Northwest **Power** and **Conservation** Council

September 6, 2017

MEMORANDUM

TO: **Council members**

FROM: **Lynn Palensky**

SUBJECT: **Briefing on the Upper and Mid-Columbia White Sturgeon activities**

BACKGROUND:

Presenters:

- *For Upper Columbia White Sturgeon:* Jason McLellan, Colville Confederated Tribes; and representatives from Spokane Tribe of Indians and Washington Department of Fish and Wildlife
- *For Mid-Columbia White Sturgeon:* Bob Rose, Yakama Nation; with representatives from Yakama Nation, Washington Department of Fish and Wildlife and the Mid-Columbia PUD's

Summary: The Council will hear summaries from managers about White Sturgeon programs in areas of the basin from McNary Dam up to Columbia Lake in Canada. This presentation does not include program information on the Kootenai River White Sturgeon or on the populations below McNary Dam, as we have fairly regular reports on these programs at Council meetings.

Relevance: Among the many sturgeon measures in the 2014 Program, one calls on the "Action Agencies and state agencies and tribes to report on sturgeon in the Columbia Basin on a regular basis". Other measures call for specific White Sturgeon actions in particular areas of the basin, including the Upper Columbia areas that we will hear about from the presenters.

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Workplan: The work is being tracked in the Division's annual work plan as a high priority task, and sturgeon are listed as an emerging priority in the Council's 2014 Fish and Wildlife Program. See Program language for White Sturgeon here.

Background: Nine White Sturgeon projects are currently being funded in the program; three projects in the Upper Columbia, two in the Kootenai subbasin, and the remaining five in the middle to the lower Columbia mainstem.

1	198605000	White Sturgeon Mitigation and Restoration in the Lower Columbia and Snake Rivers	Oregon Department Of Fish and Wildlife
2	200715500	Develop a Master Plan for a Rearing Facility to Enhance Selected Populations of White Sturgeon in the Columbia River Basin	Columbia River Inter-Tribal Fish Commission
3	200845500	Sturgeon Management	Yakama Nation
4	200850400	Sturgeon Genetics	Columbia River Inter-Tribal Fish Commission
5	198806400	Kootenai River White Sturgeon Aquaculture Conservation Facility	Kootenai Tribe of Idaho
6	200737200	Lake Roosevelt Sturgeon Hatchery	Spokane Tribe
7	200811600	White Sturgeon Enhancement	Colville Confederated Tribe
8	200200200	Restore Natural Recruitment of Kootenai River White Sturgeon	Kootenai Tribe of Idaho
9	200715500	Develop a Master Plan for a Rearing Facility to Enhance Selected Populations of White Sturgeon in the Columbia River Basin	Columbia River Inter-Tribal Fish Commission

More Info:

- The Council's White Sturgeon web page
- Columbia Basin White Sturgeon Planning Framework
- Upper Columbia White Sturgeon Recovery Plan

White Sturgeon Management in the Mid-Columbia

Presentation to the NPCC

September 13, 2017

Donella Miller and Bob Rose
Yakama Nation

Paul Anders Ph.D. (Presenter)
Cramer Fish Sciences, UI

Oil by Alex VanBrasch

Presentation Topics

- Review Mid-Columbia White Sturgeon Management Plans
- Report Progress to date
- Review Yakama Nation White Sturgeon Production Facility
- Questions - Discussion

