CALIFORNIA DEPARTMENT OF WATER RESOURCES

U.S. Department of the Interior
Bureau of Reclamation

Yolo Bypass “Big Notch” Concept Development and Evaluation

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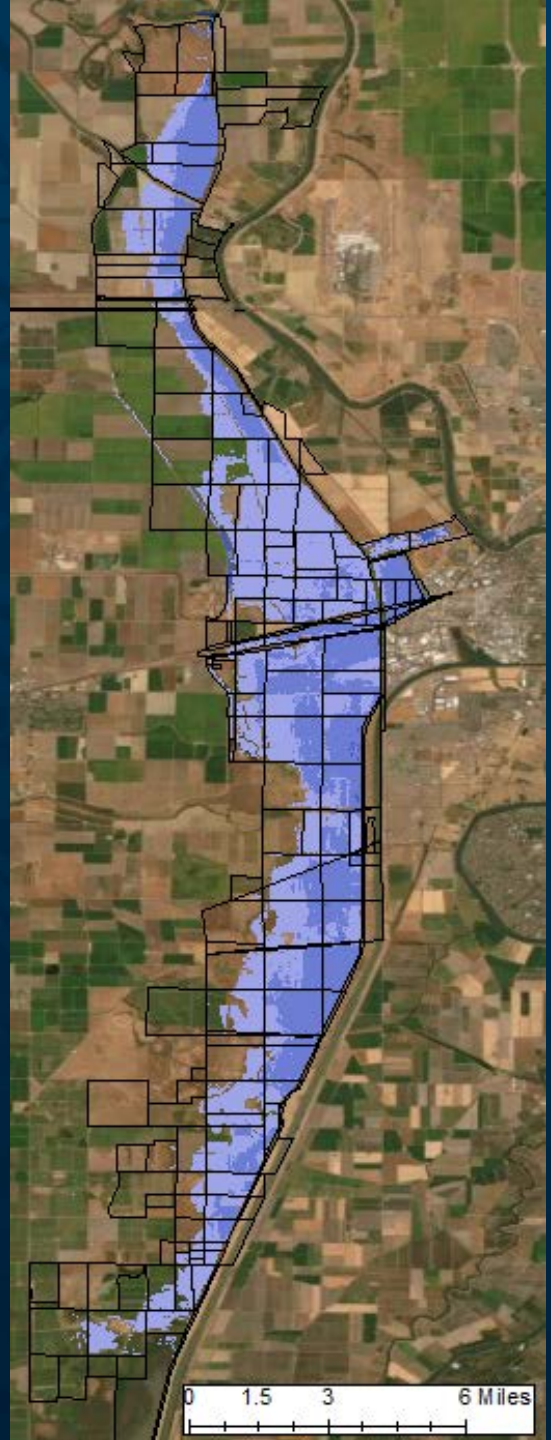
Project Background

- Enhance floodplain rearing habitat
- Improve adult fish passage
- Comply with 2019 NMFS BO
- Work with existing land uses
- 2022 start of construction



