

Columbia River Basin Monitoring Design Alternatives

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USEPA

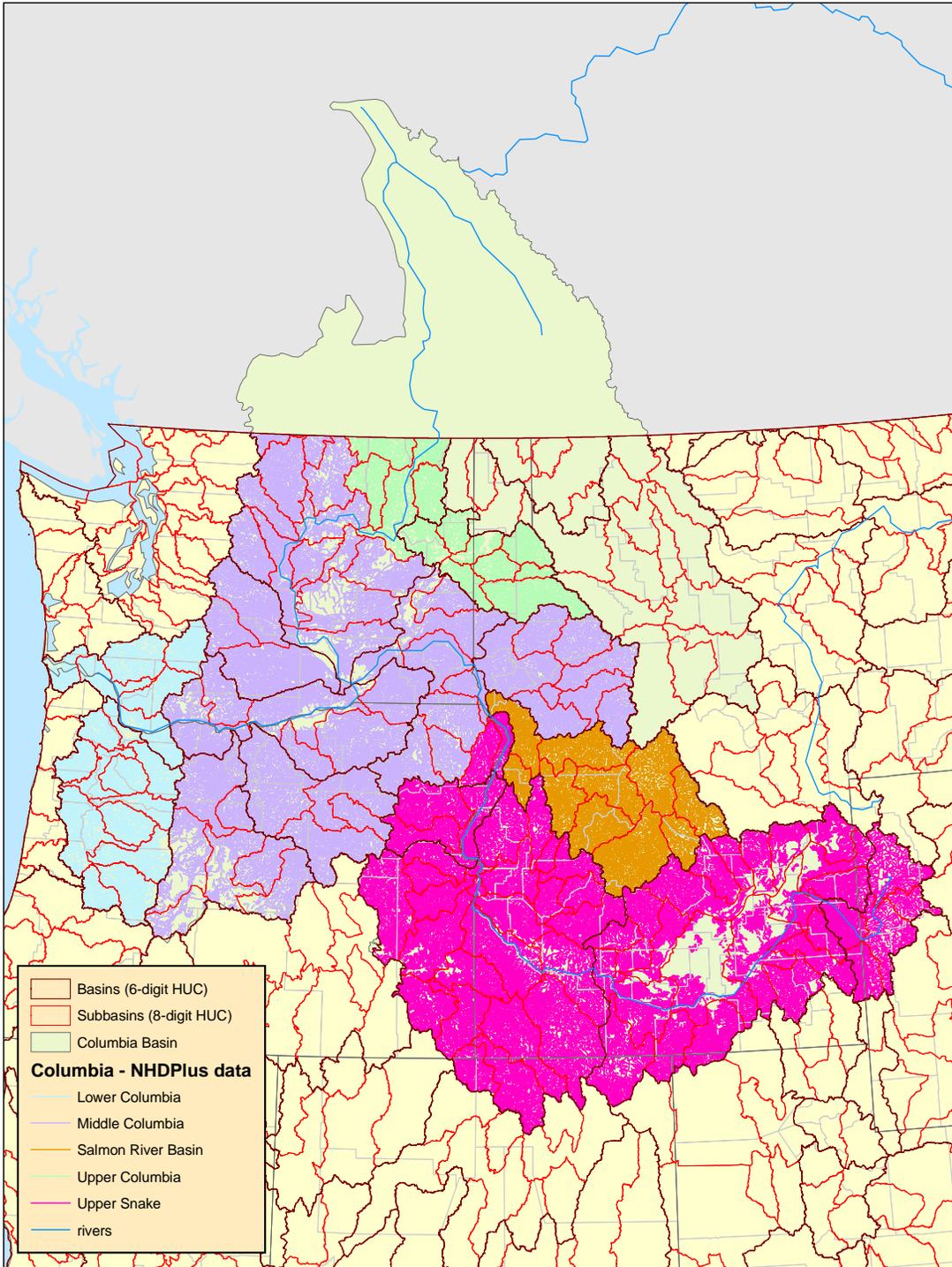
Corvallis, OR

Monitoring Design Components

