

Adaptive Management Framework

Presentation to the California Waterfix
Aquatic Science Peer Panel
Phase 2A, December 8, 2016
CDFW, NMFS, DWR

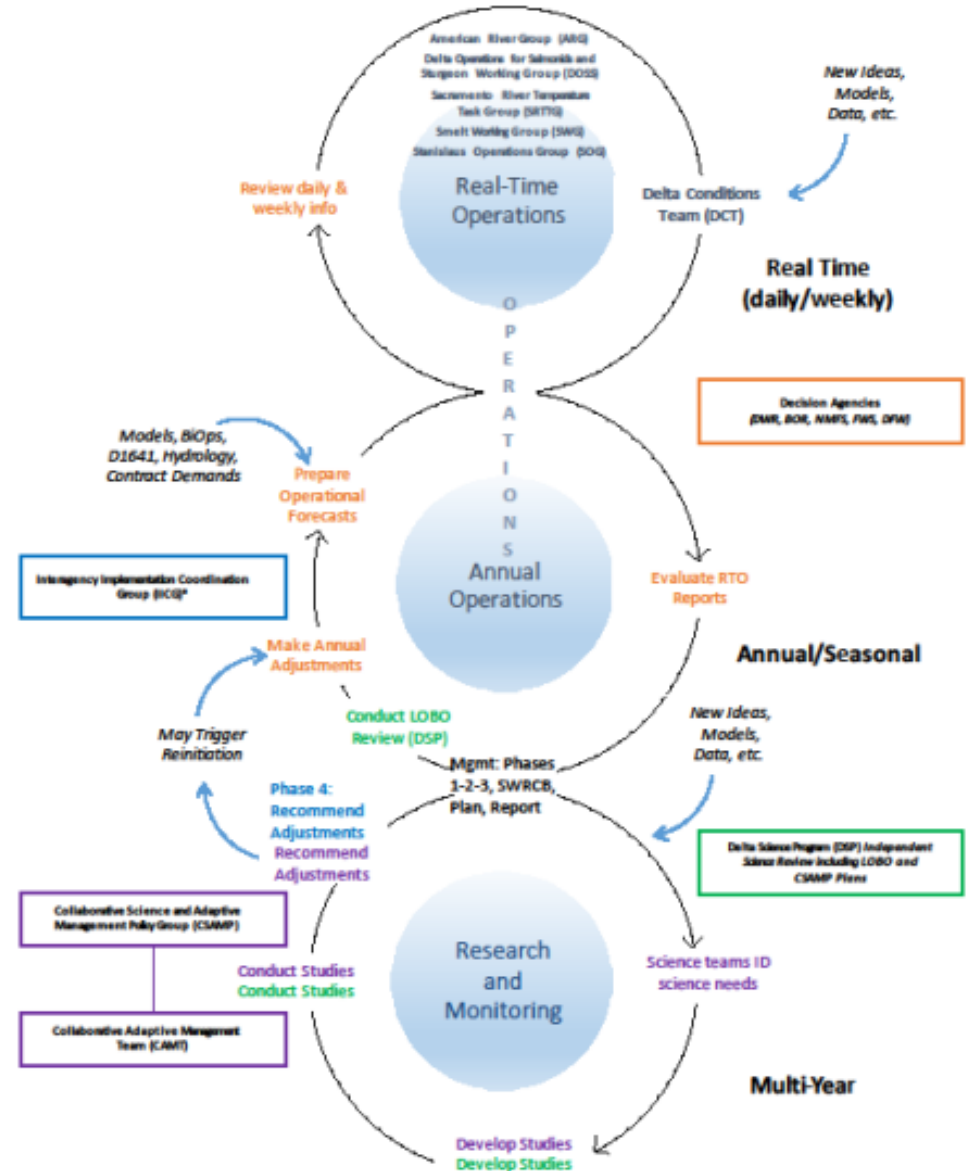
AM Framework

- Will be used to implement:
 - the current BiOps and CESA authorizations,
 - the updated BiOps and CESA authorizations as part of the re-initiation process for the long-term operation of the CVP and SWP,
 - the California Waterfix BiOps and CESA authorization.

AM Framework

- Does not apply to real-time operational decision making.
- Adaptive management can result in changes to operational criteria subject to real-time decision making only through annual or periodic basis following the Framework process.

