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Washington

July 30, 2013

MEMORANDUM

TO: Fish and Wildlife Committee Members

FROM: Mark Fritsch, Project Implementation Manager

SUBJECT: Step 1 review of *Yakima Subbasin Summer and Fall Run Chinook and Coho Salmon Hatchery Master Plan*.

PROPOSED ACTION: Council staff recommends that the Fish and Wildlife Committee approve the *Yakima Subbasin Summer and Fall Run Chinook and Coho Salmon Hatchery Master Plan* to proceed with Step 2 activities for the Holmes Ranch component of the coho program. This recommendation is subject to the requirement that the Yakama Nation addresses the issues raised by the ISRP as part of the Step 2 submittal.

SIGNIFICANCE: On July 23, 2012, the Yakama Nation (YN) submitted Step 1 (master plan) documents to the Council, as part of the Three-Step Review Process, for the *Yakima Subbasin Summer and Fall Run Chinook and Coho Salmon*, a component of Project 1988-115-25, *Yakima Klickitat Fisheries Project, Design & Construction*.

In the Master Plan, the YN proposes to implement hatchery strategies that will contribute primarily to harvest and secondarily to cultural/conservation goals identified for Yakima coho and summer and fall Chinook. The purpose of the proposed actions is to increase harvest levels, natural spawning abundance, and spatial/temporal distribution of both species in the Yakima River Basin. The coho and Chinook programs are components of the ongoing Yakima-Klickitat Fisheries Project (YKFP) under which the YN and its partners are enhancing existing stocks of anadromous fish in the Yakima and Klickitat river basins while maintaining genetic resources and reintroducing runs formerly present in the subbasins.

Though both species are addressed in the master plan, coho is the action being addressed by this review and recommendation. Fall Chinook actions will remain as currently reviewed and recommended and any expansion will depend on a future reviews.

BUDGETARY/ECONOMIC IMPACTS

Project costs presented in the Step 1 documents are consistent with Council's Three-Step Review Process. It is important to note that these conceptual costs are a planning baseline from which to refine cost estimates, evaluate alternatives and protect against budget expansion as the proposed project progresses through the preliminary (Step 2) and final design (Step 3) phases and implementation.

Project costs provided in the Step 1 Master Plan are based on the proposed programs, and conceptual designs to construct new facilities at the Prosser, Marion Drain, Sunnyside Dam and Holmes Ranch sites were based on the proposed programs and conceptual designs. Cost estimates for facility planning and design, land acquisition, construction, capital equipment, environmental compliance, operations and maintenance and research, monitoring, and evaluation are presented for each of the hatchery facilities. Though the Master Plan addresses the needs for both Chinook and coho, the priority at this time for the YN is to implement the Holmes Ranch coho hatchery program.

Capital funds totaling \$7,700,000 are reserved in MOA budgets between the YN and the FCRPS Action Agencies for a coho production facility construction. It is important to note that there is a discrepancy between the total estimated construction costs in the master plan for the Holmes Ranch and the MOA reserve. This discrepancy will be further refined as the project progresses through design and reviews steps.

II. Key Expenditures by Program Area

The summary of key expenditures by step and program area (see Attachment 1) provides an approximate overview of future costs for planned programs as presented in the Step 1 Master Plan for the Holmes Ranch coho hatchery.

- Planning & Design Step 1- \$102,500 (Contract amount to develop Step 1 Master Plan for completion of a Step 1 Master Plan)
- Planning & Design Step 2 - \$317,750
 - Environmental Compliance Step 2 (Permitting, Environmental Assessment, Other) \$340,662
- Planning & Design Step 3 - \$568,388
- Construction - \$8,849,104
- Capital Equipment \$97,889¹

¹ Reflects costs associated with various equipment for office and laboratory, fish rearing, and fish transport.

The total budget for the conceptual planning associated with the Master Plan is about \$102,500. This figure is an estimate that includes conceptual planning, engineering, and development of the Step 1 Master Plan.

The preliminary planning and design stage, intended to meet the Council's Step 2 requirements, is designed to identify any major difficulties or concerns with the program and facility designs. Step 2 design work should provide sufficient detail and specifics to ensure that the intent and scope of the Step 1 conceptual design work can be met and to refine the cost estimates further. Step 2 will include refinement of scientific information, environmental compliance, and ESA reviews. A placeholder of about \$658,412 has been identified for Step 2 preliminary planning, environmental compliance, site investigations and design. Initiation of this work is proposed in Fiscal Years 2013 and 2014.

A placeholder of about \$568,388 has been identified for the Step 3 final planning and design stage. It is anticipated that this work will begin in Fiscal Year 2014 and 2015. Refinement of the Step 3 budget will occur as part of the Step 2 development and design.

In addition, the YN is requesting a design/build approach at the completion of Step 2. This approach would provide the most realistic construction cost estimate possible in Step 3. This approach could compress the overall timeline for implementation and would result in significant cost savings without compromising the Council's requirements for Step 3. The final construction contract would be negotiated at the completion of the final design and formal Council approval of the Step 2/3 documents.

The total estimated conceptual construction budget for the Holmes Ranch coho hatchery as outlined in the master plan is approximately \$8,849,104. The budget estimate used master planning guidance of +/- 35 to 50 percent and will be refined as part of the next submittal associated with Steps 2/3

Future cost estimates for operations and maintenance (O&M) at Holmes Ranch coho hatchery is estimated to be about \$579,000 annually. Related M&E expenses are addressed within the existing *Yakima River Monitoring and Evaluation-Yakima/Klickitat Fisheries Project (YKFP), Project #1995-063-25*. The Master Plan shows these costs escalated at 2 percent annually through 2022.

BACKGROUND

The Yakima River originates at the outlet of Lake Keechelus and runs for 214 miles in a southeasterly direction to its confluence with the Columbia River at Richland. With its tributaries, the Yakima River drains about 6,150 square miles or 4 million acres. The headwaters of the Yakima Subbasin originate in the high Cascade Mountains, with numerous tributaries draining subalpine regions within the Snoqualmie National Forest and the Alpine Lakes, Norse Peak, and William O. Douglas Wilderness areas. Major tributaries include the Kachess, Cle Elum and Teanaway rivers in the northern part of the subbasin. The Swauk, Taneum, Umtanum, Manastash, and Wenas creeks drain into the upper and middle Yakima River. The Naches River and Ahtanum, Toppenish, and Satus creeks join the Yakima in the middle subbasin from the west.

Major cities in the Yakima Basin include Ellensburg, Yakima, Prosser, and Toppenish. Important facilities to fish and wildlife projects in the subbasin include Prosser Hatchery on the mainstem Yakima River (RM 47), Marion Drain Hatchery (located 13.8 miles upstream of the mouth of a 20.3 mile-long irrigation drain that enters the Yakima River at RM 77), Sunnyside Dam (RM 103.8) and Roza Dam (RM 128).

The Yakima subbasin supports at least 48 species of anadromous, resident native, and exotic fish. Anadromous species include spring and fall Chinook, coho, and summer steelhead. Historically, 500,000-900,000 adult salmon and steelhead returned to the Yakima Subbasin annually. This total was composed of spring, summer, and fall Chinook, coho, sockeye, and steelhead.

