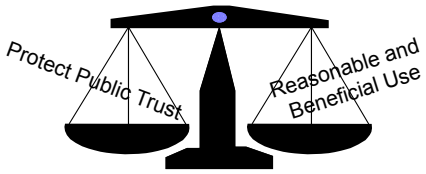
The Climate Change Conundrum: A Water Resource Management Perspective

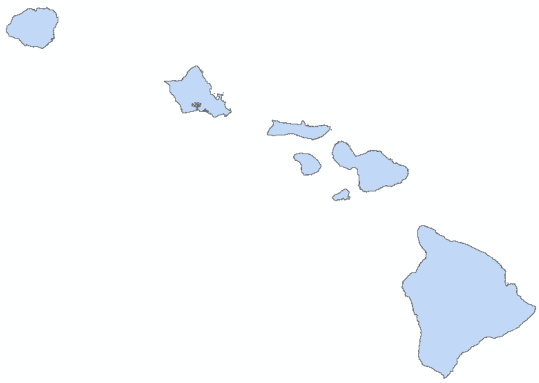


PISCS Downscaling Workshop
September 17, 2015

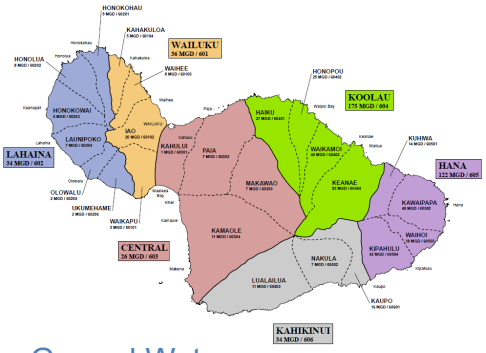
The Big Q…

How much water do we have?

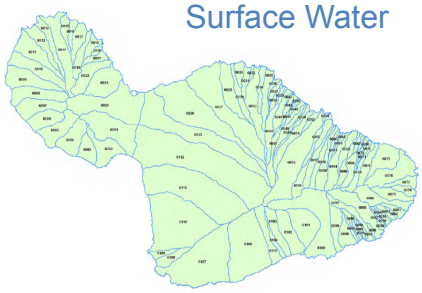
Area of Interest: Main Hawaiian Islands (except Niihau)



Spatial Scale: Hydrologic Units



Ground Water

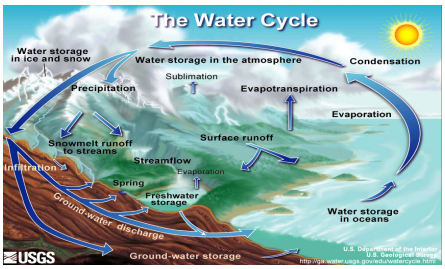


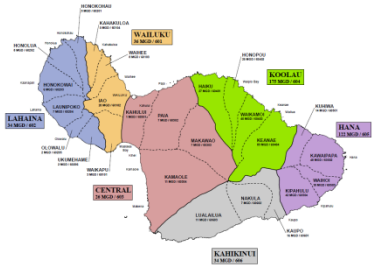
Surface Water

Determination of Ground Water Availability

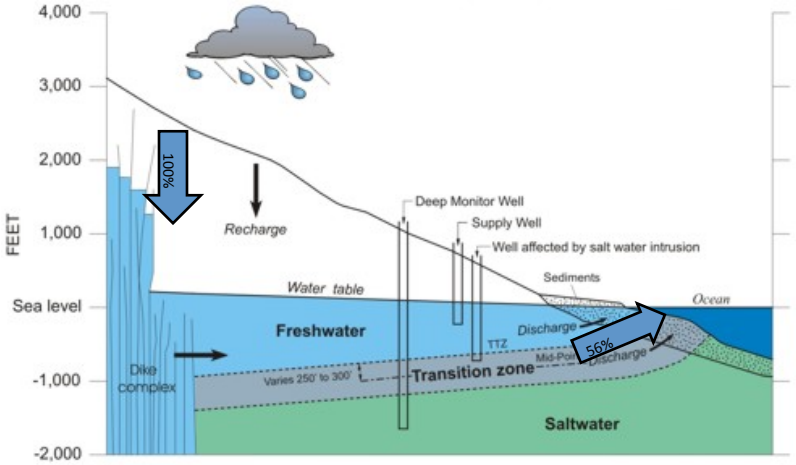
$$R = RF - DRO - ET$$

Simplified recharge calculation where:
R = Recharge
RF = Rainfall
DRO = Direct runoff
ET = Evapotranspiration

