Fish Passage from the Tidewater to the Sierras Workshop - Fish Passage at High Dams - Part 3

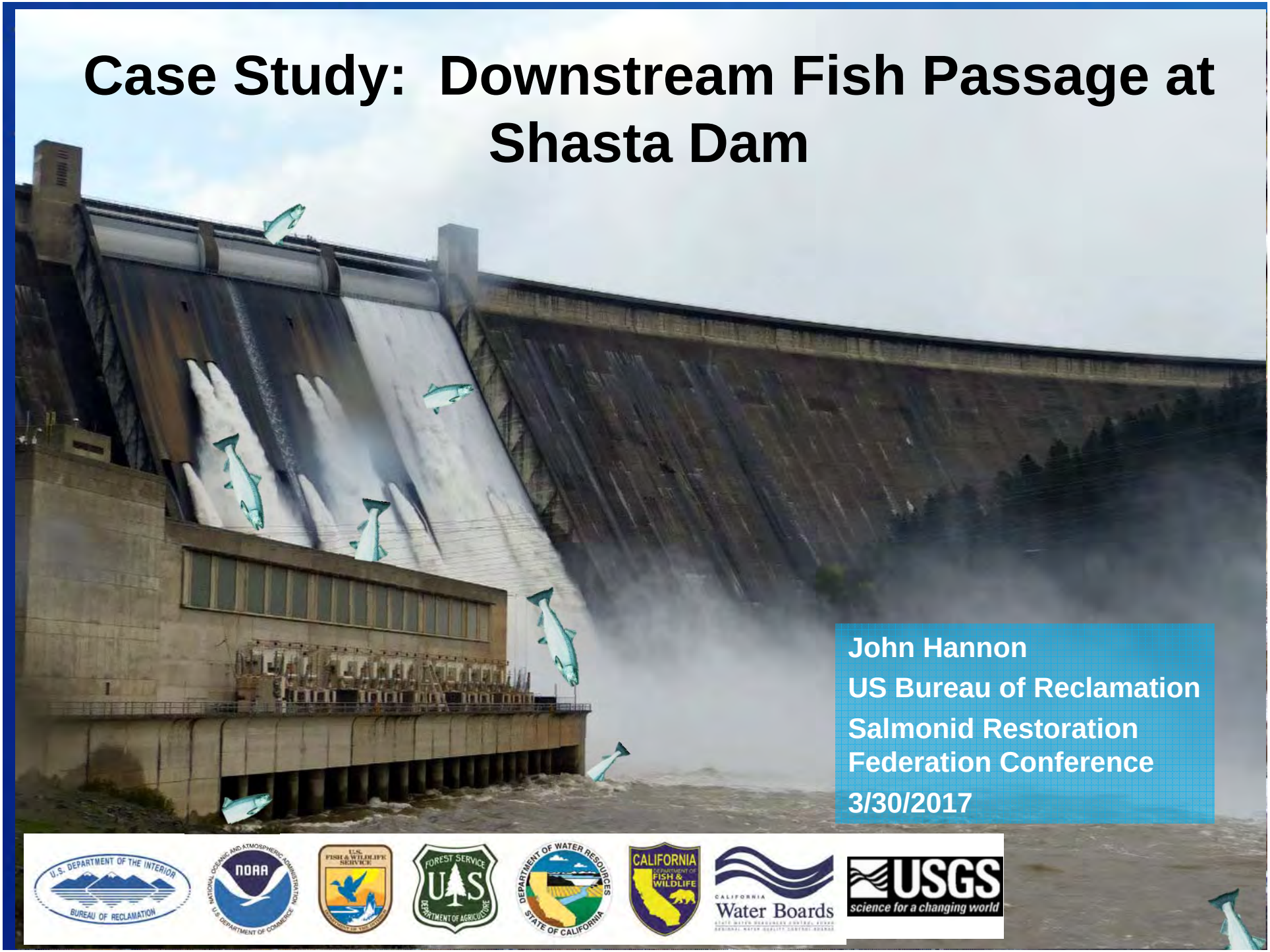
35th Annual Salmonid Restoration Conference held in Davis, CA from March 29 – April 1, 2017.

Case Study II: Downstream Fish Passage at Shasta Dam

John Hannon
US Bureau of Reclamation

RECLAMATION
Managing Water in the West

Case Study: Downstream Fish Passage at Shasta Dam



John Hannon

US Bureau of Reclamation

Salmonid Restoration Federation Conference

3/30/2017

Location

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Project Driver

2009 NMFS Biological Opinion (ESA)

- **Fish Passage Program at Shasta, Folsom, and New Melones dams**

Authority: Rivers and Harbors Act of 1937 and 1940

- **Authorized the construction and operation of the Central Valley Project**

Stepwise Evaluation

Near Term - Pilot Fish Passage Program

- Habitat Assessment
- Biological Productivity
- Technical Feasibility

  Pilot Juvenile Collectors
  - Head of Reservoir
  - In-river
- Feasibility Determination

Long Term - Fish passage program OR other actions

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Project Purpose

Evaluate feasibility of passage for ESA-listed Chinook around Shasta Dam to make a well informed decision about initiating a long-term fish passage program.

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Participating Agencies and Project Organization

US Bureau of Reclamation
CA Dept of Fish and Wildlife
US Fish and Wildlife Service
CA State Water Board
National Marine Fisheries Service
CA Dept of Water Resources
US Forest Service
US Geological Survey