Mid-Columbia White Sturgeon Management Plans

- **Each PUD has recently renewed FERC licenses.**

Douglas PUD - Wells Dam *(2012)*

Chelan PUD* - Rocky Reach Dam *(2009)*

Grant PUD - Wanapum & Priest Rapids dams *(2008)*

- **Each license includes a WST Management Plan.**

** Rock Island Dam relicensing to begin in a few years (CCPUD)*

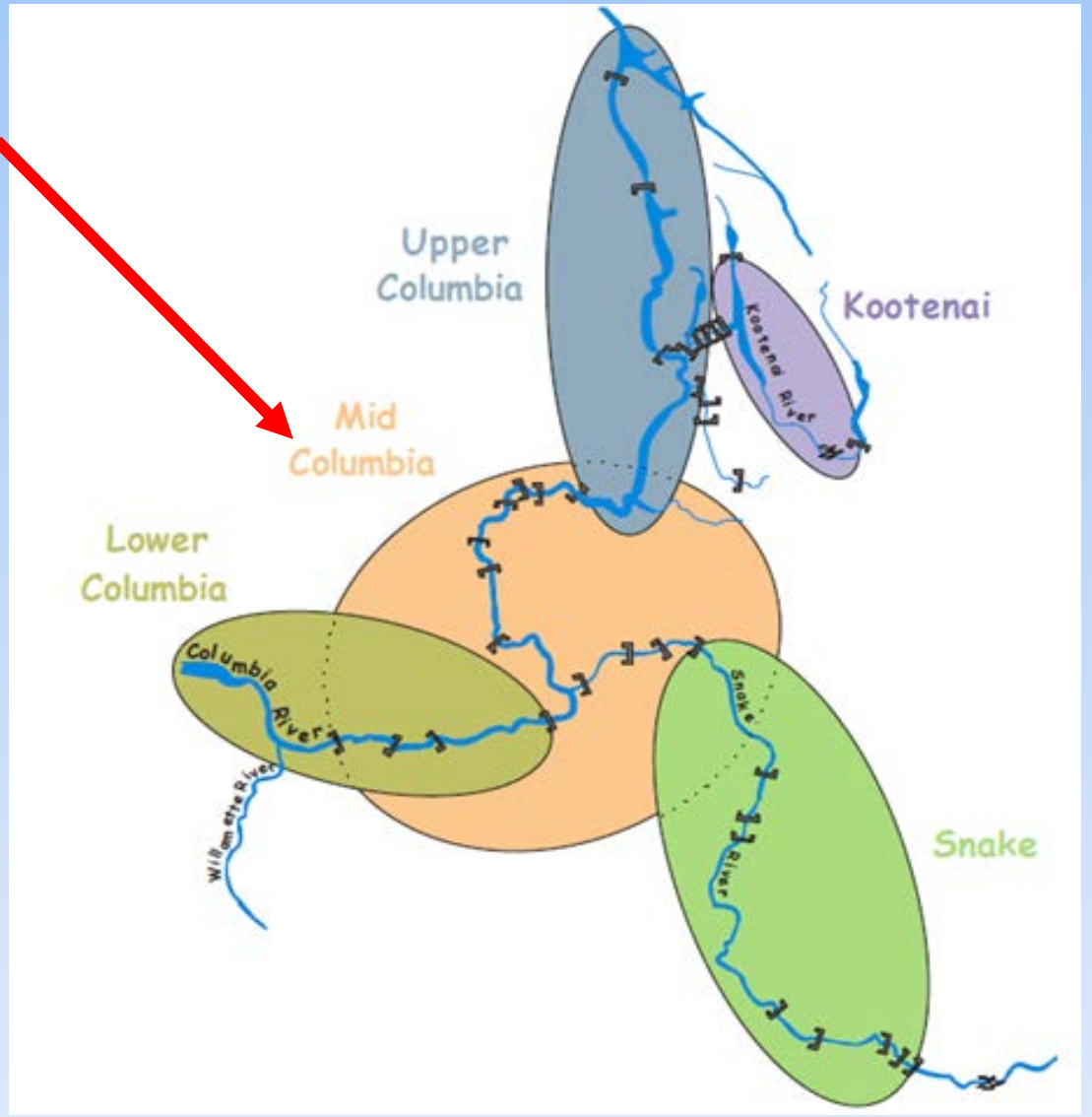


Image from CRITFC Step 1 Hatchery Master Plan

PUD - White Sturgeon Management Plans: Goals

Douglas PUD: **Increase the white sturgeon population** in the Wells Reservoir to a level that can be **supported by the available habitat** and characterized by a **diverse age structure** consisting of multiple cohorts.

