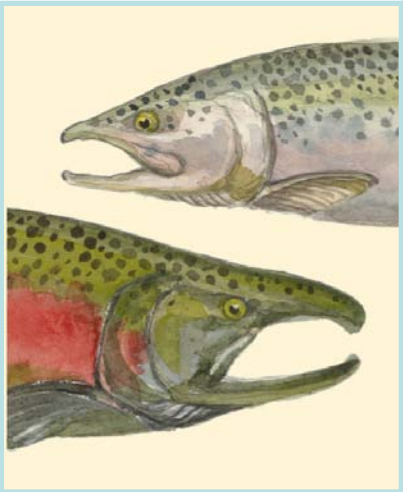
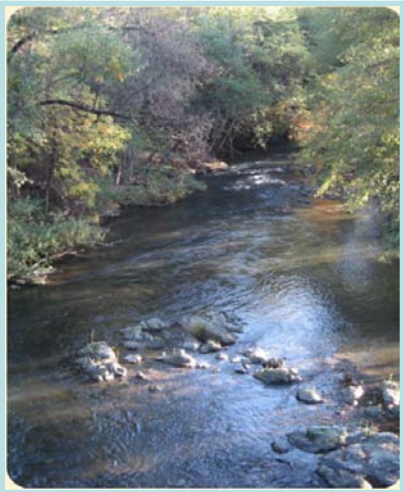
Coho Salmon and Steelhead Habitat Enhancement in Dry Creek

David Manning

Environmental Resources Coordinator





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2008 Biological Opinion

- Status quo water operations:
  - Jeopardize Coho Salmon and Steelhead
  - *Do not* jeopardize Chinook Salmon
  - 23 Actions for SCWA and US Army Corps to modify operations
  - 15 Year Timeline (2008 to 2023)
  - Cost $150,000,000

Biological Opinion Requirements

Reduce High Summer Flow

Dry Creek Habitat Improvement

Fish Screen Upgrade

Estuary Restoration

Juvenile Coho and Steelhead Summer and Winter Rearing Habitat

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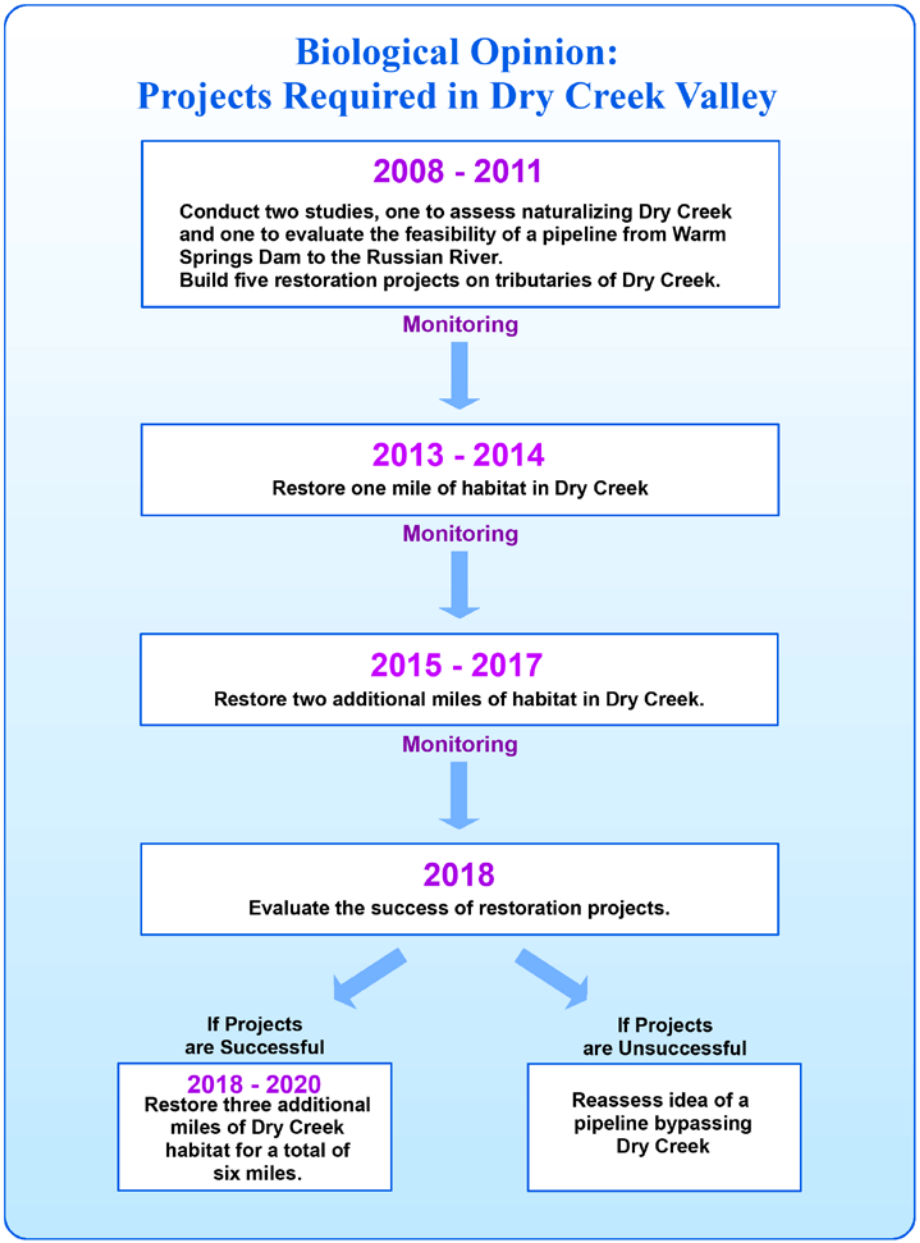
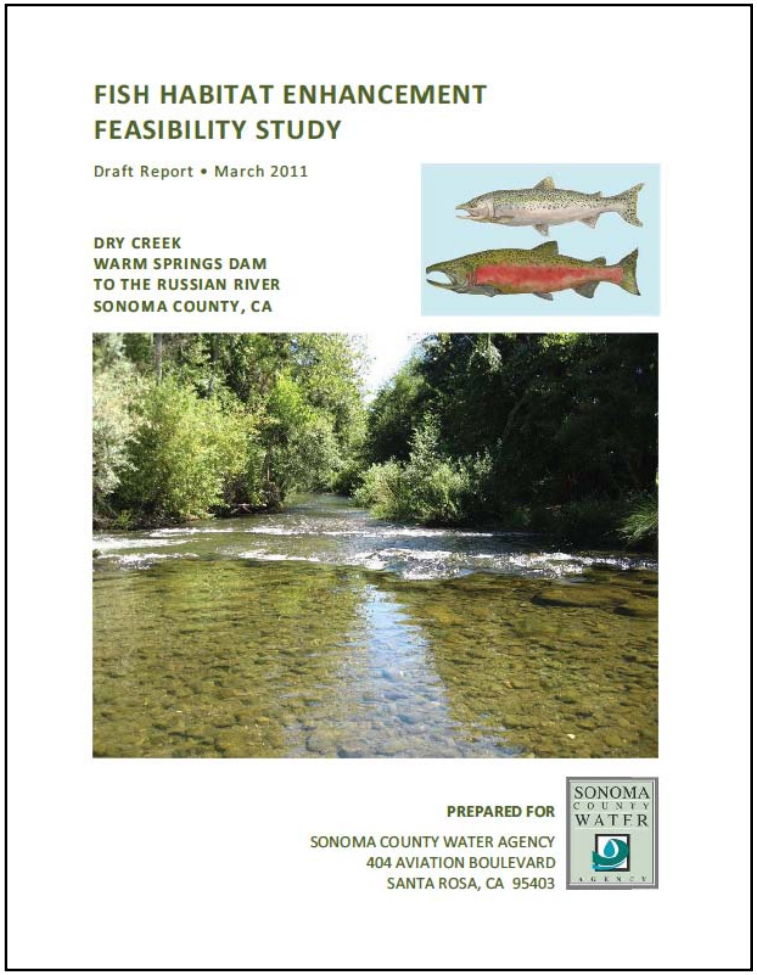
Dry Creek Objectives & Timeline