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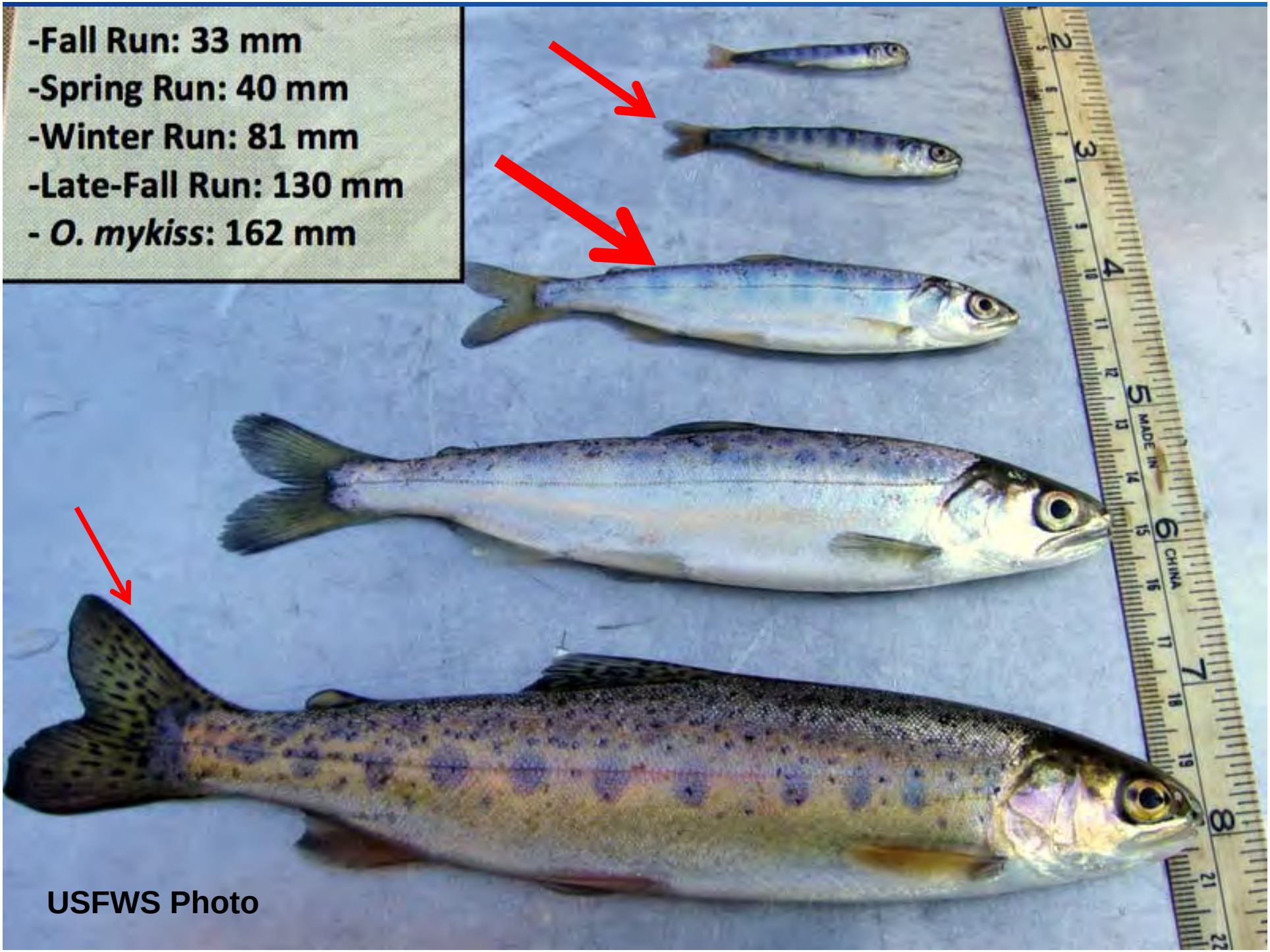
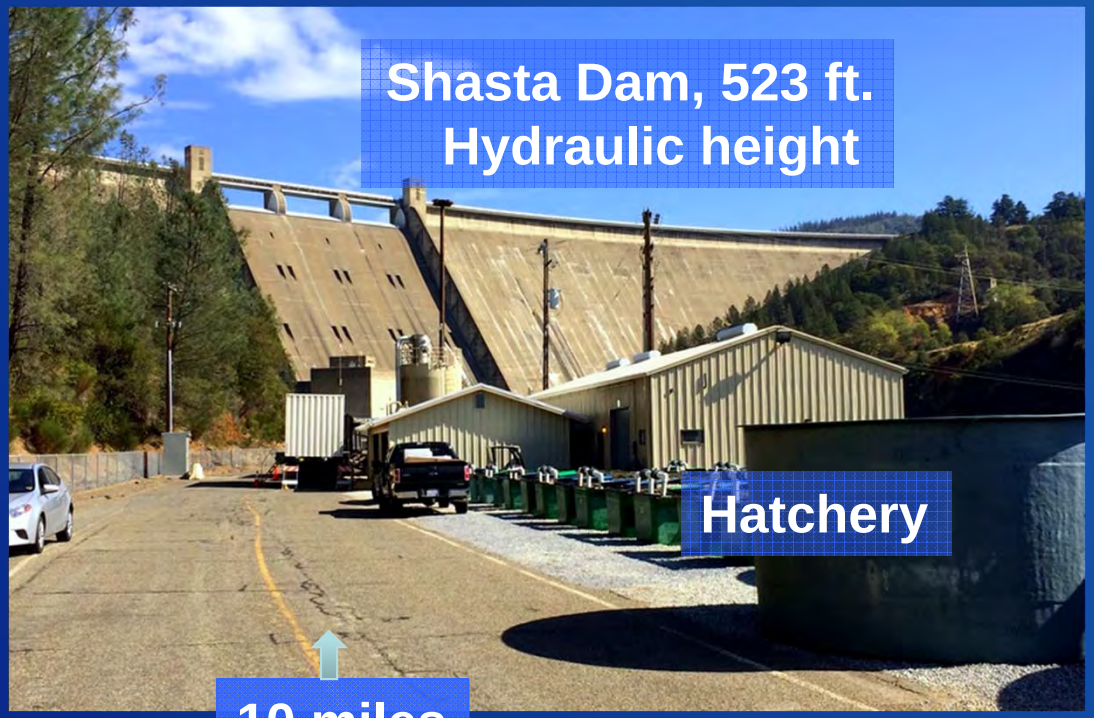
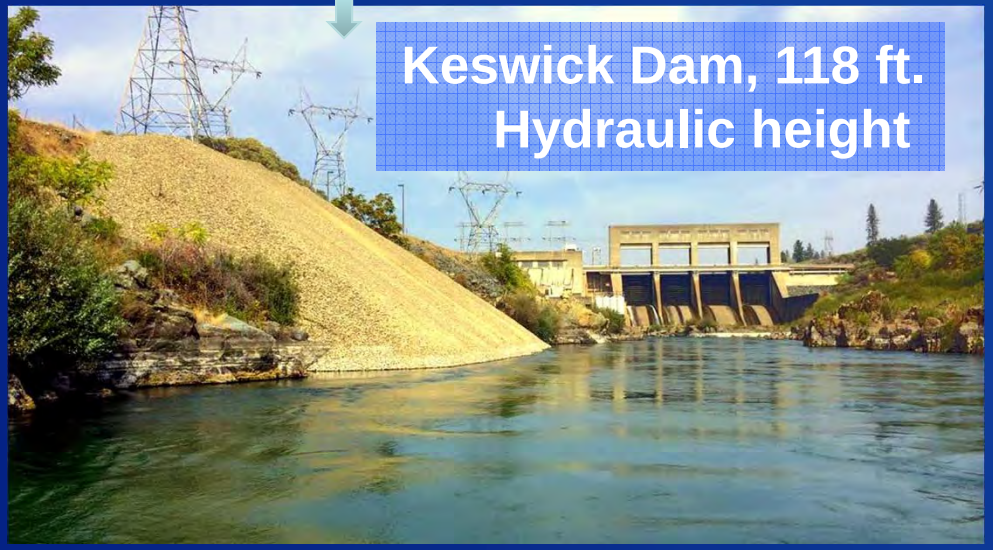

-Fall Run: 33 mm
-Spring Run: 40 mm
-Winter Run: 81 mm
-Late-Fall Run: 130 mm
- *O. mykiss*: 162 mm
USFWS Photo



10 miles



RECLAMATION

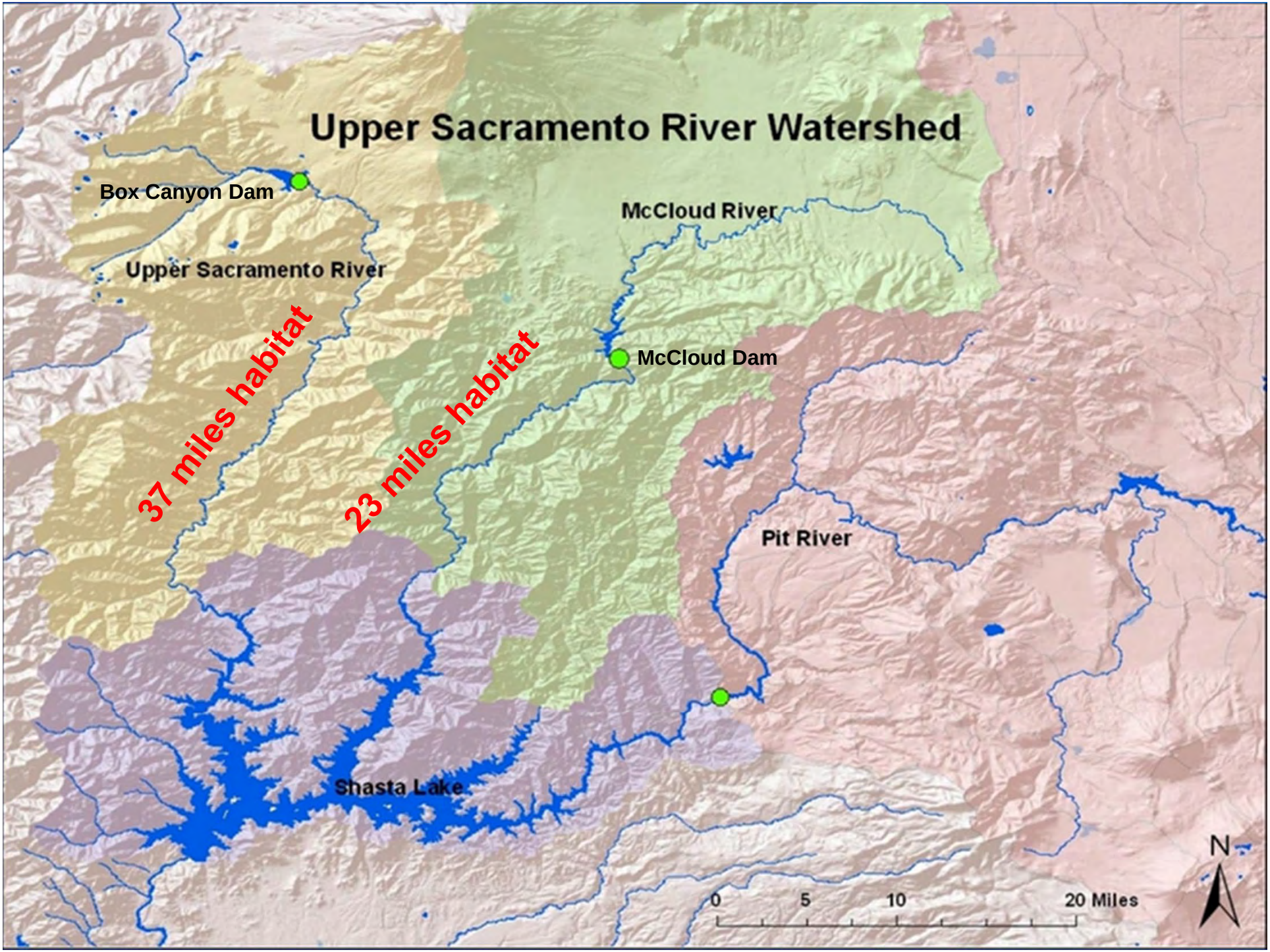
Salmon die-off fears at heart of latest California water conflict

