

## Statewide E-Flows Workgroup – February 12, 2019 Meeting Notes

### Attendees

- Robert Holmes
- Eric Stein
- Sarah Yarnell
- Sam Sandoval
- Alyssa Obester
- Bob Soleski
- Brianna Drescher
- Elijah Portugal
- Jason Hwan
- Bri Seapy
- Amber Villalobos
- Will Anderson
- Annie
- Caitlyn - Coastkeeper
- Tatyana Isopov
- Lisa Fong
- Julie Zimmerman
- Sam Cole
- Shirley Birosik
- Doug McPherson
- Ed Hancock
- Josh Westfall
- Jenny Potts
- Mina Chon

Data management discussions between State Water Resources Control Board (State Water Board) and California Department of Fish and Wildlife (CDFW) are ongoing.

### Red Robin Updates

- Functional flow calculator webinar (January) – described how to access data and use it, more detailed than general overview. Posted on California Environmental Flows Framework (CEFF) website and California Environmental Flows Workgroup website:
  - Webinars on functional flows went well.
  - Agencies are starting to use the tool.
  - Sam et. al. want feedback on tool and website from users to help with continued improvement.
  - Currently being used by State Water Board, Southern California Coastal Water Research Project (SCCWRP)
  - Future webinar in March? TBD. Will be focused on statistical models
- CDFW
  - Water Action Plan –
    - Redwood Creek – finalized habitat suitability curves, developing Weighted Useable Area (WUA) curves
    - Ventura River – 3 studies; 2D model in dry reach, spawning/rearing/ecological maintenance flows in “live reach”, evaluated San Antonio Creek for steelhead rearing;
    - Models for Mark West Creek being developed based on current data collection
      - Modeling Coho rearing
  - Region 5 – Functional Flows Calculator (FFC) – life stage specific recommendations – West Fork San Gabriel. Some issues with flashy systems in Southern California Some metrics don’t work as well. Amber and Eric can talk offline on strategies for modified set of metrics for S. Ca. flashy ephemeral streams.

- Instream Flow Unit
  - Using FFC to evaluate a stream in Southern California to craft instream flow recommendations for various permitting processes; West Fork San Gabriel
    - Struggling with spring recession metric
    - SCCWRP/tech team have been working to modify metrics for Southern California systems to determine which are most relevant
    - Build user feedback into FFC – allow them to describe where they're using, potentially the ability for user to update data
- North Coast Regional Water Quality Control Board - Brian
  - Cannabis and instream flows – Feb 21<sup>st</sup> Board meeting; staff will present monitoring and reporting data; detailing timing of water use and sources; flows and estimates in the Trinity and comparing this to Electronic-Water Rights Information Management System (e-WRIMS) data
  - Salmonid Restoration Federation Workshop on April 21<sup>st</sup>, presentation on the above topics; will be presenting some of the findings on availability vs. demand in upper Mattole
- Delta Stewardship Council – Dan
  - Presentation at upcoming meeting on functional flows
  - Interested in working functional flows in the future in the Delta
  - applying functional flows work for Tier 1 analysis
- July 1<sup>st</sup>/2<sup>nd</sup> Water Data Science Symposium
  - Hosted by the State Water Board, CEFF tech team will present a CEFF overview
- UC Davis – Sam
  - Summary of accomplishments in the last year – glossary, hydrologic classifications, FFC, metrics, Tier 1 Overview draft, hydrogeomorphic classification for the state of CA (have finished the geomorphic classification for the Sacramento basin), working on a classification for the South Fork Eel, will also have classifications for Humboldt to San Diego (coastal)
  - Geomorphic classifications are being developed and draft classifications should be available this spring/summer.
  - March 4-5, Water Program team meeting. Will have training section on eflows (hosted by University of California Agriculture and Natural Resources (UCANR)/Sam)

### Glossary and charter

- Glossary, version 1 is final.
- Living document, will add terms as we progress (particularly after Tier 1 draft document is out)
- Glossary will be posted on California Water Quality Monitoring Council/California Environmental Flows Workgroup website
- Include information about what each arrow means or represents
- Simplified version of the diagram?
- Include elements of the diagrams in the fact sheet
- Tier 1 overview will be out by next meeting
- *Ecological outcomes* – clarify difference between an ecological outcome and a desired outcome; CEFF team will update and distribute
- Charter approved pending one change from endpoint to outcomes

## Webpage updates

- Webpage is up and available for view – under the water quality monitoring council website
  - Eflows.ucdavis.edu – tools and calculators
  - Ceff.ucdavis.edu – framework overview
- Work in progress
- Next meeting dates are posted
- Future goal – use an open data approach, GIS web-based portal to show all regions of the state where e-flows have been developed and associated metadata