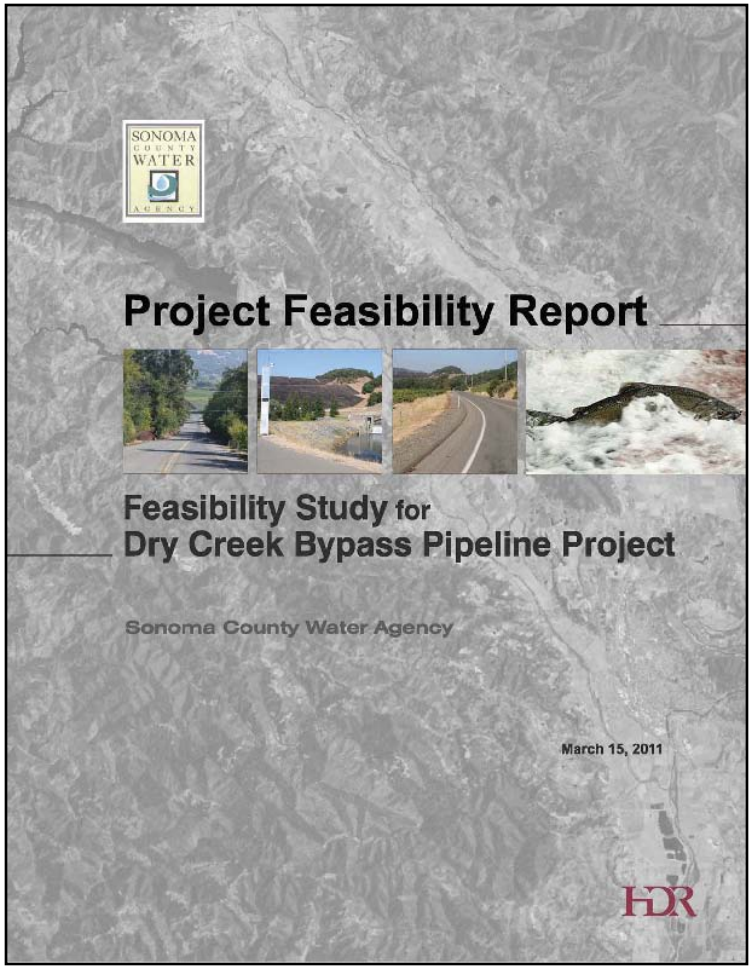
- Reduce water velocity for coho summer and winter rearing
- Create near optimal depth, cover, habitat complexity
- Enhance 6 of 14 miles (10 of 22 km)
- 12 years
- Use an Adaptive Management Approach



