Update on TMDL and Stewardship Efforts Within the Scott and Shasta River Watersheds

Item 6

North Coast Regional Water Quality Control Board Meeting

October 17, 2019

- Watershed Characteristics
- Watershed Stewardship
- Waiver Overview
- Waiver Implementation and Prioritization
- Progress in the Scott and Shasta
- Monitoring Update
- Update on Stewardship and Coalition Building
- Reminder of Coming Changes

Watershed Characteristics: Scott

- Flows north from headwaters in the Klamath National Forest
- Shallow gradient
- Joins the Klamath at river mile 142
- Historically home to massive beaver populations, which created and managed complex riparian habitat
- Snowmelt provides spring/early summer cold water; deep alluvial aquifer provides summertime cooling and baseflow
- Coho Salmon stronghold

Watershed Characteristics: Scott

- Working landscape: cow-calf operations, alfalfa
- Extensive hydromodification after 1964 flood
- Extensive surface water diversions from mainstem and tributaries – mo not water mastered
- 1992: listed as impaired for sedime
- 1998: listed as impaired for temperature
- 2005: sediment and Temperature TMDL, including Action Plan, adop by RWB
- 2006: approved by OAL and the USEPA
- 2012: listed as impaired for biostimulatory conditions

Watershed Characteristics: Shasta

- Flows north from Mount Shasta and the Eddy Mountains
- Shallow gradient with significant cold water spring inputs below Lake Shastina
- Joins the Klamath at river mile 176
- Springs historically provided year-round cold water refugia within complex riparian habitat
- Naturally high nutrients from volcanics supports complex food web
- Food + slow cold water = Lots of salmon

Watershed Characteristics: Shasta

- Working landscape: cow-calf operations, alfalfa, strawberries, cannabis
- Springs currently diverted, impounded, used for flood irrigation
- Flood irrigation historically lead to tailwater inflows, even more nutrients and warm water introduced
- 1992: listed for DO
- 1994: listed for elevated temperature
- 2006: temperature and DO TMDLs including Action Plan, adopted by RWB and approved by OAL
- 2007: approved by the US EPA

Watershed Stewardship in the Scott and Shasta

- TMDLs are watershed scale plans
  - Require integrated approach using regulatory and non-regulatory means to tackle complex pollutant inputs
  - Need to adapt to changing conditions and new information
  - Funding is needed to develop status and trend monitoring networks, implement novel approaches to restoration, and drive forward best management practice improvements
  - Require close coordination with agency partners, watershed groups, landowners, etc
- Wrapping these techniques into a coherent TMDL implementation approach is watershed stewardship

Waiver Overview

Waiver Overview

Scott Waiver Iterations:

- 2006 (Order No. R1-2006-0081)
- 2011 (Order No. R1-2011-0063, extension of 2006 Waiver)
- 2012 (Order No. R1-2012-0084)
- 2018 (Order No. R1-2018-0018)

Shasta Waiver Iterations:

- 2007 (TMDL Action Plan)
- 2012 (Order No. R1-2012-0083)
- 2018 (Order No. R1-2018-0019)

Scott Waiver Overview

Scott Waiver addresses three TMDL Action Plan requirements:

(1) For parties conducting grazing activities
  - Private ranches, timberlands used for grazing

(2) For parties responsible for vegetation that shades waterbodies
  - Private landowners with riparian areas on their property

(3) For parties responsible for roads and sediment waste discharge sites
  - *Timberlands outside of active THPs, eroding banks, etc*

Shasta Waiver Overview

Shasta Waiver was included as part of the TMDL Action Plan, recognizing actions already underway in the watershed

"The Regional Water Board hereby waives the requirement to file a Report of Waste Discharge and to obtain Waste Discharge Requirements…for dischargers that choose to participate in the on-going collaborative programs and implement recommended measure as applicable…"

Activities Covered by the Scott and Shasta Waivers

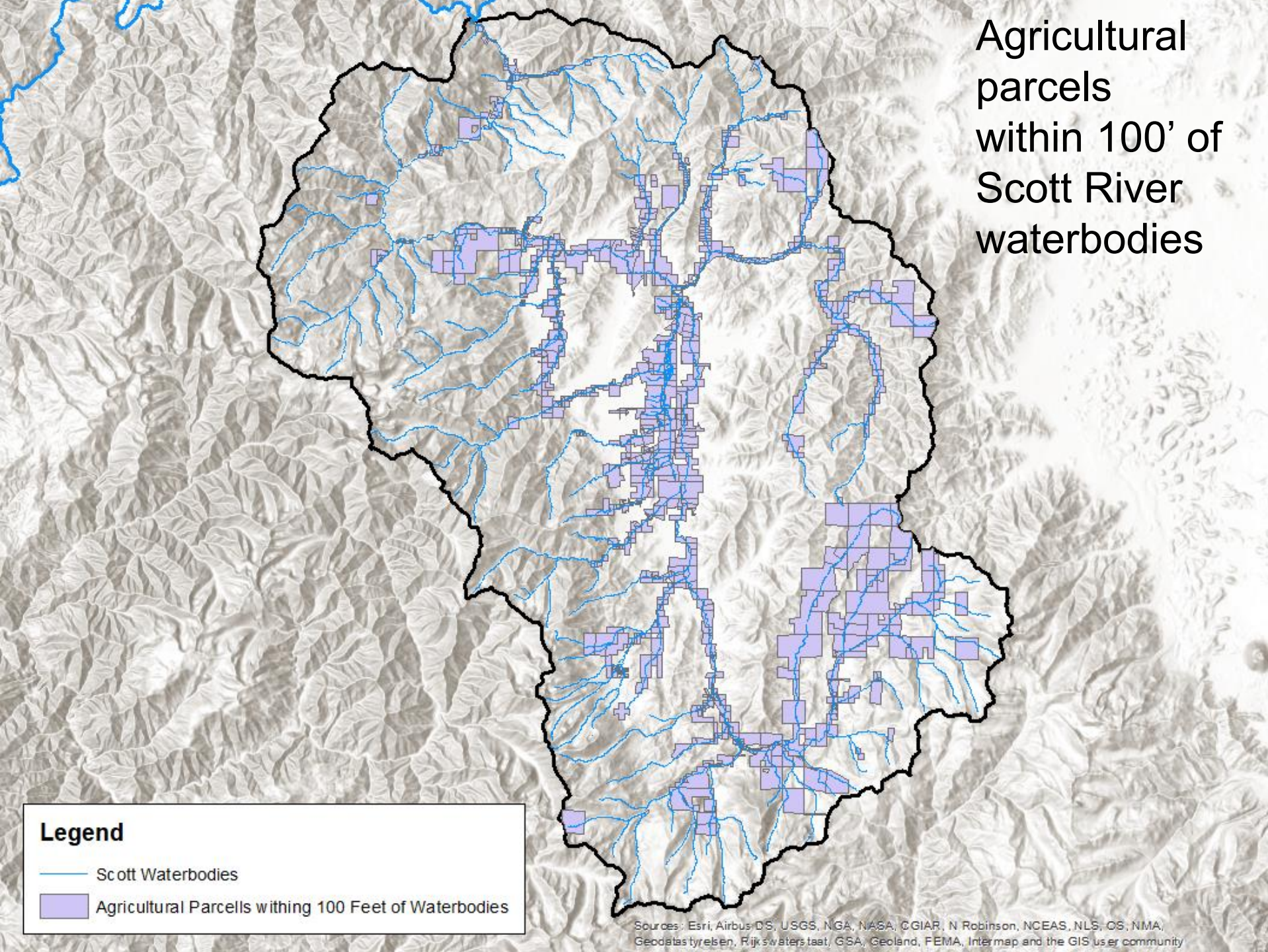
- Agriculture operations not covered by other permits
  - Predominantly alfalfa, irrigated pasture, and unirrigated rangeland for cow-calf, pastured pig, and mixed livestock
- Grazing on timberlands
- Timberland and rural roads not covered by other permits
- Requires compliance with specific management measures (Condition 5) and performance measures (Condition 3)