By Peter Fimrite | December 11, 2015

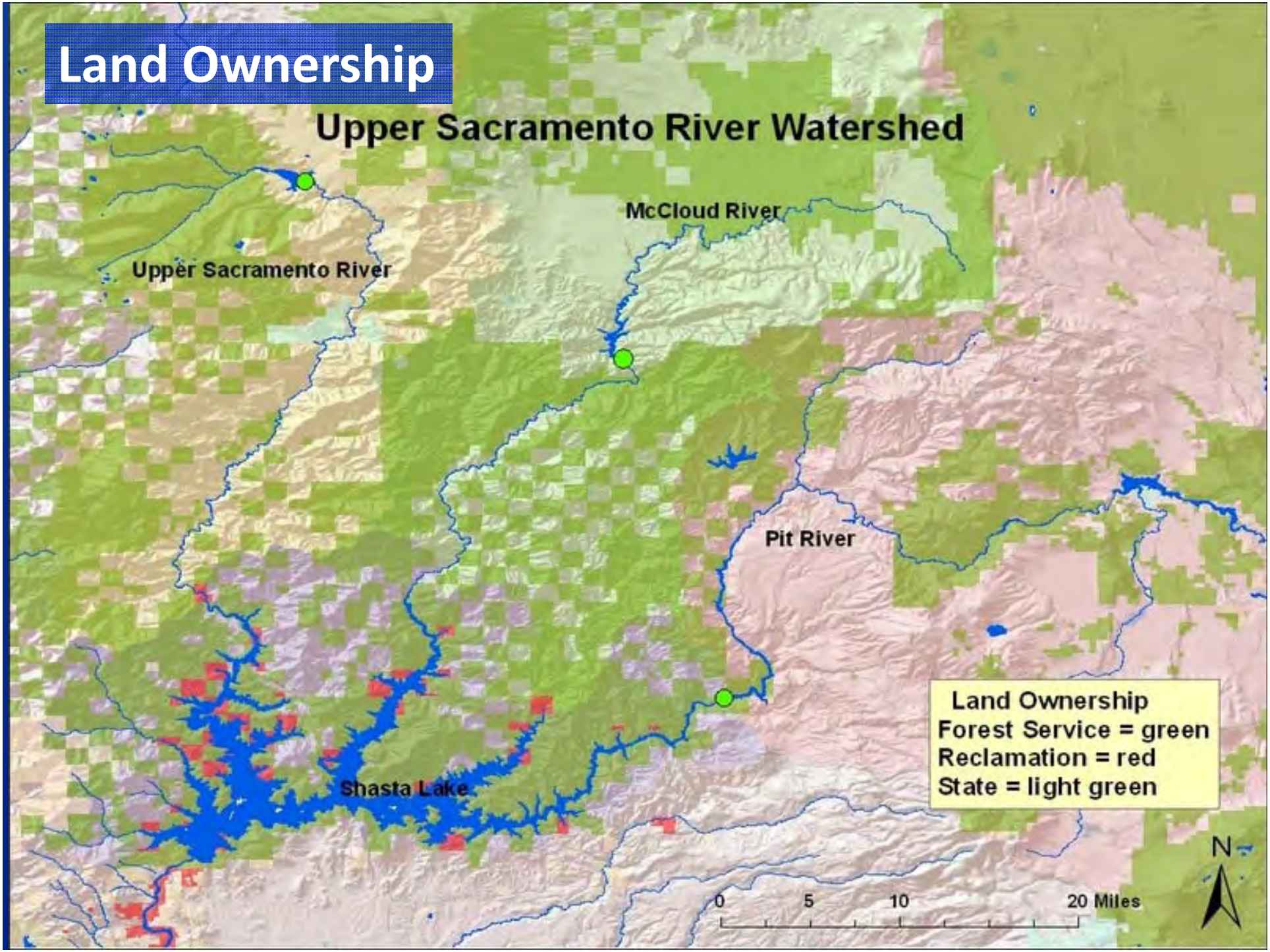
Photo: Michael Macor, The Chronicle

Assistant Hatchery Manager John Rueth, tends to tanks full of endangered winter run Chinook Salmon, at the Livingston Stone Federal Fish Hatchery at Shasta Lake, Calif., on Wednesday December 9, 2015.


Sacramento R.
McCloud R.
Pit R.
Shasta Dam
Image Landsat


Upper Sacramento River Watershed
Box Canyon Dam
McCloud River
Upper Sacramento River
37 miles habitat
23 miles habitat
McCloud Dam
Pit River
Shasta Lake
0
5
10
20 Miles
N

Land Ownership



Public and Stakeholder Engagement

- McCloud River CRMP
- Siskiyou County Board of Supervisors
- Public Meeting
- Stakeholder Questionnaire
- Caltrout Water Talk
- Habitat Assessment webinar
- Local timber managers
- Winnemem Wintu
- Sweetbriar Cabin Owners
- CA Board of Forestry
- Project Update Webinars
- Professional society talks
- Fishing groups


Dancing Salmon
Home

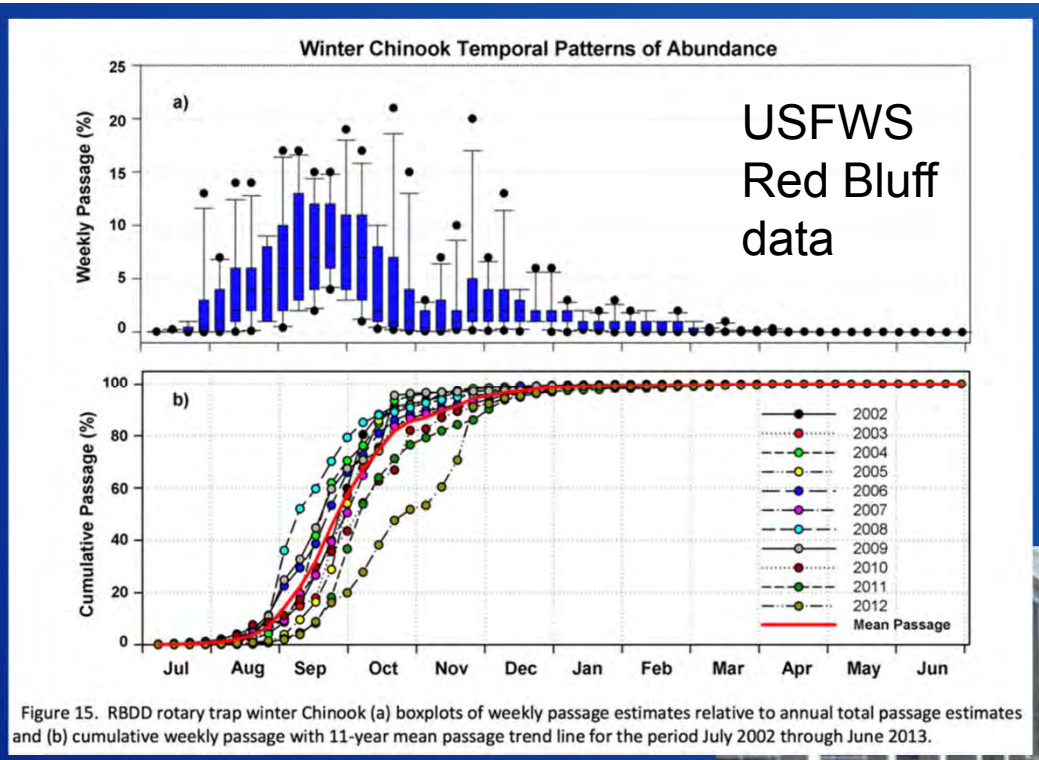


Figure 15. RBDD rotary trap winter Chinook (a) boxplots of weekly passage estimates relative to annual total passage estimates and (b) cumulative weekly passage with 11-year mean passage trend line for the period July 2002 through June 2013.

