

RECLAMATION

Managing Water in the West



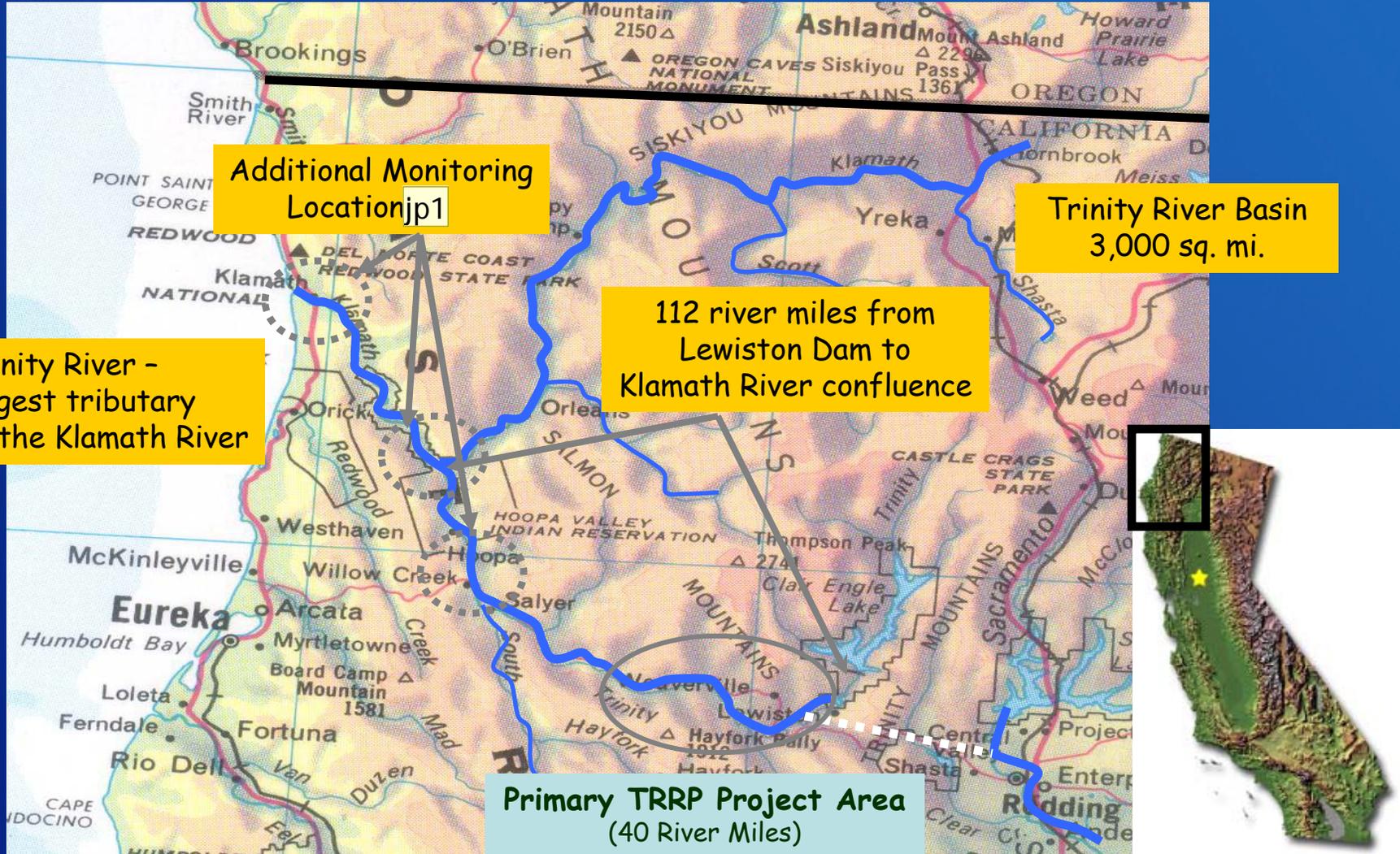
FY 2012

March 15, 2012



U.S. Department of the Interior
Bureau of Reclamation

Trinity River Restoration Program Location



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Slide 2

jp1

suggest deleting this..while the program does support some monitoring activities down here it may be more problematic to mention them on this slide since by noting it here could imply and equal "status" of the primary project area.