The National Marine Fisheries Service listed summer steelhead in the Mid-Columbia ESU, which includes the Yakima Subbasin, as threatened under the ESA. Endemic coho stocks were extirpated by 1980, although naturalized production resulting from hatchery releases has been documented since 1989. Endemic summer Chinook were last observed in the early 1970s and are now considered extirpated. Sockeye were historically abundant, but were extirpated following the completion of impassible storage dams below all natural rearing lakes in the late teens and early 1920s. Reintroduction of sockeye began in 2009 by transporting adults from the Columbia to Lake Cle Elum. Pacific lamprey is a U.S. Fish and Wildlife Service category 2 candidate species, and in the Yakima Basin have become very rare.

I. History and objectives of the Yakima Subbasin Summer and Fall Run Chinook and Coho Salmon Hatchery Master Plan

Coho

In early 1996 the Yakama River Coho Supplementation Project was one of the high priority supplementation projects approved by the Council. The project was expected to progress through four experimental design phases: 1) select and introduce a donor stock, 2) test and initiate re-colonization of natural habitat, 3) continue colonization and transition to local broodstock, and 4) a local adaptation phase. Phase 1 and 2 have been accomplished and the intent of the actions defined in the master plan address the implementation of the third and fourth phases.

The first phase of the effort was aimed at (1) moving existing coho hatchery releases to locations above the confluence of the Yakima and Naches rivers, and (2) evaluating the extent and feasibility of restoring naturally spawning coho to the Yakima River Basin. This effort was considered successfully completed in 2003.

Phase 1 results provided the baseline data needed to demonstrate that coho reintroduction was feasible, and that their reestablishment in the basin would not substantially affect other species of concern (e.g., Chinook and steelhead). Phase 2 goals were to increase coho spawning in tributaries, phase out imported releases of coho in the Yakima Basin, and replace them with fish reared from locally collected broodstock and test and monitor new acclimation techniques. Phase 2 studies are on-going and will be considered completed with the implementation of Phase 3 under the master plan.

II. Proposed Coho Program and Facilities

The primary goal of Phase 3 of the artificial production program is to provide fish for harvest and for natural production in the subbasin. This goal will be accomplished by implementing both segregated and integrated hatchery programs in the basin. The segregated program component will be located at Prosser Hatchery on the lower Yakima River and the integrated program will be located at Holmes Ranch Hatchery on the Upper Yakima River. The segregated program will release 500,000 smolts (at 15 fish per pound (fpp)) downstream of Prosser Dam using broodstock collected at Prosser. The integrated program will rear and release 500,000 parr (at 100 fpp) and 200,000 smolts (at 20 fpp) in the upper Yakima and Naches rivers using broodstock collected at Roza and Sunnyside. Fish will be 100percent coded wire-tagged but not adipose fin-clipped. Different coded wire tag codes will be used to distinguish release locations.

Phase 4 will begin when the number of natural-origin coho exceeds hatchery-origin coho at Prosser Dam for three consecutive brood years. The three year period was selected as the criterion because it corresponds to the three year life cycle of coho. When the adult criterion is achieved, the program will operate as follows:

- The segregated harvest program will continue to produce and release 500,000 smolts at Prosser Hatchery.
- The integrated conservation program will be operated to achieve a PNI of 0.75 and pHOS of no more than 30 percent. Thus, the focus of the integrated program will shift to one that equally emphasizes harvest and conservation.
- The size of the program will be set at the level needed to produce sufficient parr to seed newly opened or restored stream habitat and the adults needed for broodstock to operate the segregated program.
- The 200,000 smolts from the integrated program may be acclimated and released at Prosser in order to increase their juvenile to adult survival rate and thus provide greater harvest benefits. Fish from the segregated program will be 100 percent ad-clipped or coded wire tagged, while the integrated program will be 100 percent marked.

Though the master plan addresses the needs for both Chinook and coho, the priority at this time for the YN is to implement only the Holmes Ranch coho hatchery program. The proposed major elements associated with the coho hatchery include the following.

- New intake screens and a surface water pump station will provide water to the hatchery from the upstream entrance to the side channel.
- Stop- log supports to be installed in the Cascade Irrigation District's screen structure will allow surface water to be diverted into the side channel.
- Three new wells will supply groundwater and provide redundancy.
- A new centralized degassing head box will be installed for groundwater treatment and supply
- A new 28,000-square-foot hatchery and administration building will be designed for the coho incubation and rearing program. Water re-use systems will provide a 25 percent

make-up flow for the program to produce high-quality fish using the limited available water supply.

- New adult holding and spawning facility
- New cleaning waste treatment pond
- Two new 2,000-square-foot residences.

III. Major Project Review (The Three-Step Process)

On July 23, 2012, the Yakama Nation (YN) submitted Step 1 (Master Plan) documents to the Council, as part of the Three-Step Review Process, for the *Yakima Subbasin Summer and Fall Run Chinook and Coho Salmon*, a component of Project 1988-115-25, *Yakima Klickitat Fisheries Project, Design & Construction*.

On September 17, 2012 the ISRP provided their preliminary review (ISRP Document 2012-13). The ISRP requested additional information (i.e., "response request") and requested that the response provide key information that was lacking in the Step 1 documents.

On February 25, 2013 the Council received a submittal intended to provide the requested information and on July 17, 2013 the ISRP provided its final review (ISRP Document 2013-13). The ISRP found that both the coho and summer/fall Chinook programs meet scientific review criteria with the qualification that the ISRP's questions and concerns presented in this review be addressed in Step 2. The qualifications raised by the ISRP are summarized in the following.

Key issues for coho include:

1. the transition from Phase 3 to Phase 4
2. management of harvests and spawning escapement
3. the likelihood of implementing the expected habitat restoration plans (Integrated Plan)
4. management of the overall program in light of high uncertainty in the extent of habitat actions and fish responses to actions
5. the need for a robust monitoring and evaluation program to support a management decision framework, and
6. overall program size.

ANALYSIS

The ISRP found that the master plan and the response information provided by the Yakama Nation meets science review criteria and the proposal should proceed to the next review step. The ISRP also stated in their review that the Yakama Nation prepared a comprehensive and fairly thorough Master Plan for its Yakima Subbasin summer/fall Chinook salmon and coho salmon hatchery programs and found that the proposal builds upon the existing hatchery system by improving the proposed hatchery infrastructure and modifying the program goals and objectives to better fit the needs of the Yakama Nation while also addressing the scientific principles in the Council's fish and wildlife program. The goal of the proposed Yakama Nation program is to provide harvest opportunities for tribal members and others, while also developing sustainable natural populations of summer/fall Chinook salmon and coho salmon in the upper Yakima River watershed.

The ISRP review and recommendations address the need for additional clarification to be able to reasonably conclude that the proposed actions are likely to succeed and meet the fish and wildlife program's artificial production strategy guidelines. That said, the ISRP qualifies its recommendation on emphasizing the conservation and rebuilding that is anticipated in Phase 4 of the proposed program (Phase 4 - local adaptation phase that begins when the number of natural-origin coho exceeds hatchery-origin coho at Prosser Dam for three consecutive brood years). This issue is closely linked to another concern raised by the ISRP as it relates to the habitat efforts and relationship to the fish response in the Yakima River Subbasin.