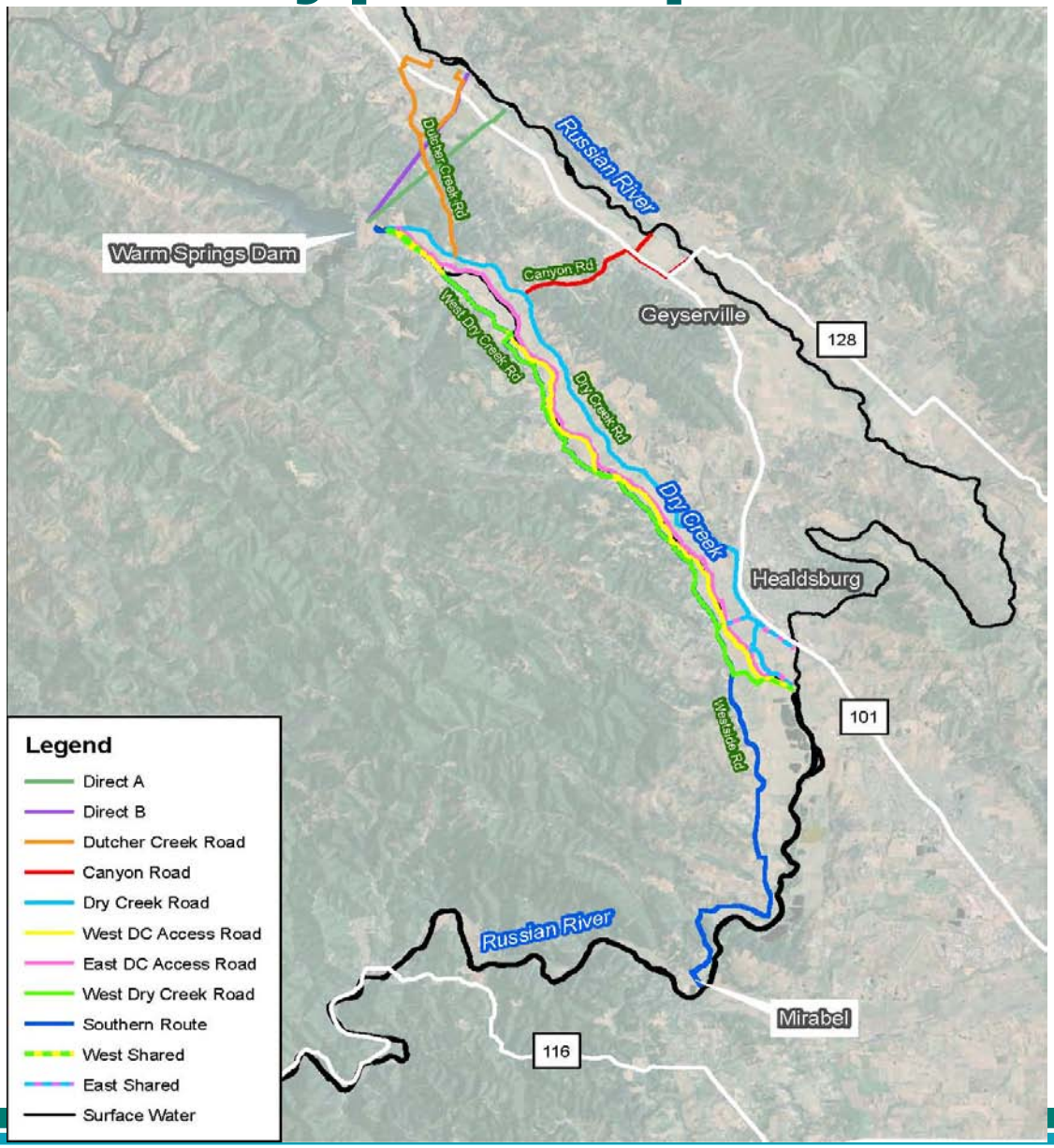
Plan "A"
Habitat Enhancement



Plan "B"
Bypass Pipeline



Potential Bypass Pipeline Routes



DRY CREEK HABITAT ENHANCEMENT REACHES

PREPARED BY SONOMA COUNTY WATER AGENCY | FEBRUARY 2012

2012	2014	2017	2018	2020
Complete design phase. Permitting. Landowner agreements. Begin construction	MILESTONE 1: 1 mile of habitat in Dry Creek completed and work on miles 2 & 3 begins	MILESTONE 2: Complete enhancement of miles 2 and 3	DECISION POINT: Evaluate the success of the enhancement projects	MILESTONE 3: Enhance 3 additional miles of habitat in Dry Creek for a total of 6 miles

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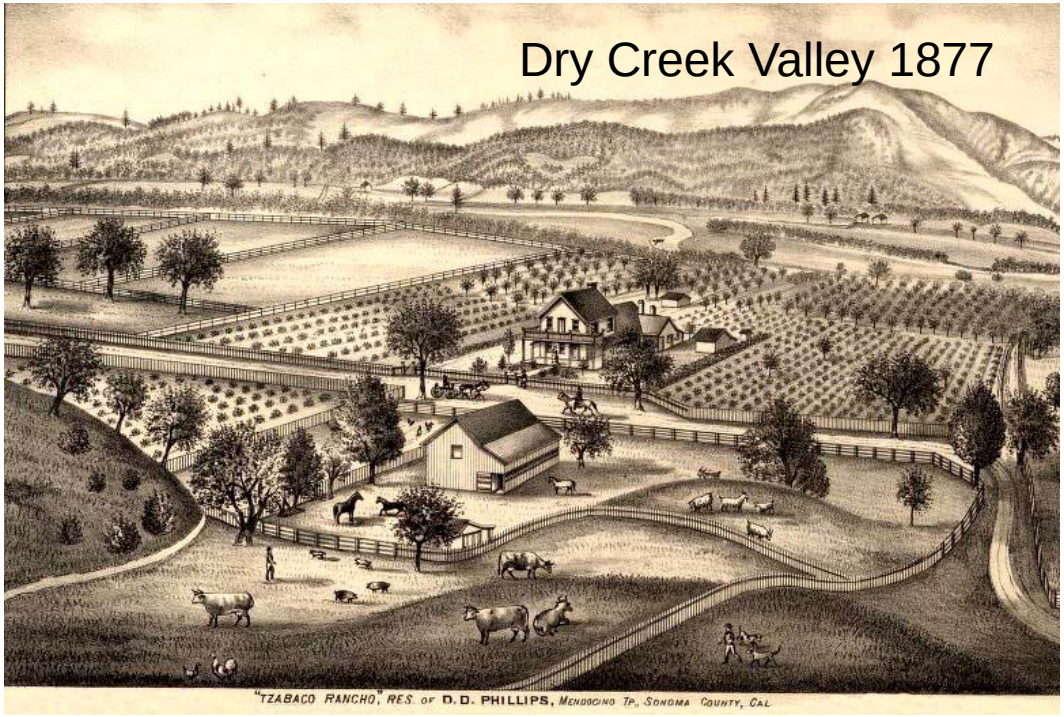
Historic Evolution of Stream Channel



1850s: Valley settled

- 40% of forested acres cleared 1850-1870

1900 – 1970s: Gravel mining in Russian River and Dry Creek

1952: Healdsburg Dam

1959: Coyote Dam and Channel Stabilization

- Combined, these lowered the downstream base level for Dry Creek
- Creek bed lowering (Incision) by 1980s (10 – 30 ft.)
- Lowering of stream in turn propagated up Dry Creek tributaries
- Effects slowed by mid-1980s

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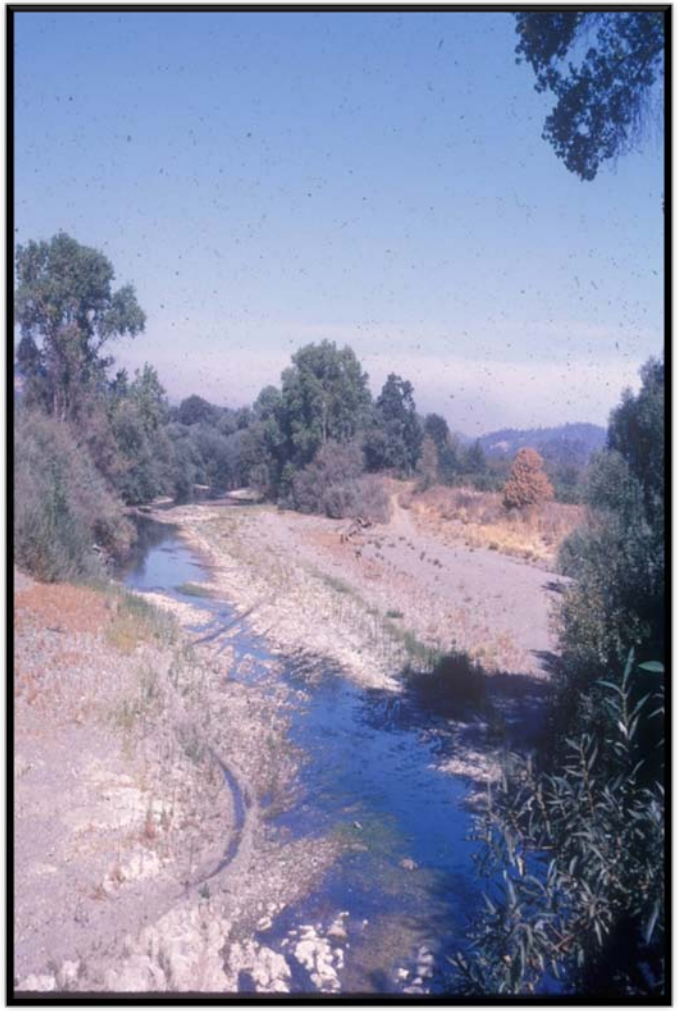
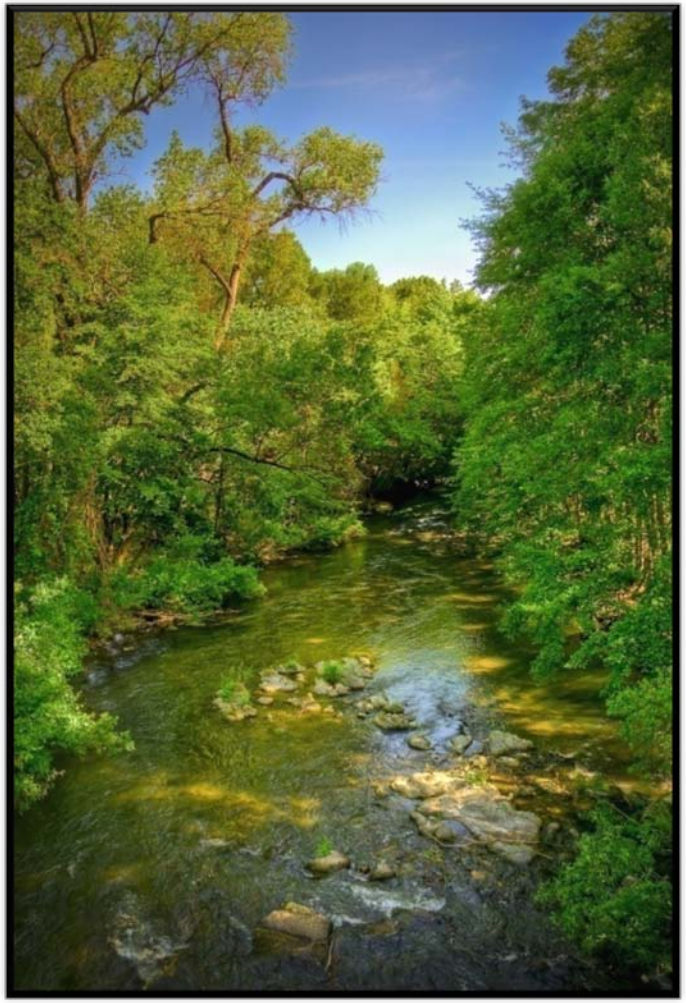
Dry Creek (Lake Sonoma to Russian River)