Scott and Shasta Waiver Requirements added in 2018

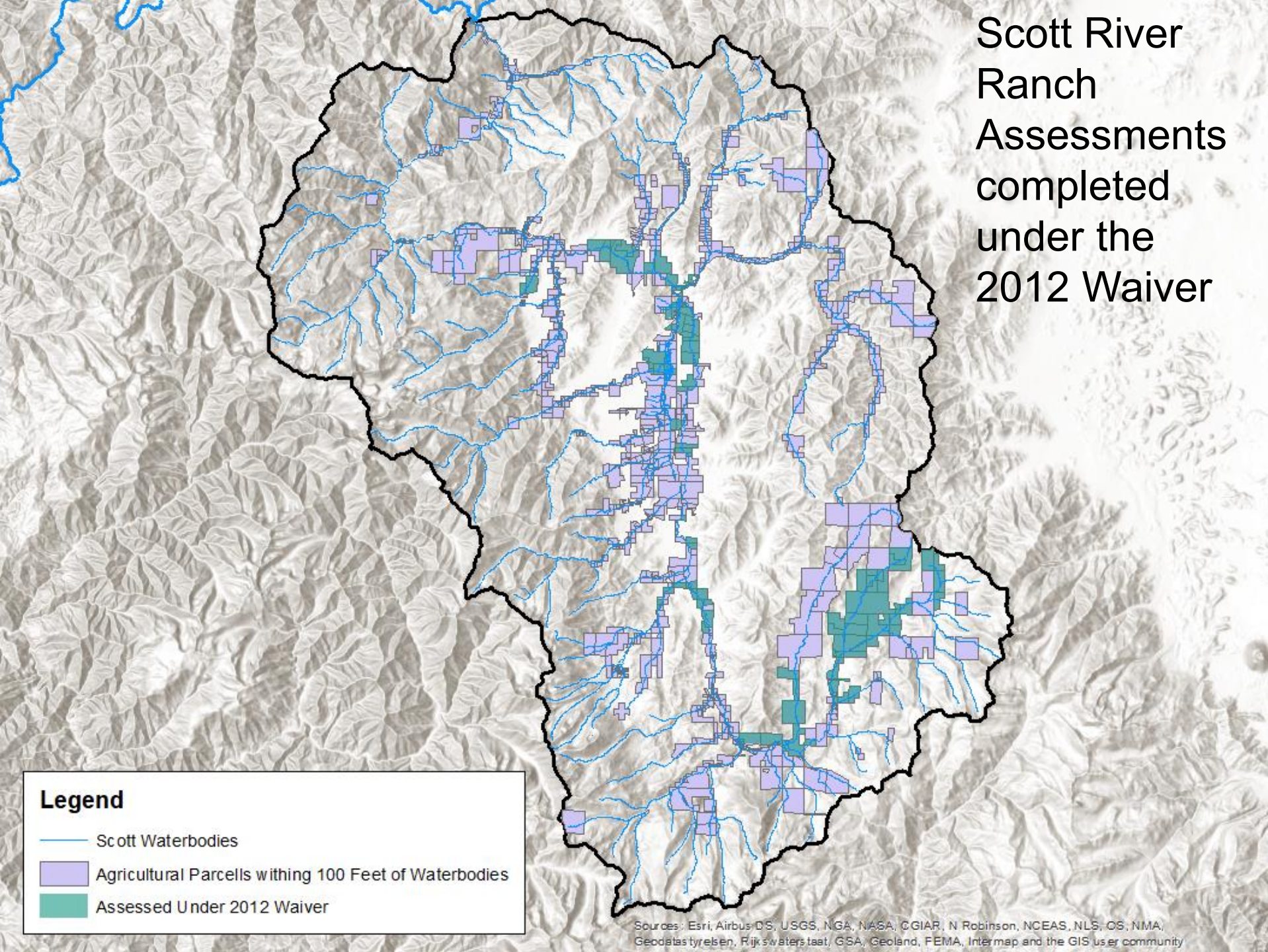
- 17 specific management measures considered recommendations in 2012 are now conditions of compliance (condition 5 a-q)
- More specific monitoring and reporting requirements (condition 3)
- Forecasts future changes in the next iteration