The experimental nature of this project over the past 17 years does not conform to the norm for the development of an artificial-production project. This project has evolved with the science, and in doing so, has used existing facilities and natural sites as was envisioned in 1996 when the feasibility studies were approved for implementation.

Based on the ISRP review, the Council staff recommends that the Fish and Wildlife Committee approve the *Yakima Subbasin Summer and Fall Run Chinook and Coho Salmon Hatchery Master Plan* to proceed with Step 2 activities (i.e., preliminary design and environmental review) for the Holmes Ranch component of the coho program. This recommendation is subject to the requirement that the Yakama Nation addresses the issues raised by the ISRP as part of the Step 2 submittal.

Though both coho and Chinook are addressed in the master plan, coho is the action being addressed by this review and recommendation. Fall Chinook actions will remain as currently reviewed and recommended and any expansion will depend on future revisions and ISRP review and Council recommendation.

Attachment 1: Summary of Step Expenditures and Ten Year Summary of Future Costs for the Holmes Ranch Coho Hatchery.

Program Area	Fiscal Year					
	2012	2013	2014	2015	2016	2017 - 2022
Planning and Design						
Step 1: Conceptual Engineering, Planning ²	\$102,500					
Step 2: Preliminary Engineering, Planning & Environmental Compliance ³		\$95,325	\$158,875	\$63,550		
Step 3: Final Engineering, Planning ⁴			\$284,194	\$284,194		
Construction						
Estimated Construction Costs ⁵				\$2,654,731	\$6,194,373	
Capital Equipment						
Capital Equipment ⁶					\$97,889	
Environmental Compliance						
Environmental Compliance ⁷			\$340,662			
Operations and Maintenance⁸						
Holmes Ranch					\$562,550	\$579,427 - \$671,714
Monitoring and Evaluation						

²Step 1 Planning (based on current expenditures to complete planning).

³ Step 2 Planning based on percentage of estimated construction costs (escalated to FY 2013 dollars).

⁴ Step 3 Planning based on percentage of estimated construction costs (escalated to FY 2014 dollars)

⁵ Estimated construction costs assume occurring in FY 2015 (escalated from FY 2012 to mid FY 2015 dollars)

⁶ Capital equipment, estimated lump sum for equipment items not shown in construction estimate (escalated from FY 2012 to FY 2015 dollars)

⁷ Environmental compliance costs (assumes expenses occur in FY 2014) (escalated from FY 2012 to FY 2014 dollars)

⁸ O&M cost hatchery program (costs escalated at 2.5% annually from 2012 dollars) assumes existing on-going operations

Monitoring and Evaluation Program ⁹				\$0	\$0	\$0
Total Estimated Capital Costs	\$102,500	\$95,325	\$783,731	\$3,002,475	\$6,292,262	
Total Estimated Expense Costs					\$562,550	\$579,427 - \$671,714
Total Estimated Costs	\$102,500	\$95,325	\$783,731	\$3,002,475	\$6,854,812	\$579,427 - \$671,714

⁹ Monitoring and evaluation program is covered under Project #1995-063-25, *Yakima River Monitoring and Evaluation-Yakima/Klickitat Fisheries Project (YKFP)*.

Yakima Basin Coho Reintroduction

Presented By:

David Fast

Senior Research Scientist

Yakama Nation

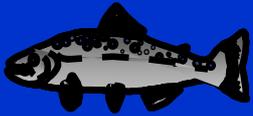


Yakima Subbasin Summer and Fall Run Chinook and Coho Salmon Hatchery Master Plan

Project # 1988-115-25

**Step One of the Northwest Power and
Conservation Council's Three-Step Review
Process**

Background



Extinct in Yakima in the 1980'S



**Through US v. Oregon Settlement Agreement
700,000 smolts released in Yakima (below Union
Gap) for harvest purposes**



**Program Goal - Re-establish self-sustaining naturally
spawning population of coho salmon in Yakima River**

Phase I: 1999-2003 Complete



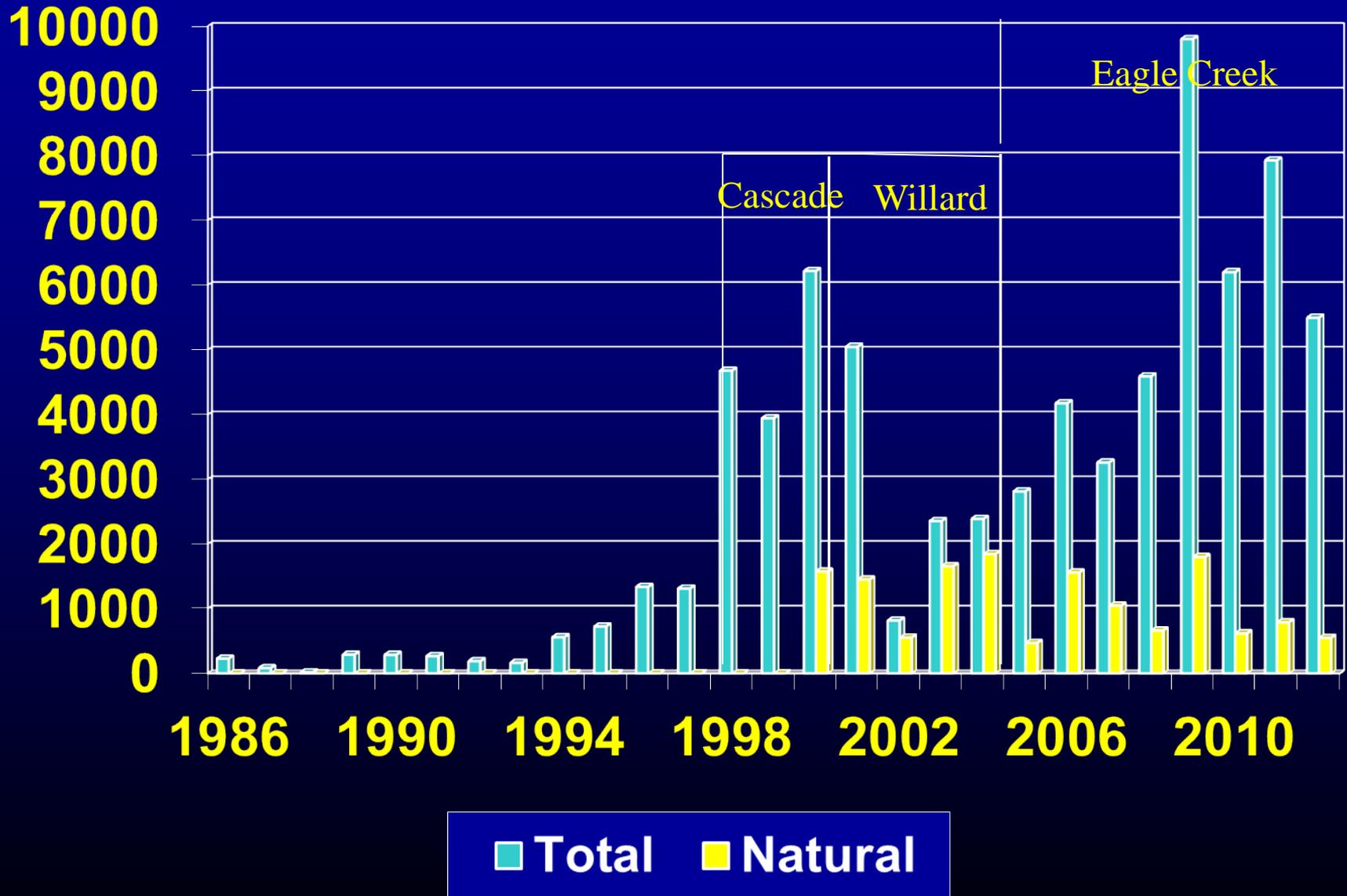
Feasibility

Interim Work: 2004-2006 Complete

Phase II: 2007-2011 Complete

Full Scale Reintroduction: Waiting...

