Using conceptual diagrams as tools for the Bristol Bay Assessment

A conceptual diagram is a visual representation of hypothesized relationships among human activities and the resulting sources, stressors, and responses—basically, it explicitly lays out how you think a system of interest is (or will be) working. These diagrams can be useful tools throughout an assessment, from structuring and clarifying initial brainstorming, to providing a framework for data collection and analysis, to organizing and presenting results.

Development of conceptual diagrams at the beginning of an assessment facilitates explicit, critical thinking about linkages among system components. Because these diagrams are always works-in-progress, to be revised and updated as the assessment progresses and information accumulates, they encourage transparency by providing a window into the assessment process.

Figure 1 provides a diagrammatic overview of the Bristol Bay Assessment. The assessment focuses on how environmental impacts associated with mine construction, operation, and long-term management (i.e., post-closure activities and maintenance) may affect salmon and resident fishes; effects on wildlife and human populations will be assessed in terms of fish-mediated impacts, although direct effects are recognized (dashed lines). We currently are developing four conceptual diagrams for mine life stage (mine construction & operation; post-closure management) and impact type (water quantity, sediment, and physical habitat; water quality) combinations, as well as a diagram illustrating potential effects of low probability but high impact accidents.

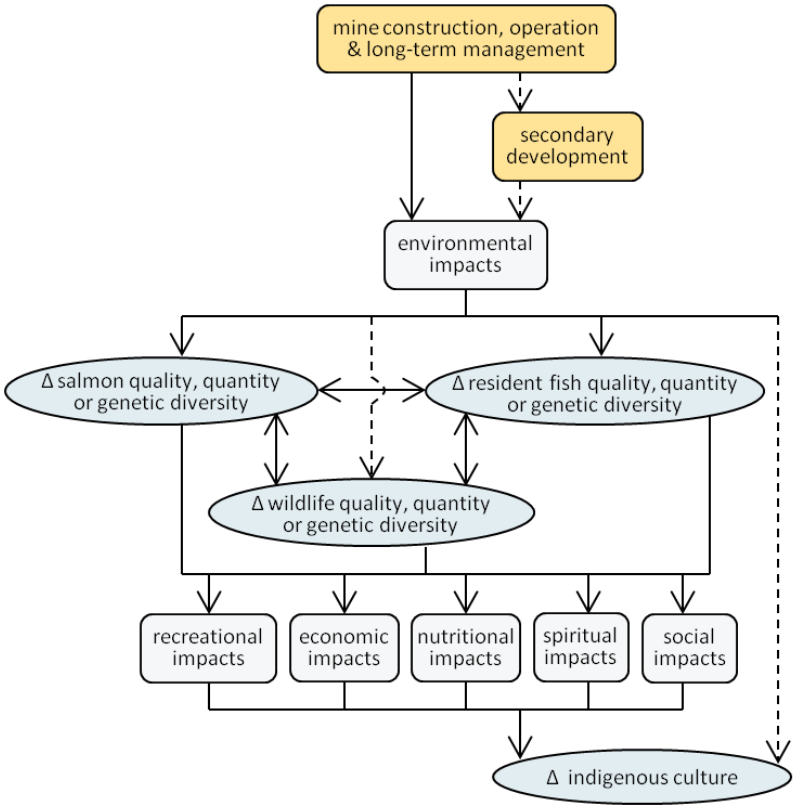

Figure 1. An overview of key components of the Bristol Bay Assessment (solid lines indicate focal pathways for the assessment).