Joe Polos, 3/13/2012

TRRP Background

- *Central Valley Project Improvement Act of 1992 – P.L. 102-575, Title 34 (CVPIA) - legal authority for projects that restore the fishery resources of the Trinity River.*
- Trinity River Flow Evaluation Final Report (TRFES) prepared by the U.S. Fish and Wildlife Service and the Hoopa Valley Tribe (USFWS and HVT, 1999)
- Trinity River Environmental Impact Statement (TREIS/R) U.S. Fish and Wildlife Service et al. 2000)
- Implementation Plan for the Preferred Alternative of the TREIS/R (2000)
- Record of Decision (ROD; U.S. Department of the Interior 2000) – summarizes guidance in all of the above
- Master EIS (2009)

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Record of Decision Activities

- **Flow Management** – a variable flow regime based on five water-year types jp2
- **Mechanical Channel Rehabilitation** – treatments to reshape the current channel form to allow physical processes to create and maintain fish habitat
- **Sediment Management** – augmentation of spawning gravels and reduction in fine sediments
- **Watershed Restoration** – a program to reduce fine sediment input to the Trinity River
- **Infrastructure Improvements** – modification of structures in the floodplain to allow restoration flows
- **Adaptive Environmental Assessment and Monitoring** – a rigorous program to monitor and improve restoration activities through experience
- **Environmental Compliance and Mitigation** – measures to minimize or eliminate short-term impacts

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Slide 4

jp2

deleted "to mimic natural flows" since there are many parts of the hydrograph where we do not mimic natural flows.

Joe Polos, 3/13/2012

Restoration Approach

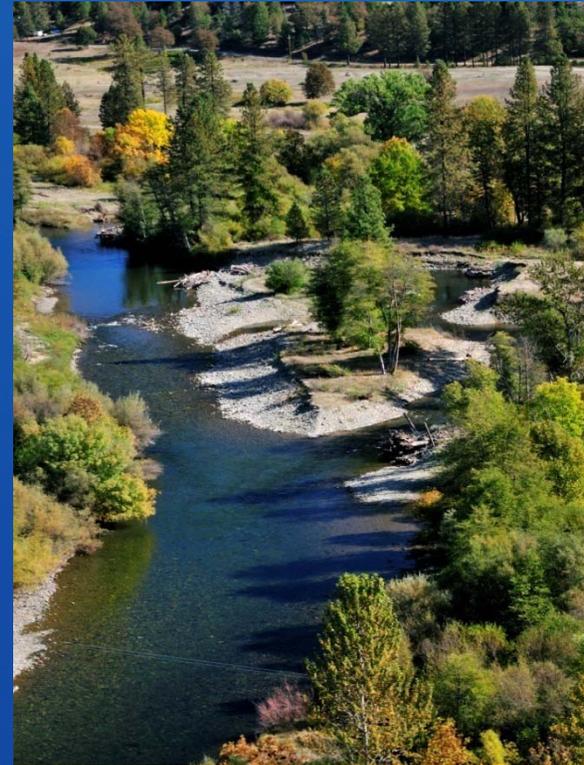
Promote physical
processes



Complex channel form



Rearing and spawning
habitat



Program Goal

Restore populations of
naturally spawning salmon
and steelhead to pre-dam
levels.



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TRRP Funding

jp3

Summary of Program Budgets/Spending 2002 through 2012								
Fiscal Year	Admin	Percent of Total	RIG	Percent of Total	Science	Percent of Total	Total	Comments
2002	\$ 4,062,399	40%	\$ 2,841,000	28%	\$ 3,309,821	32%	\$ 10,213,220	Office opens
2003	\$ 2,666,338	26%	\$ 3,815,000	38%	\$ 3,677,603	36%	\$ 10,158,941	Cableway gravel augmentation
2004	\$ 2,935,000	20%	\$ 8,083,750	56%	\$ 3,312,070	23%	\$ 14,330,820	Bridges (Salt Flat, Bucktail, Poker Bar, Biggers)
2005	\$ 1,957,554	30%	\$ 2,629,176	40%	\$ 2,015,334	31%	\$ 6,602,064	Poker Bar road, Chancellor road, house relocation & Hocker Flat
2006 *	\$ 1,829,765	17%	\$ 4,415,324	40%	\$ 4,731,858	43%	\$ 10,976,947	Canyon Creek
2007	\$ 1,729,000	19%	\$ 4,214,000	45%	\$ 3,353,000	36%	\$ 9,296,000	Indian Creek
2008 *	\$ 1,874,000	18%	\$ 4,726,000	45%	\$ 3,869,700	37%	\$ 10,469,700	Lewiston-Dark Gulch
2009 *	\$ 2,750,425	20%	\$ 5,459,011	40%	\$ 5,597,444	41%	\$ 13,806,880	Sawmill
2010 *	\$ 2,662,807	16%	\$ 9,625,613	57%	\$ 4,727,934	28%	\$ 17,016,354	ARRA \$'s
2011	\$ 2,562,705	21%	\$ 5,121,087	42%	\$ 4,573,360	37%	\$ 12,257,152	Lowden, THG & Reading
2012	\$ 2,900,000	18.6%	\$ 7,400,000	47.4%	\$ 5,321,000	34.1%	\$ 15,621,000	UJC, LSF, Bank Naturalization
Totals	\$ 27,929,993		\$ 58,329,961		\$ 44,489,124			
Averages	\$ 2,539,090	21.4%	\$ 5,302,724	44.6%	\$ 4,044,466	34.0%	\$ 11,886,280	
* Based on actuals at varying times in the fiscal year. Years without asterick are budgeted amounts, not actuals.								