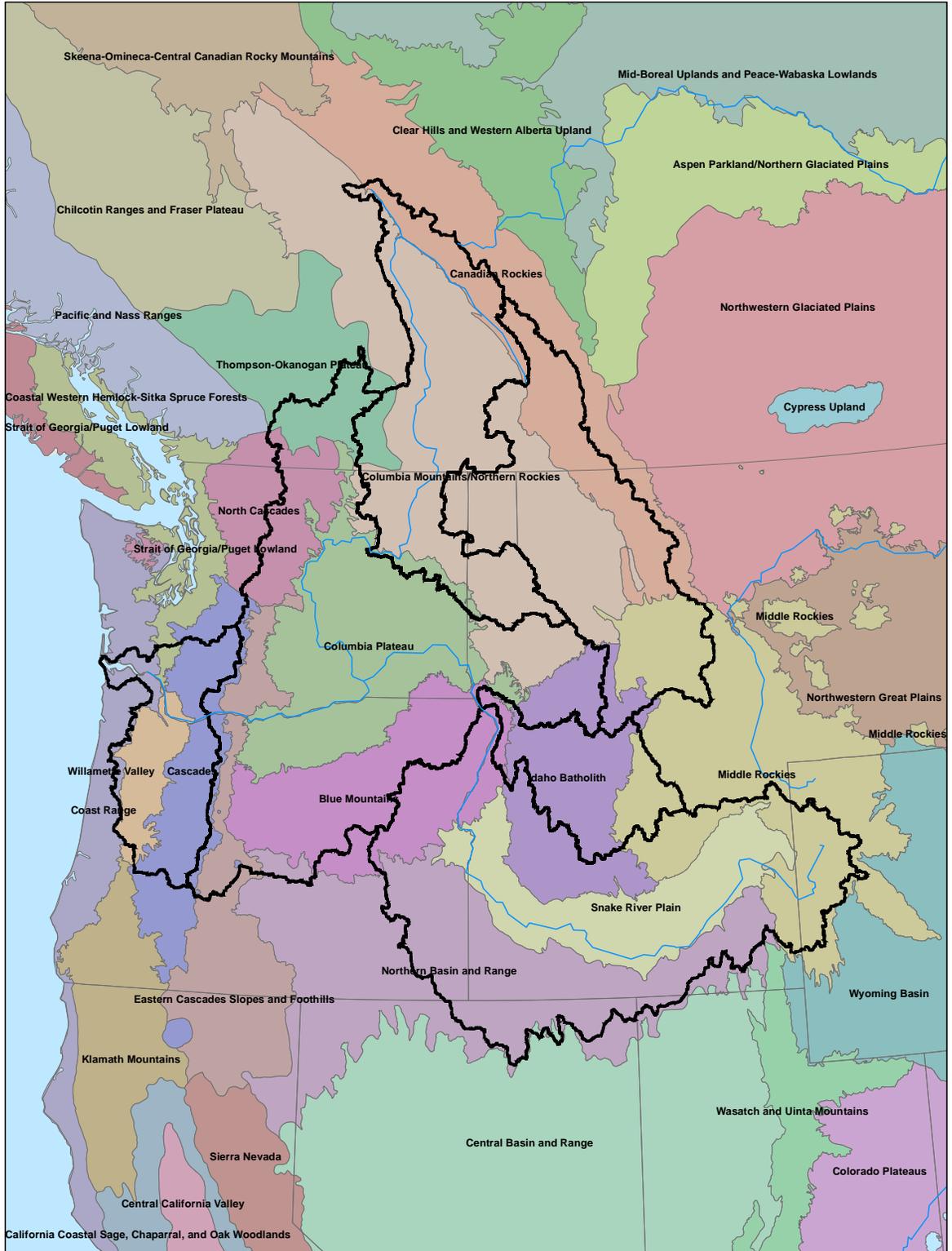
- What will be measured at a site? (indicators)
- How will it be measured? (response design)
- Where will it be measured? (site selection)
- What is resource of interest? (target population)