Waiver Implementation and Prioritization

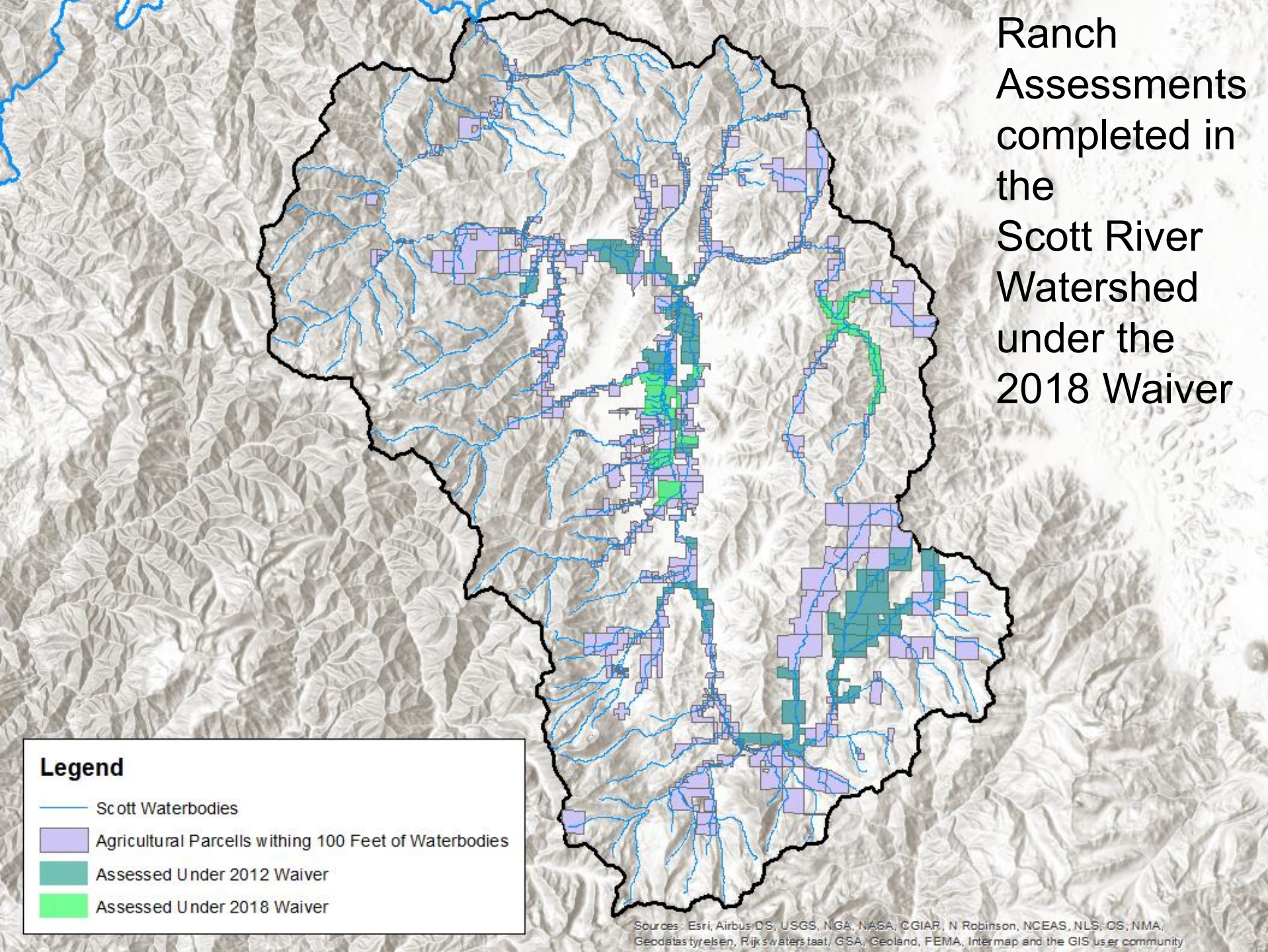
- Scott Prioritization based on stream frontage
  - 14 Ranches Assessed under 2012 Waiver
  - 4 Additional Ranches Assessed to date under 2018 Waiver
- Shasta Prioritization based on habitat potential
  - 3 Ranches Assessed under 2012 Waiver
  - 3 Additional Ranches Assessed to date under 2018 Waiver
- Progressive Enforcement: Transmitted 13267 letters to two land owners following an initial non-response, lead to Ranch Assessments


Agricultural parcels within 100’ of Scott River waterbodies
Legend
Scott Waterbodies
Agricultural Parcells withing 100 Feet of Waterbodies
Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community

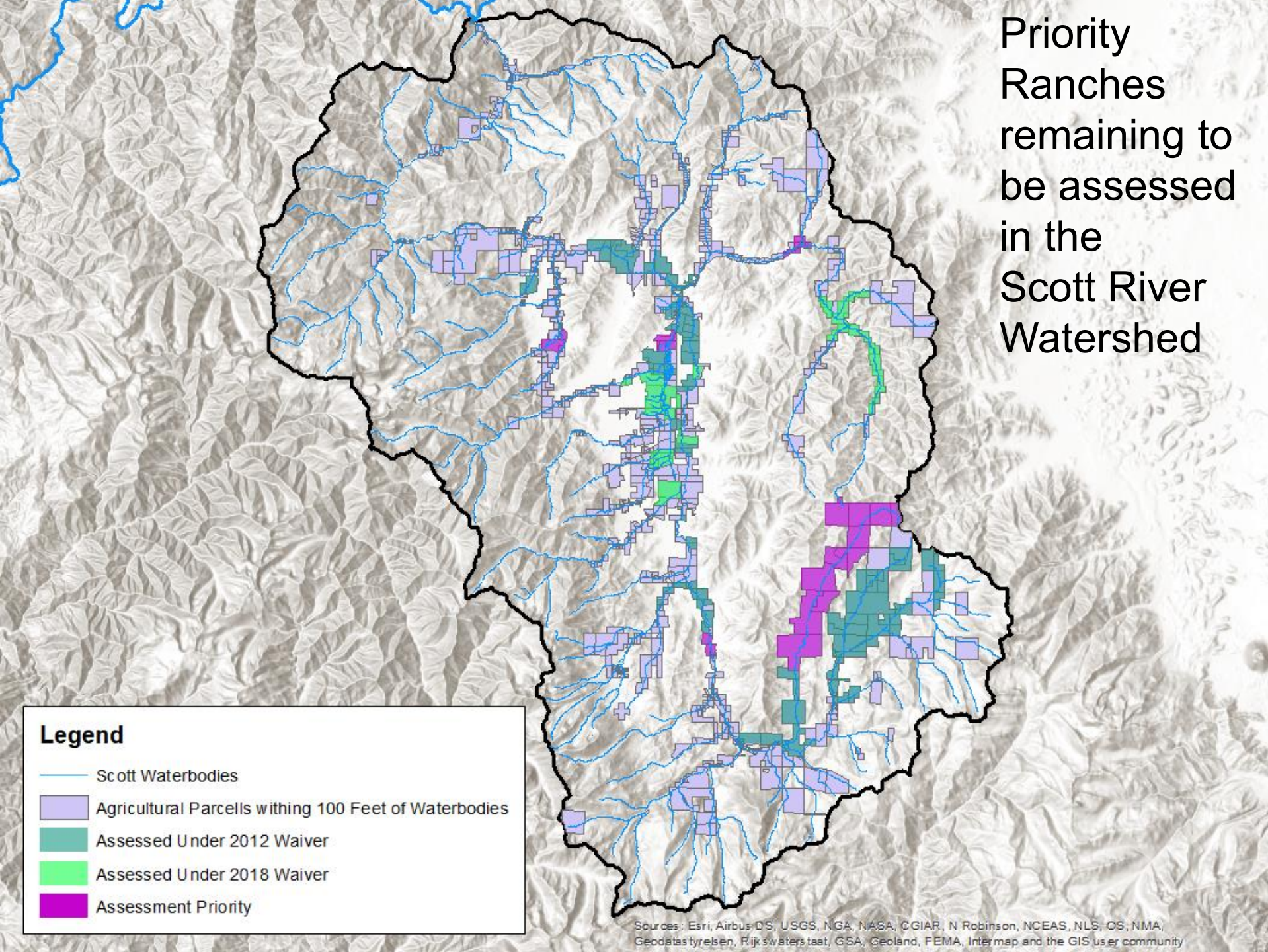
Scott River Ranch Assessments completed under the 2012 Waiver