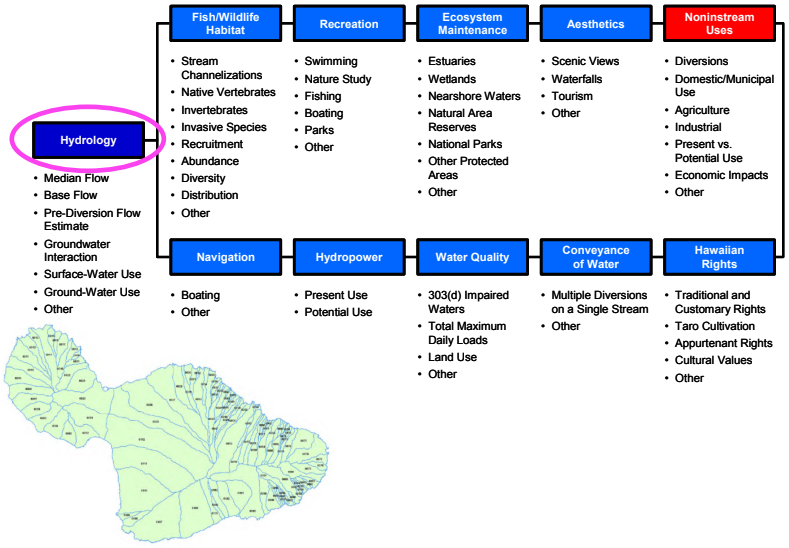




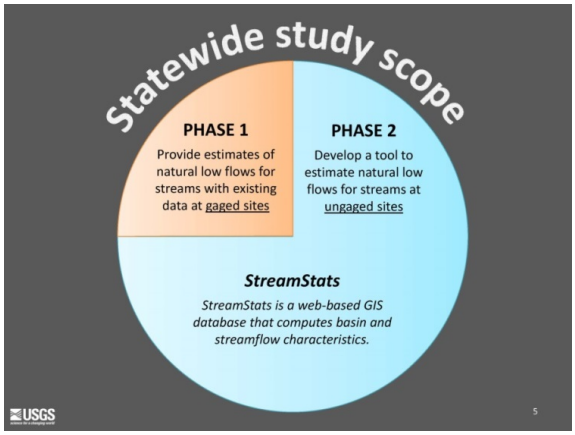
"Sustainable yield" means the **maximum rate** at which water may be withdrawn from a water source without impairing the utility or quality of the water source as determined by the commission.



Determination of Surface Water Availability

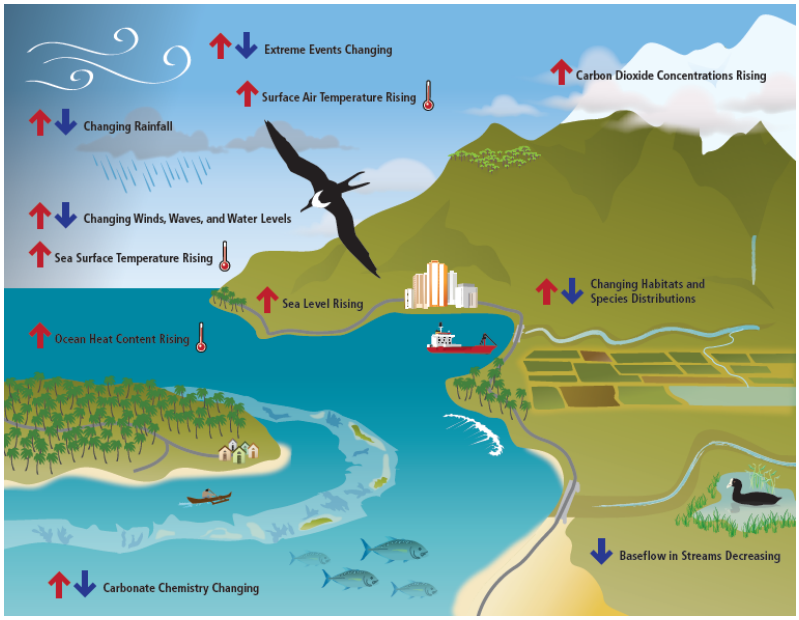


"Instream flow standard" means a **quantity or flow of water or depth of water** which is required to be present at a specific location in a stream system at certain specified times of the year to protect fishery, wildlife, recreational, aesthetic, scenic, and other beneficial instream uses



Time Scale: Long-term

- Ground Water Management Area designations
- Water allocation duration
- Provisions to deal with short-term fluctuations



The Bigger Q…

How much water ~~do~~ will we have?

Water Resource Management Issues

Data Needs: Precipitation, air temperature (ET, vegetation cover, demand)

Timescale of the long term average: Present to…?
20-year planning horizon? infrastructure life cycle? 50 years? 7 generations?

Accuracy: Need a specific rate/number, not identification of trends or a range

Uncertainty: Be conservative & apply adaptive management