Upper Yakima Coho Returns, 1986 – 2012



Master Plan and Review

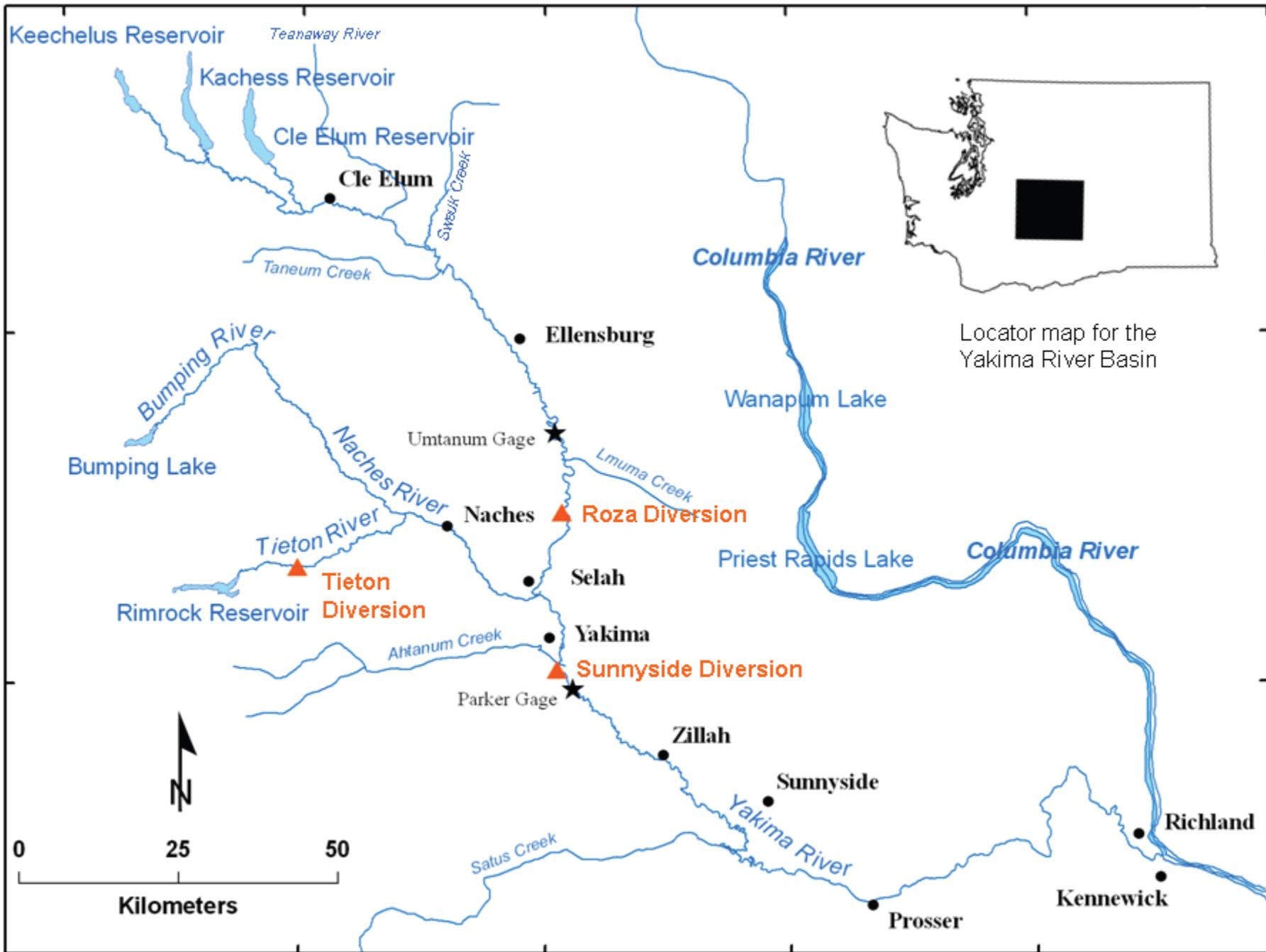
- On July 23, 2012, the Yakama Nation (YN) submitted Step 1 (Master Plan) documents to the Council, a component of Project 1988-115-25, *Yakima Klickitat Fisheries Project, Design & Construction*.
- On September 17, 2012 the ISRP provided their preliminary review (ISRP Document 2012-13). The ISRP requested additional information.

ISRP Review

- On February 25, 2013 the Council received a submittal intended to provide the requested information
- On July 17, 2013 the ISRP provided its final review (ISRP Document 2013-13). The ISRP found that both the coho and summer/fall Chinook programs meet scientific review criteria with the qualification that the ISRP's questions and concerns presented in this review be addressed in Step 2.

Key issues for coho include:

- the transition from Phase 3 to Phase 4
- management of harvests and spawning escapement
- the likelihood of implementing the expected habitat restoration plans (Integrated Plan)
- management of the overall program in light of high uncertainty in the extent of habitat actions and fish responses to actions
- the need for a robust monitoring and evaluation program to support a management decision framework, and
- overall program size.