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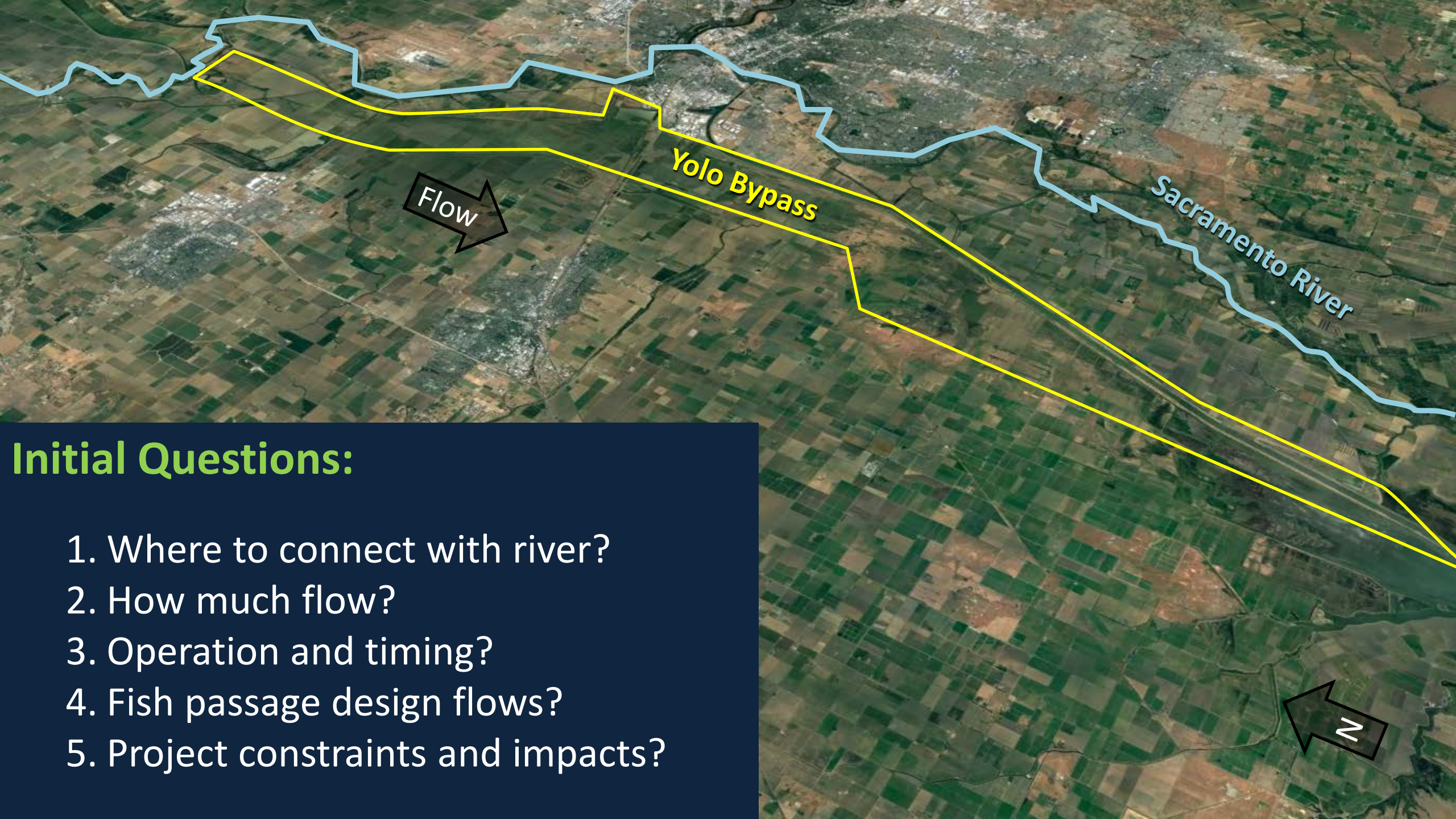
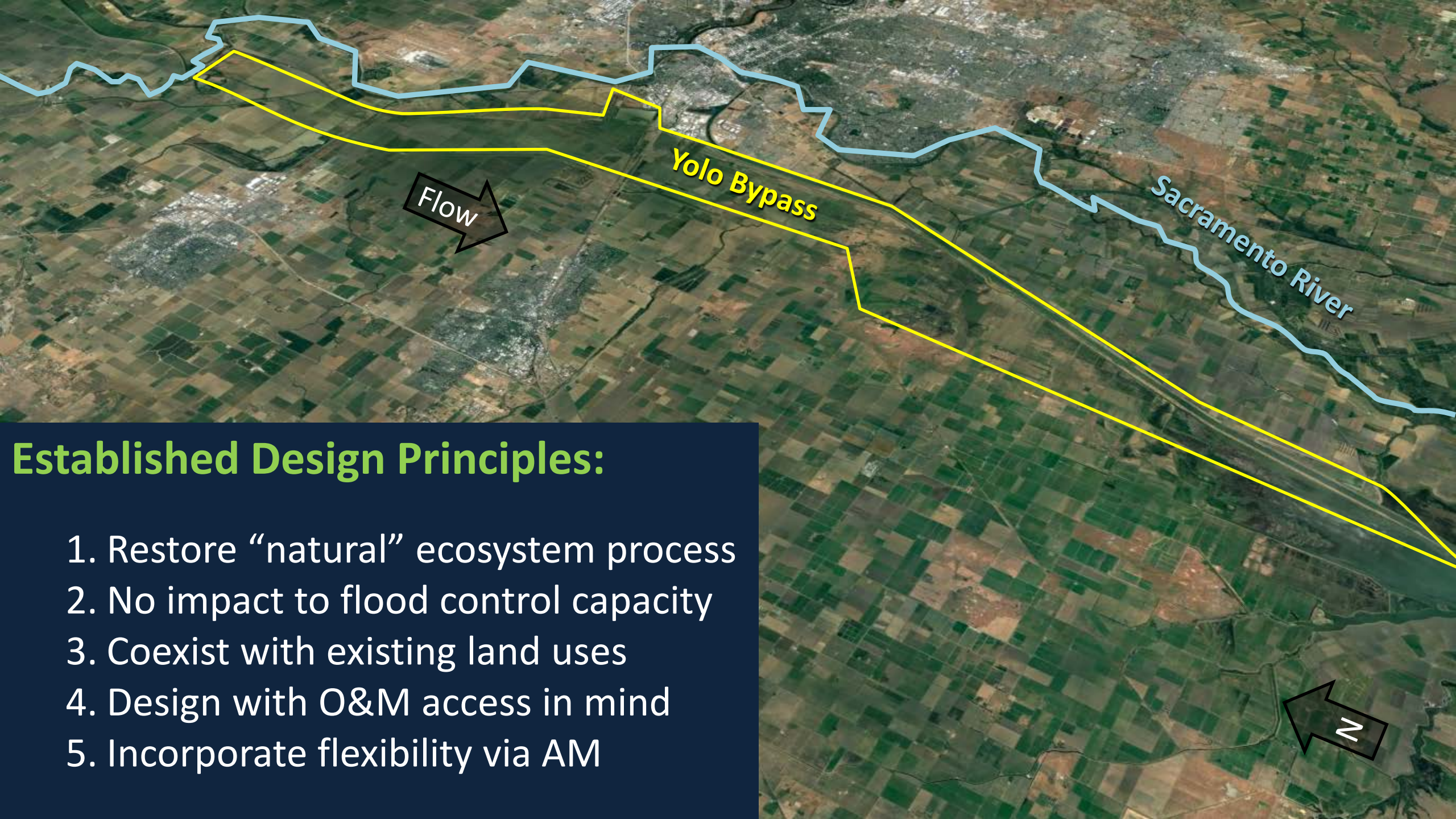


