International Centre of Excellence in Water Resources Management

Protecting Environmental Flows in the Western U.S.

A story of Cowboys, Indians, Fish and Markets

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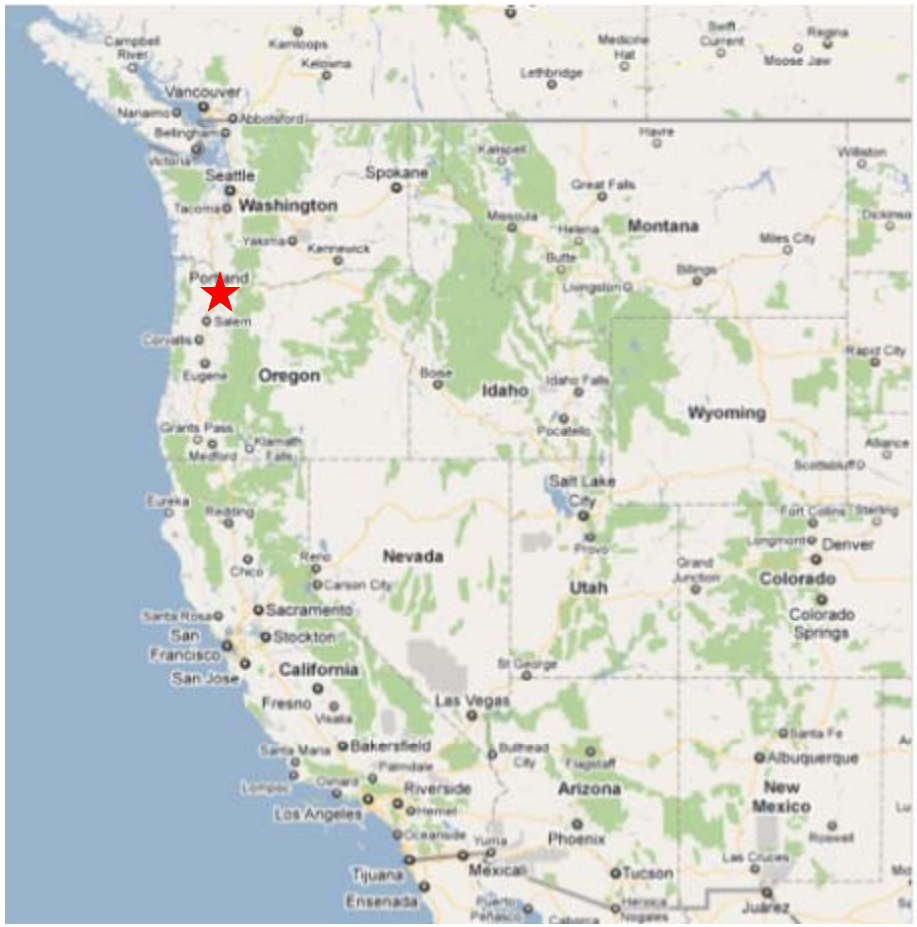
An Australian Government Initiative

ICE WaRM

Portland, OR



The Freshwater Trust™

Oregon Trout

OREGON WATER TRUST

Presentation Outline

1. Cowboys: water law in the western US
    - Water rights and management in the US
    - Prior appropriation doctrine
    - Over-appropriation
2. Indians and Fish: environmental flow requirements
    - Indigenous water access rights
    - Iconic fish species
    - The U.S. Endangered Species Act
3. Markets: reallocating water to environmental use
    - Oregon's Instream Water Rights Act 1987
    - Project types and examples
    - Water price