Above are determined by monitoring objectives

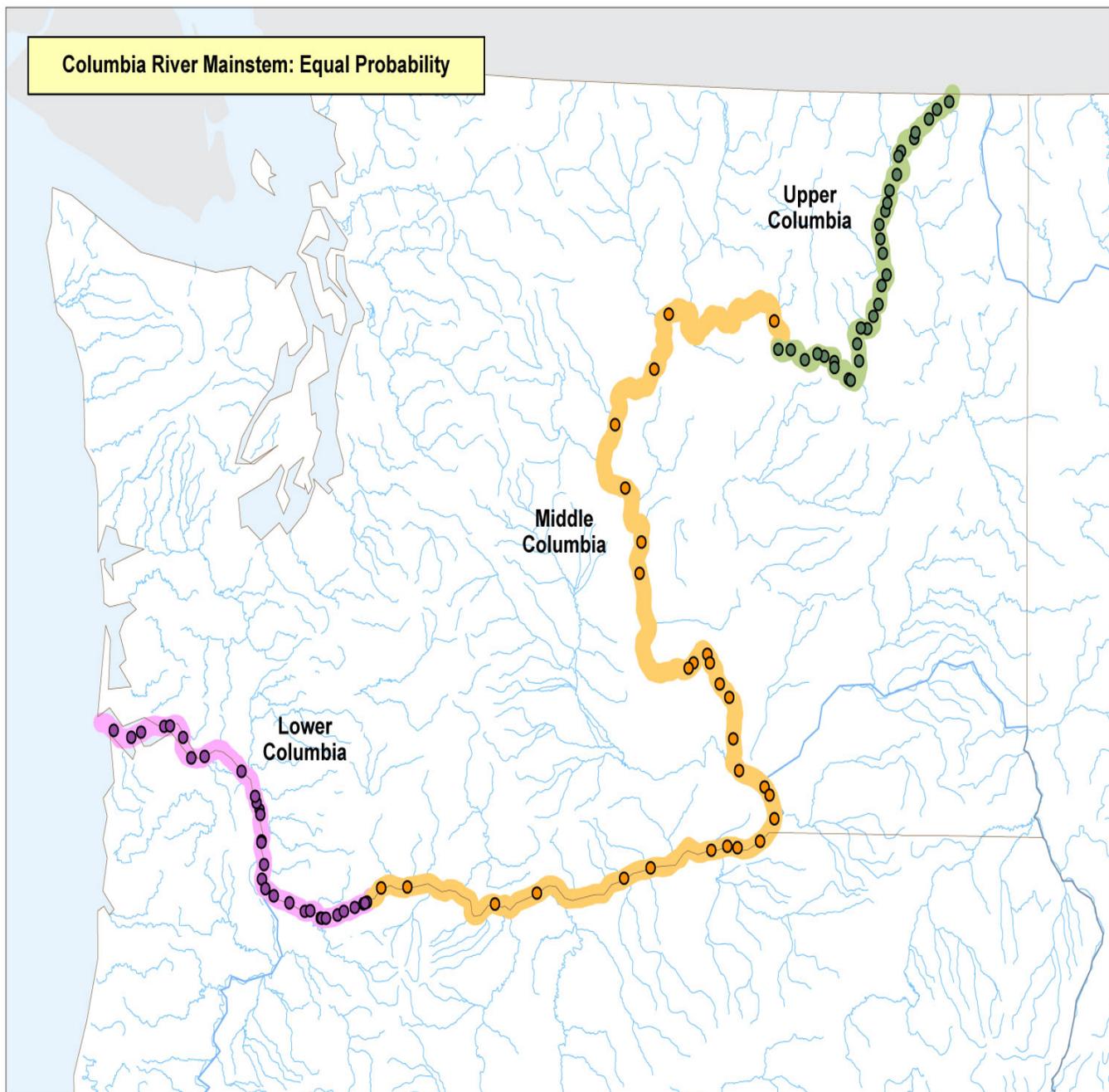
Columbia River Basin: What is the target population?