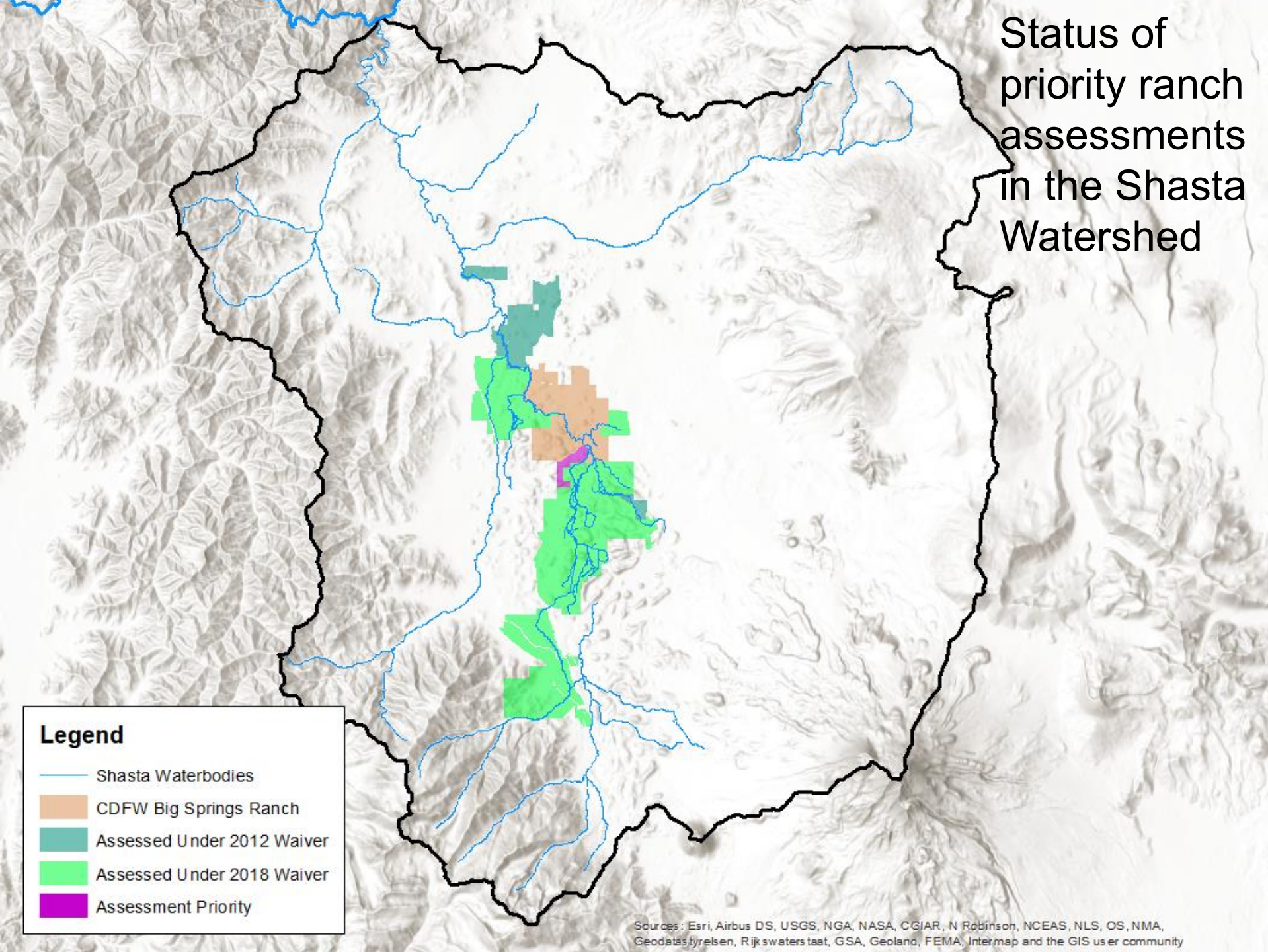
Ranch Assessments completed in the Scott River Watershed under the 2018 Waiver



Priority Ranches remaining to be assessed in the Scott River Watershed



Status of priority ranch assessments in the Shasta Watershed



Waiver Implementation and Prioritization

- Since the 2012 Waiver was adopted:
  - Requested 7 Grazing and Riparian Management and Monitoring Plans in the Scott; received and approved 3; 4 in development
  - Requested 4 Ranch Management and Monitoring Plans in the Shasta; received 4; approved 2
    - These do not include Plans produced by the Shasta Valley RCD through 319h grant funding (23 total plans - 11,000 irrigated acres)

Progress in the Shasta

- 35 miles of stream frontage assessed
- 133 miles of riparian fencing
- 24 stock water systems
- 8 irrigation efficiency projects
- 7 tailwater reduction and re-use projects
- ~4,000 linear feet of riparian plantings

Progress in the Scott

- 106 Miles of stream frontage assessed (doubled since adoption of the 2018 waiver)
- 11 acres of riparian plantings
- 8 beaver dam analogues installed
- 5 major bank stabilization projects completed
- Comprehensive groundwater model completed and in use by Siskiyou County's GSA.

Monitoring

- Waiver Requirements:
  - Photo point monitoring for riparian vegetation, discrete erosion site controls and other BMP implementation and effectiveness
  - Biostimulatory substances sampling of treatment wetlands/tributaries
  - E. Coli, if appropriate
  - Temperature
  - D.O. in the Shasta in addition to the above

Monitoring

- Other monitoring efforts in the Scott:
  - Bridge photo points for riparian conditions
  - Biostimulatory conditions (SWAMP)
  - RCD temperature dataset
  - Tribal water quality monitoring
  - Scott River Watershed Council implementation monitoring
  - Scott Groundwater
    - Generally private data, but used to inform a public modelling effort