Initial Questions:

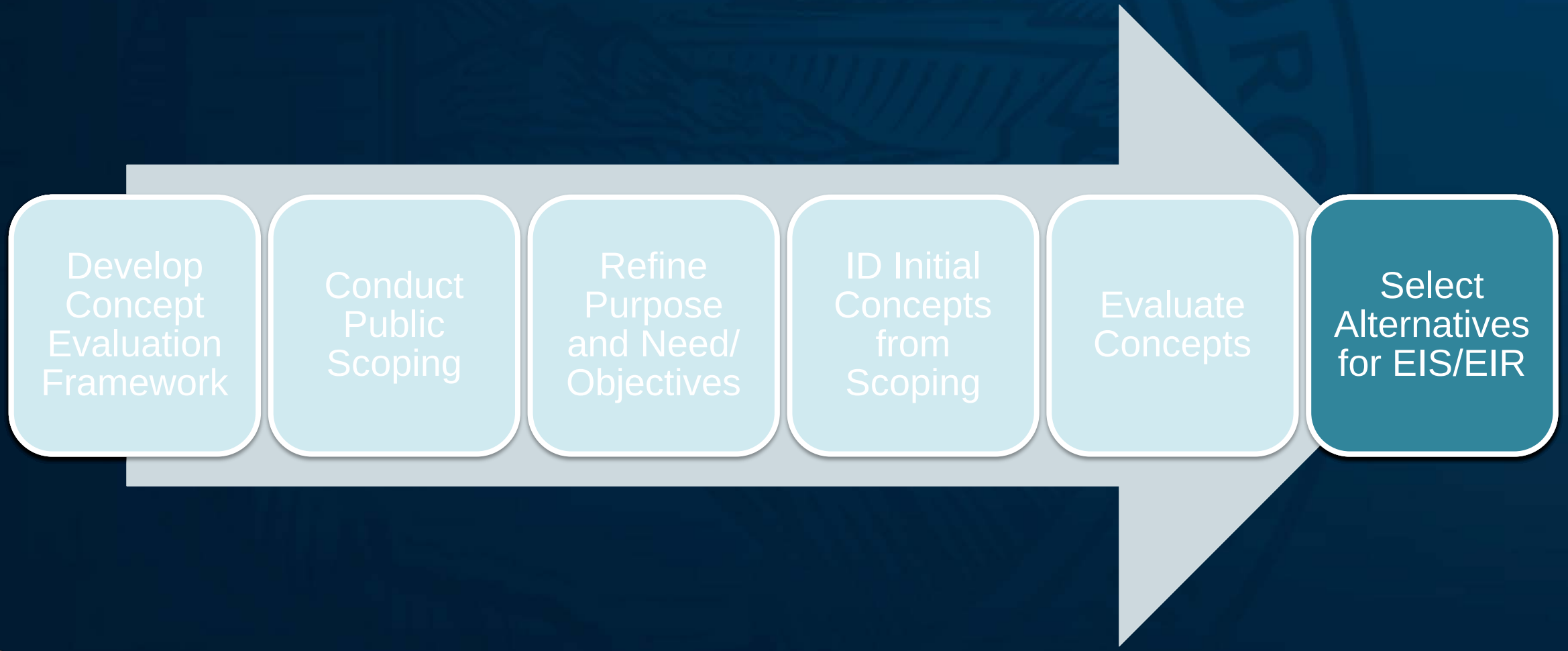
1. Where to connect with river?
2. How much flow?
3. Operation and timing?
4. Fish passage design flows?
5. Project constraints and impacts?



Established Design Principles:

1. Restore “natural” ecosystem process
2. No impact to flood control capacity
3. Coexist with existing land uses
4. Design with O&M access in mind
5. Incorporate flexibility via AM

