

Phase 2 Review

May 1, 2012

Positive Feedback

- The scoring system of net effects is good given the mix of qualitative and quantitative information.
 - We are encouraged that the scoring considers uncertainty.
- Net effect analysis has been included to some degree for all covered species.
- The hydrodynamic modeling recognizes that the DSM2 is calibrated to current conditions and model limitations. The modeling has incorporated more advanced modeling techniques to stretch the capabilities of DSM2.
- Biological objectives have included some quantitative criteria for some species.
- The HSI approach incorporates habitat quality.
- The list of stressors is extensive.

Expectations for missing appendices

Appendix E: Habitat Restoration

- Include status and description of existing restoration activities in the Delta
- Document what contributes to successful restoration and what doesn't (e.g. invasive species).
- Describe how restoration is going to be directly linked to conservation strategies (location, type)
- How are you going to apply specific rules for particular species in aggregate to conservation measures that incorporate landscape ecology and population biology principles (e.g. connectivity)?

Expectations for missing appendices

Appendix E: Habitat Restoration (continued)

- Indicate sequence of management actions needed to occur prior to restoration (e.g. removing invasives before restoration).
- Identify key uncertainties to be the focus of adaptive management and directed research.
- How will models be used to understand restoration impact.

Expectations for missing appendices

Appendix G: Fish Life Cycle Models

- Ensure that this appendix is linked to the biological objectives in Chapter 5.2-5
- Include different life cycle models for each salmonid stock.
- Quantify BDCP effects in the context of the total life history of covered species.
- Indicate limiting factors on fish performance for each life stage affected by BDCP.

Does the effects analysis meet expected goals?

Recommendations

- Biological objectives should be applied to all covered species with quantitative metrics that can be monitored.
- Biological objectives should also be provided for the ecosystem and landscape scale.
- Each biological objective should be evaluated in the effects analysis.
- No connection between net effects and biological objectives table.
- Net effects needs to consider jeopardy for listed species.
- The scoring of stressors and uncertainty is subjective and we recommend that the numerical rankings be further vetted by expert review.

Does the effects analysis meet expected goals?

Recommendations

- Use the fish effects stressors approach for terrestrial species.
- Net net effects need to be included both weighted and unweighted for uncertainty
- Bar chart captures the relative importance of stressor by BDCP actions but does not adequately capture the relative importance of stressor on covered species – i.e. the stressor may be very important for covered species but BDCP has little effect on it. (e.g. predation) This would result in low response to stressor – the stressors should be color coded in terms of their importance to covered species.
- Link to life cycle models

How complete is the effects analysis?

Recommendations

- Insufficient background in the Effects Analysis. Need information within analysis about how restoration will occur, sequence,
- Chapter 5 needs to be a stand alone document. If this is a “roll up” it needs to be complete.
 - Need better maps of plan area.
 - Background on current wetland restoration activities, benchmarks and outcomes.
 - Make sure critical findings from the appendices are adequately reported in Chapter 5.
- Does not include life cycle analysis for most species.

How complete is the effects analysis?

Recommendations

- The baseline is unclear.
 - Restoration activities already underway. Does the baseline include current activities? and not – how do we tease apart BDCP benefits from other ongoing activities and their associated benefits.
 - Status of many of the covered species is uncertain.

Is Chapter 5 reasonable and scientifically defensible?

Recommendations

- Need to understand interactions and how phasing actions will influence outcomes.
- Need more specificity about approach so that we can evaluate the potential for desirable outcomes.
- Contaminants appendix limits discussion to direct toxicity effects for covered species. This downplays the emerging evidence of importance of contaminants on ecological impacts (lower trophic levels).
 - Unclear how changing flow in the central Delta to a more San Joaquin signal will change contaminant field.

Is Chapter 5 reasonable and scientifically defensible?

Recommendations

- Develop a scheme for prioritization based on state and federal listings, population status, geographic range, etc.
- Need to incorporate landscape and conservation ecology principles. For example, linking of migratory corridors and connectivity of food exports.

Is Chapter 5 reasonable and scientifically defensible?

Recommendations

- Need to consider effects of implementation of some conservation measures. (e.g. invasive aquatic plant removal) in the short term. (example: herbicides and promotion of other invasive species)
- The treatment of food resources grossly incomplete and overly simplistic. Need to incorporate *both* detrital and planktonic food web. Food quality needs to be considered in addition to food quantity.

Is Chapter 5 reasonable and scientifically defensible?

Recommendations

- Uncertain that they are actually capturing level of analysis around the north delta operations effects on existing and proposed restoration.
 - At present the modeling is not capable (due to boundary position) to get at hydrodynamics the influence of north Delta exports on Cache Slough complex cannot be fully evaluated.
 - The boundary condition needs to be changed.
 - Explicitly include in the analysis how the decreased flow in Sacramento will alter existing and restoring and proposed wetlands.

Is Chapter 5 reasonable and scientifically defensible?

Recommendations

- Recognize that they are changing physics of system – reorganizing hydrodynamics. Implications for governance.
- Need to anticipate regulations as a result of operating north Delta pumps.
 - Old and Middle River Regulations
 - X2 definitions

Does Chapter 5 integrate the appropriate suite of analysis?

Recommendations

- Use the best, most complete scientific models
 - See red flag comments by agencies.
 - For example, life cycle models for fish species. Where available need to scale to population level effects. Red Flag comments says that there were missed opportunity to use quantitative models.
- The effects analysis should include the effects on San Francisco Bay.

How well is uncertainty addressed?

Recommendations

- Uncertainty – although categorized, no real discussion of all uncertainties in one place –may be hidden within narrative but better to list of more details of uncertainty, identify information gaps to direct monitoring and special studies.
- Recognition of propagation of uncertainties
- Although the bulk of the benefit of BDCP is linked to restoration, uncertainties are not assessed for restoration and other conservation measures.

How well does Chapter 5 link to adaptive management?

Recommendations

- Effects analysis (Chapter 5) does not include adaptive management discussion and measures.
- Adaptive management needs to be tied to specific metrics, based on biological objectives, that will be monitored to assure that net affects will be achieved.
- Need to describe what to monitor and adaptive management actions and metrics.
 - Need conceptual or numeric models to guide adaptive management.
 - Timescales for triggers.

Integrate appropriate suite of analyses

Recommendations

- Salmon need to split out by species and stock
- Turbidity analysis and suspended sediment needs to be completed.