1980



2010



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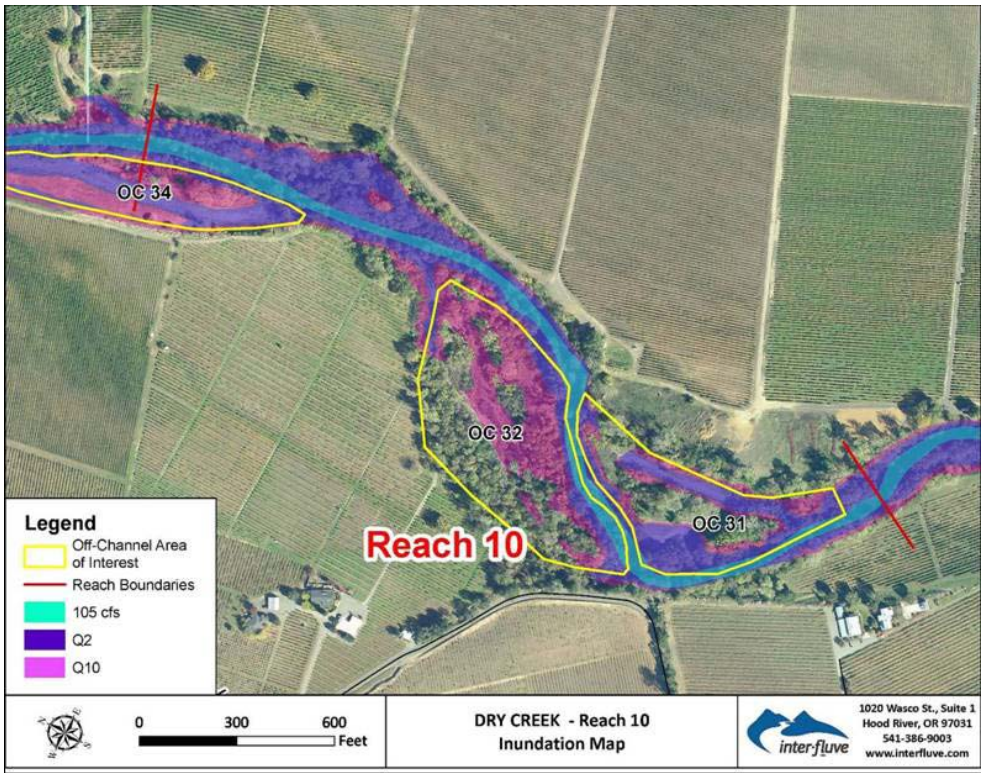
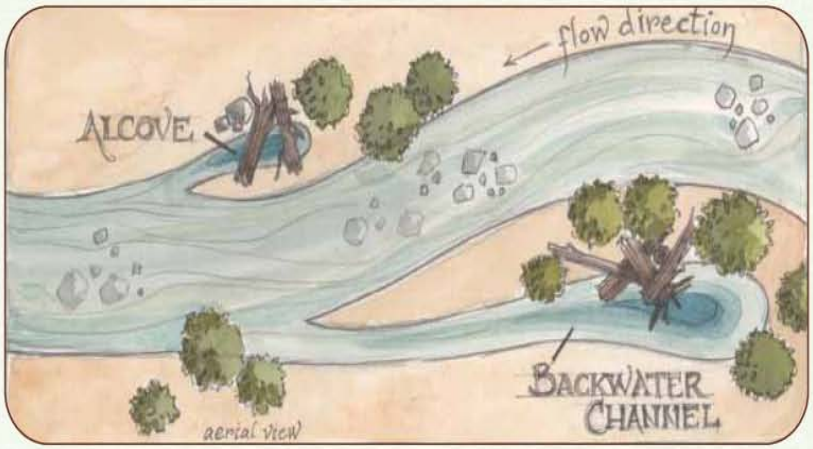
Habitat Feasibility Study Results

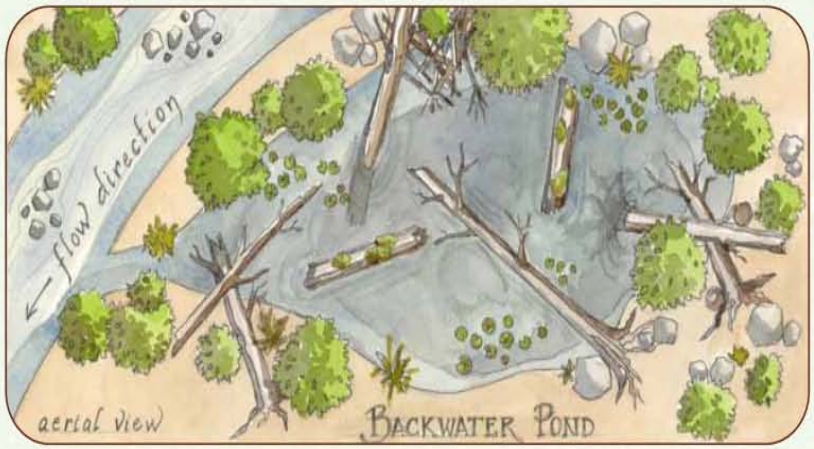


- 26 Sub Reaches with Potential project opportunities
- Distributed throughout 14 miles
- 9 miles of off channel habitat
- Total cost for 6 mile objective = $36 to $48 Million