2012 Hatchery Coho Juvenile Acclimation Sites Yakima Basin

Volitional Release, April 16, 2012

Holmes: 179,694

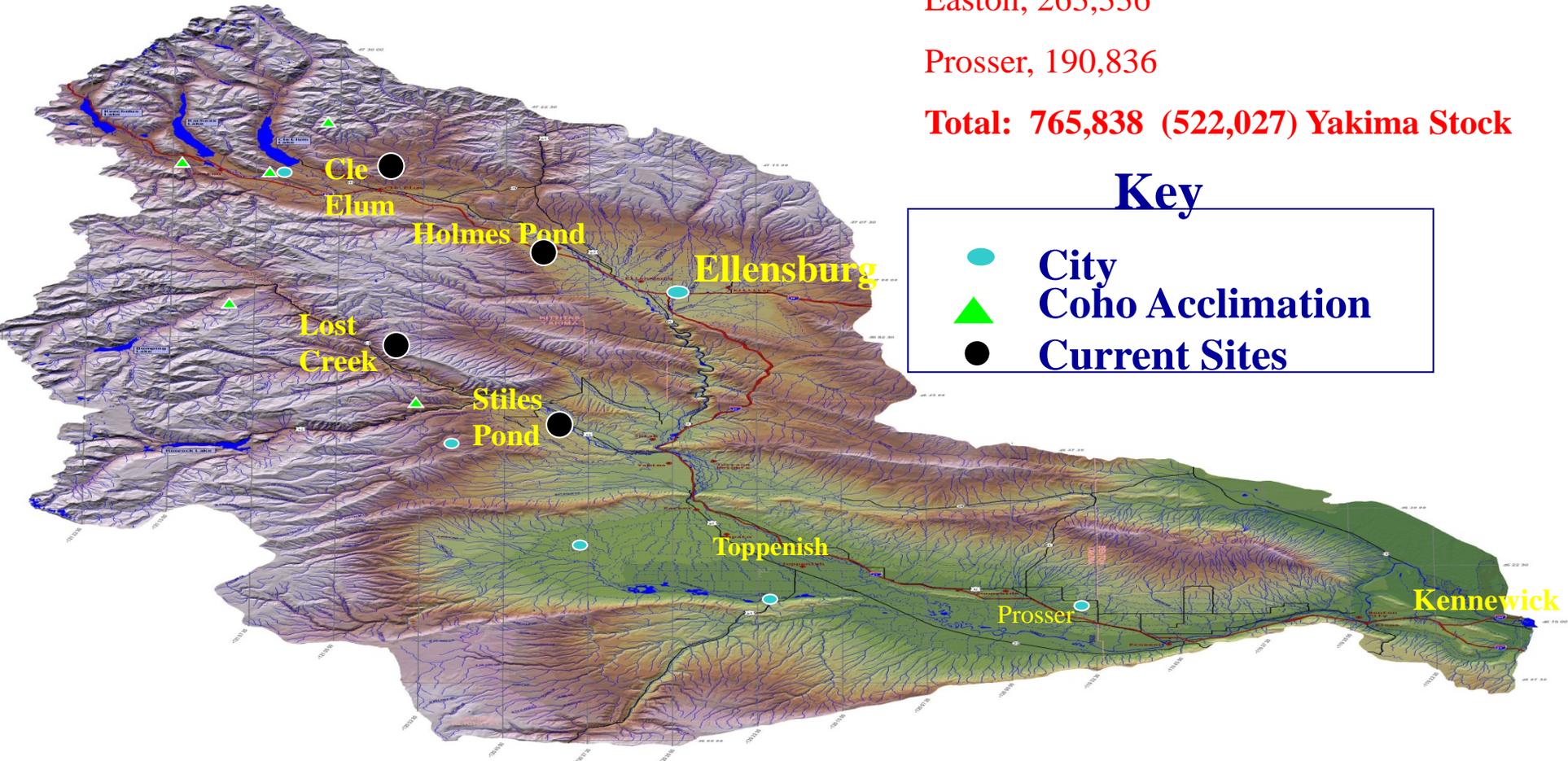
Lost Creek, 0

Stiles, 131,972

Easton, 263,336

Prosser, 190,836

Total: 765,838 (522,027) Yakima Stock



Key

- City
- Coho Acclimation
- Current Sites



AMY CUT-OFF RD

KLOCKE RD



Boulders

Large Trees

Gravim Gravel Placement

First Deep Excavation Followed by stump placement

Boulders

Boulders
Trees

Gravim Gravel

YAKIMA RIVER

YAKIMA RIVER

YAKIMA RIVER

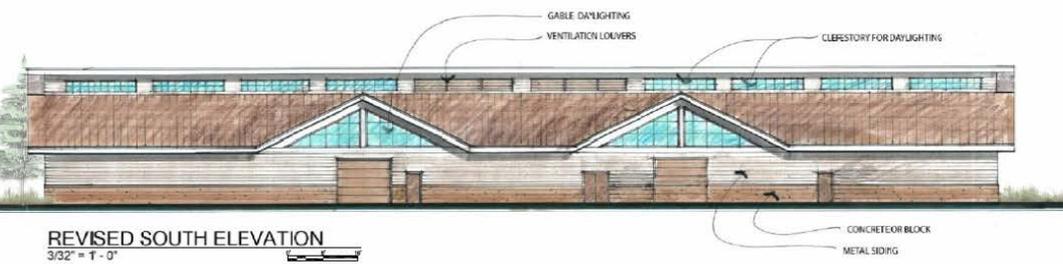
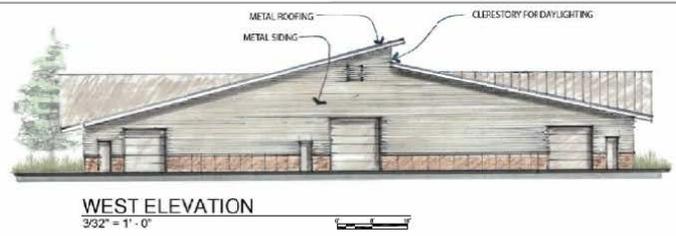
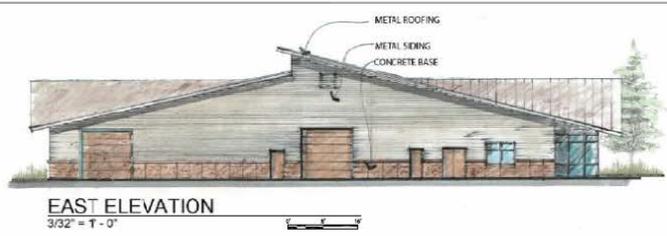


The Prosser Hatchery segregated harvest program will continue to produce and release 500,000 smolts.

The Holmes Hatchery integrated conservation program will produce 500,000 parr and 200,000 smolts. The program will be set at the level needed to produce sufficient parr and smolts to seed newly opened or restored stream habitat and the adults needed for natural production and broodstock to operate the segregated program.

The integrated program will be operated to achieve a PNI goal of 0.75 and pHOS of no more than 30 percent. Thus, the focus of the integrated program will shift to one that equally emphasizes harvest and conservation.