Adaptive Management Conceptual Model



AM for Cal Waterfix

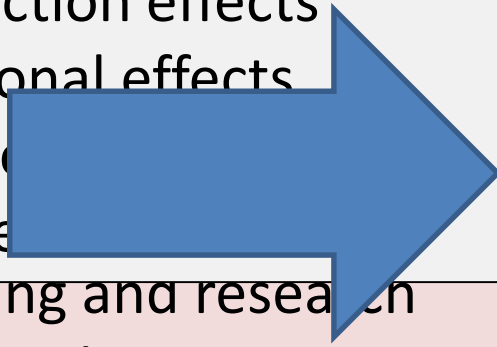
- There are substantial uncertainties associated with effects of the project on covered species and climate change.
- Given these uncertainties, the AM process described in the Framework will be critical to meeting the requirements of ESA and CESA and implementing the operational criteria, minimization, and mitigation measures described in the Biological Assessment.

AM Framework

- Key Uncertainties:
 - Derived from IEP MAST & SAIL reports, CSAMP SST gap analysis, and the CWF BA

CWF BA:

- Construction effects
- Operational effects
- Mitigation effectiveness
- Implement long-term monitoring and research

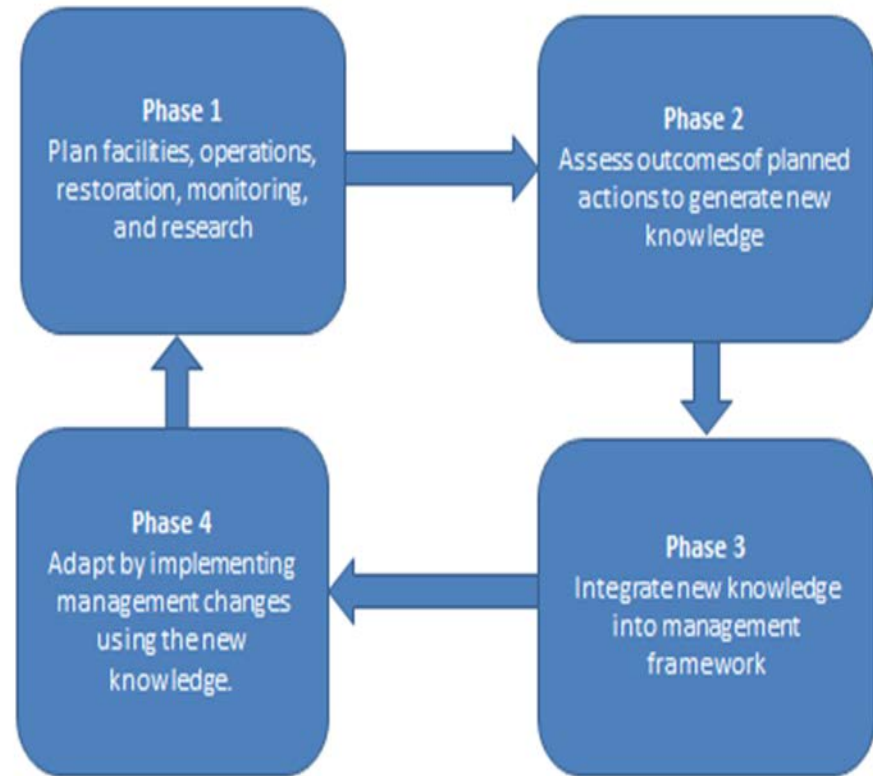


Key Uncertainties:

- Listed Fish Performance
- Yolo Bypass
- Tidal Wetland Restoration
- Riparian, Channel Margin, & Floodplain Restoration
- Delta Outflow

AM for California Waterfix

- Will use a four phase process similar to that employed by the Everglades



AM for California Waterfix

- Framework will rely on collaborative science to:
 - Address scientific uncertainties,
 - Inform development of alternative management actions,
 - Test the effectiveness of alternative management actions,
 - Inform adaptive management changes based on new knowledge and understanding.

AM for Cal Waterfix

- Initial research and monitoring priorities to address key uncertainties:
 - Assess the impact of Water Operations on Delta Smelt while accounting for other ecosystem changes
 - Connecting Longfin Smelt abundance to outflow
 - Integrate biological & WQ monitoring
 - Develop and support mechanistic studies that support life cycle models
 - Develop models and tools to evaluate the influence of management actions
 - Increase overall Data accessibility

AM for Cal Waterfix

- Will use independent scientific review panels to:
 - Evaluate science plans to address uncertainties and test alternative management actions as is used in CSAMP and the LOBO review.
 - Review synthesis products resulting from review of ongoing research and monitoring to inform potential adaptive management changes.

AM for Cal Waterfix

- Identifies initial performance objectives against which management actions can be assessed (Appendix 1).

AM for Cal Waterfix

- Research and monitoring will be funded to the level necessary to resolve uncertainties by the time the North Delta Diversions would become operational.

Questions