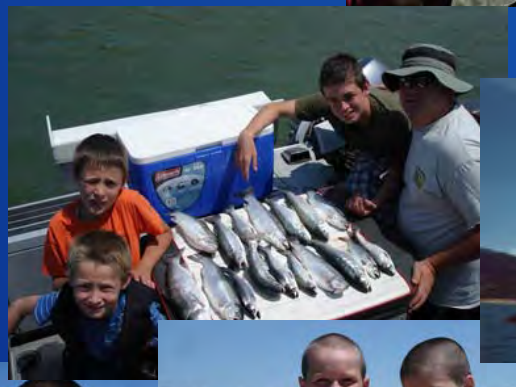
Winter-run emigrate in the fall when weather is still warm

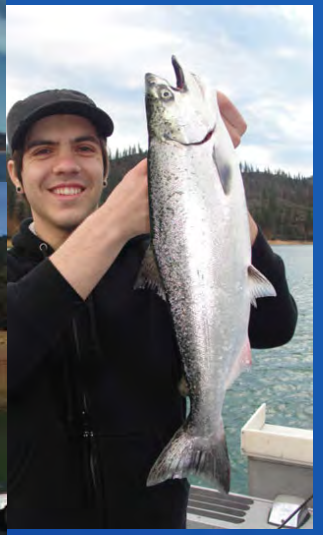
Shasta Lake Salmon

Pictures from Sacriverguide.com









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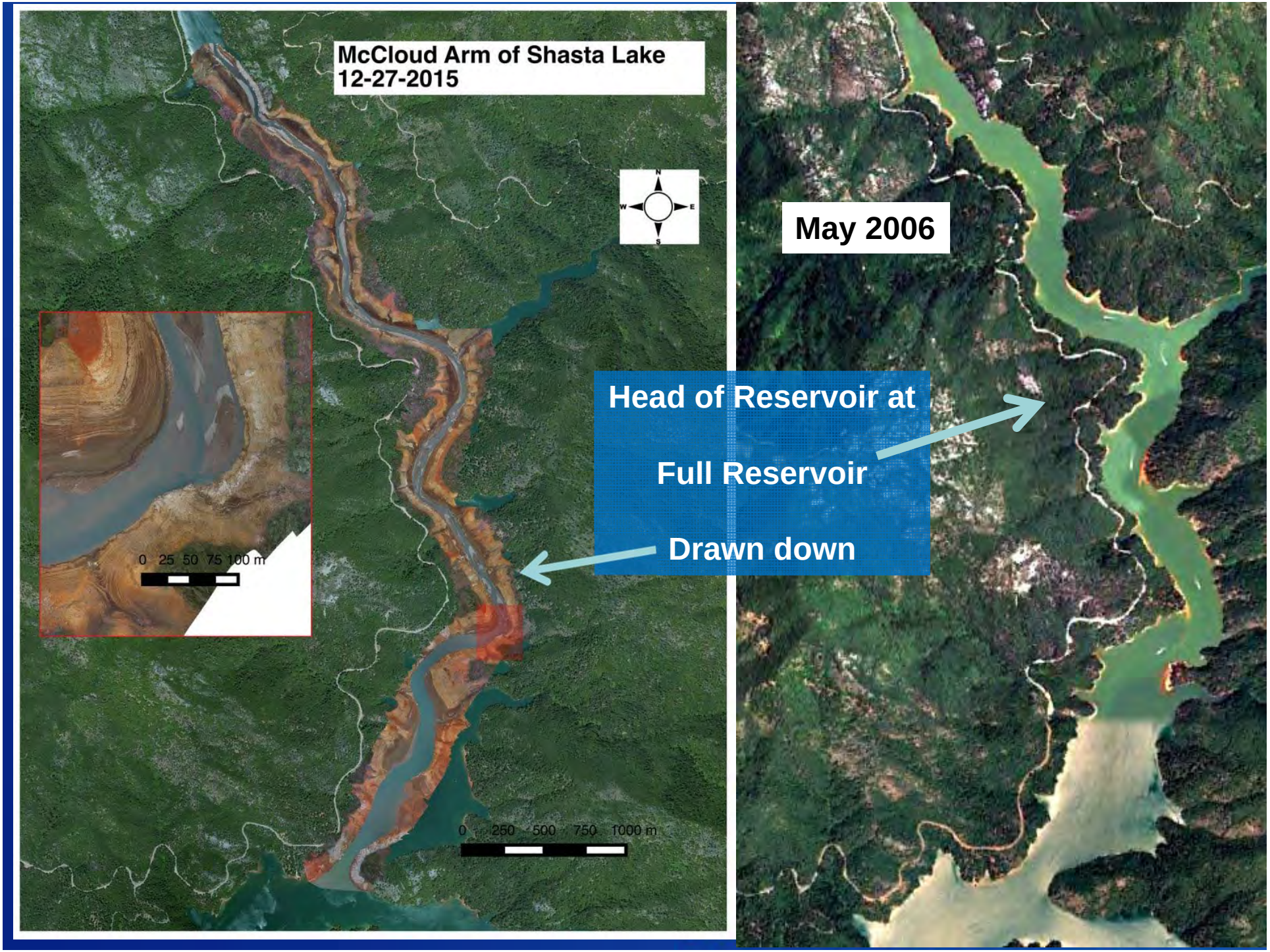
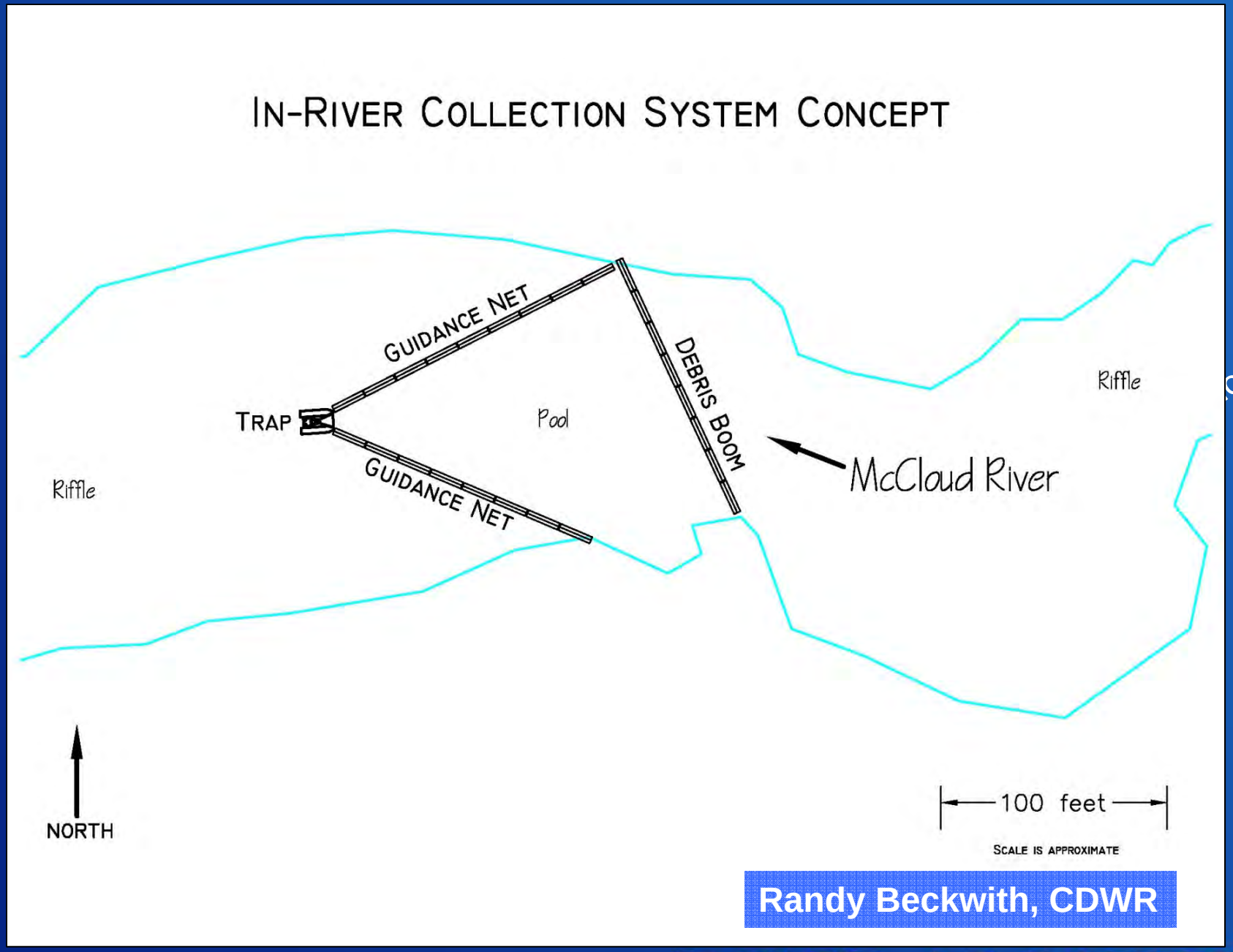