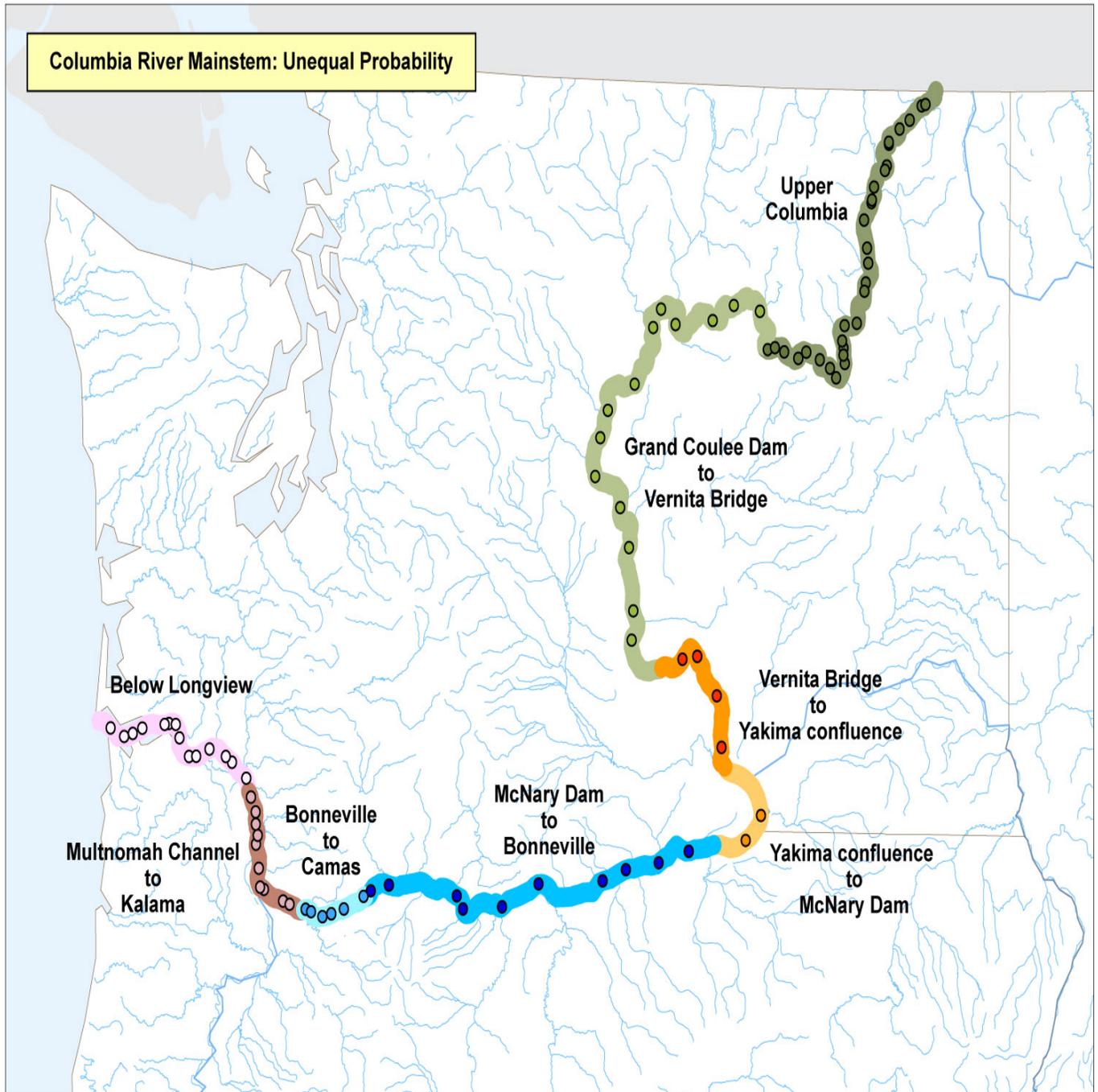
Columbia River Basin with Ecoregions



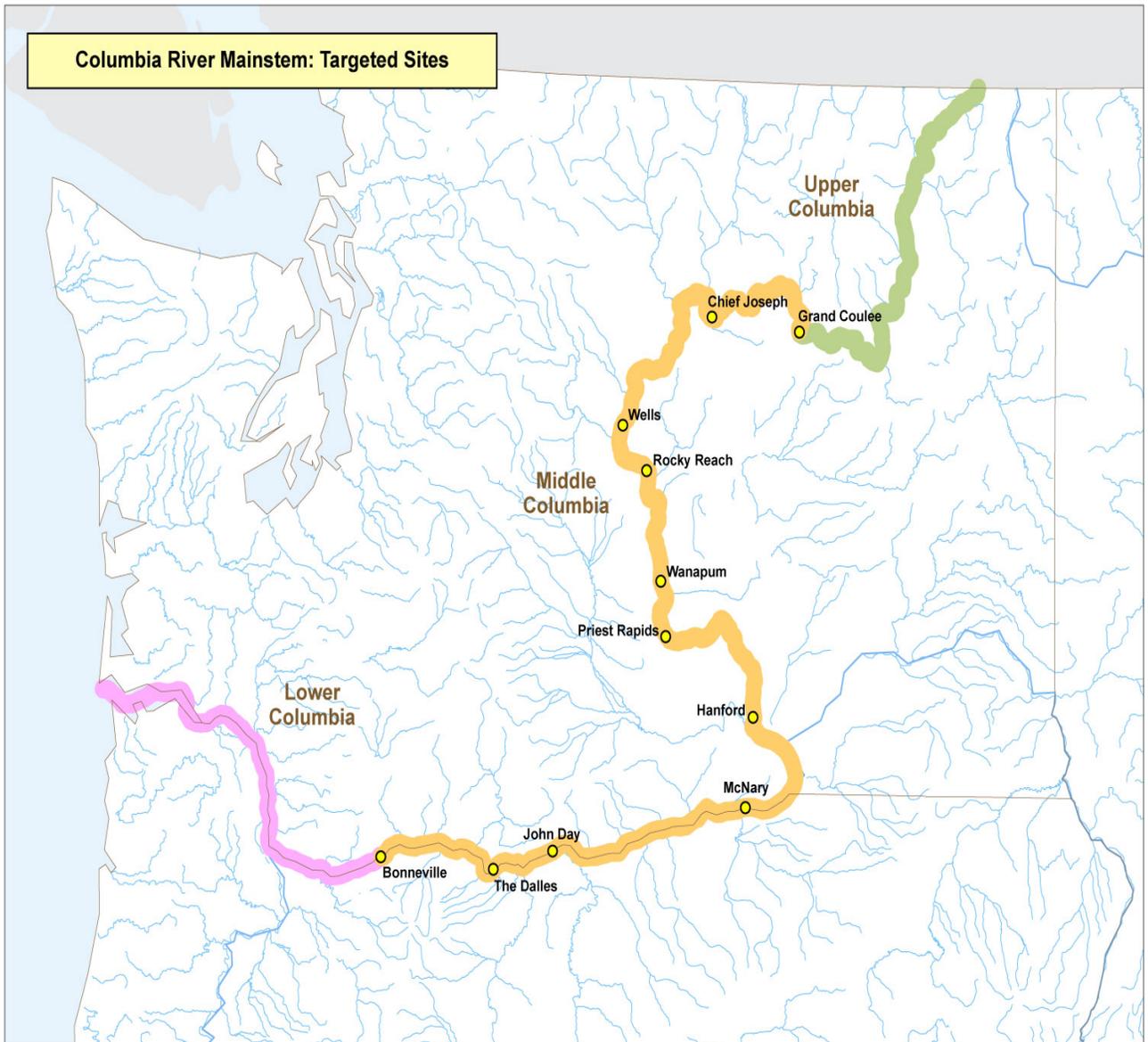
Question: How many miles of mid-Columbia mainstem have fish tissue contaminants greater than criteria?