Slide 6

jp3

Is this going to be the past budgets? That would probably be useful to have. Since the purpose of this presentation is to present the FY12 work plan you can include the FY12 proposed budget and then get rid of the slide that has out-year budgets.

Also may want to mention that the full program funding identified in the EIS/ROD was ~\$16 million per year for the first ?? years and then \$XY million after that. I don't have these values off the top of my head right now.

Joe Polos, 3/13/2012

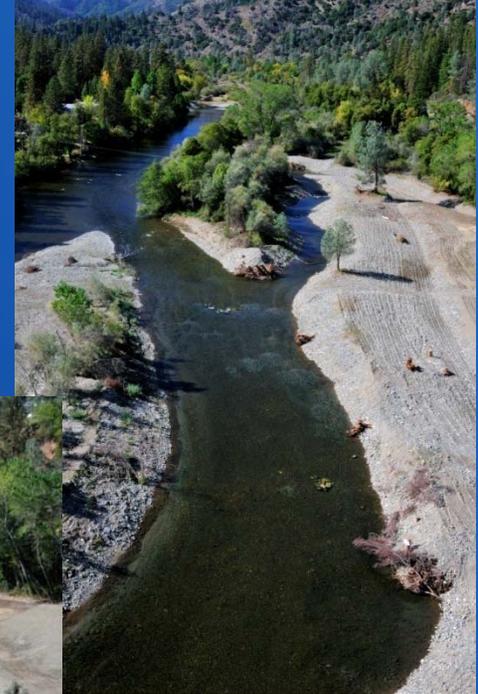
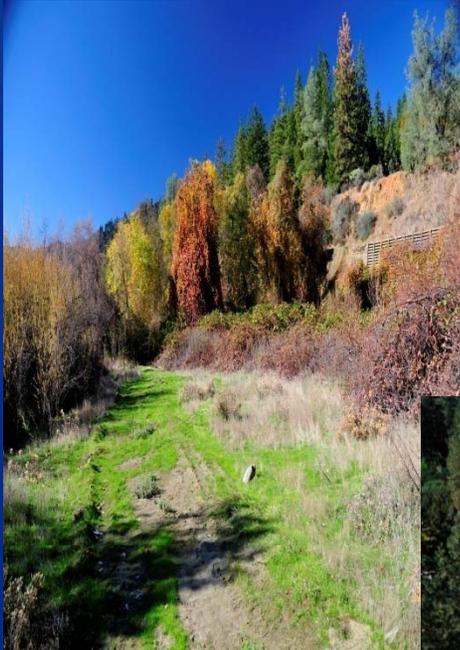
TRRP 2011 Accomplishments

- Wheel Gulch Project - private landowner & Caltrans (7 acres, 0.3 river miles)
- Highest ROD restoration release
 - 3 days @ 11,000 cfs
 - largest release in 37 years
 - Well Grant Program reopened
- Gravel injection – 2 sites total 5,300 cy
 - Mobilize and redistribute gravel

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Wheel Gulch Project

- 7 acre site
- 60/40 split flow channel
- Low flow channel
- Alcove
- Wood geomorphic structures