Fay Lane Bridge
July 28, 2017

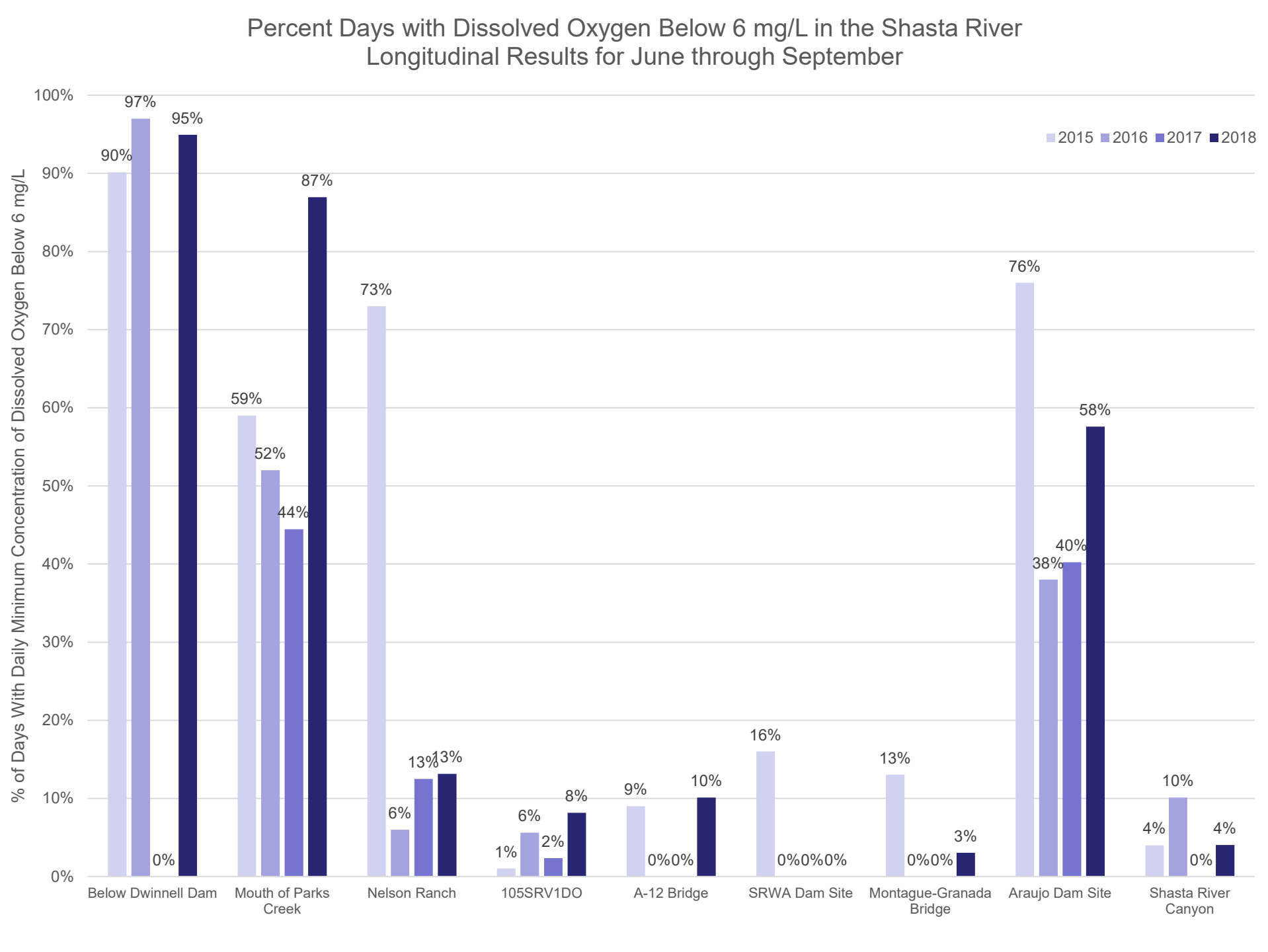
Fay Lane Bridge
August 1, 2001

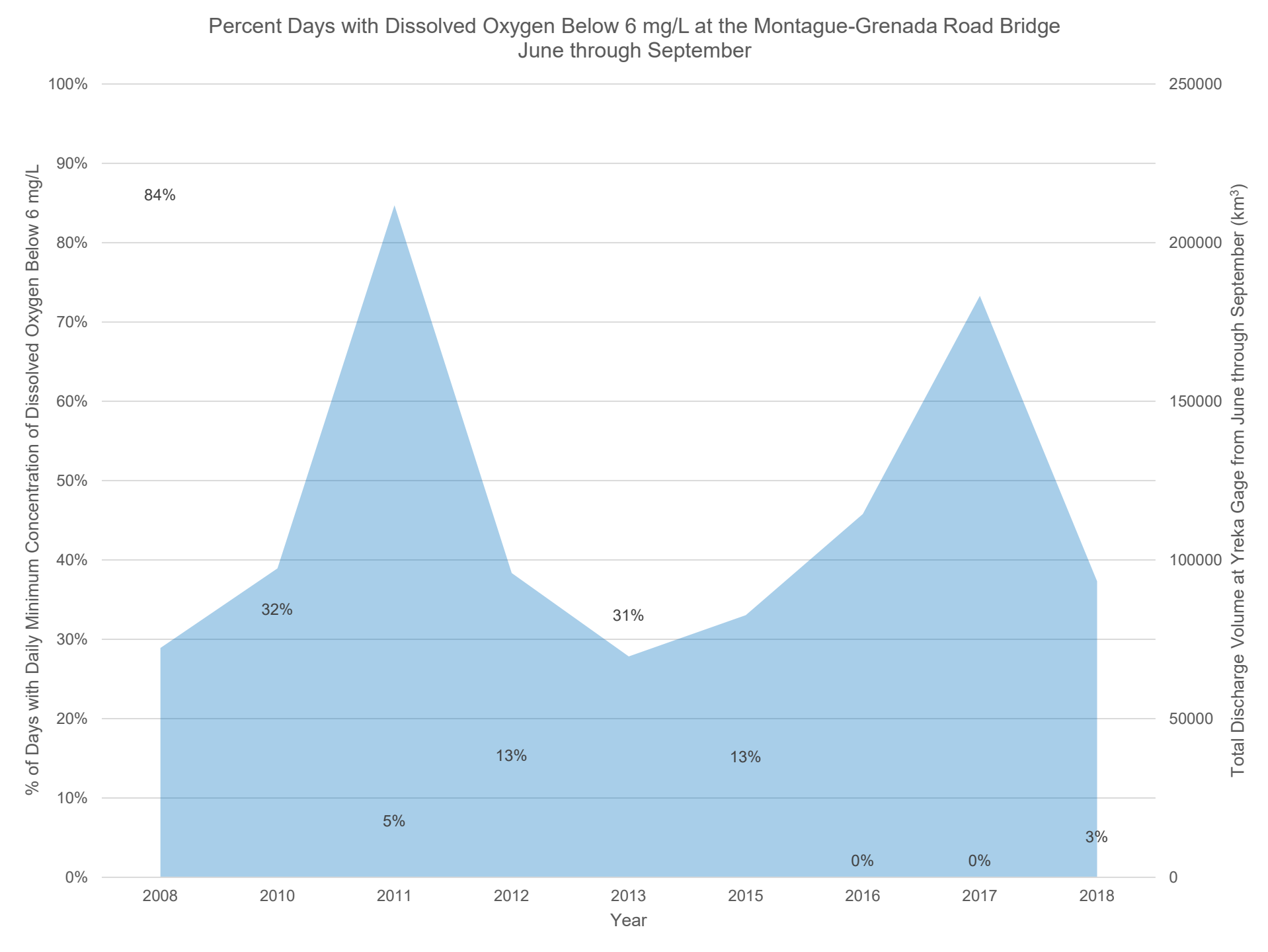
Quartz Valley Road Bridge
August 13, 2001