Water Management in the "Wild West

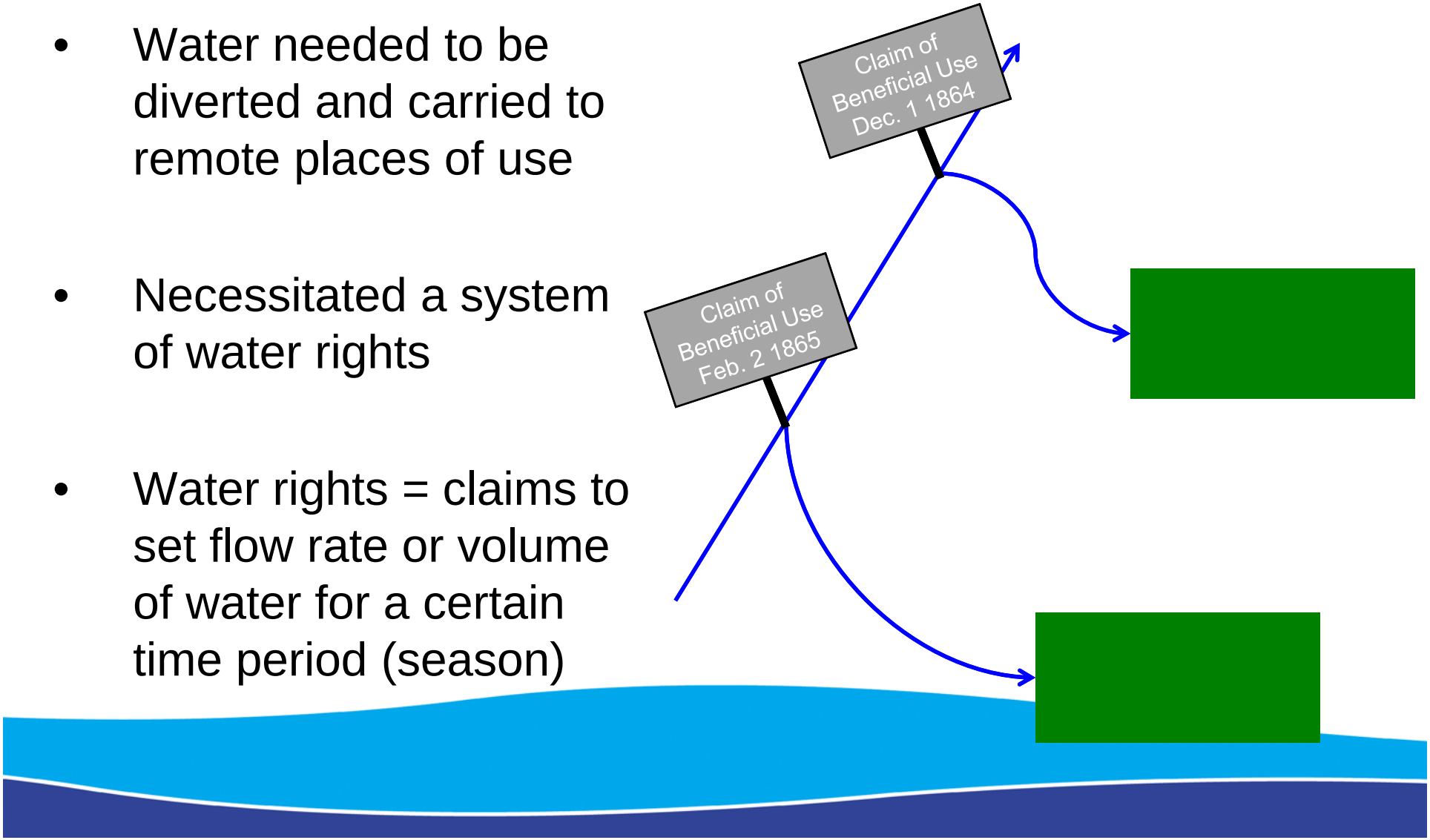
"Whiskey is for drinking, water is for fighting"

Development of Water Law in the Western US

- **Productive agriculture impossible without irrigation**

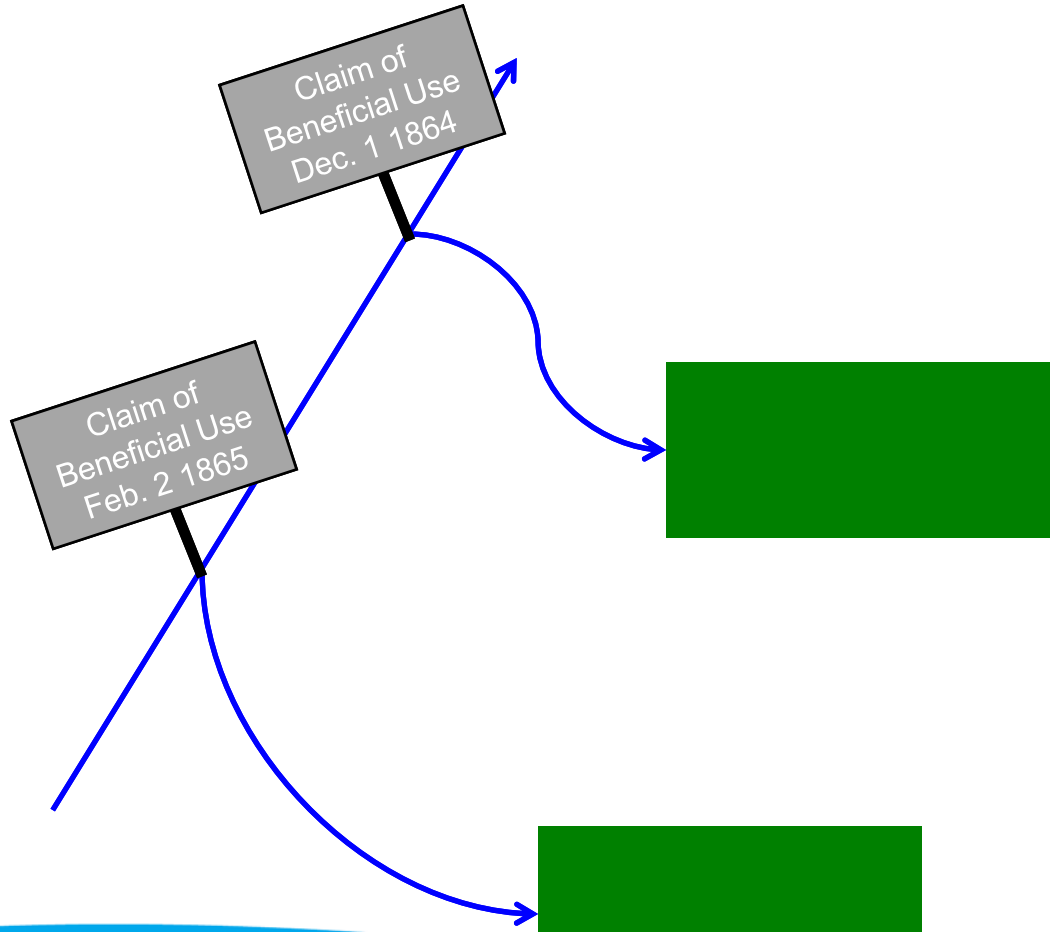
Development of Water Law in the Western US