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- Six watershed projects
 - road improvements or decommissions to reduce sediment and culvert replace to remove fish barriers
 - rapid sediment assessments to quantify watershed condition
- 2011 analysis - 2009/10 sediment budgets
 - sand content of the channel bed and banks downstream from Lewiston dam

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Watershed Projects

FY 2011 Projects	TRRP (\$)	Match (\$)
Middle Trinity Road Decommissioning and Upgrade	150,000	70,000
Union Hill Road Improvement	87,500	27,000
Indian Creek Rehabilitation and Sediment Control, Phase 2	107,000	0
West Weaver Creek Rapid Assessment	55,500	35,000
Conner Creek Migration Barrier	50,000	495,000
Browns Creek Road Sediment Assessment	42,300	0
Total FY2011	492,300	627,000

FY 2012 Projects	TRRP (\$)	Match (\$)
BLM Roads Sediment Reduction	260,000	50,000
Lower East Weaver Creek Habitat and Infrastructure Project	76,000	27,000
Sidney Gulch at Forest Service Compound Feasibility	90,000	14,000
Conner Creek Fish Passage Feasibility	50,000	8,500
LiDAR Tributary Data Acquisition	20,000	16,000
Total FY2012	496,000	115,500

TRRP Watershed Contributions, FY 2008-2012:

\$1,934,000

Leveraged funds, FY 2008-2012:

\$2,019,500

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Monitoring and Assessment

- **Biological**

- **Adult salmonid harvest and escapement monitoring** – provides status and trend information used to evaluate long-term progress toward achieving Program goals
- **Juvenile salmonid outmigrant monitoring** - assess the juvenile salmonid abundance, run timing, condition and health -
- **Salmonid habitat assessment** – assess the effects of restoration actions on Chinook Salmon and Coho Salmon rearing habitat
- **Riparian establishment and development** – evaluate whether scour, encroachment, initiation and establishment objectives are being met.
- **Birds** – Monitoring five focal species expected to show measureable responses to habitat restoration: Tree Swallow, Yellow Warbler, Yellow-breasted Chat, Song Sparrow, and Black-headed Grosbeak

Fisheries Managers

US Fish and Wildlife Service – Federal TRRP Co-lead

<http://www.fws.gov/arcata/fisheries/activities/habRestoration/default.html>

CDFG –harvest, escapement, run size estimates

<http://nrm.dfg.ca.gov/documents/ContextDocs.aspx?cat=KlamathTrinity>

NOAA – NMFS Protected Resources Division

- salmon/steelhead of S. Oregon and California
- SONCC draft recovery plan

<http://swr.nmfs.noaa.gov/recovery/SONCC.htm>

Hoopa Valley Tribal Fisheries Dept –

<http://www.hoopafisheries.org/>

Yurok Tribe Fisheries –

<http://www.yuroktribe.org/departments/fisheries/FisheriesHome.htm>

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Monitoring and Assessment

- **Physical**

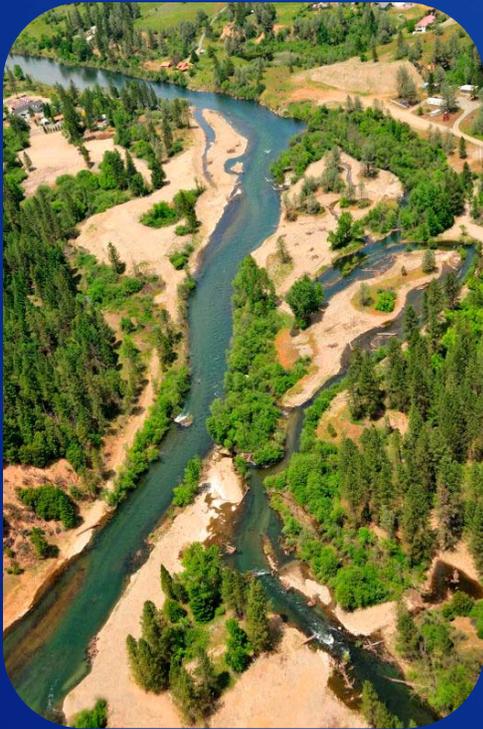
- **Sediment transport** - quantity of sediment (by size class) mobilized within each mainstem sub-reach under various release-hydrograph scenarios; used to develop a **Sediment budget**
- **Bed mobility and scour** - evaluate if established thresholds are being achieved
- **Implementation monitoring and analysis** - monitoring activities needed to inform rehabilitation site design and gravel augmentation
- **Geomorphic assessment** - quantify nature, extent, and rate of geomorphic change since 1980
- **Linking sediment supply and channel complexity** - morpho-dynamic modeling to investigate specific daily release hydrographs and gravel augmentation scenarios that best promote development of the desired complex channel.