Columbia River Mainstem with unequal selection by sections

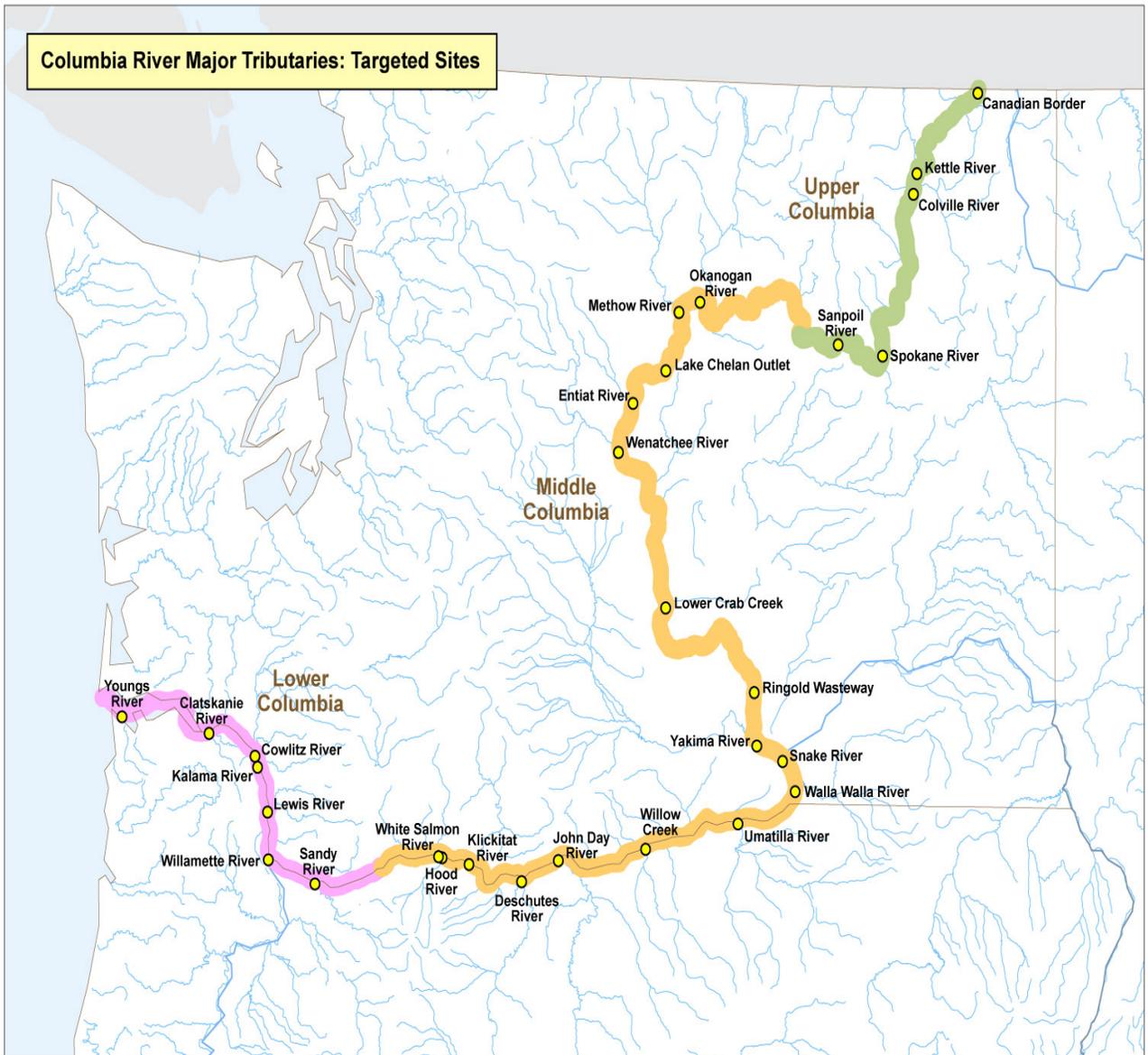


Targeted Columbia River Mainstem Sampling (WA DOE): What is the average fish tissue contaminant concentration above dams?