Quartz Valley Road Bridge
July 31, 2017

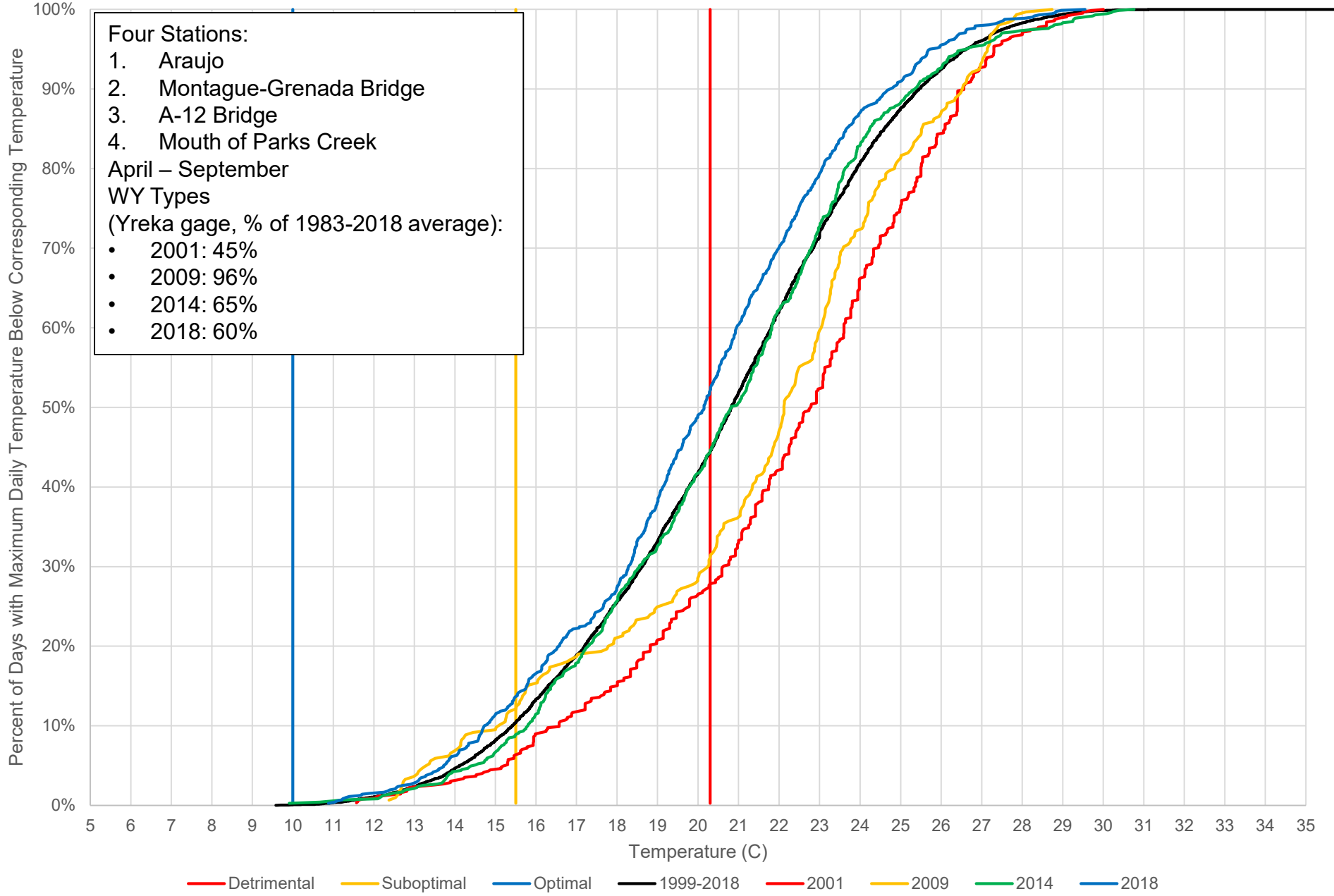
Monitoring

- Other monitoring efforts in the Shasta
  - Continuous Temperature/D.O. monitoring
    - Annual reporting in the Stewardship Report updates
  - Stewardship Monitoring Plan provides a guide for future monitoring


Percent Days with Dissolved Oxygen Below 6 mg/L in the Shasta River
Longitudinal Results for June through September
% of Days With Daily Minimum Concentration of Dissolved Oxygen Below 6 mg/L
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
2015
2016
2017
2018
90%
97%
0%
95%
59%
52%
44%
87%
73%
6%
13%
13%
1%
6%
2%
8%
9%
0%
0%
10%
16%
0%
0%
0%
13%
0%
0%
3%
76%
38%
40%
58%
4%
10%
0%
4%
Below Dwinnell Dam
Mouth of Parks Creek
Nelson Ranch
105SRV1DO
A-12 Bridge
SRWA Dam Site
Montague-Granada Bridge
Araujo Dam Site
Shasta River Canyon


Percent Days with Dissolved Oxygen Below 6 mg/L at the Montague-Grenada Road Bridge
June through September
% of Days with Daily Minimum Concentration of Dissolved Oxygen Below 6 mg/L
Total Discharge Volume at Yreka Gage from June through September (km3)
Year
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
250000
200000
150000
100000
50000
0
2008
2010
2011
2012
2013
2015
2016
2017
2018
84%
32%
5%
13%
31%
13%
0%
0%
3%

Shasta River Maximum Daily Temperature Cumulative Distribution Analysis
April through September