McCloud Arm of Shasta Lake
12-27-2015
N
W
E
S
0 25 50 75 100 m
0 250 500 750 1000 m
May 2006
Head of Reservoir at
Full Reservoir
Drawn down



Randy Beckwith, CDWR

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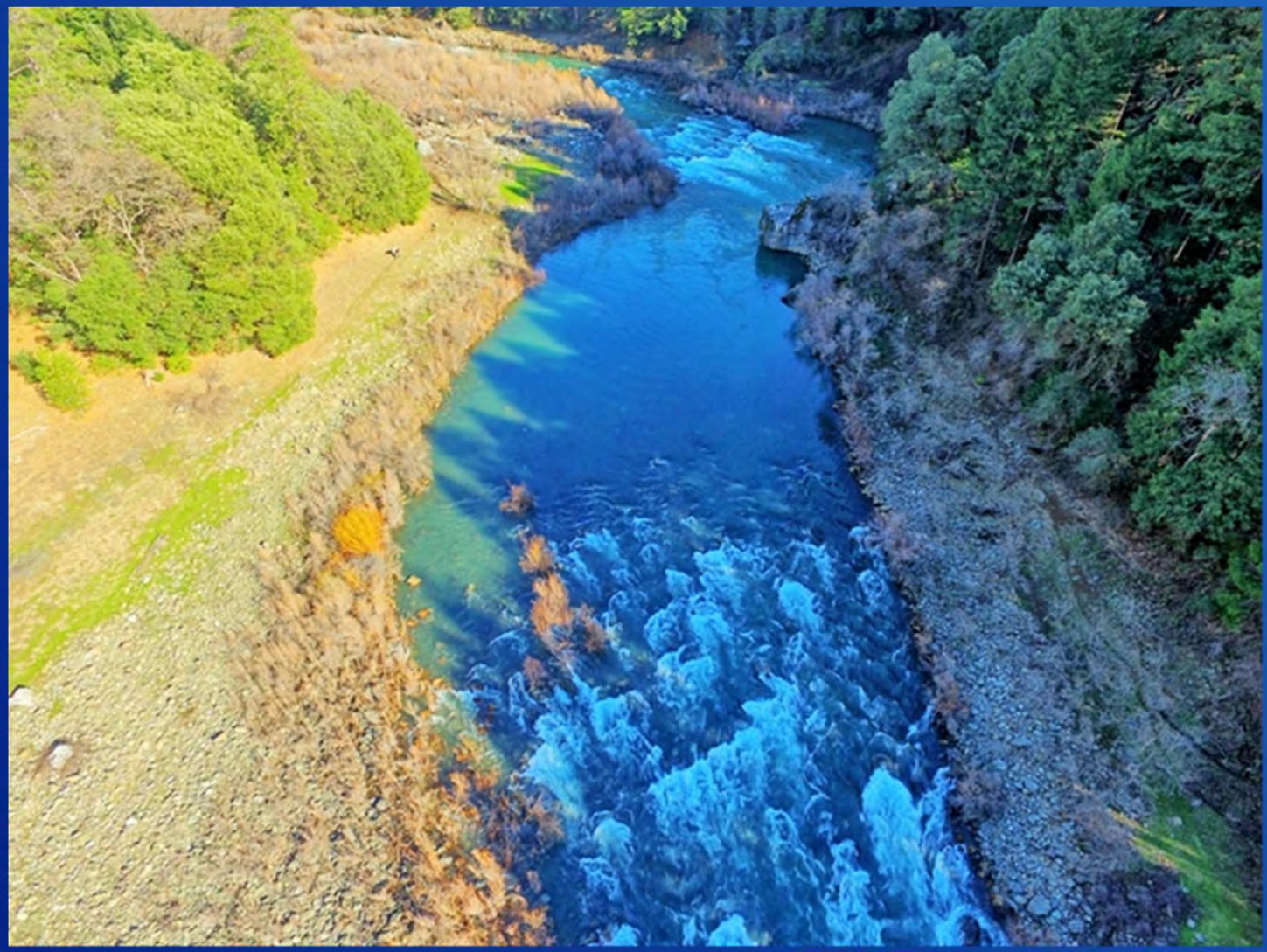
Proposed In-River Collection Site