- Water needed to be diverted and carried to remote places of use
- Necessitated a system of water rights
- Water rights = claims to set flow rate or volume of water for a certain time period (season)

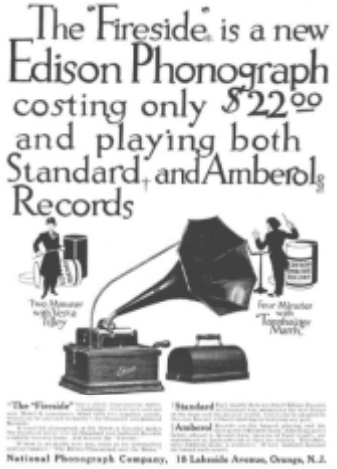


Development of Water Law in the Western US

- Doctrine of Prior Appropriation
- 1st in time = 1st in right
- “Juniors” shut off in favor of “Seniors”



US State Water Codes Date from Around 1900

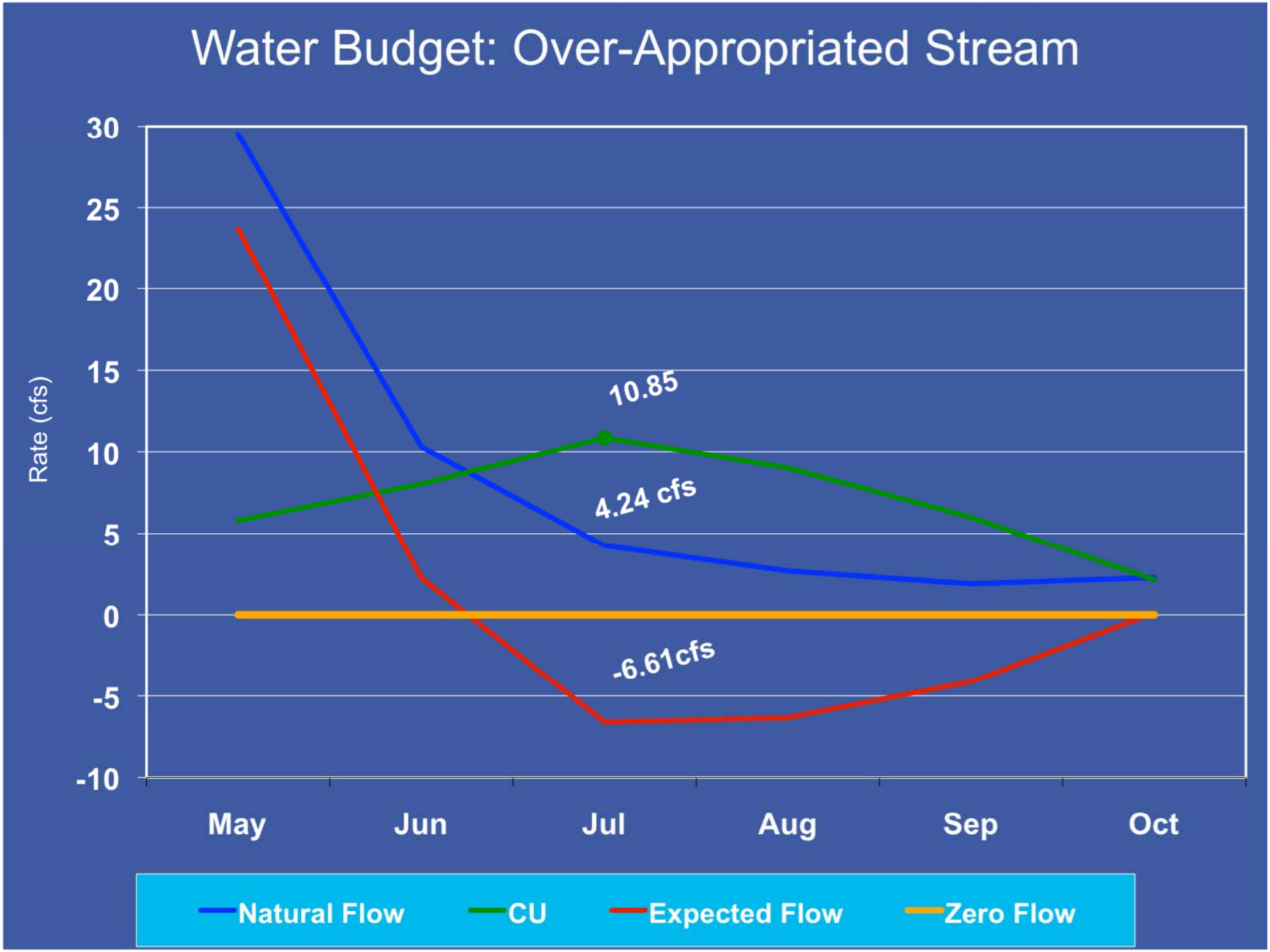