Proposed YKFP Coho Facility



REV	DATE	BY	DESCRIPTION



WARNING
 IF THIS DRAWING HAS
 BEEN REPRODUCED,
 IT IS NOT TO BE USED
 IN ANY MANNER
 WITHOUT THE WRITTEN
 PERMISSION OF LCA

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 Office: (206) 842-8214
 Fax: (206) 842-8218



YAKAMA NATION FISHERIES
 HOLMES RANCH HATCHERY CONCEPT DESIGN
 HATCHERY BUILDING ELEVATIONS

DESIGNED: M. SEDER
 DRAWN: D. LEFA
 CHECKED:
 ISSUED DATE: 3/16/12
 DRAWING: **AH-2**
 SCALE: AS NOTED

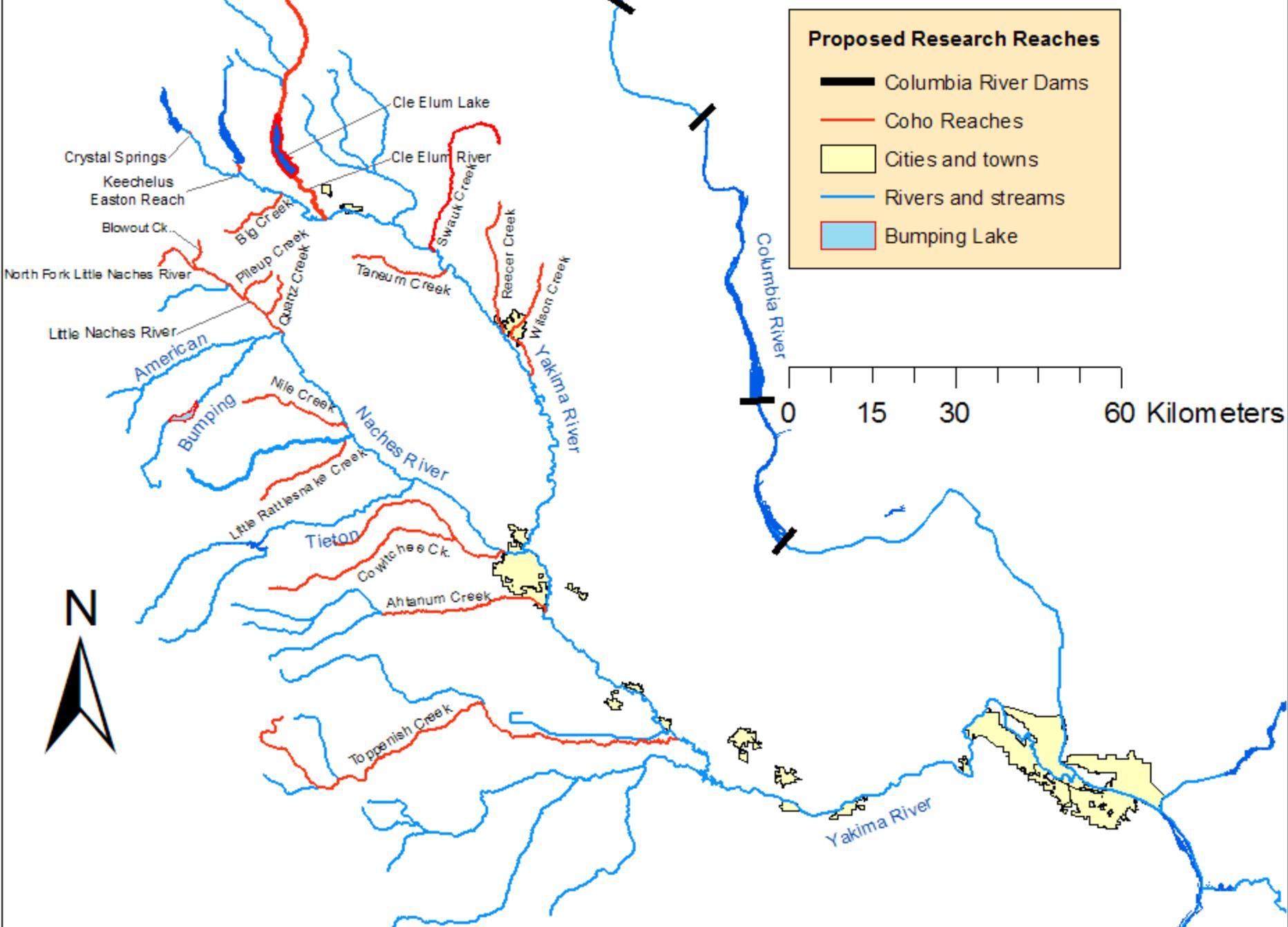
Tools Sign Comment
 Sign In
 Export PDF
 Create PDF
 Send Files
 Adobe SendNow
 Verify your file is received. Send files online instead of email.
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 Store Files

Holmes Hatchery Design

- **A new 28,000-square-foot hatchery and administration building for the coho incubation and rearing program. Water re-use systems will provide the limited available water supply.**
- **Three new wells will supply groundwater and provide redundancy.**
- **A new centralized degassing head box will be installed**
- **New adult holding and spawning facility**
- **Two new 2,000-square-foot residences**
- **New intake screens and a surface water pump station will provide water to the hatchery**

Cost Estimates

- Planning & Design Step 1- \$102,500 (Contract amount for completion of a Step 1 Master Plan)
- Planning & Design Step 2 - \$317,750
 - Environmental Compliance Step 2 (Permitting, Environmental Assessment, Other) \$340,662
- Planning & Design Step 3 - \$568,388
- Construction - \$8,849,104
- Capital Equipment \$97,889
- Reflects costs associated with various equipment for office and laboratory, fish rearing, and fish transport.



Summer Parr Survival To McNary Dam

5yr Naches Smolt Average



Mobile Acclimation

Rattlesnake Creek



Adult Out Planting



 **Study
In
Progress** 

Please Do Not Disturb!

This is a research site designed to evaluate the spawning success of coho salmon and the future interactions of their offspring with other resident fish species. This research is being conducted by the Yakama Nation Fisheries (YN) and the Washington Department of Fish and Wildlife (WDFW).

Please do not disturb racks, site, or fish.

NOTE: FISH HAVE BEEN TREATED WITH CHEMICALS AND ARE NOT EDIBLE!