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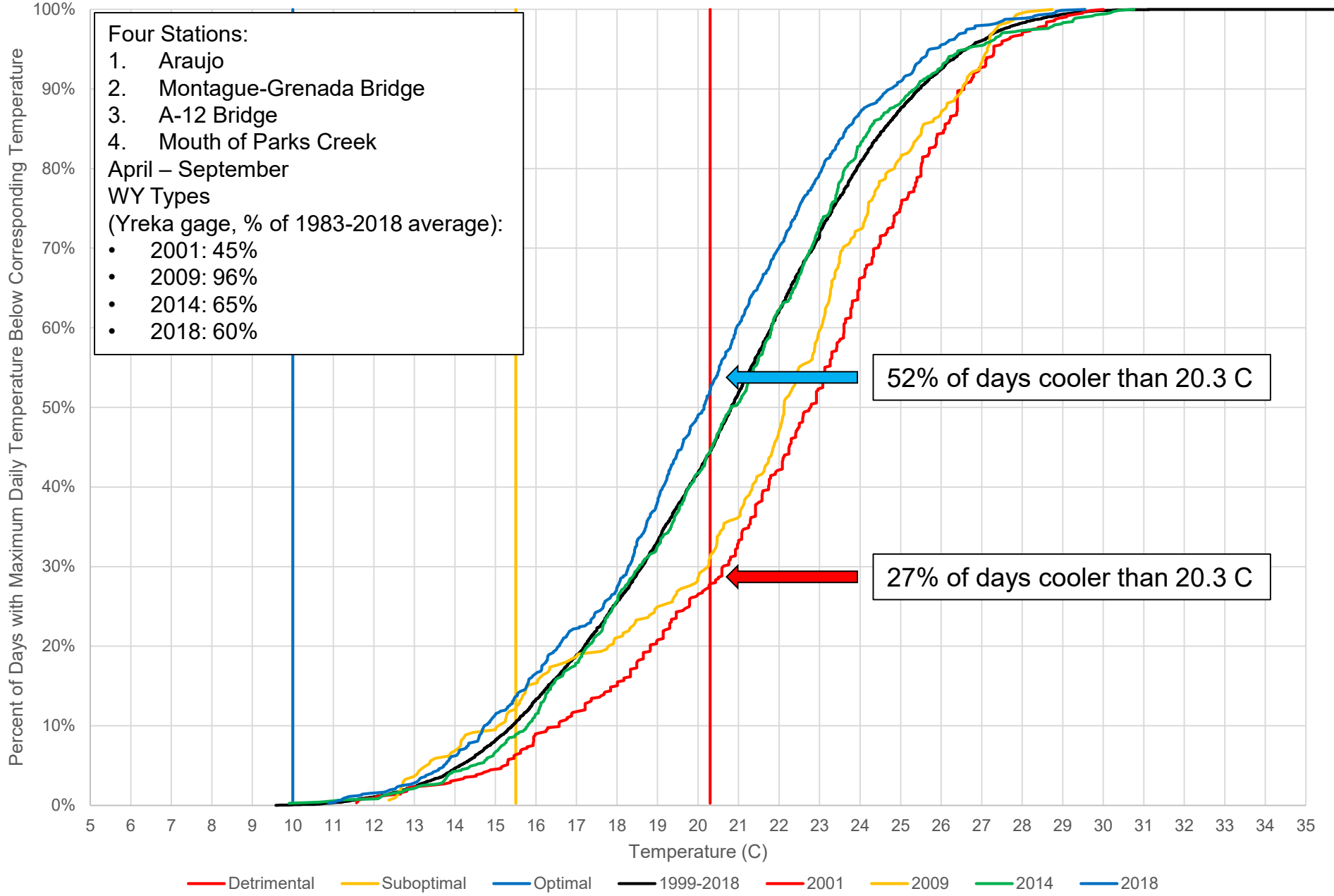