New Approaches

- External Peer Review - all investigation and design plans, reports and other products
- Sampling Design – site specific/systemwide
- Partnership-wide Data Management Team
- Investigation Plan Database
- Technical Work Groups – posted summaries
Physical, Fish, Riparian/Wildlife, Temperature, Design, Watershed,
Flow, Data, and Interdisciplinary Team

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Performance Measures



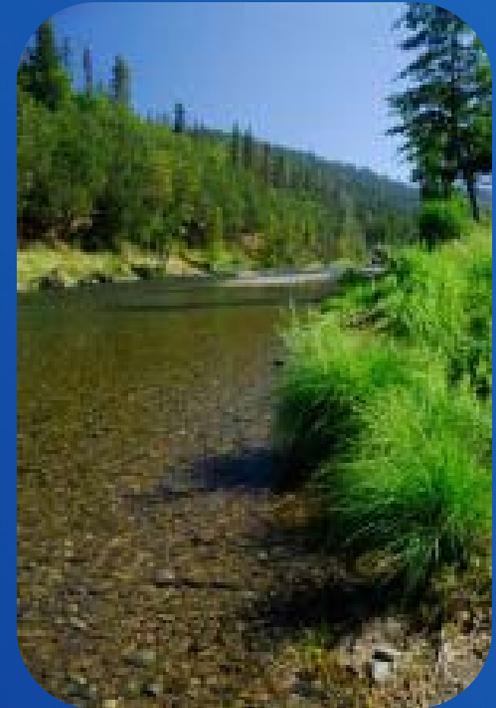
Aquatic Habitat



Fish



Wildlife



Riparian Vegetation

http://www.trrp.net/?page_id=490

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http://www.trrp.net/?page_id=490

Aquatic Habitat Measures

- [Restoration Water Volume Accounting](#)
- [Increase and Maintain Coarse Sediment Storage](#)
- [Change in Fine Sediment Storage](#)
- [Temperature Target Performance](#)
- [Chinook and Coho Salmon Rearing Habitat](#)

Fish Measures

- [Abundance of Naturally Produced Juvenile Chinook Salmon](#)
- [Spawning Escapement of Naturally Produced Salmonids](#)
- [Proportion of Natural Origin Salmonids Contributing to Total In-River Run](#)
- [Distribution of Natural-Origin Chinook Salmon Spawners](#)

Wildlife Measures

- [Abundance Patterns Over Time for Riverine Birds](#)
- [Abundance Patterns Over Time for Riparian Birds](#)
- [Comparison of Turtles on the South Fork Trinity and Mainstem Trinity](#)

Riparian Vegetation

[Mapping and Quantifying Riparian Vegetation](#)

Trinity River Restoration Program Performance Measure:

Chinook and Coho Salmon Rearing Habitat

Hypothesis: Restoration actions will lead to site-specific and restoration reach increases in Chinook and coho salmon rearing habitat (hereafter rearing habitat) area. The restoration reach for this assessment is defined as the 64 km (40 miles) of mainstem Trinity River between Lewiston Dam and the confluence with the North Fork Trinity River.

Importance: The primary limiting factor for Chinook and coho salmon populations in the Trinity River is rearing habitat availability. The restoration strategy for the Trinity River is designed to restore through-geomorphic processes downstream of Lewiston Dam. We anticipate that this strategy will lead to increased channel complexity and reach in riparian reaches in adjacent habitat quality and quantity in the entire Trinity River and particularly within the restoration reach. The restoration strategy is made up of four components including: (1) mechanical channel rehabilitation, (2) flow management to drive fluvial processes that create and maintain subchannel habitats and provide outside channel regimes, (3) coarse sediment augmentation, and (4) watershed restoration. Although we anticipate the maximum change in rearing habitat at channel rehabilitation sites, we hypothesize that the restoration strategy will create synergistic effects, improving habitat throughout the restoration reach.

Objective:

General Objective from the [Integrated Assessment Plan \(IAP\)](#)

IAP objective 2.3.1: Increase (maintain reduced fry and parrish) rearing habitat in the upper 64 km (40 miles) of the mainstem Trinity River by a minimum of 40 percent following rehabilitation of channel attributes.

