Coho (*Oncorhynchus kisutch*) and Chinook salmon (*O. tshawytscha*), and steelhead (*O. mykiss*) in the Salish Sea have exhibited declines in marine survival over recent decades. While the cause of these declines is unknown, multiple factors have likely contributed. To evaluate the contribution of a suite of drivers on salmon survival, we used qualitative network modeling (QNM). QNM is a conceptually-based tool that uses networks with specified relationships among the variables. In a simulation framework, linkages are weighted and the models are subjected to user-specified perturbations. Our network had 33 variables, including: environmental and oceanographic drivers (e.g., temperature, precipitation), primary production variables, food web components, and anthropogenic impacts (e.g., habitat loss, hatcheries). We included salmon traits (survival, abundance, residence time, fitness, and size) as response variables. We invoked perturbations to each node and to suites of nodes and evaluated the responses. The model showed that anthropogenic impacts resulted in the strongest negative responses in salmon survival and abundance. Additionally, feedbacks through the food web were strong suggesting that food web variables may be important in mediating salmon survival within the system. With this model, we were able to compare the relative influence of multiple drivers on salmon survival.