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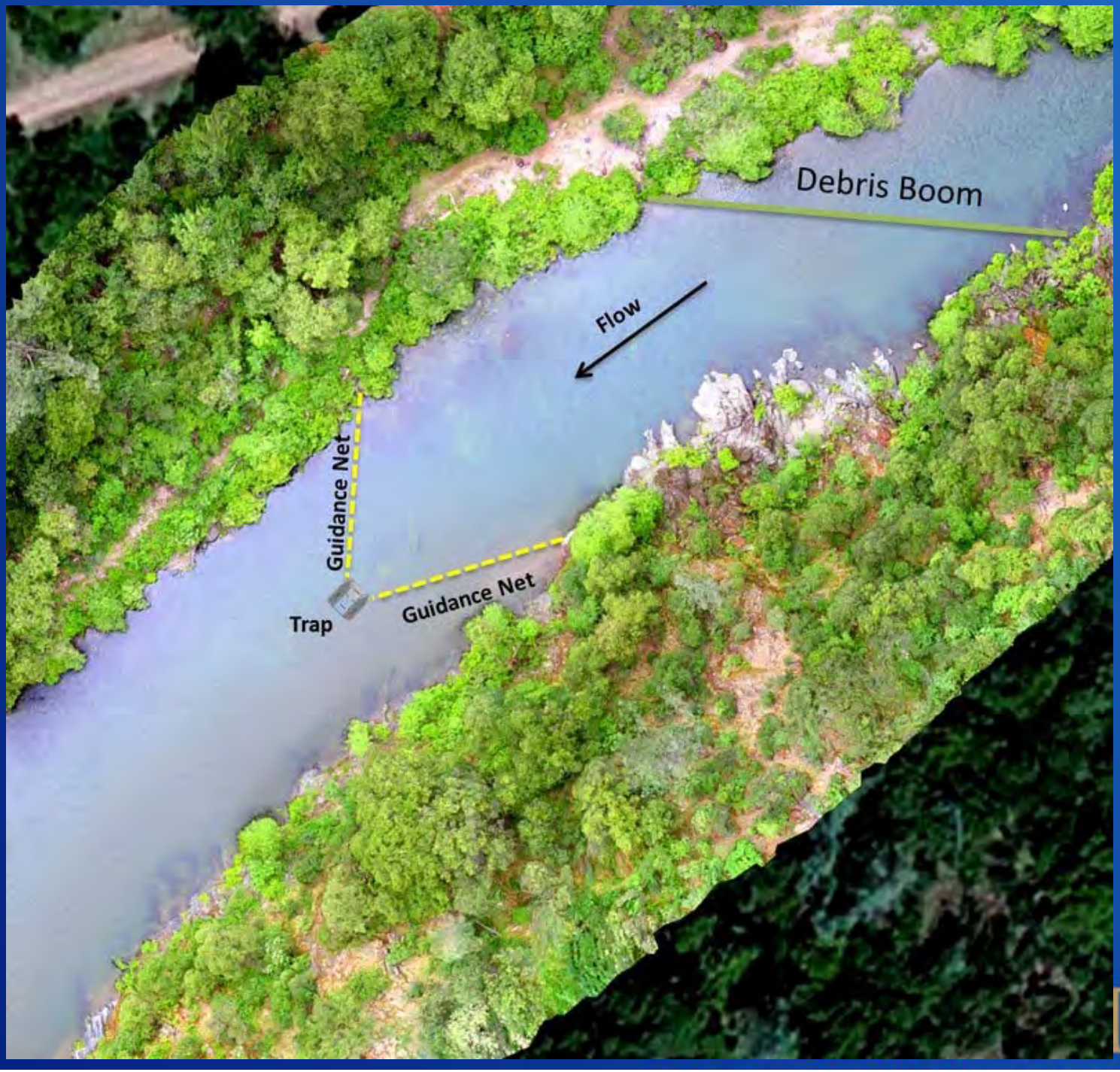
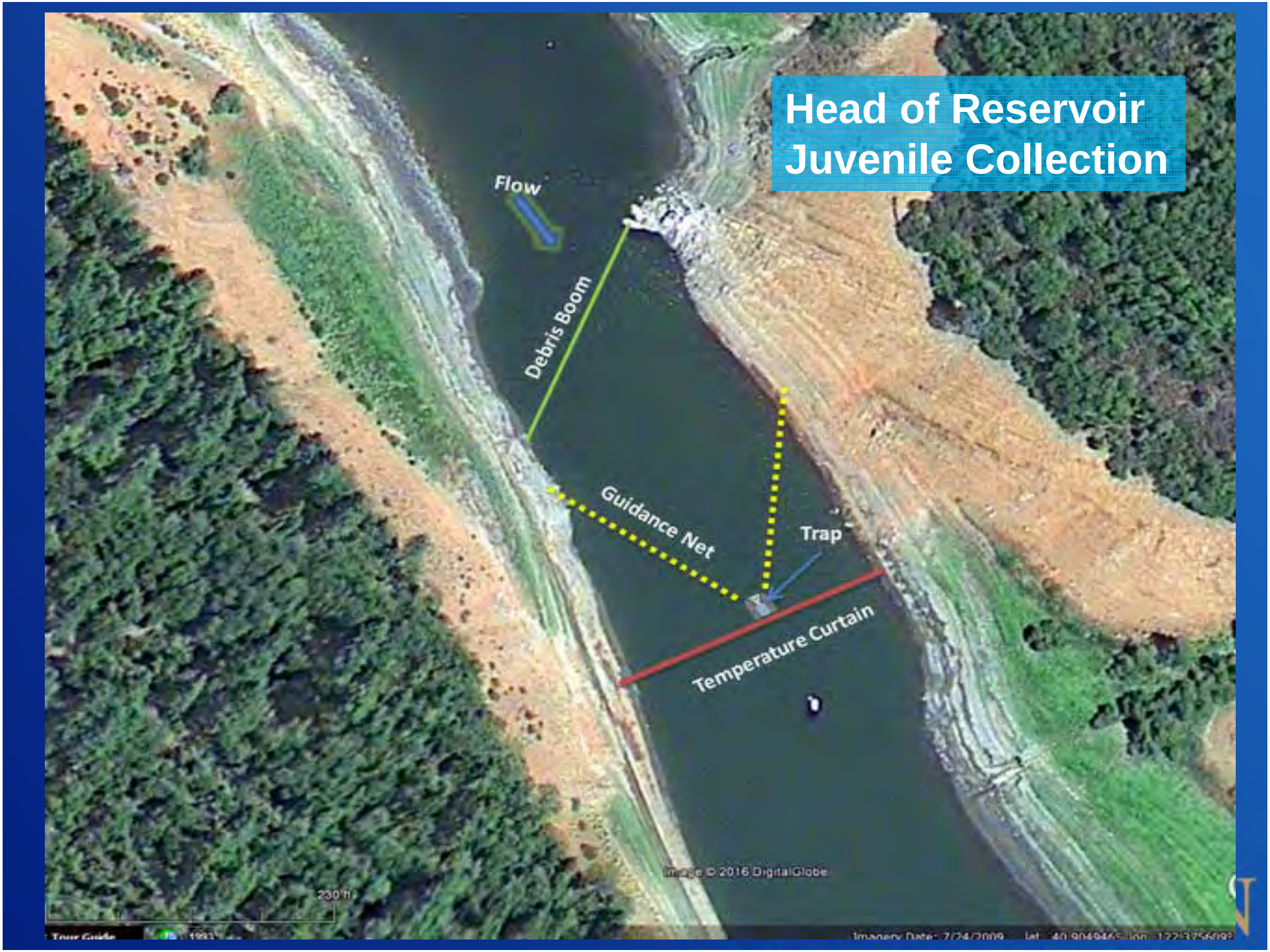
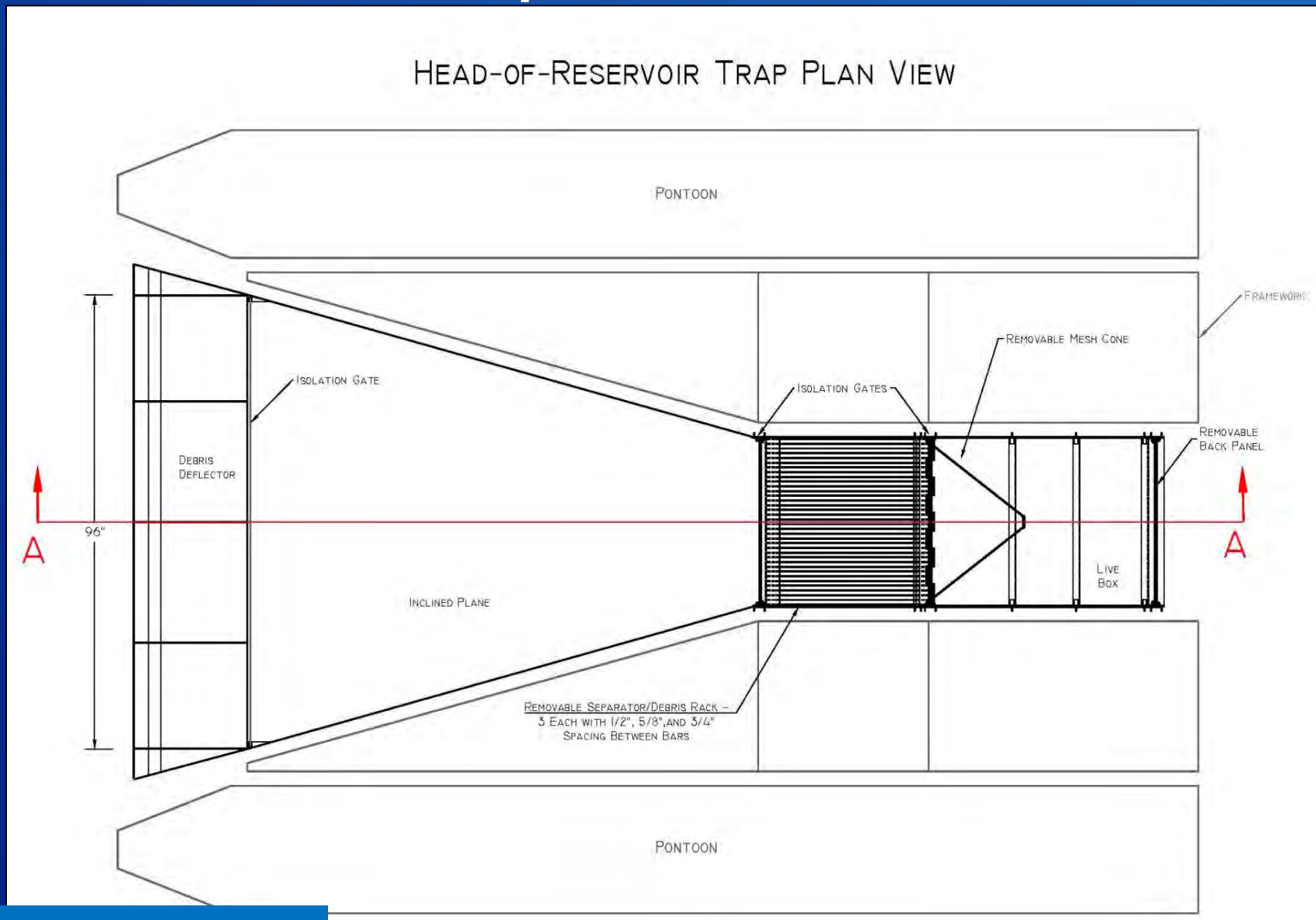