Enhancement Techniques

Low Velocity Backwater Pools, Alcoves Side Channels





Enhancement Techniques

Winter Refuge Habitat

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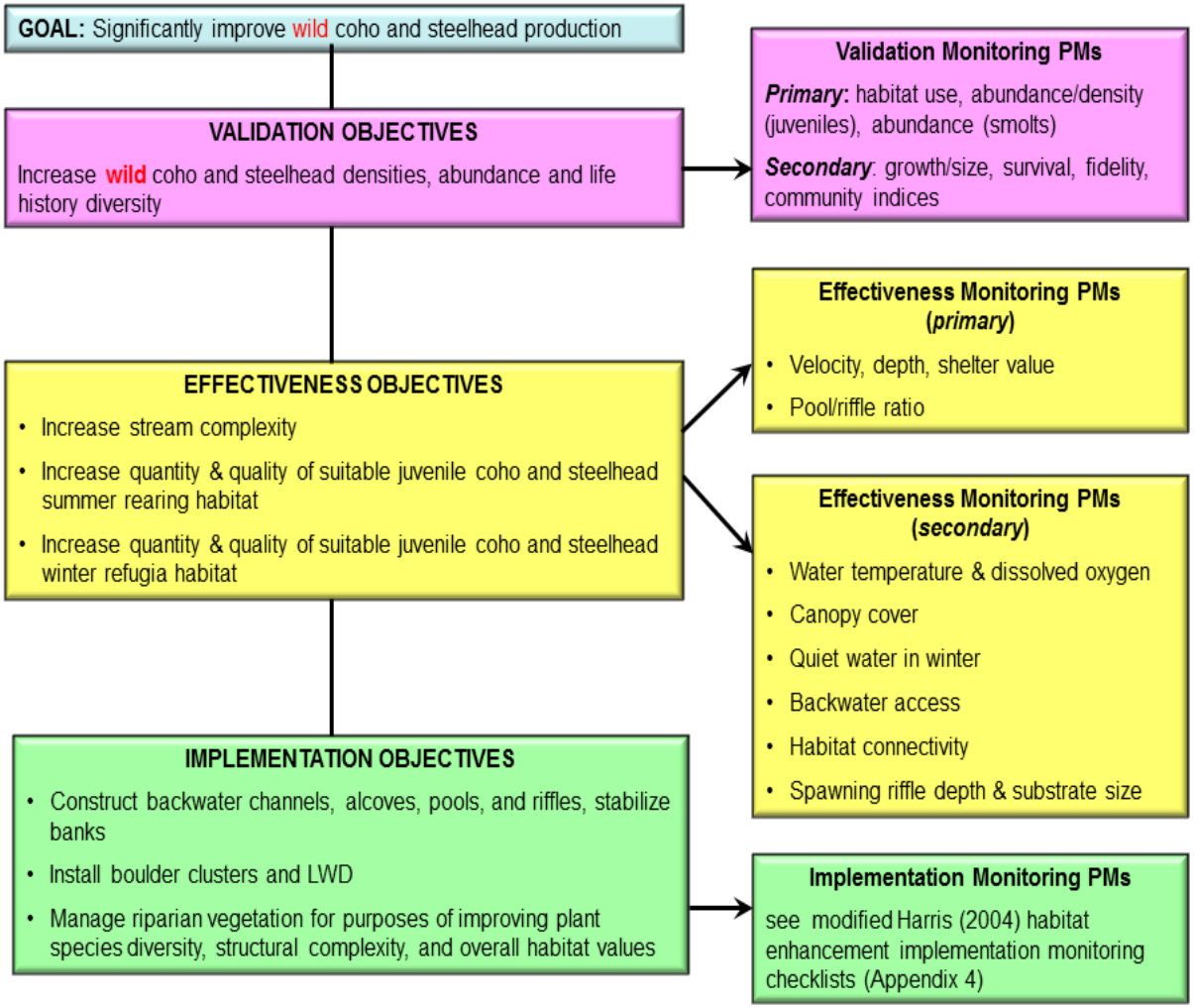
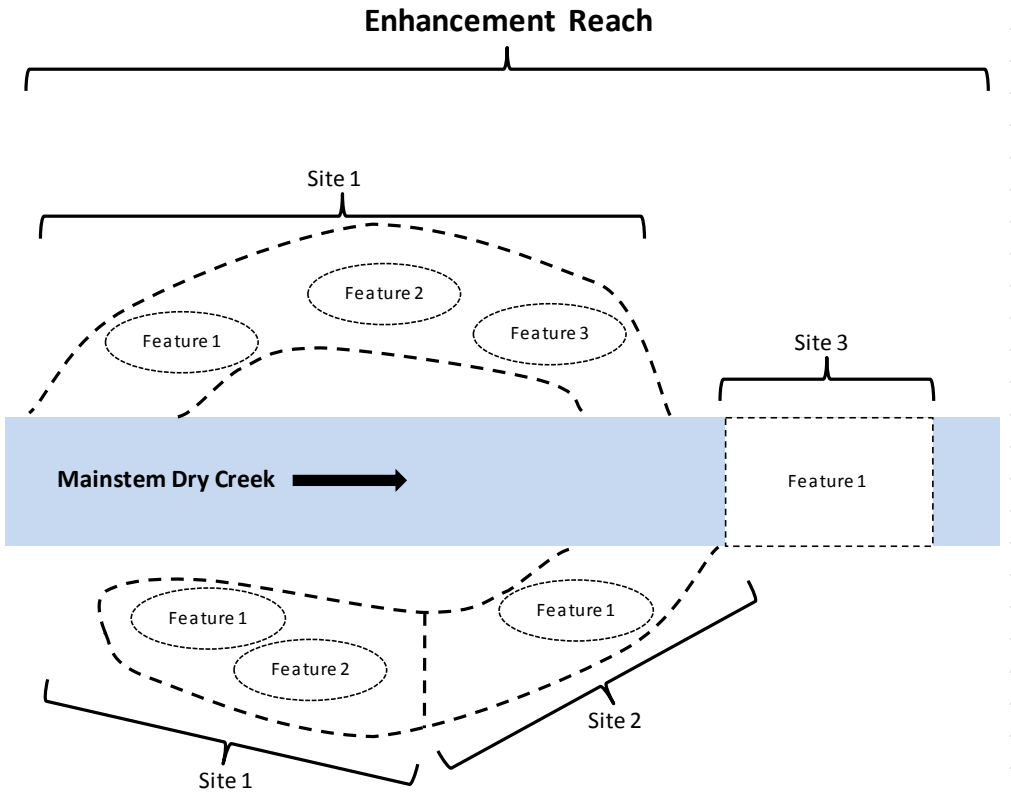
Adaptive Management Plan