## The Nature Conservancy (TNC) Natural Flows Database – Julie Zimmerman, rivers.codefornature.org

### Questions:

1. Do models vary by stream class (i.e. snowmelt vs. winter rain)? NO, for monthly metrics, the three classifications were sufficient – xeric, coastal mountains, interior mountains
2. Can model be used at a more local scale? It has been used at watershed or regional scale, but training of model needs a critical mass of training gauge data. This would be best used when comparing natural flows to predicted functional flow metrics. Division of water rights has also used it in the cannabis policy
3. Is this intended to be used at individual gauges? YES, it can be used at individual gauges at a monthly time step. The tool shows prediction intervals. If the prediction intervals are very wide, you can decide whether the predictions are precise enough for your purposes. Data can also be downloaded by gauge, sub-basin, or watershed.
4. For gauges where a partial historic record is being used, is there a problem with climate change effects altering flow due to climate change, affected the model? This is a good point. The model has not currently accounted for this.
5. How has anthropogenic gauges been defined? This is a standard U.S. Geological Survey (USGS) definition in the GAGES2 database and is based on land use that is expected to result in altered flow, hydrologic control, National Pollutant Discharge Elimination System (NPDES), etc. However, the tool predicts expected natural flows. Julie has the information on which gauges were considered unaltered and the reason that they were classified as either altered or unaltered.
  - Predated CEFF workgroup, but bringing these efforts together and integrating them in this project
  - Identified reference gages for the state (250)
  - Three regions (xeric, interior mountains, north coast mountains), 3 monthly statistics (min, mean, max), 113 static, physical watershed characteristics, 39 climate metrics, 108 models (12 months \* 3 monthly statistics \* 3 regions)
  - Each model = 1000 random forest trees, used to calculate mean
  - Model performance
    - O/E = 0.94
    - Mountains performed better than xeric

- Min and mean flows performed better than maximum
- Monthly metrics from 1950-2015 for every stream segment in the state
- Beta version released this month, updates to be released this summer
- Next steps: add additional visualizations, incorporate code to pull updated data, add functional flow metric predictions and visualizations by stream segment
- TNC wants feedback on interface and visualization ideas

## Tier 1 Overview

### Questions on CEFF document and approach

- How to determine if you are in or out of the box
- How do I map back to functions and communicate value?
- How to communicate why certain functions are important to care for?
- How do I get back into the FFC box?
- What should we monitor? How should we monitor? Where does the data go?

**Future need** – determine data standards for flow data and develop a platform for compiling information about locations where functional flow metrics/criteria are being developed

- Outline of CEFF Guidance Document
  - Background and overview
  - Tier 1 process
    - Relies heavily on online tools and guidance on how to use and apply them, with links to where they are which will include additional documentation on how to use them
    - For some metrics that are less variable, boxes could be smaller
    - Best to provide more data and give the user the option to decide
  - Tier 2 guidance
    - How to decide when tier 2 is necessary
    - Checklist of features that are consistent with CEFF approach
    - General approach
  - Case study examples

### Tier 1 – prescriptive, ecological flow criteria

- Stream classification → regional reference hydrology → evaluate reference functional flow metrics → assess modeled natural functional flow metrics at local stream reaches → determine ecological flow criteria based on functional flow metrics
- Products: hydrologic classification, dimensionless reference hydrographs, list of priority functional flow metrics, metric predictions for all reaches in the state, case studies
- Implementation questions for agencies to consider
  - How good is good enough? What level of confidence do you want in tier 1 criteria?
  - How do you want to spatially aggregate results?
    - If one reach fails, what does that mean? How many failures indicates there's a problem?
  - How often do you need to meet criteria?

- Focus on certain water year types? Do you need to “pass” during a minimum number of years or % of years?

## Tier 2

- Tools and products –
  - Key datasets (geomorphic classification, regional species assemblages, impaired flows classification)
- Models and tools
- Summary of programs and policies that involve environmental flow considerations
- Implementation considerations
- Case studies
- South Fork Eel, SoCal, LA River, Central and Northern CA dam relicensing, North Coast?
- Feedback from group
- How big the boxes should be – should vary based on metric, where predictions might be better
  - Options for different regions based on variability, water year type (large box in north coast vs smaller boxes in SoCal flashy systems)
- Guidance on how to build back out from an eflows study
  - How do you map back to functions from that? Can we build guidance for that from a particular stream class type?
  - How communicate the results of this type of study and assign value to this
- Other webinar topics –
  - CEFF overview
  - Tier 1 workshops at different user levels

## Potential topics for next meeting (May 14)

- Sustainable Groundwater Management Act (SGMA) plans and relationship to eflows – Bri
- Statewide modeling at ungaged streams – Ted
- Tier 2 decision tree/more detailed outline
- Fish/benthic macroinverts
- NHD+ high res presentation

## Action items

- Finalize charter
- Post glossary and associated diagrams
  - Make small updates to ecological outcomes definition
- Develop simplified version of glossary flowchart, define what arrows mean
- Update CEFF fact sheet
- Send Julie comments/suggestions on Natural Flows database, ideas for data visualization, sample application