Shasta River Maximum Daily Temperature Cumulative Distribution Analysis
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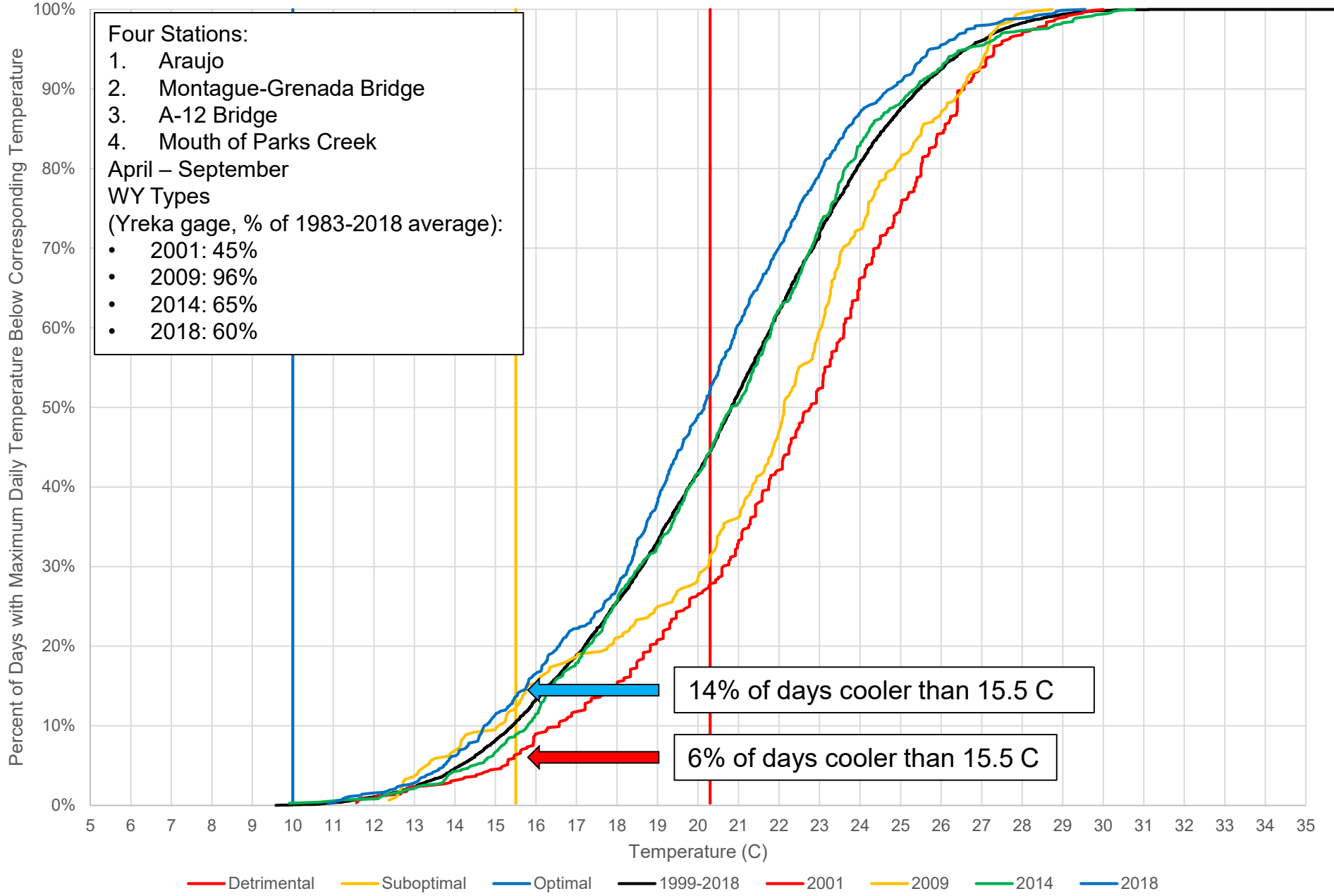
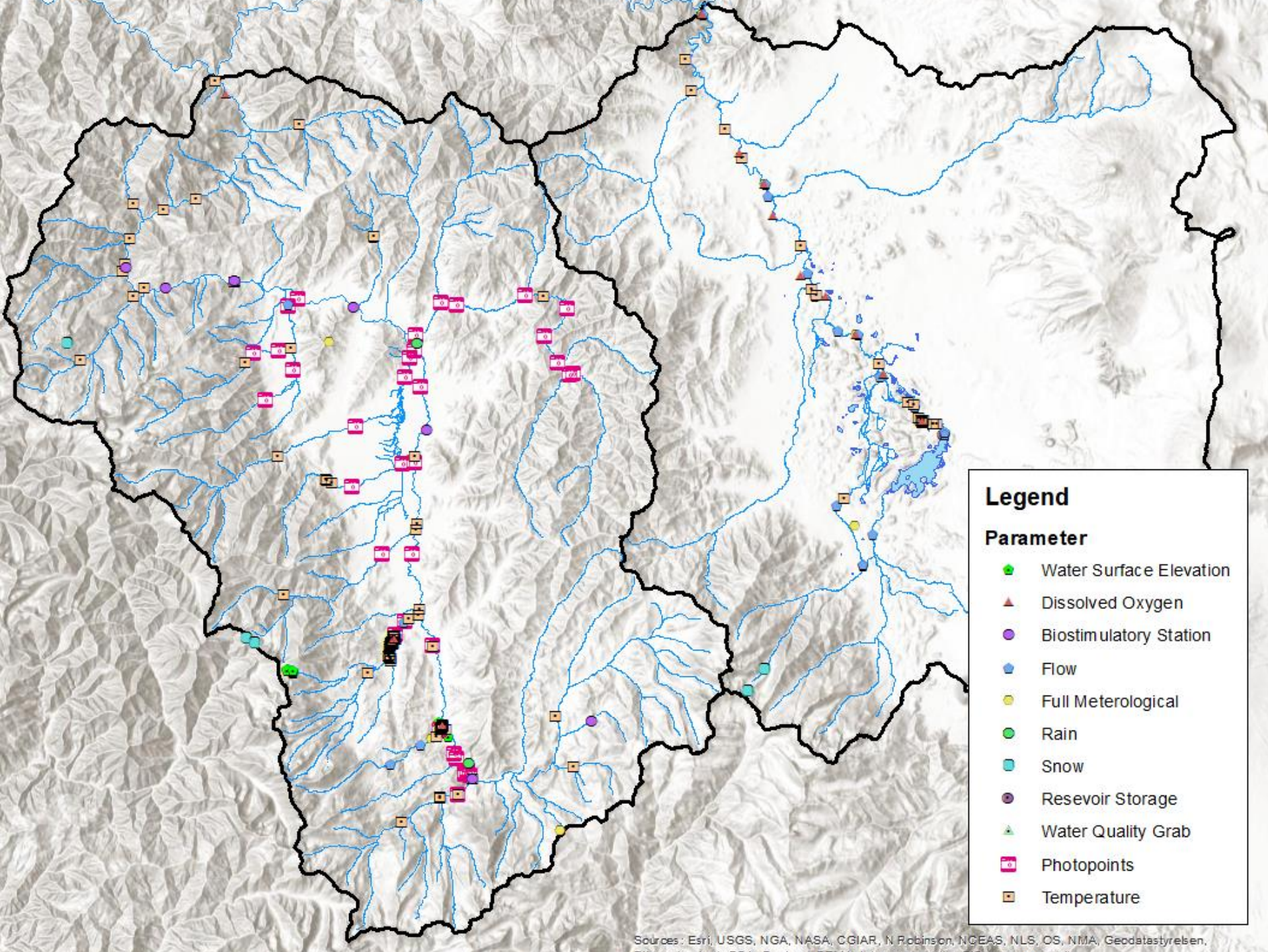


Monitoring

- Future Efforts
  - Coordinate Scott Valley Regional Monitoring
  - Fund QA/QC, data synthesis, and analysis of the historic data held by the Siskiyou RCD


Legend
Parameter
Water Surface Elevation
Dissolved Oxygen
Biostimulatory Station
Flow
Full Meterological
Rain
Snow
Resevoir Storage
Water Quality Grab
Photopoints
Temperature
Sources: Esri, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen,

Stewardship and Coalition Building

- Coordination on Safe Harbor with NOAA and CDFW
- Development of localized restoration working groups (i.e., Moffett Creek Working Group)
- Coordination with USFW Partners, NOAA, CDFW, tribes, RCDs, TNC, CalTrout, etc. to support restoration efforts
- Increased internal coordination
- Watershed Stewardship Report
- Flow Improvement Projects
  - California Water Action Plan, CDFW Instream Flow Objectives
- Scott Groundwater

Effective Approach

- Rate of waiver implementation has increased since 2017
- Focus on status and trends analysis
- Data shows water quality improvements
- Consistency in prioritization
- Positive landowner engagement

Effective Approach

- Watershed-scale approach:
  - Focus on actions that result in whole-system scale uplift in the long-term
  - Identification and preservation of key refugial areas in the short term
    - Develop climate resiliency to support adaptation
  - Building automation into data analysis to facilitate annual trend analysis and adaptive management
  - Effective framework for on-ranch water quality improvements:
    - Assessment -> Planning -> Implementation -> Monitoring

Potential Changes for Next Waiver

- Finding 18 in both Waivers
  - Same on-the-ground approach with landowners to implement proactive measures that protect water quality
  - Potential tiered structure with multiple levels of permitting rigor based on discharge or threat of discharge
    - Lowest level of rigor based on those already in compliance and participating in the program
    - Highest level of rigor based on those who haven't participated and/or have a high risk of discharge or are actively discharging
  - May require enrollment and fees
  - Higher tiers may have more rigorous monitoring and reporting requirements
  - Subject to noticing and a public comment prior to adoption

Potential Changes for Next Waiver

- 2021: Staff analysis and development
- 2022: Public outreach and comment
- 2023: Hearing for adoption


Questions?