Habitat Monitoring

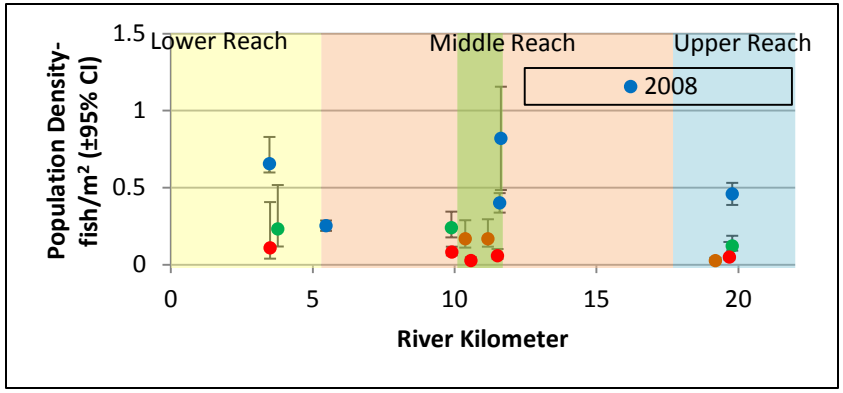
(a) Implementation monitoring:



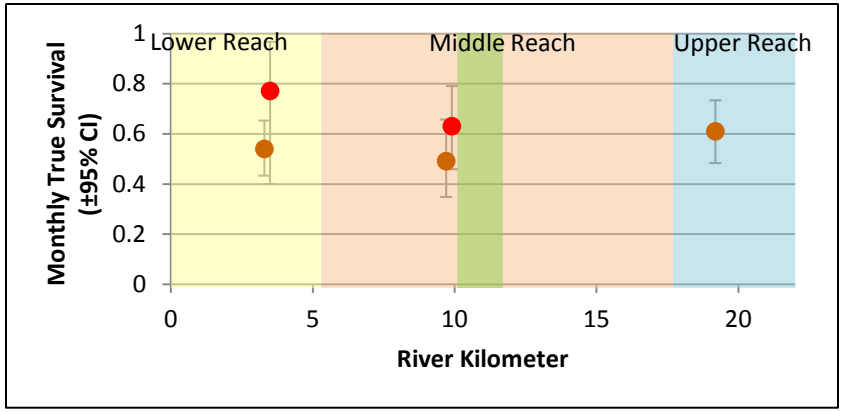
(b) Effectiveness and validation monitoring:

Fisheries Monitoring

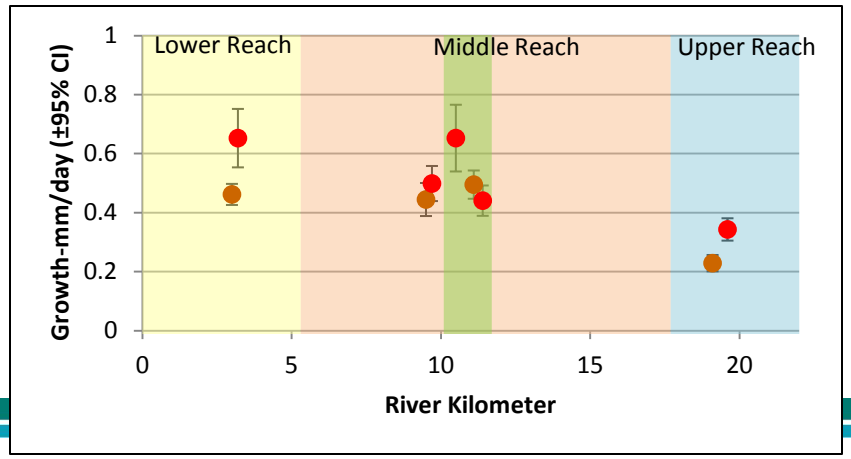
Reach Scale Monitoring



Density



Survival



Growth

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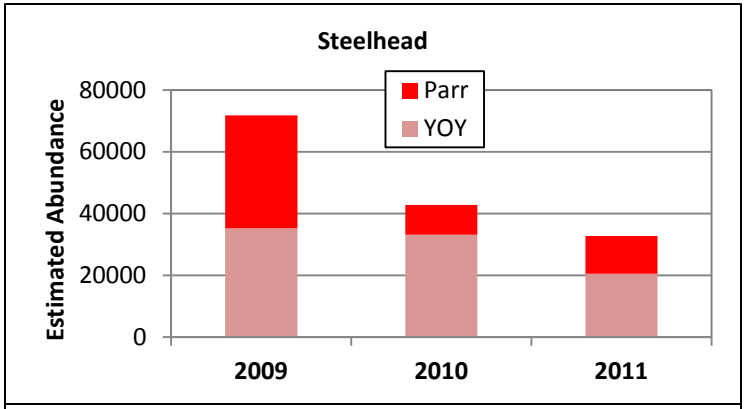
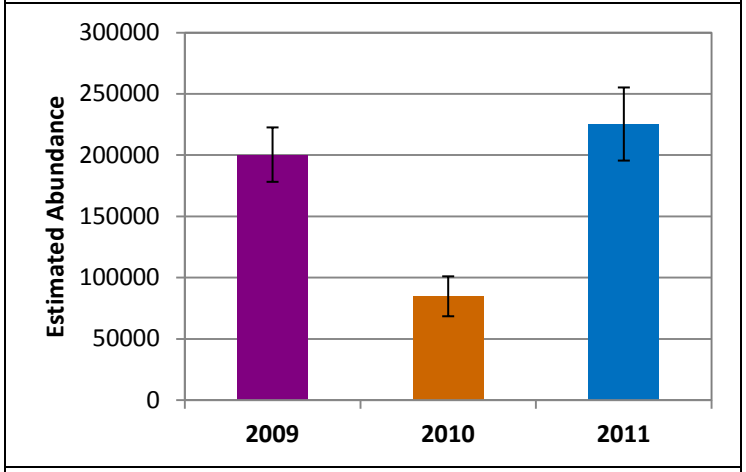
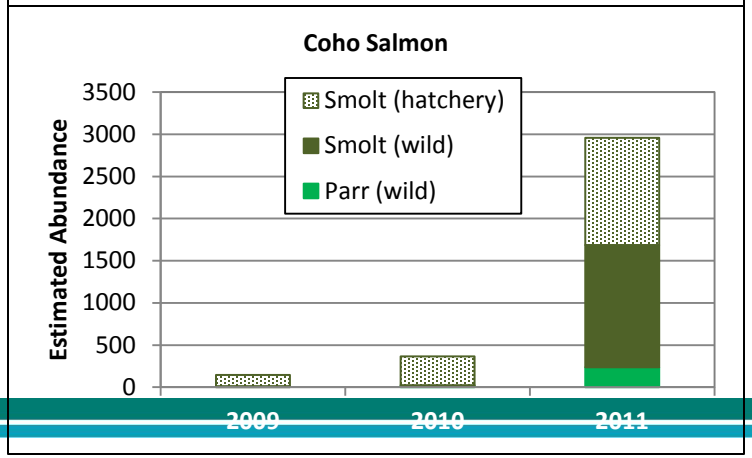
Stream Scale Monitoring