Alternative Formulation Process

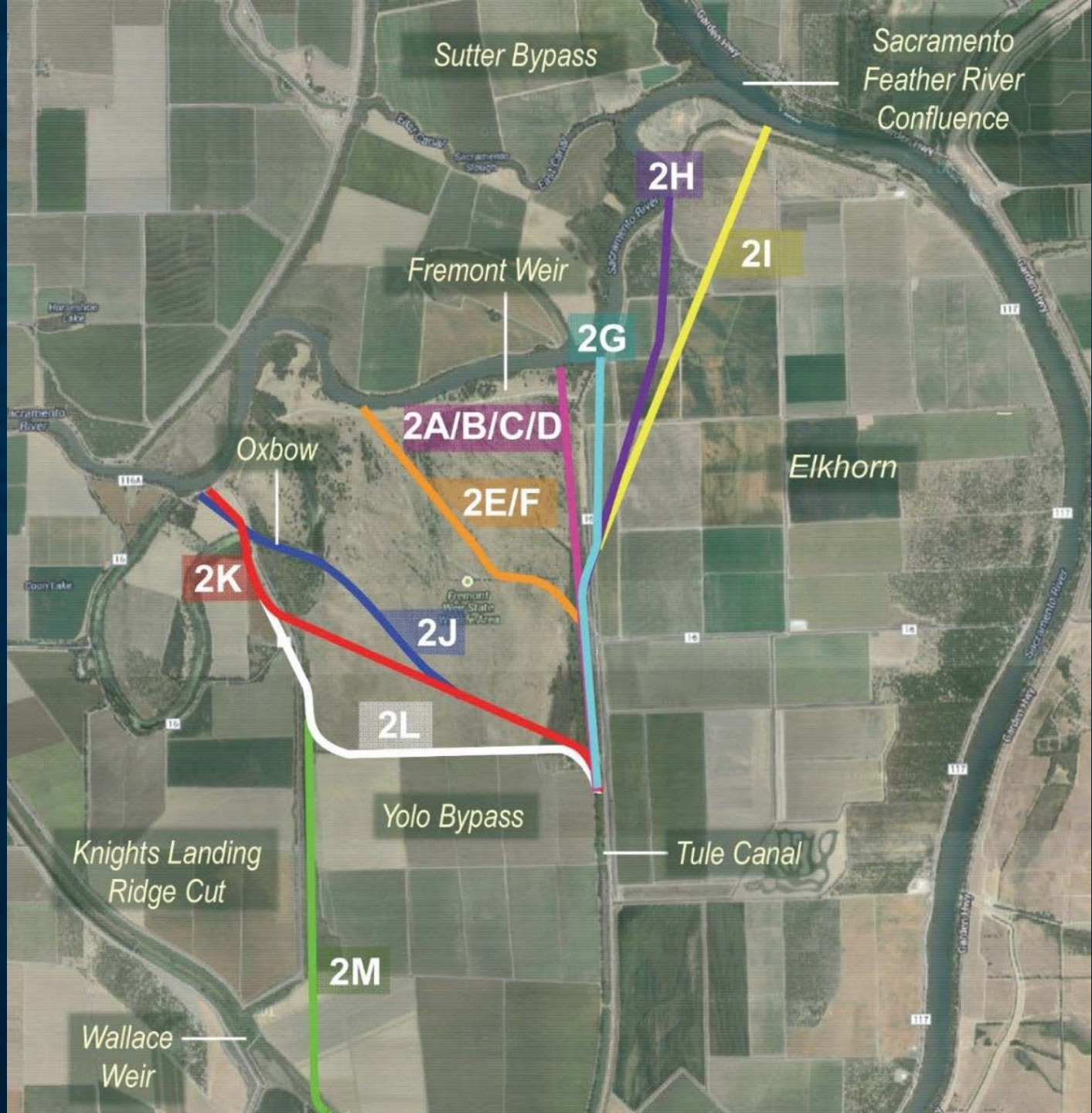


Develop Initial Concepts:
Establish Design Criteria

Structure	Feature Length	Depth Criterion	Velocity Criterion	Width Criterion
Intake structure/ short channel transitions	<60 ft	>3 ft	<6 ft/sec	>10 ft
Downstream channel	>60 ft	>5 ft	<4 ft/sec	>10 ft

Example: *Initial Gated Concepts*

- Various sizes, locations, & configurations
- 3,000 - 6,000 cfs max



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Federal Planning Criteria & Evaluation Factors

