

Summary of Healthy Streams Project Meeting Outcomes

August, 24 2012

Approach for Moving Forward

The California Healthy Watersheds Assessment will be based on an assessment of *structural indicators of watershed condition*, which are defined here as those watershed attributes that drive aquatic ecosystem processes and for which spatially continuous landscape-level data are available. Landscape predictive models will be built from these indicators and calibrated with *indicators of aquatic ecosystem health*, which are defined here as those measures of chemical, physical, and biological integrity that the Clean Water Act was designed to maintain and restore, for which high quality data representative of the various ecoregions in California are available at discrete sampling locations. The uncertainty associated with each of the predictive models will be quantified and communicated in a way that informs responsible decision-making and adaptive management.

In addition, watershed vulnerability will be assessed through an evaluation of available climate, land use, and water use change projections. Climate, land use, and water use change are the three primary stressor categories influencing watersheds and their dependent aquatic ecosystems. The sensitivity of these ecosystems will be considered through measures of hydromodification potential and projected changes in baseflow, snowpack, surface runoff, and wildfire severity as a result of future climate stressors. Adaptive capacity will be considered through measures of groundwater dependency, presence of coldwater fisheries habitat, and connectivity of protected areas (e.g., national forests, conservation easements, etc.).

Structural Indicators of Watershed Condition

- Percent Natural Land Cover in Active River Area / RAMT
- Headwater Natural Land Cover (stream classes 0-2)
- Percent Natural Land Cover in Watershed (current/historic wetlands, forests, etc.)
- Soil Infiltration Capacity
- Geomorphic Landscape Units (Relative Risk of Excess Sediment Production)
- Number of Road/Stream Crossings
- Dam Storage Ratio (reservoir volume/watershed flow)
- Miles of Artificial Channels

Indicators of Aquatic Ecosystem Health

- Indicators of Hydrologic Alteration
- O/E Macroinvertebrate Scores
- CRAM Attribute Scores
- Water Temperature
- pH
- Conductivity
- Turbidity
- Relative Bed Stability (or another stream geomorphic indicator)

Indicators of Watershed Vulnerability

- Fire Regime Condition Class
- Climate Change
 - Projected changes in precipitation and temperature
 - Intersection of Groundwater Dependent Ecosystems and projections of changes in baseflow (as a result of climate change)
 - Projected change in monthly snowpack
 - Projected change in wildfire severity
 - Projected change in monthly surface runoff
- Projected Land Cover Change
- Water Use and Demand
- Hydromodification Potential (e.g., stream power)

Potential Uses of Healthy Watersheds Assessment Results

Inform bio-objectives process

Communication tool

Modify way that antidegradation is implemented

Inform local land use decision-making

Identify data gaps (quantity and quality)

Inform permit-writing

Inform requirements for LID in the context of stormwater management

Inform watershed-scale wetland permitting and mitigation

Identify reference or benchmark watersheds

Program integration (DWR and water boards)

Local initiatives can build on the state level assessment with local data

In Healthy Streams Portal: Where do we have healthy watersheds, where are watersheds stressed or potentially stressed, and where do we need more information?

Ideas for deliverables

Technical Report

Map Viewer of Results

Geodatabase of all data used

Recorded webinar describing process and results

Follow Up for Cadmus

Verify that we have all PSA data (Corey will call Pete).

Look at which PSA sites are near streamgages and consider identifying an IHA flow metric or two that is strongly associated with O/E scores.

Check into GeoTools for use in geomorphology assessment.

Verify that we have most recent CEDEN data once indicators are finalized.

Download NWIS water quality data.

Develop cumulative distribution functions (CDFs) for all indicators once list is finalized. Send to HSP and have follow-up conference call to consider selection of thresholds.

Talk to Fraser Shilling about potential water use and demand indicators

Obtain California Protected Areas Database

Further consider relevance of Active River Area in desert regions

Consider use of Riparian Area Model in place of, or addition to, Active River Area delineation (Corey will call Meredith)

Clearly define health, condition, risk, vulnerability, stress, etc.