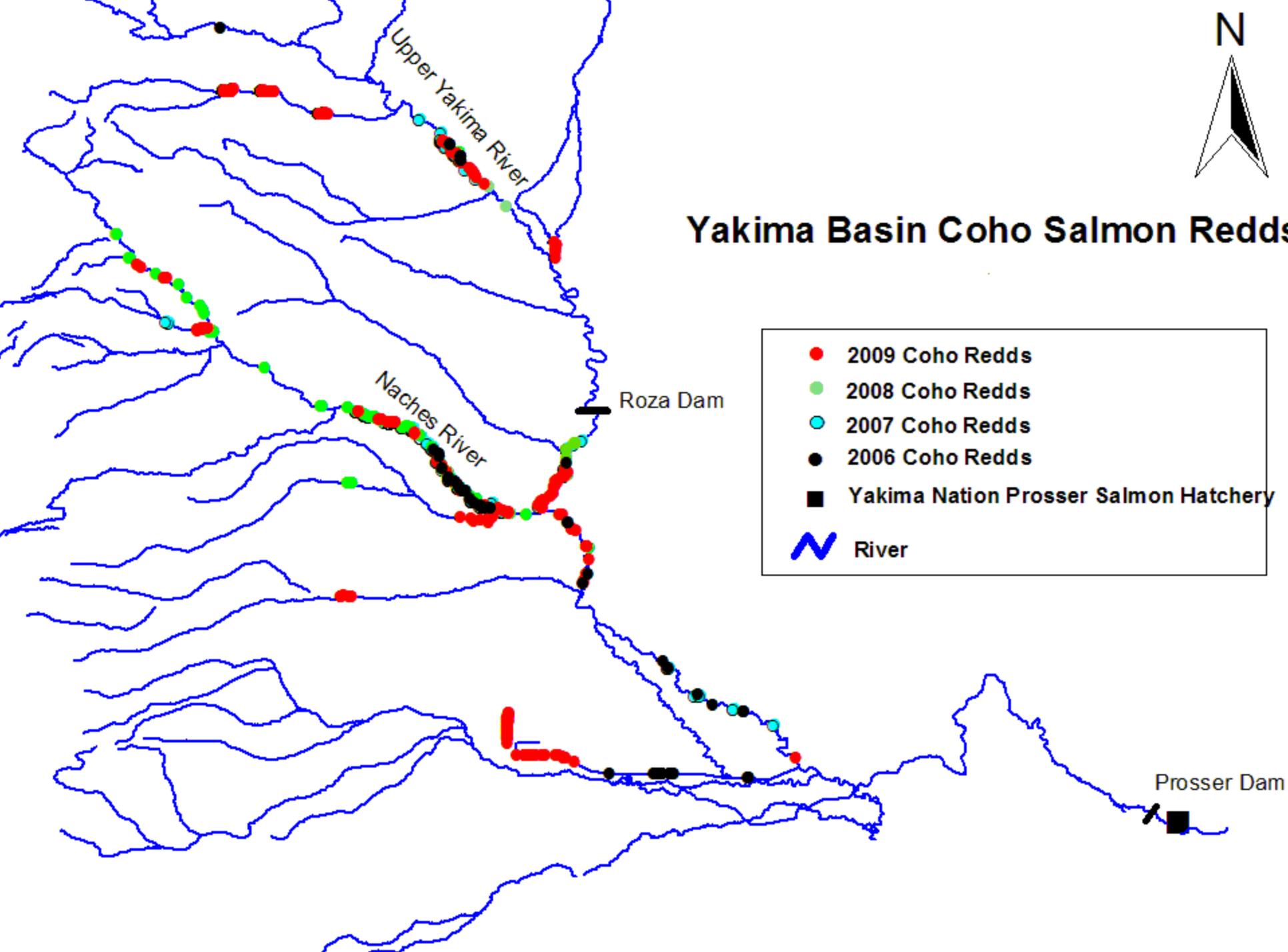
Please direct questions to:
YN: 509-865-6262 Todd Newsome
WDFW: 509-925-4467 ext#4

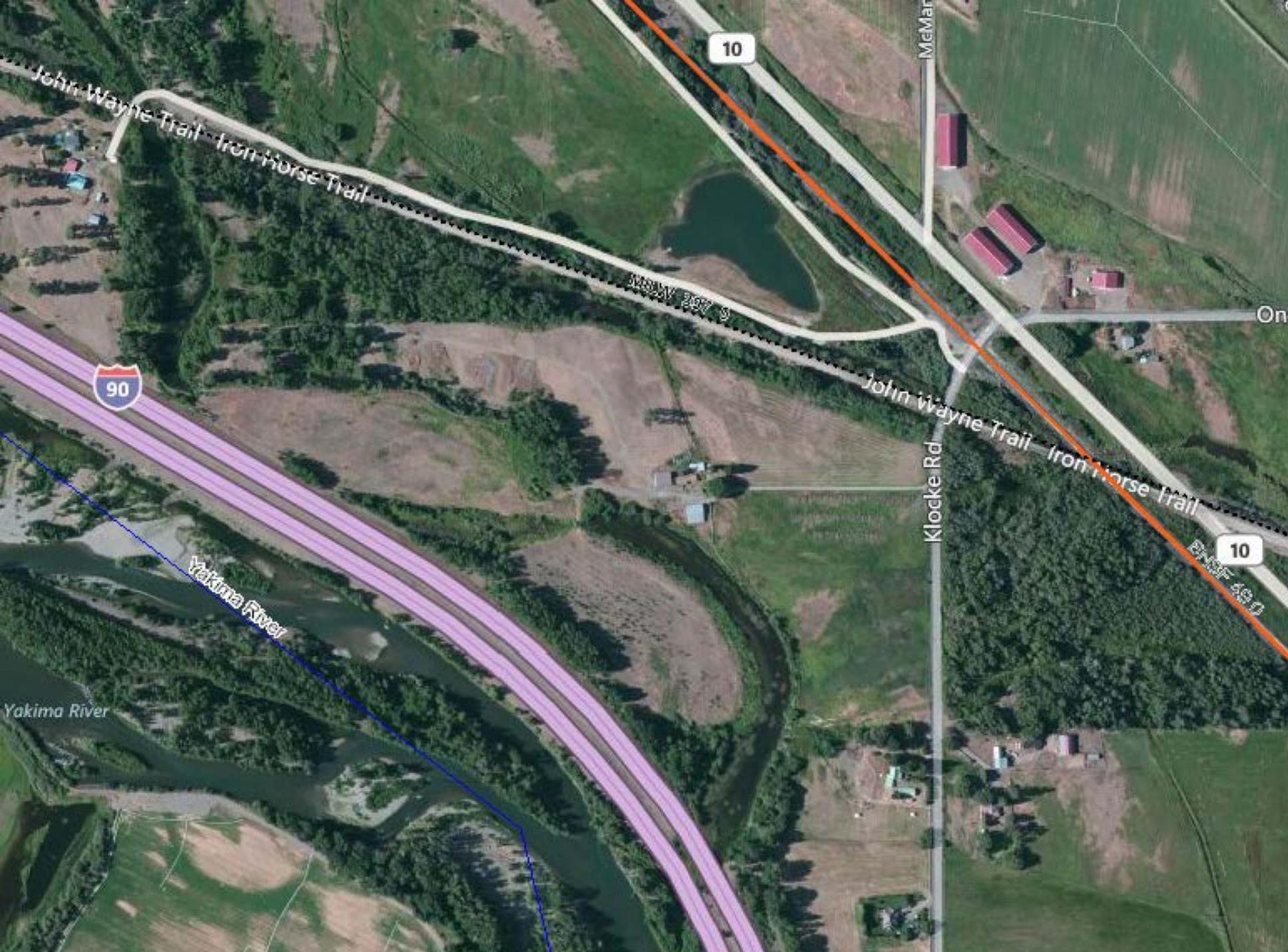
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Yakima Basin Coho Salmon Redds