Since That Time, Some Things Have Changed

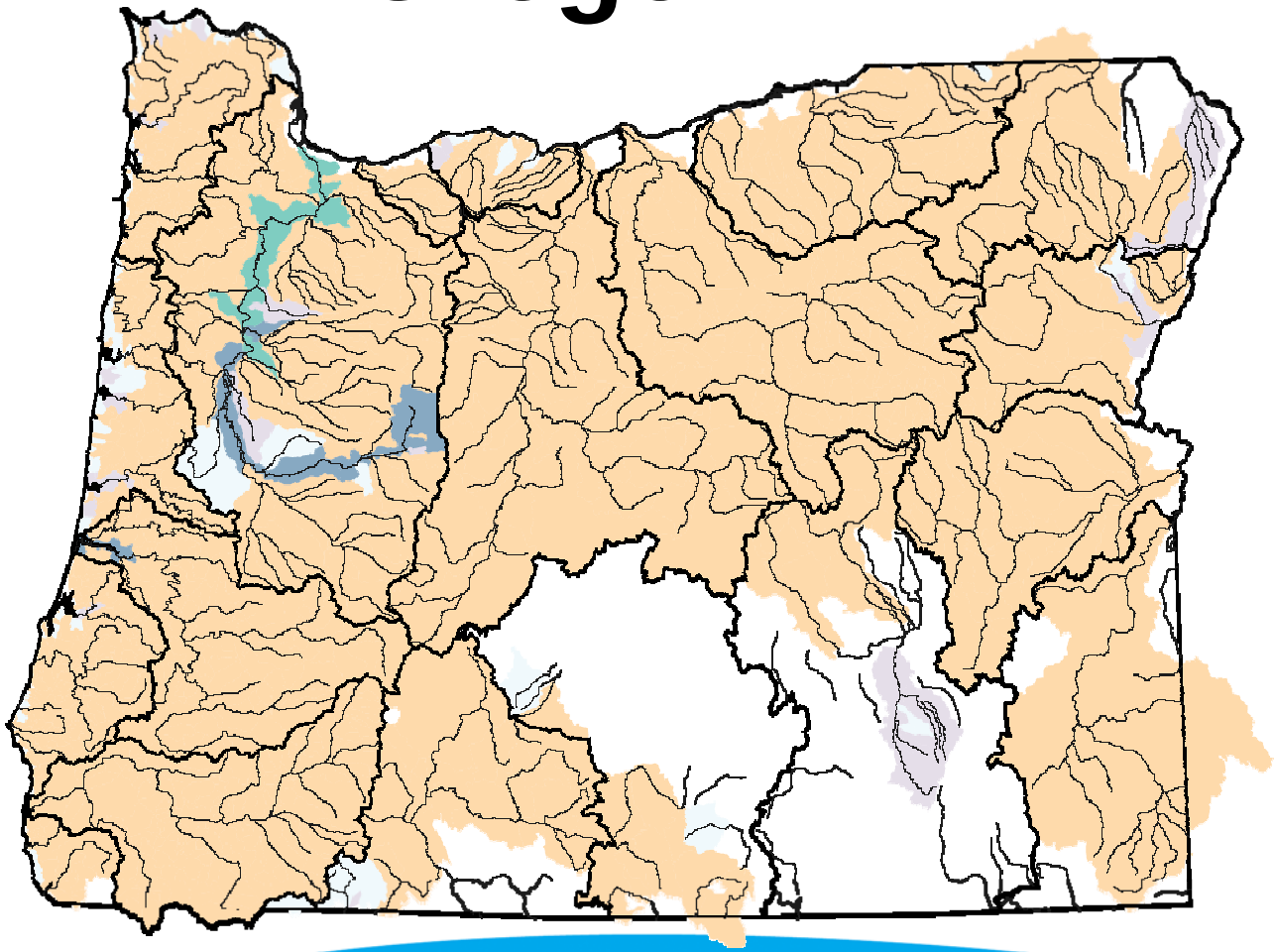

And Some Things Have Not . . .
So. . . What has 100 years of prior appropriation done to the water resource?

Over-Appropriation

- As settlement continued, water rights were granted, according to priority date, without regard to water availability
- Additional water rights had little effect on existing rights because of priority system
- New rights, lower reliability, higher risk
- BUT. . . had a huge impact on the resource . . .


