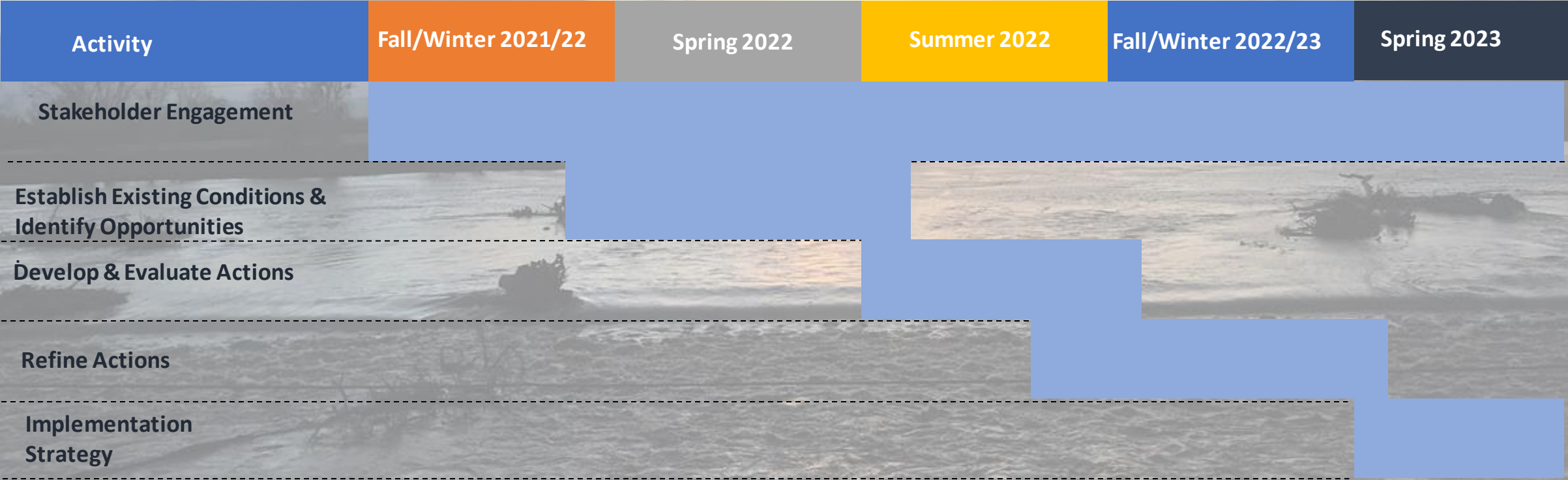
Study Documentation

- ***Goals & Objectives***

- ***Existing Conditions***

- ***Decision Support Tool Development***

- ***Evaluation Criteria***

- ***Opportunity Identification***

- ***Evaluation and Refinement of Actions***

- ***Implementation Strategy***