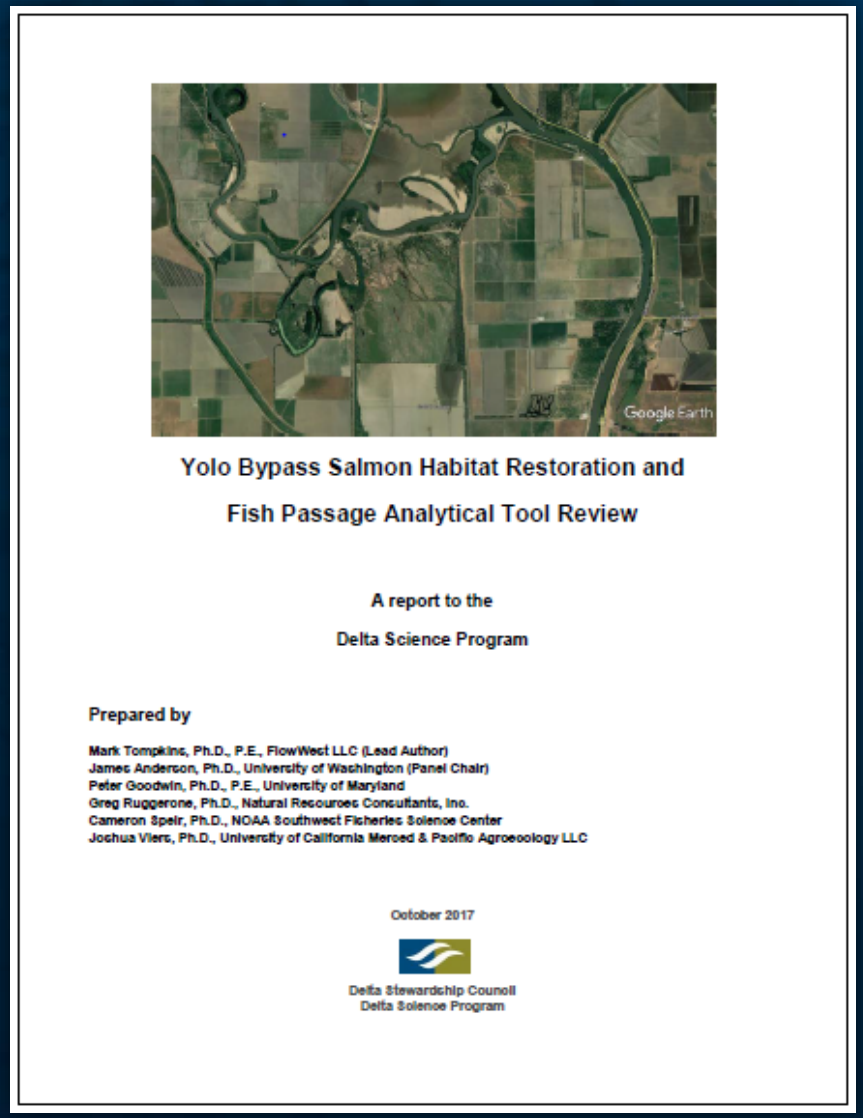
1. ***Effectiveness:*** Does alternative meet Project goals?
2. ***Completeness:*** Does alternative account for all species?
3. ***Acceptability:*** Is alternative compatible with other regional efforts, land uses, and laws?
4. ***Efficiency:*** How well does alternative deliver benefits relative to Project cost?

Example: *Effectiveness*

Category	Evaluation Factors
Increase access to floodplain habitat	**Measure connectivity and potential to entrain winter-run Chinook onto floodplain**
	Measure connectivity and potential to entrain spring-run Chinook onto floodplain
Increase area of floodplain habitat	Inundation area (area inundated at least 14 days in 50% of years)
Increase food production as part of ecosystem approach	Increase in food production
Adult fish passage	% of season that meets adult fish passage criteria
Juvenile fish passage	Potential for juvenile stranding or predation risk