Water Budget: Over-Appropriated Stream
Rate (cfs)
30
25
20
15
10
5
0
-5
-10
May
Jun
Jul
Aug
Sep
Oct
10.85
4.24 cfs
-6.61cfs
Natural Flow
CU
Expected Flow
Zero Flow

Over-Appropriation in Oregon

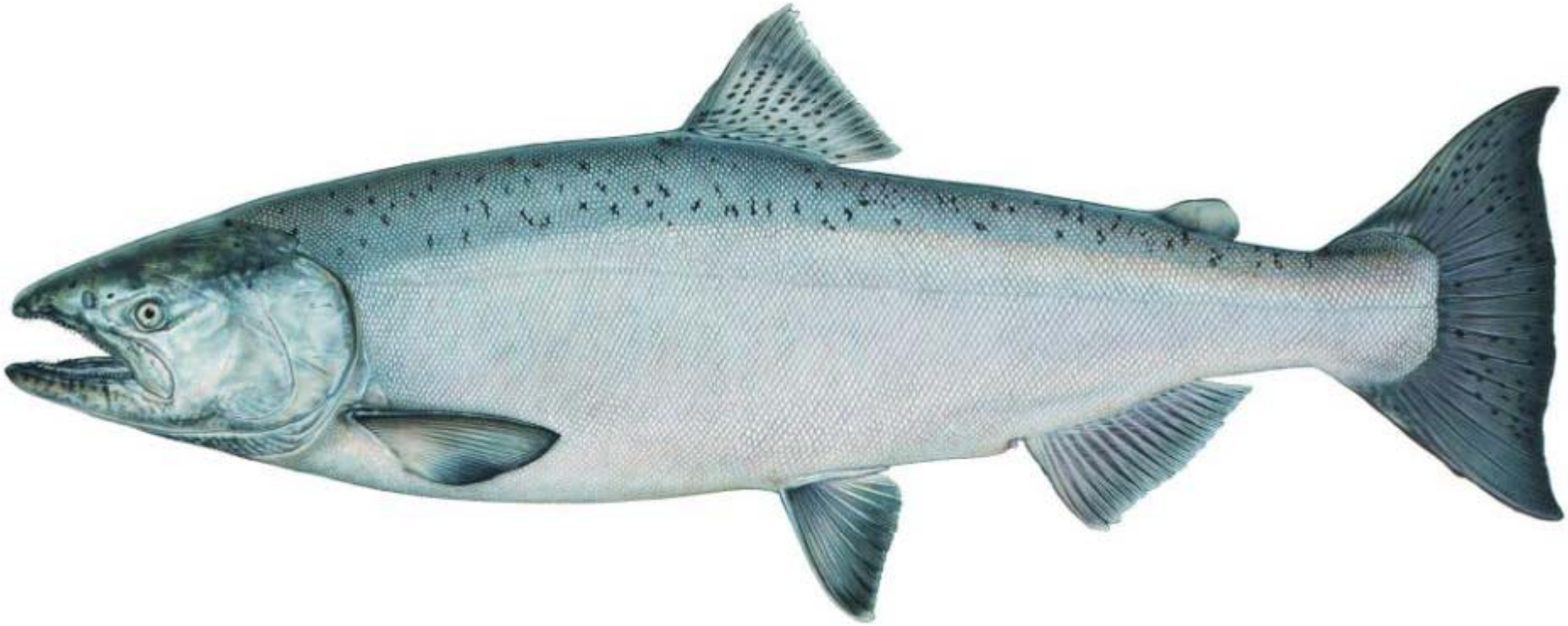


So What?

- Three primary motivations for working to restore the water balance

    1. Salmon
    2. Indigenous rights and values
    3. Existence and aesthetic values

Salmon are the Key



Anadromous Life Cycle

Adults spend 2-3 years in the ocean

Begin migration up main stem rivers

Continue up tributary rivers/creeks

Females lay eggs, males fertilize

Eggs hatch, “smolts” live in tribs for 1-2 yrs

Juveniles migrate back out to ocean

Cycle restarts as adults migrate back to same place they were born

Salmon are the Key

Threats to Salmon Survival

- Over-appropriation and other riparian impacts to tributary habitat
- Fish farms and other disease vectors
- Hatchery impacts
- Dams
- Changing ocean conditions
- Water quality
- Over-fishing

Salmon are the Key

- Salmon are now extinct in more than a third of their historic habitat in the northwestern US

- Salmon are at risk of extinction in more than a third of their remaining habitat

Salmon and Indigenous Values

- Salmon play an integral part of tribal religion, culture, and physical sustenance.
- “Salmon was presented to me and my family through our religion as our brother. The same with the deer. And our sisters are the roots and berries. And you would treat them as such. Their life to you is just as important as another person would be.” --Margaret Saluskin, Yakama