Steelhead
Smolt and Parr



Chinook Smolt



Coho Smolt and Parr
Hatchery and Wild

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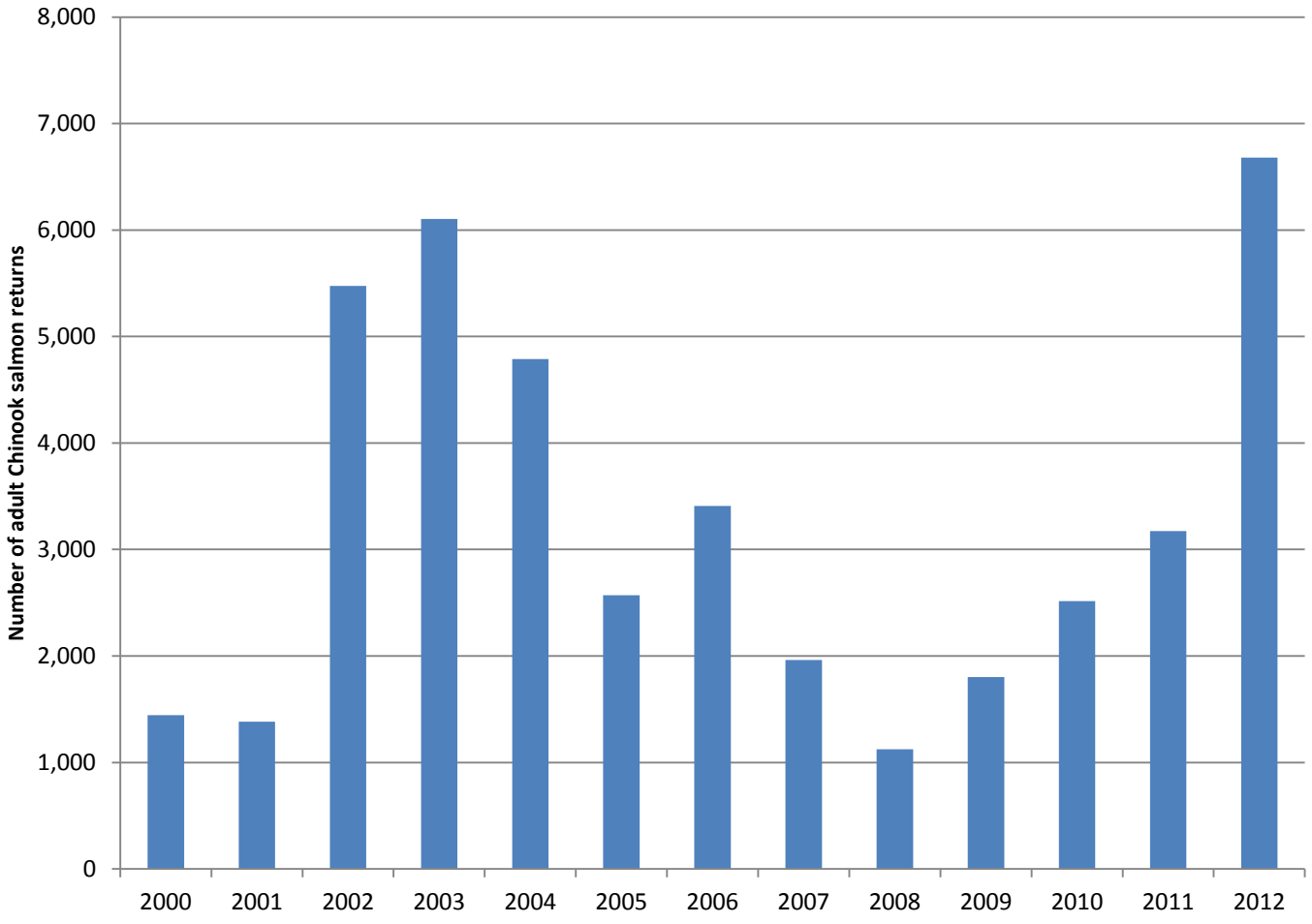
Wild Chinook Salmon Spawners



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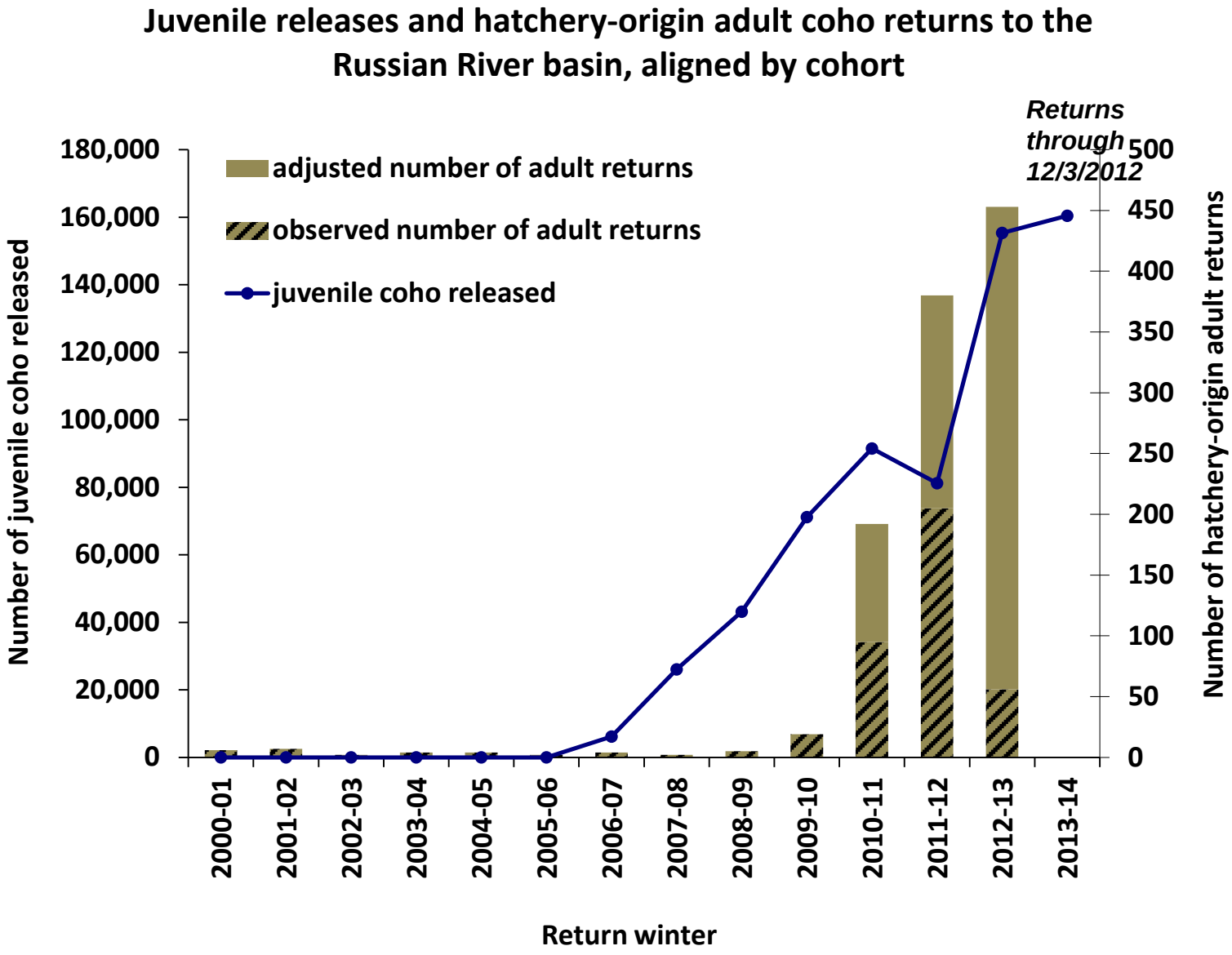
Coho Broodstock Program Results