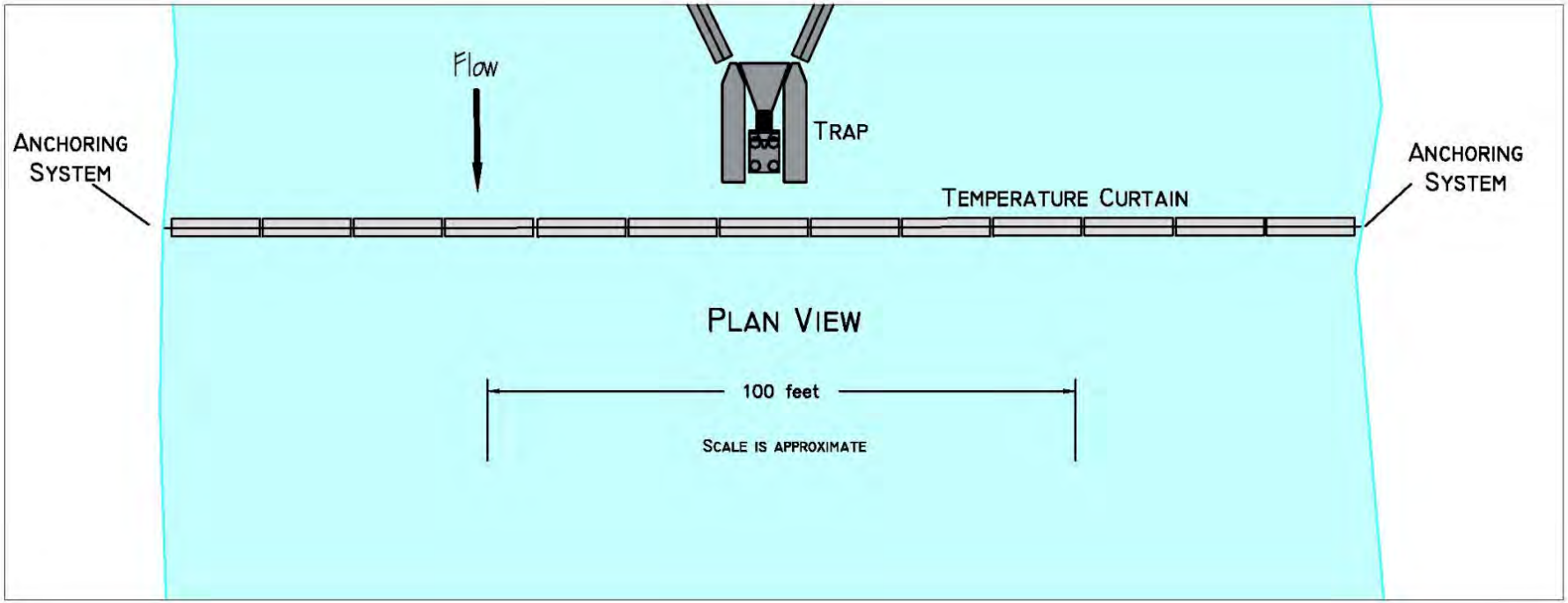
TION

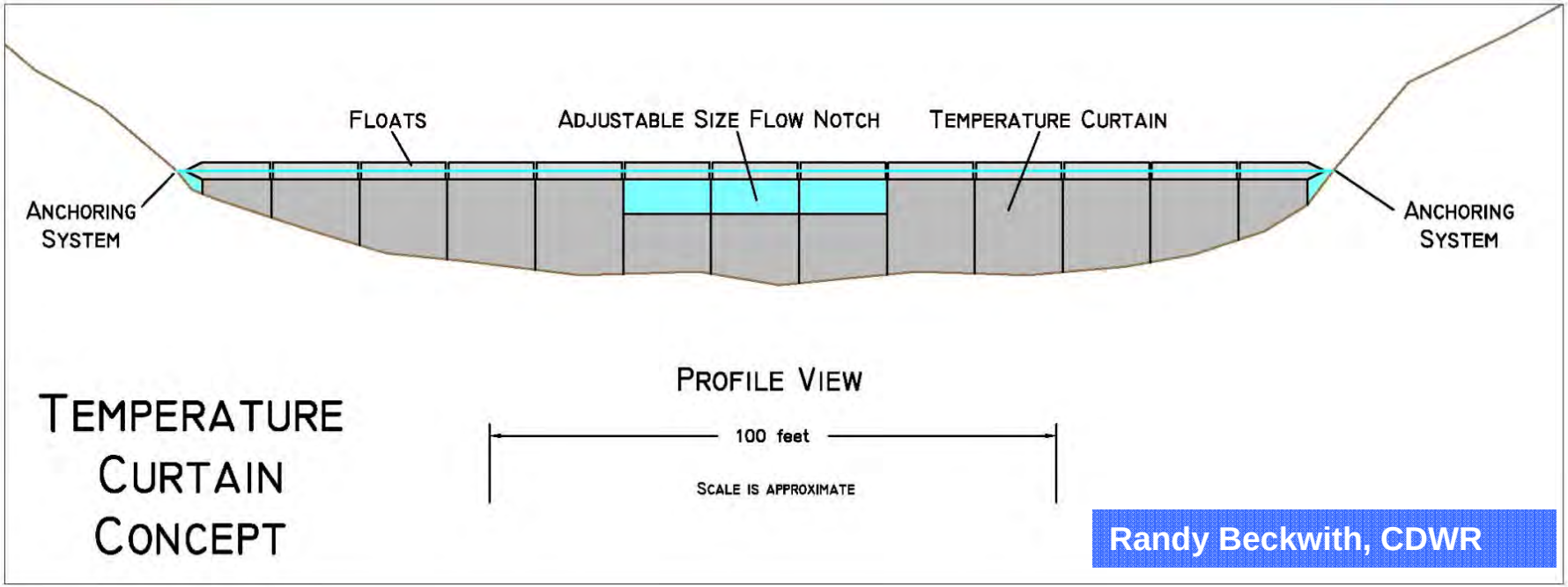

Head of Reservoir
Juvenile Collection
Flow
Debris Boom
Guidance Net
Trap
Temperature Curtain
Image © 2016 DigitalGlobe
230 ft

Head of Reservoir Trap



Randy Beckwith, CDWR





Temperature Curtain Concept

Randy Beckwith, CDWR

Temperature Curtain Evaluation

Katherine Clancy, UNR

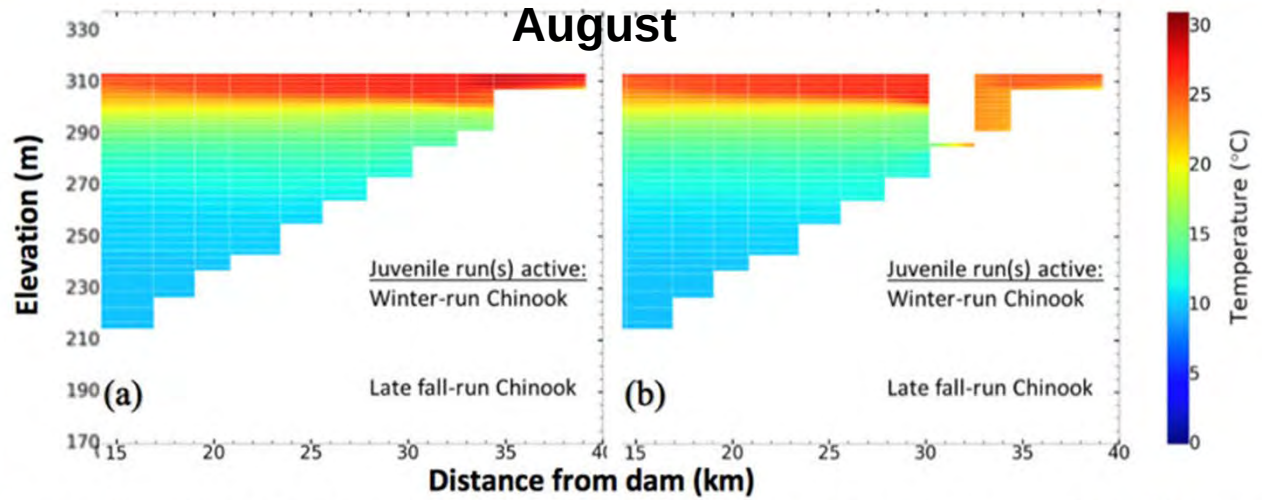


Figure 47: Temperature conditions of the McCloud River on August 5, 2001 (dry year simulation) a) without a temperature curtain and b) with a LF curtain at Segment 34. Temperature curtain is illustrated with a white box.