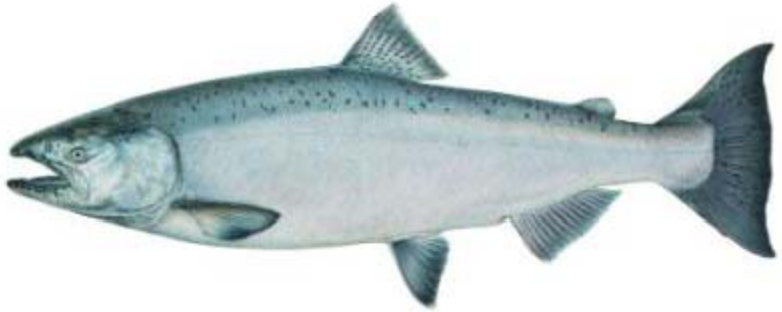
Treaty Rights

- Many treaties signed between US and Indian tribes contained the following clause or similar:
  - Tribes retain the right to fish and hunt at their historic, customary locations
  - Some implied right to continued existence of fish

Reserved Rights

- US Common law legal doctrine (“Winters Doctrine”)
  - When US created reservations for Indians, reservations included water rights to accomplish purposes of reservation
  - Unsettle law: does this imply setting aside flows to support fish for tribal values?

Primary Drivers of EV Flow Restoration/Protection



Tribal Treaties

ESA-mandated mitigation actions

Endangered Species Act (ESA)

- Federal law enacted to maintain species diversity and protect species from extinction
- Species are “listed” as either “threatened” or “endangered”
- Once listed, species and their habitat protected by the ESA

West Coast Salmonids Listed Under the ESA

Species	*Stocks*	*ESA Protection*
Chinook	17	9
Coho	7	3
Steelhead	15	10
Others	13	4
Totals	**52**	**26**

ESA Introduction

- ESA applies to federal actions or actions that “harm” a federally listed species
- Requires scientific consultation on federal actions that may effect listed species
  - Will action jeopardize species?
- Imposes penalties for harming listed species
- ***Requires mitigation for impacts***

Presentation Progress. . .

- We've talked about Cowboys
- We've talked about Indians and fish

- Next topic:
  - What tools do we have to protect/restore environmental flows?

OR 1987 Instream Water Rights Act

- 1st state in the US to enable “Instream” water rights
- Declared instream use to be beneficial use
- Purposes: to support fisheries, riparian habitat, recreation, and water quality

Characteristics of Oregon Rivers

- Largely unregulated (few reservoirs or other flow regulators)
- High early spring/summer runoff
- Low flows generally begin in July and last through September