John Wayne Trail
Iron Horse Trail

10

McMann

90

Yakima River

Yakima River

Wash 267 D

John Wayne Trail
Iron Horse Trail

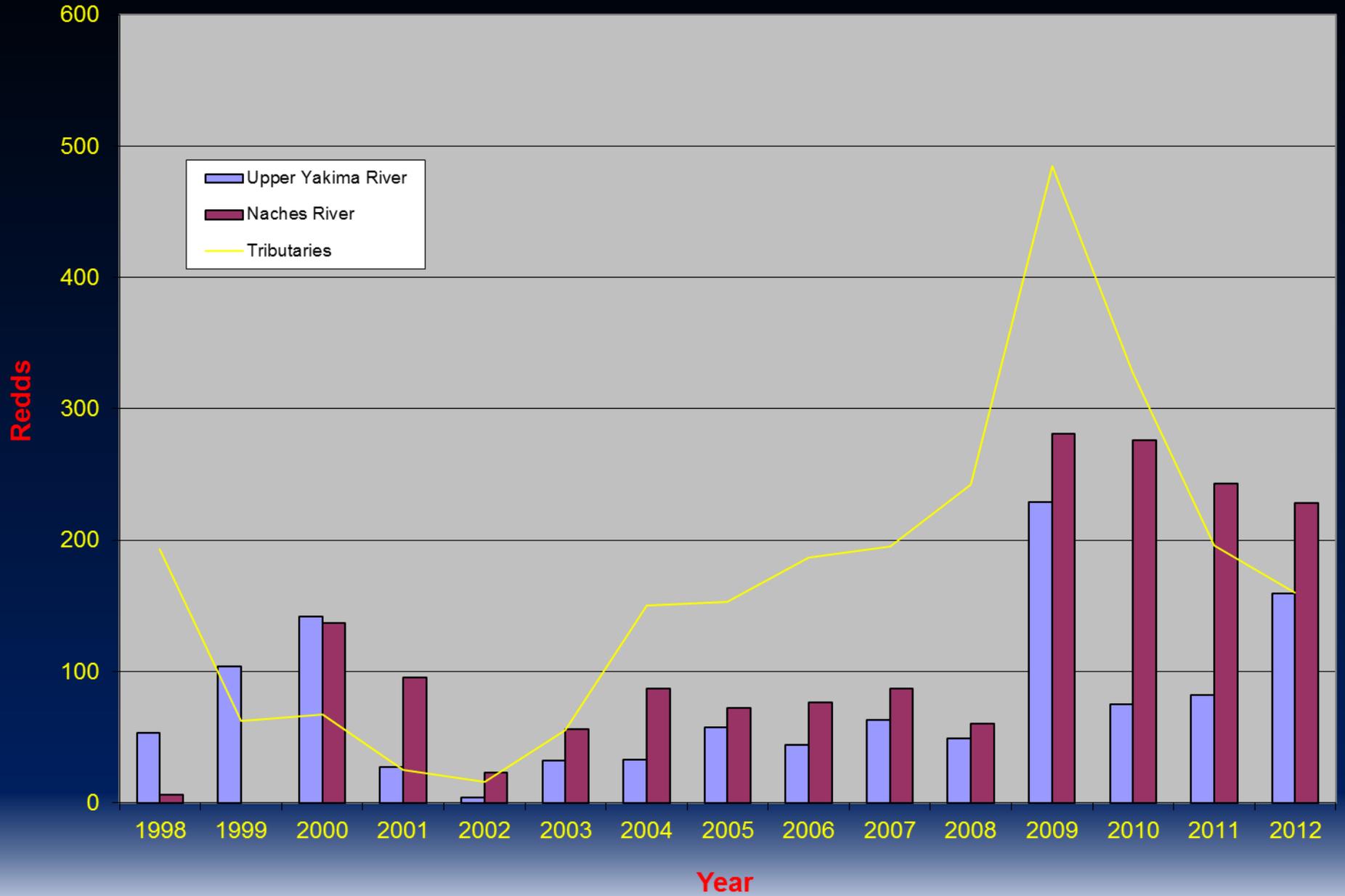
Klocke Rd

10

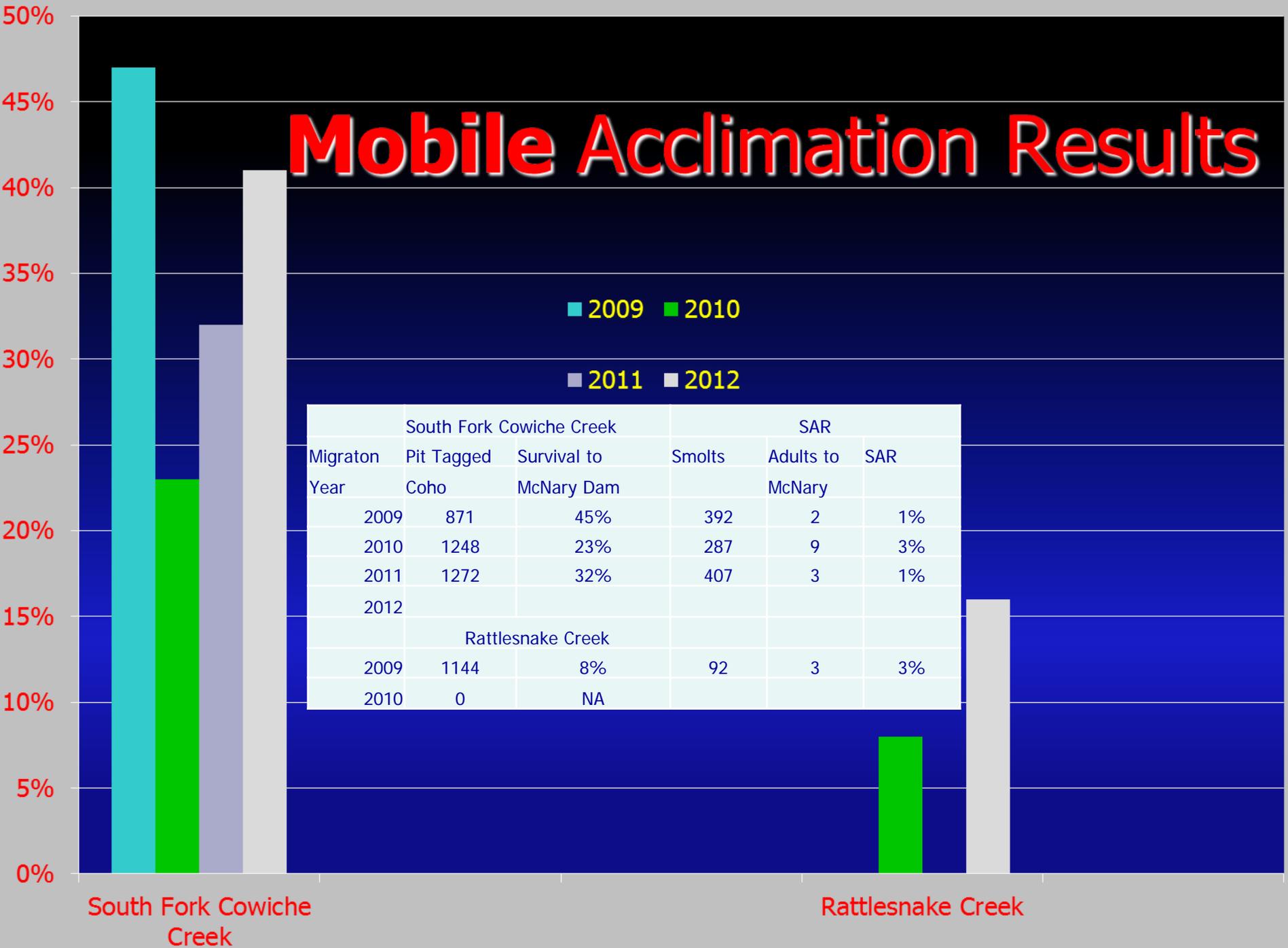
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On

Yakima Basin Redd Counts 1998-2012



Mobile Acclimation Results



Cowiche/Reecer Creek Redd Counts