Specific Objectives Related to the General Objective:

1. Quantify the change in rearing habitat area and quality at an index streamflow from construction of channel rehabilitation sites.
2. Evaluate the effects of channel rehabilitation treatment types on streamflow to habitat relationships.
3. Estimate the quantity of rearing habitat within the restoration reach.
4. Evaluate the annual trend in rearing habitat area from rehabilitation actions within the restoration reach.

Targets, Predicted or Desired Response: We anticipate rearing habitat area to increase at channel rehabilitation sites from restoration. We expect this increase not only to occur immediately after construction but also to continue with high streamflow events, riparian development, large wood recruitment, and more. The magnitude of change will vary by bank rehabilitation site and specific site design hypotheses and predictions. In addition, we anticipate rearing habitat conditions to improve outside of bank rehabilitation sites. We anticipate a measurable response in total habitat area and high-quality habitat through time. The current target for rearing habitat increases is 40 percent of pre-BCD levels, but this target is currently under investigation in relation to measured response and system potential.

1 January 2012

Technical Approach: Channel rehabilitation sites are assessed by measuring rearing habitat area before and after construction. Post-construction assessments begin soon after construction and are repeated periodically to track the evolution of bank rehabilitation sites with time. For specific design features, the effects of channel rehabilitation on streamflow to habitat relationships were evaluated by measuring rearing habitat area at a variety of streamflow before and after construction.

Changes in the restoration reach are evaluated by measuring rearing habitat at randomly selected sites throughout the restoration reach using a rearing reach index design. By applying this study design annually, the synergistic effects of restoration actions will be documented and improve the understanding of how the Trinity River responds to specific management actions such as the differential effects of variable water year type (rainfall or allocation). Rearing habitat area is mapped within study sites following methods developed on the Trinity River, as described in [Gibson et al. 2010](#). This technique provides a spatially explicit representation of rearing habitat areas within study sites.

Results: Figure 1 shows the changes in estimated fry and parrish rearing habitat area at the three Observation rehabilitation sites following construction. Figure 2 shows the estimated total and optimal fry and parrish rearing habitat available throughout the mainstem reach in 2009 and 2010. The area estimates presented below were not significantly different between 2009 and 2010.

Contact: Justin Brown, justin@trinityriver.org, Hoopa Valley Tribe, Hoopa, CA (530) 625-0207; Aaron Martens, aaron@trinityriver.org, Yakima Fishery Program, Washington, CA (509) 625-4100; and Devon Goodwin, devon@trinityriver.org, US Fish and Wildlife Service, Astoria, CA (707) 599-8882.

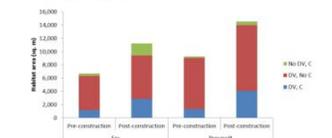


Figure 1. Available rearing habitat across the entire River Observation rehabilitation sites (WPM 178.64-178.6) at 0.6 m²/m (200-cfs). Pre-construction conditions were measured in 2009 and post-construction conditions were measured in 2010.

2 January 2012

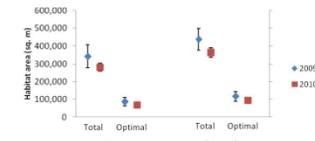


Figure 2. Total and optimal fry and parrish rearing habitat available in 2009 and 2010. Error bars indicate a 95% confidence interval.