Wild Dry Creek Juvenile Coho Salmon

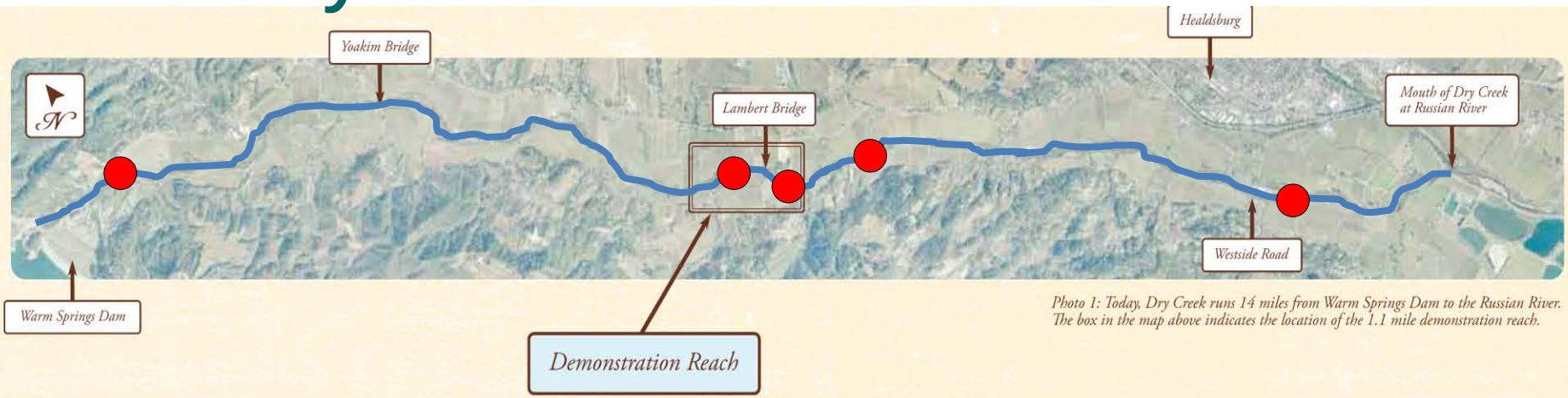
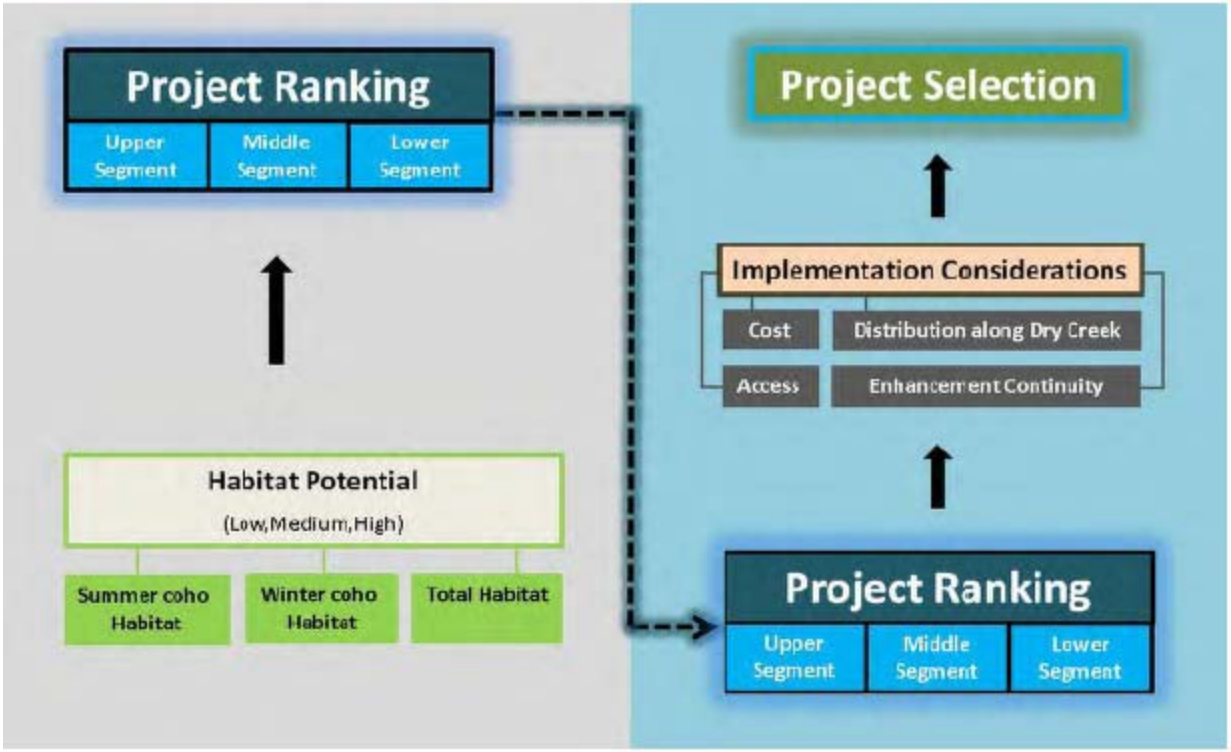


Photo 1: Today, Dry Creek runs 14 miles from Warm Springs Dam to the Russian River. The box in the map above indicates the location of the 1.1 mile demonstration reach.

- Wild juvenile coho captured in 2011 and 2012
- 5 locations
- Wild coho outmigrants
  - 3 in 2010
  - 86 in 2011
  - 152 in 2012

Future Habitat Projects In Dry Creek

- Miles 2-3 - 2015-2017
- Miles 4-6 – 2018-2020
- Site Evaluation and Ranking
- Landowner Outreach
- Additional CEQA, Permitting, Right of Way



Questions

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