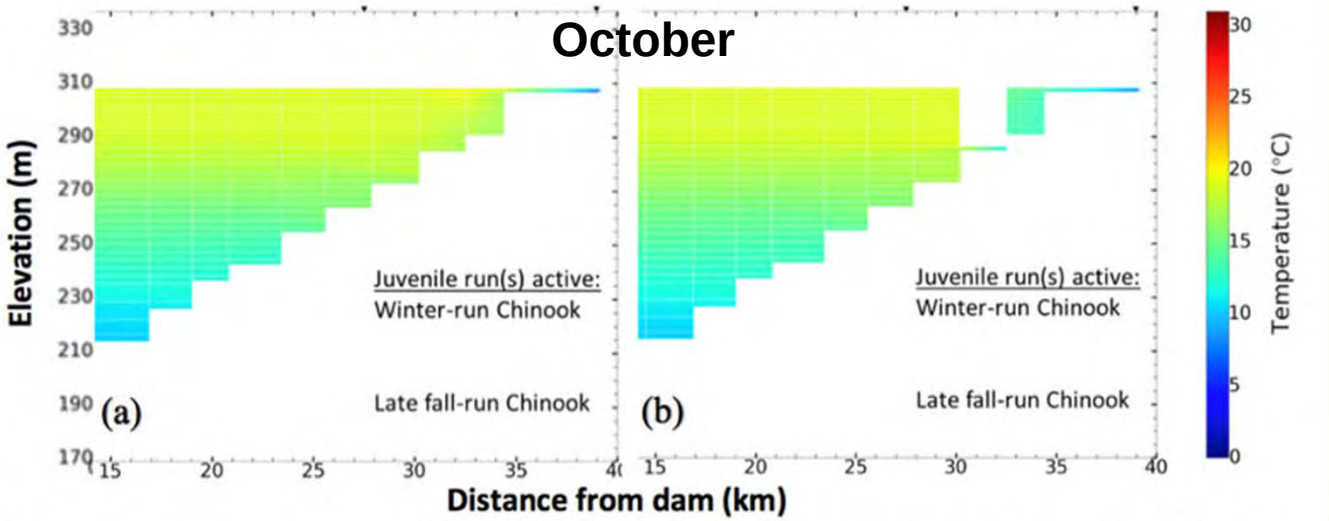


Figure 48: Temperature conditions of the McCloud River on October 15, 2001 (dry year simulation) a) without a temperature curtain and b) with a LF curtain at Segment 34. Temperature curtain is illustrated with a white box.

Temperature Curtain at Whiskeytown Lake

RECLAMATION

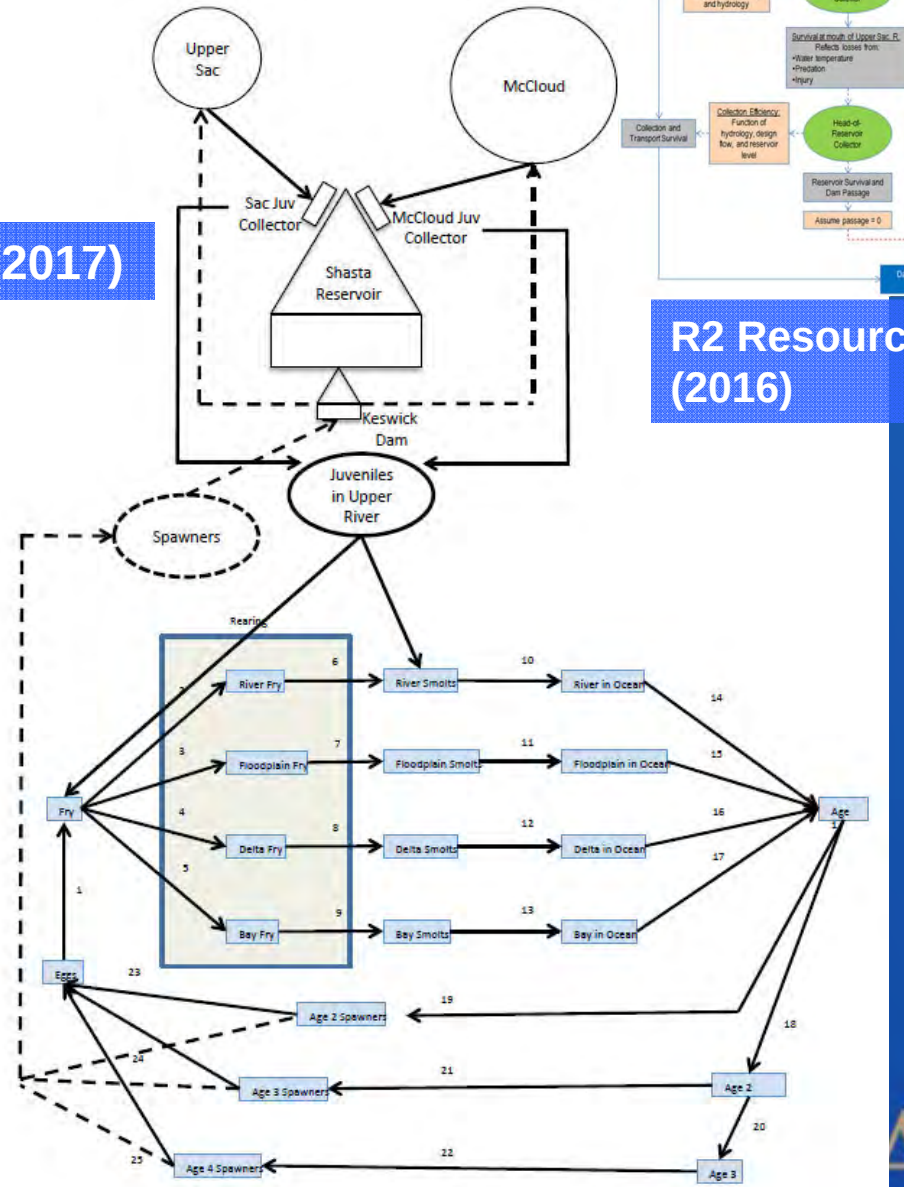
Winter-run Chinook Lifecycle Model

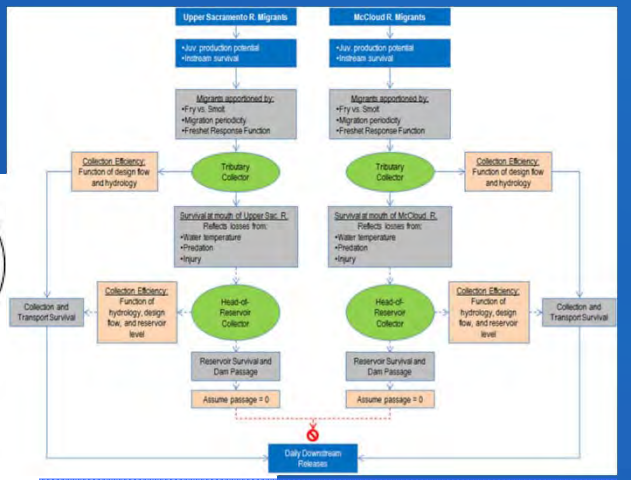
Reintroduction Model

Noble Hendrix (2017)

Objectives:

- Link reintroduction to appropriate life cycle stages in the existing life-cycle model
- Develop estimates of fish passage collection efficiency and survival for inclusion in the life cycle model
- Determine whether the reintroduction can lead to a sustainable population





R2 Resource Consultants (2016)

Pilot Program Timeline

- Experimental Population and EIS – 2017
- Test juvenile collection device(s) – 2017?
- First winter-run Chinook release – 2018
- Annual reports of findings - 2019, 2020, 2021…
- Feasibility Determination - TBD

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44 entries to juv. passage prize competition

Thank You

Jhannon@usbr.gov

http://www.usbr.gov/mp/BayDeltaOffice/shasta-dam-fish-pass.html

2:20pm

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Shasta Fish Passage

- Feasibility Evaluation
- Trap and Haul fish passage around dam
- Pilot juvenile collectors at head of Shasta Reservoir
- Captive broodstock and New Water Treatment at Livingston Stone NFH
- Experimental Chinook Salmon Population
- Biological Studies of success

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