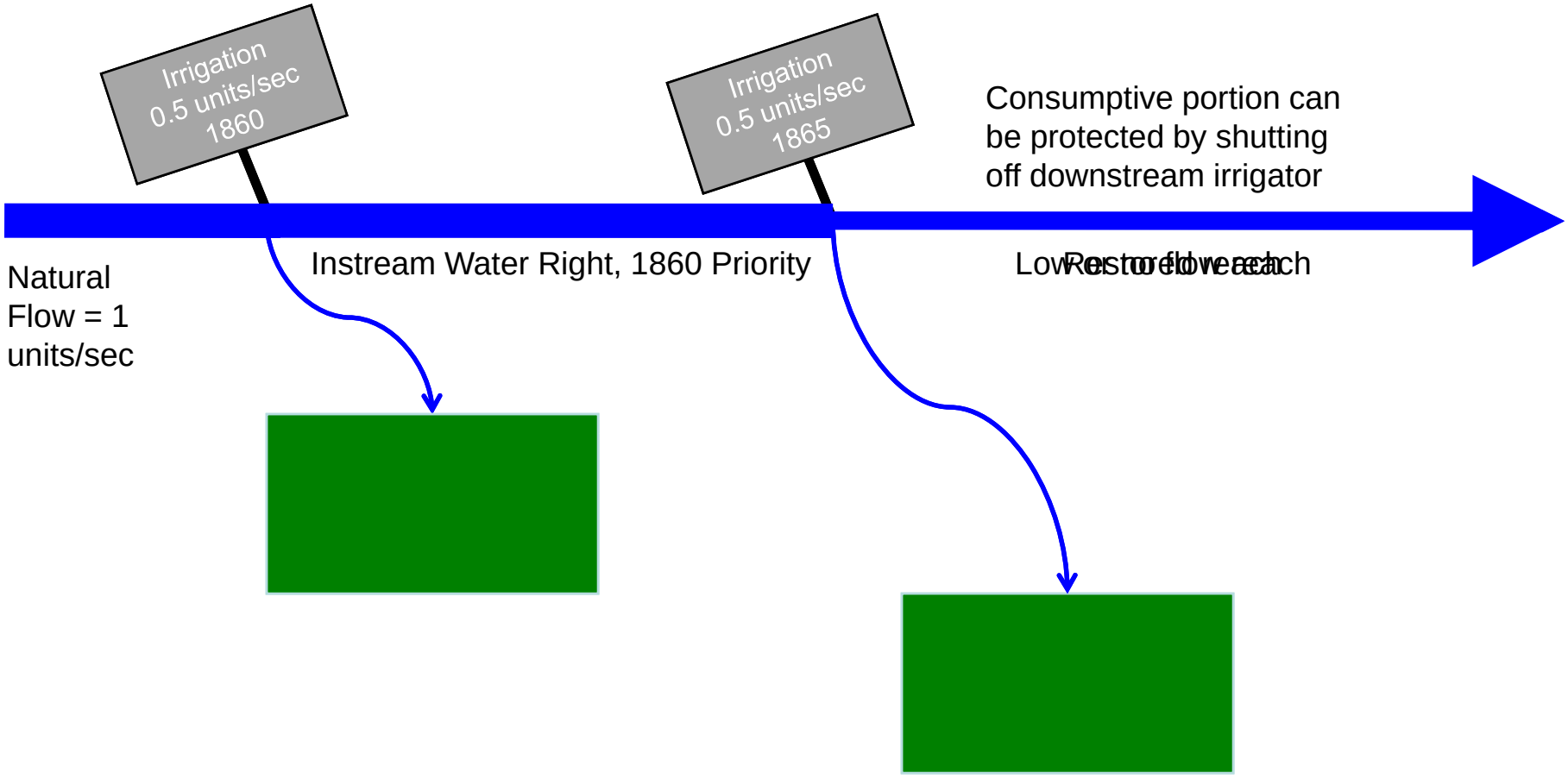
OR 1987 Instream Water Rights Act

- Allowed creation of legally enforceable "instream" water right
  - By transferring an existing right
  - Maintaining existing right's priority
- Can be permanent, temporary, or "split-season"
- Can allocate water recovered from efficiency upgrades to instream rights

Oregon Water Resources Department

- State agency in charge of water holds instream water rights “In trust for the people of Oregon”
- Regional “watermasters” deputized to enforce priority system
  - Authority to “shut-off” juniors to provide water to seniors
- Also enforce instream water rights

Creating and Enforcing an Instream Water Right



Oregon Water Trust

- First water trust in the U.S.

- Founded in 1993 to put Instream Water Rights Act into action

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Columbia River Basin

- 673,000 km^2
- 2,000 km long
- Avg. flow at the mouth 7,500 m^3/sec
- Highest recorded flow 35,000 m^3/sec

Voluntary, Market-Based

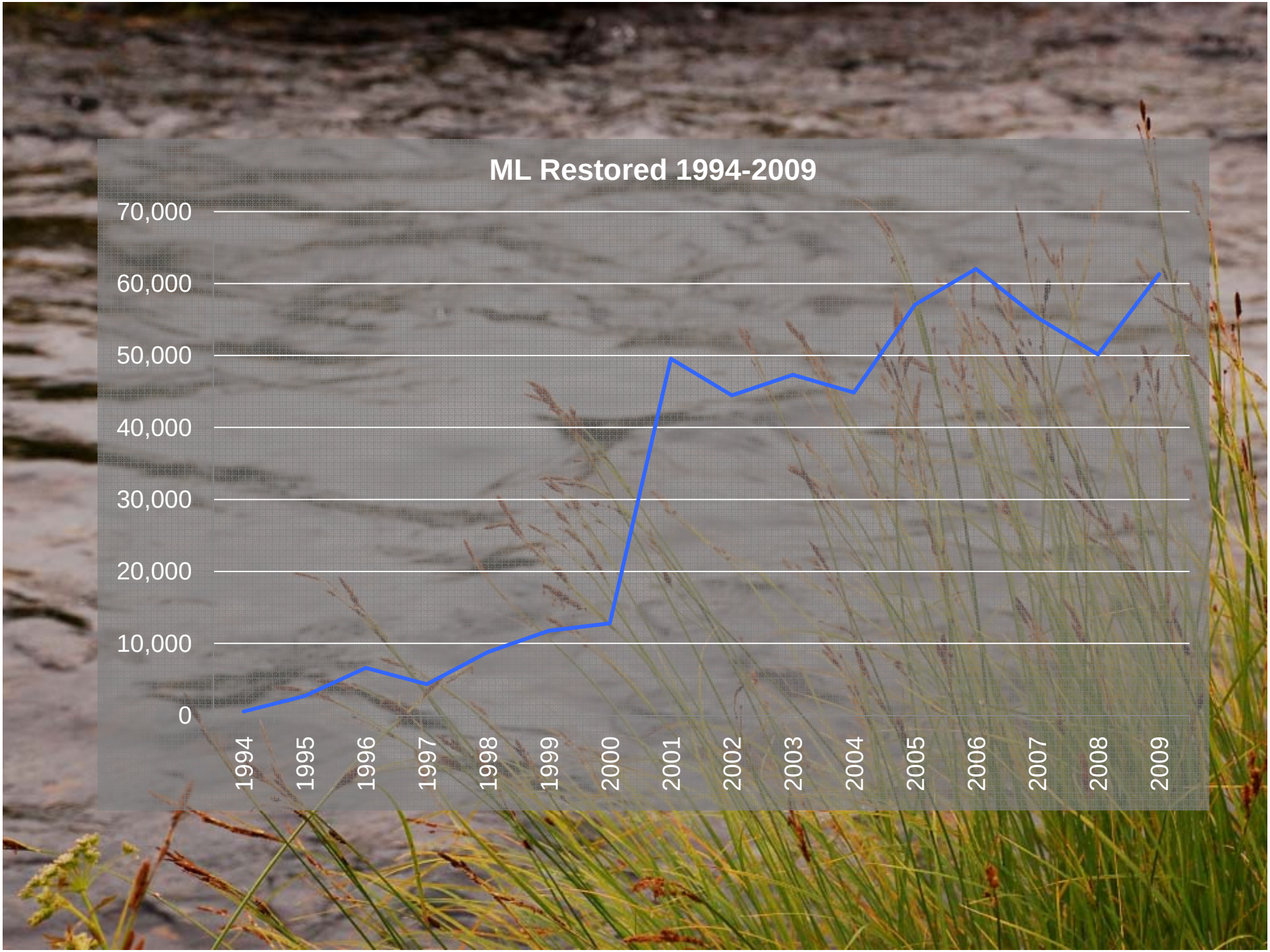
- Engage with individual landowners on a voluntary basis
  - No regulatory (or other) authority
- Landowner's incentives to work with us are market-based
  - Example: compensation for lost production