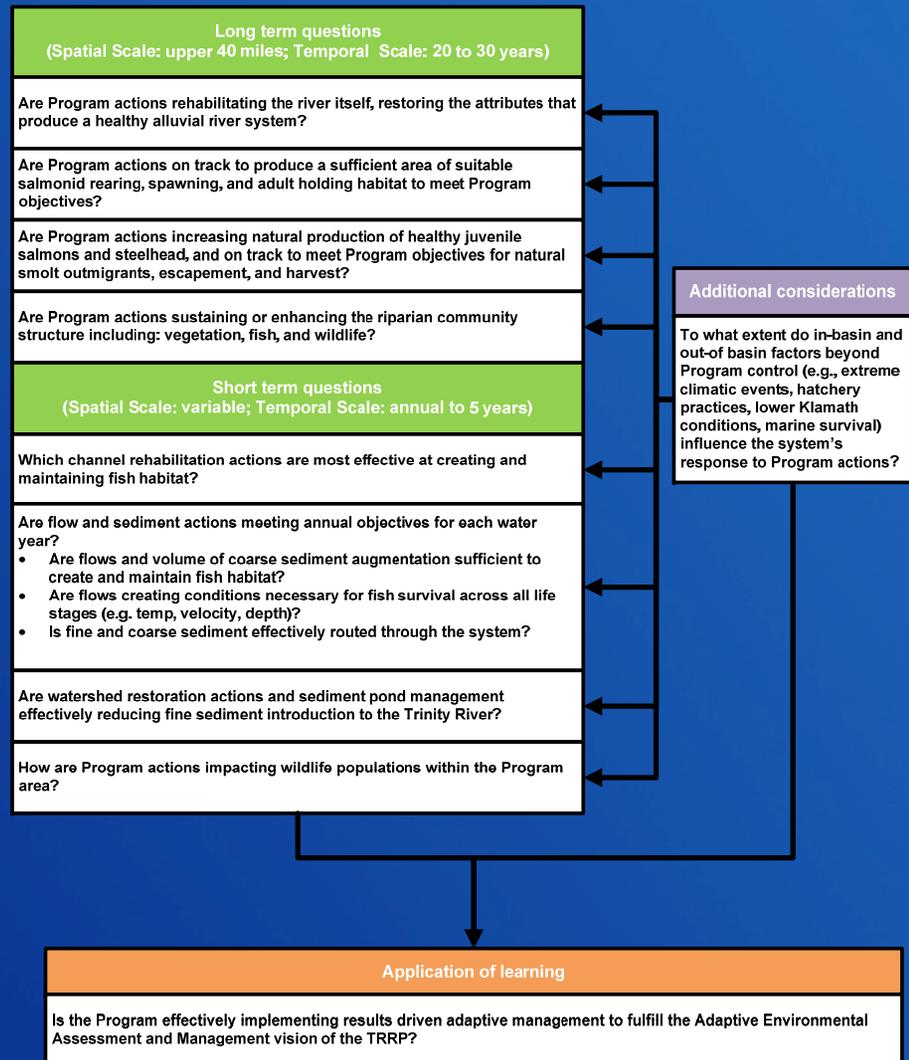
3 January 2012

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Big Questions

What we want to learn:

- Success of Program actions
- Context for synthesis of physical-biological responses
- Develop weight of evidence for adaptive management
- Report to partners, decision-makers, policy makers, stakeholders, public



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New Results to Inform Adaptive Management

Upcoming Reports

- Trinity River Restoration Program Adult Salmonid Monitoring Evaluation (3/12)
- Adult salmonid harvest and escapement—CDFG, Hoopa and Yurok Tribes
- Juvenile salmonid outmigrant monitoring
- Salmonid habitat assessment —
 - 2011 included in the Phase I review

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Upcoming Reports

- Integrated Habitat Assessment of the Upper Trinity River
- Riparian establishment and development
- Bed mobility and scour
- Implementation monitoring and analysis
 - pool scour/fill evaluation

2012 Activities

- Annual Monitoring and Assessment
- Planned restoration activities jp9
 - Upper Junction City
 - Lower Steiner Flat
 - Bank Naturalization
- Phase 1 review – SAB/support contractor & external review panel (8/12)

Slide 20

jp9

Not sure how you want to deal with this but this was a FY11 activity that carried over until FY12)which is common for many activities). I've just added completion date for this since it was initiated in FY11.

Joe Polos, 3/13/2012

Physical Habitat Assessments

- LiDAR and aerial photography
- Geomorphic Assessment
- Bathymetry

Flow Scheduling

- Annual Flow Schedule –
 - Flow proposals developed
 - 3/19 Work Group recommendations
 - 3/20 Recommendations to TAMWG & TMC
- Klamath River Fall Flows
 - Flow Work Group memo –
 - recommendations/criteria

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Outreach

2011

- Public meetings: Wheel Gulch Project, Lewiston Townhall, Wood Workshop
- Stakeholders meetings: TRGA – site plans, one-to-one (++), 2012 projects special meetings
- Work Group Meeting Summaries
<http://www.trrp.net/?s=work+group>

2012

- Douglas City/Draft Environmental Document for the Lower Steiner Flat and Upper Junction City Channel Rehabilitation Sites
- Public input meetings with external facilitator (6)

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Questions ?

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