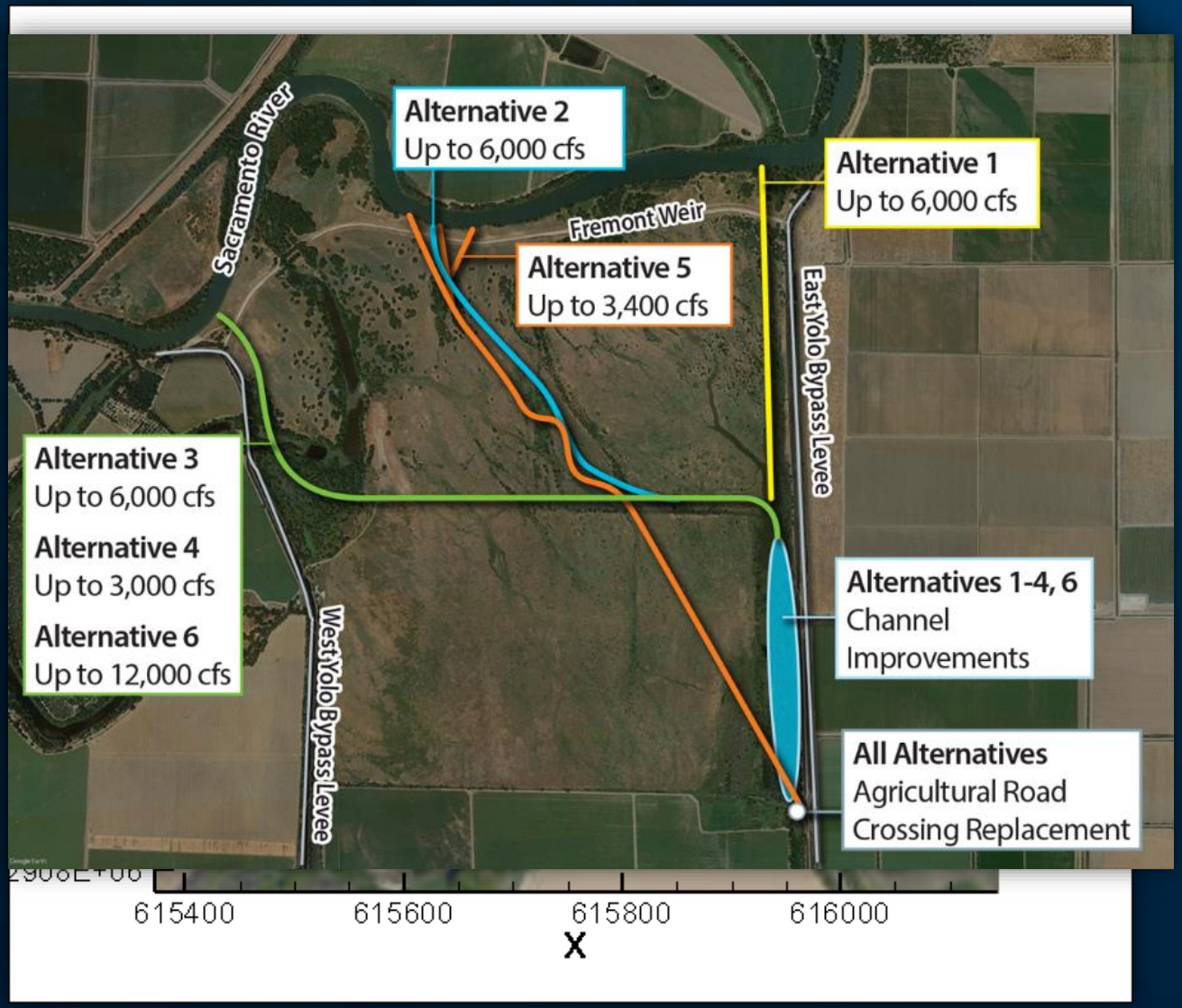
Alternative Evaluation Phase: *Peer-Review*

- Adult Fish Passage
  - YBPASS
- Hydro Modeling
  - SRH2D
- Juvenile Entrainment
  - CSA
  - ELAM
- Salmon Benefits Model



Alternative Evaluation:
Lessons Learned

- Volume diverted = Primary influence of entrainment
- Connection point should maximize adult fish passage
- Consider adult passage early in design
- Mimic ecosystem processes
- Incorporate design flexibility
- Consider maintenance access



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Questions?
Fremont Weir Adult Fish Passage Project
Constructed Fall 2018