Other Methods of Flow Restoration

- Downstream point of diversion change
  - Take water diversion off of tributary
- Irrigation season shortening
  - End diversion from creek during salmon spawning for example
- Minimum flow agreements

Project Example: Austin Ranch Irrigation Season Diminishment

Click to view video.


ML Restored 1994-2009
70,000
60,000
50,000
40,000
30,000
20,000
10,000
0
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009

Market-Based Compensation

- Austin Ranch example
  - Restored approximately 870 ML per year
  - Cost was approximately (US) $800.00 per ML for the permanent agreement

- Freshwater Trust's long-term avg. price
  - ~$188.00/ML for permanent (entitlement)
  - ~$20.33/ML per year for lease (allocation)

Funding of Flow Restoration

- State and Federal grants
- Private foundations
- Settlement agreements resulting from lawsuits
- And. . .

. . . ESA Mitigation:
Federal Columbia River Power System

. . . ESA Mitigation

- Bonneville Power Administration operates Columbia River Hydropower System
- Hydropower dams kill ESA-listed salmon
- BPA therefore required to mitigate for this harm
  - Fund tribal fish recovery efforts ($1B Accord)
  - Fund NGO efforts like The Freshwater Trust

Does Market-Based = A Water Market?

- Compared to Australia:
  - Number of transactions is much smaller
  - Cost of water is less
  - Market infrastructure far less developed
    - Unregulated systems
    - No central market “locations”
  - No third party intermediaries
- Some states in US have more developed markets than Oregon (CA for example)

Barriers to Market Development

- Oregon and other states' water rights remain bundled
  - Can detach from land, but entitlement and allocation remain bundled
- Intense scrutiny of third party impacts
  - Permanent instream transfers can take ***years***
- Lack of system regulation infrastructure
- Cultural barriers

Summary

Western US water law developed without regard to environmental values

Those value now recognized, but the old system is not set up to deal with them well

Salmon, Indian tribes, and the ESA drive most river restoration in the NW US

Water Trusts, other NGO's use government $$ to carry out restoration

We have had success over the years, but barriers remain high and deeply ingrained in the system

Lessons for Australia?

- Explore funding for private NGO's to carry out and manage some of your environmental water work

  – Easier to gain trust of irrigators/water users
  – Flexibility, creativity
  – Not subject to political shifts

Lessons for Australia?

- Environment needs high reliability, legally secure entitlements
  - Without secure entitlements, environment will be more susceptible to climate variation
  - Tradeable allocations for flexibility

Lessons for Australia?

- Some priority or ranking system allows for environmental entitlements to be met during dry years
  - Allows creation of EV entitlements that are less susceptible to climate shifts

Lessons for Australia?

- To the fullest extent your laws and culture allow, engage with indigenous groups and work to find ways to meet their water needs
  - If that full extent is not far enough, do what you can to push it further
  - In US, Indian tribes are a much-needed driver of water policy innovation

Special Thanks

- Richard Hopkins, Debro Thaw and ICE WaRM for funding and tremendous support and help
- Andrew Johnson and the SA Department of Water Land, and Biodiversity Conservation
- Numerous others in the room and elsewhere who have provided invaluable input and help on my trip

Thank You

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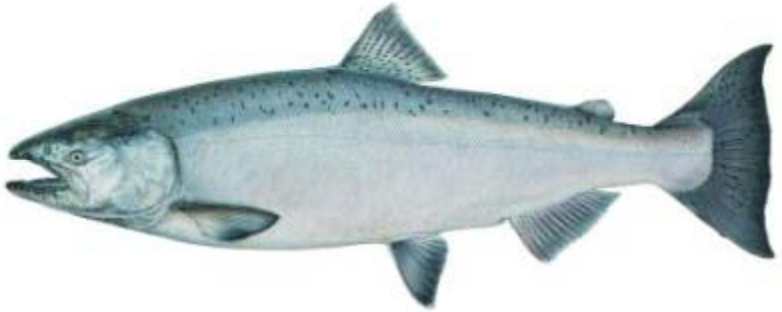

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