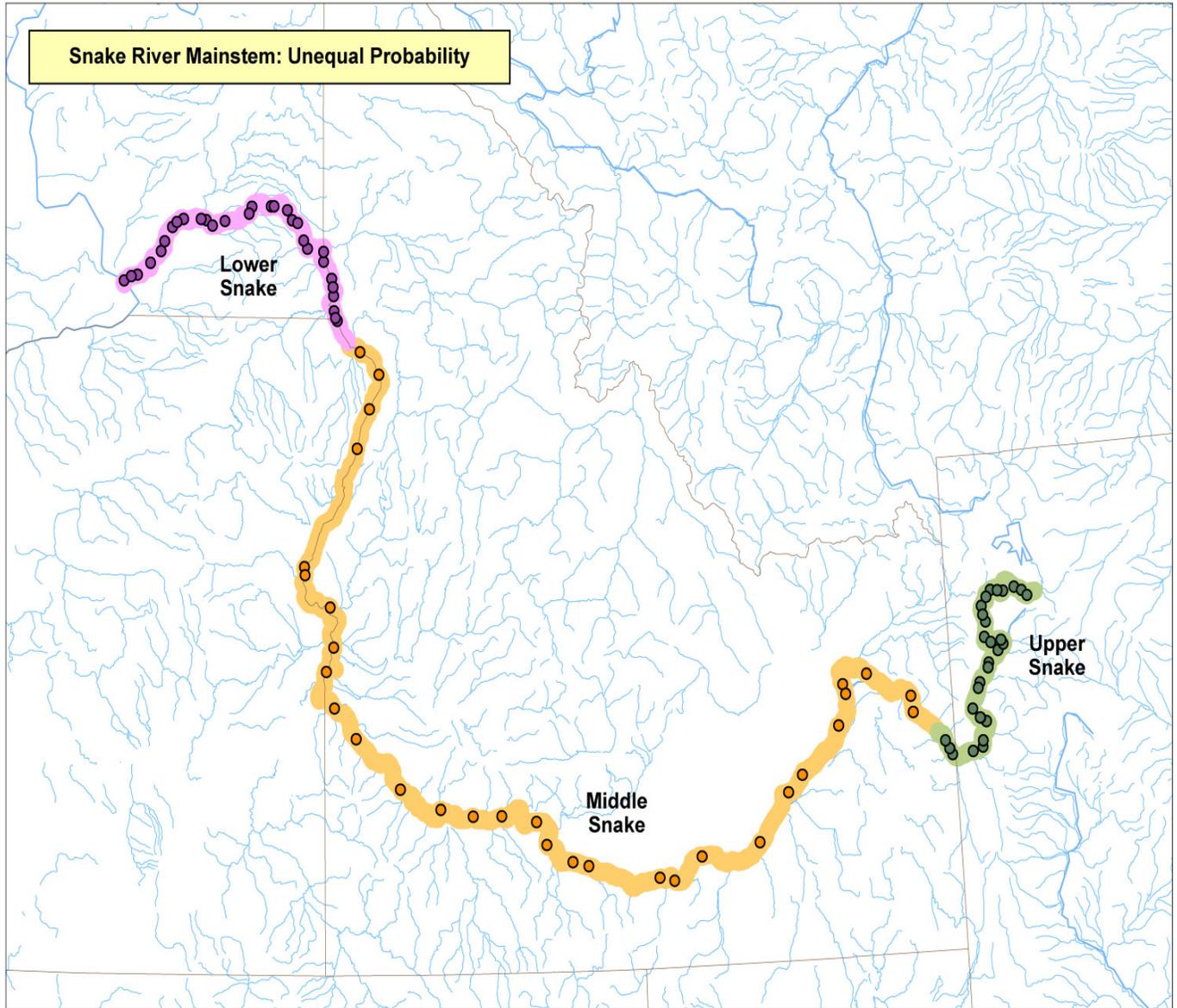


Targeted Tributary Sampling at confluence with Mainstem (WA DOE)

What is the water column contaminant concentration and loading at each confluence?

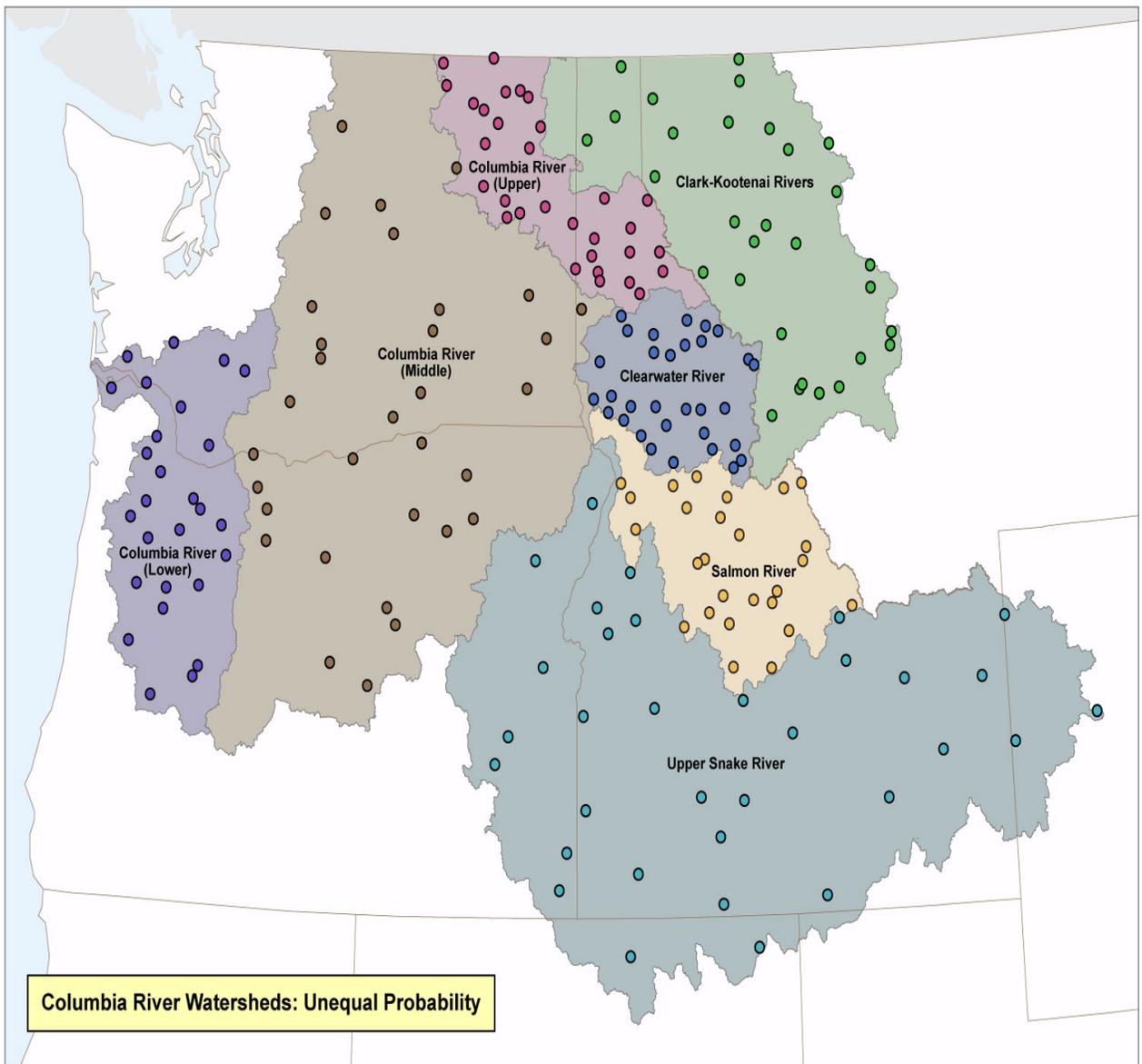


Probability Sample of Snake River Mainstem by Lower, Middle, Upper Segments



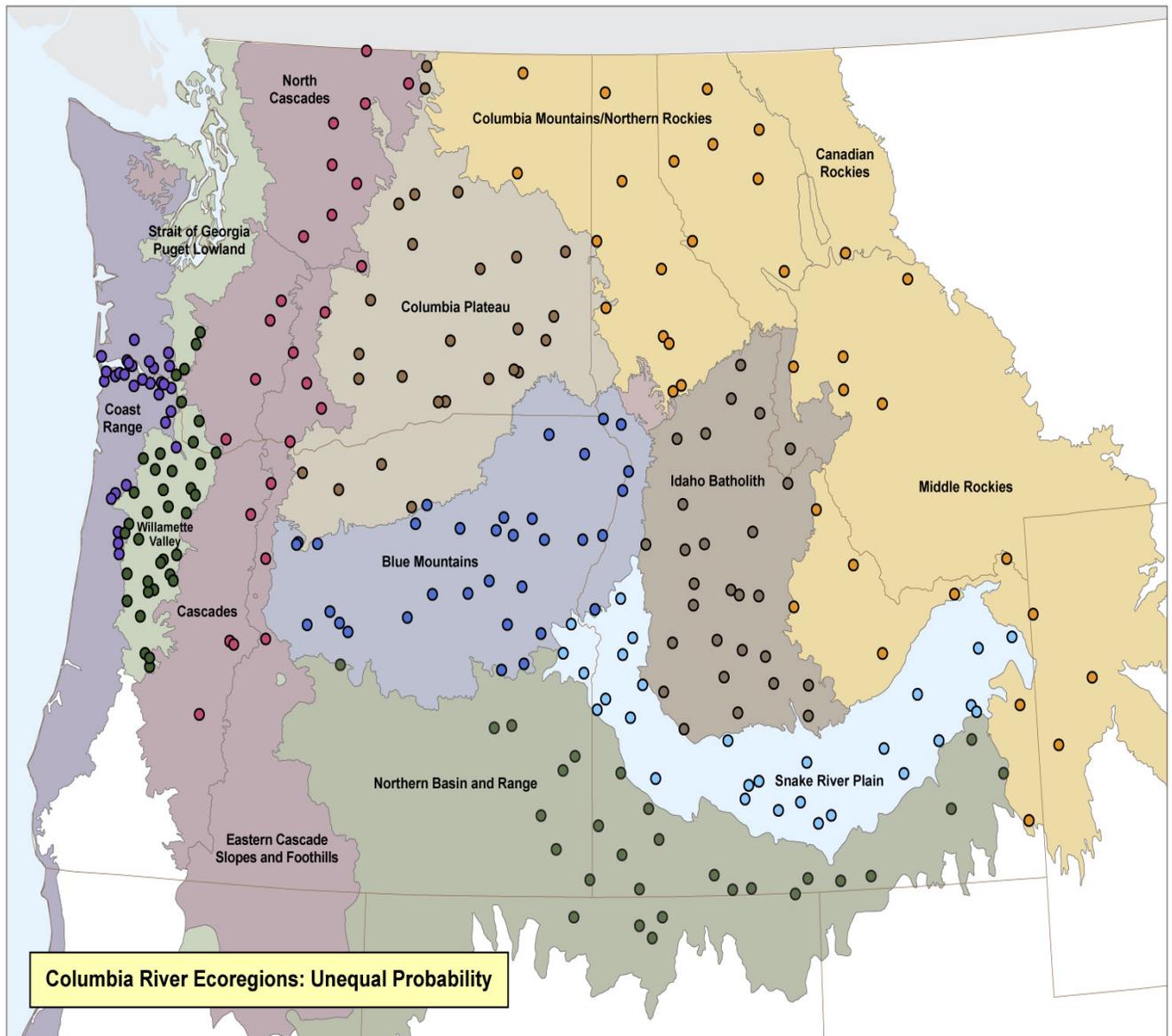
Unequal probability sample of tributaries by watersheds:

How many miles of streams within a watershed have fish tissue contaminant concentrations above criteria?



Unequal Probability Sample of Tributaries by Ecoregion

How many miles of streams within an ecoregion have fish tissue contaminant concentrations above criteria?



Perspective

- Design monitoring program in context of other programs that are expected to be operational for at least 10 years
 - Office of Water's National stream and river assessments
 - State/Tribal national stream and river monitoring programs
 - Hanford
 - LCRB National Estuary Program
 - NAWQA, others
- Design for what would like program to be – even if can't implement all of it now