Chelan PUD: Promote growth of the white sturgeon population in the Reservoir to a **level commensurate with available habita**t by year 30 of the New License.

Grant PUD: (1) **Identify and address Project effects** on white sturgeon and, (2) develop and implement "Implementation Measures" to **avoid and mitigate for Project effects** of white sturgeon. Adaptive management shall be applied to resolve critical uncertainties.

PUD - White Sturgeon Management Plans - Common Goal:

“ Increase white sturgeon growth, diversity, and abundance, commensurate with available habitat, while adaptively managing critical uncertainties and avoiding or mitigating Project effects”

PUD – WST Management Plans: Four Common Objectives

	Douglas	Chelan	Grant
1. Increase WST abundance, spawning, rearing	**Supplement** to address Project effects (migration, spawning, recruitment).	**Increase populations** in Rocky Reach reservoir	**Increase spawning and rearing** in reservoirs.
2. Effectiveness monitoring	**Determine effectiveness** – **monitoring** program.	Determine **effectiveness** of the supplementation program.	**Determine effectiveness** of supplementation program.
3. Assess natural production & *K*	Determine potential for **natural reproduction**.	Determine **carrying capacity (*K*)** of the available habitat in reservoir.	Determine **carrying capacity** of the available habitat in reservoirs.
4. Adaptively manage	**Adaptively manage** from monitoring results.	Determine **natural reproduction potential** – adjust program accordingly.	Determine **Natural Reproduction** (**Adaptive management** also included)
	Evaluate **upstream passage**.		
	Identify **education** opportunities.		

Mid-C WST Management Plans: Common Goals & Objectives

- Achieving common goals and objectives requires considerable coordination.
- Each of the PUDs have Forums & Work Groups that meet monthly to guide implementation refine the Plans through AM.

The Mid-Columbia WST Process

Each PUD has an independent but highly coordinated process (States, Feds, Tribes, PUDs)

All broodstock are spawned at Yakama Nation facility

- Maximize number of crosses / families

Many broodstock recently collected below McNary Dam

- Also Mid-C (Vernita Bar area), The Dalles & Bonneville pools, some juveniles from Lake Roosevelt
- Longer-term negotiated broodstock source strategy needed

Assessing larval collection in the lower Columbia

- Nearly 20 yrs. of data show very low catch rates

Goal and Objectives

Yakama Sturgeon Management Project

Goal:

Restore healthy, harvestable WST populations and fisheries in *mid-Columbia River* and Lower Snake reservoirs.

Objectives:

- Contribute to WST recovery, research, monitoring, and a Hatchery Master Plan – federal projects (Columbia and Snake).
- Further develop critical expertise and refine WST culture with tribal staff & collaborators
- Develop an implementation plan for WST production, rearing, M&E, and AM

Program has met, and continues to meet these Objectives.

Production at Marion Drain

(Yakama Nation sturgeon production facility)

Project Manager: Donella Miller

Funding: PUD mitigation programs, BPA, BIA

Facilities Development: ~ 2008, Marion Drain

Modest Beginnings

- Construction began 2009
- Support from BPA, BIA, PUDs and Yakama Nation

Began with a plan, a bare field… then tanks and water, and finally, buildings and fish

Yakama Program uses "Conventional" WST Hatchery Approach
(vs. Repatriation)

Photo: DCPUD

The YN WST Hatchery Program supports:

- Centralized Brood Holding Facility-all PUD WST Projects
- Cooperative Spawning
- Distribution of Fertilized Eggs (CPUD, DPUD)
- Juvenile Rearing and Tagging (GPUD)
- Wild Larvae Collection and Rearing (CPUD, GPUD)

The YN WST Hatchery Program supports:

- June spawning (6X6 annual goal)
- Isolated broodstock, maternal family groups, and juvenile rearing (6, 10, & 12 ft. dia. tanks)
- Water temperature control (sync spawning, growth)
- Rearing and tagging
- April – May releases
- ≤ 5,000 – 6,500 per reservoir – per FERC licenses
- Subsequent changes with Adaptive Management

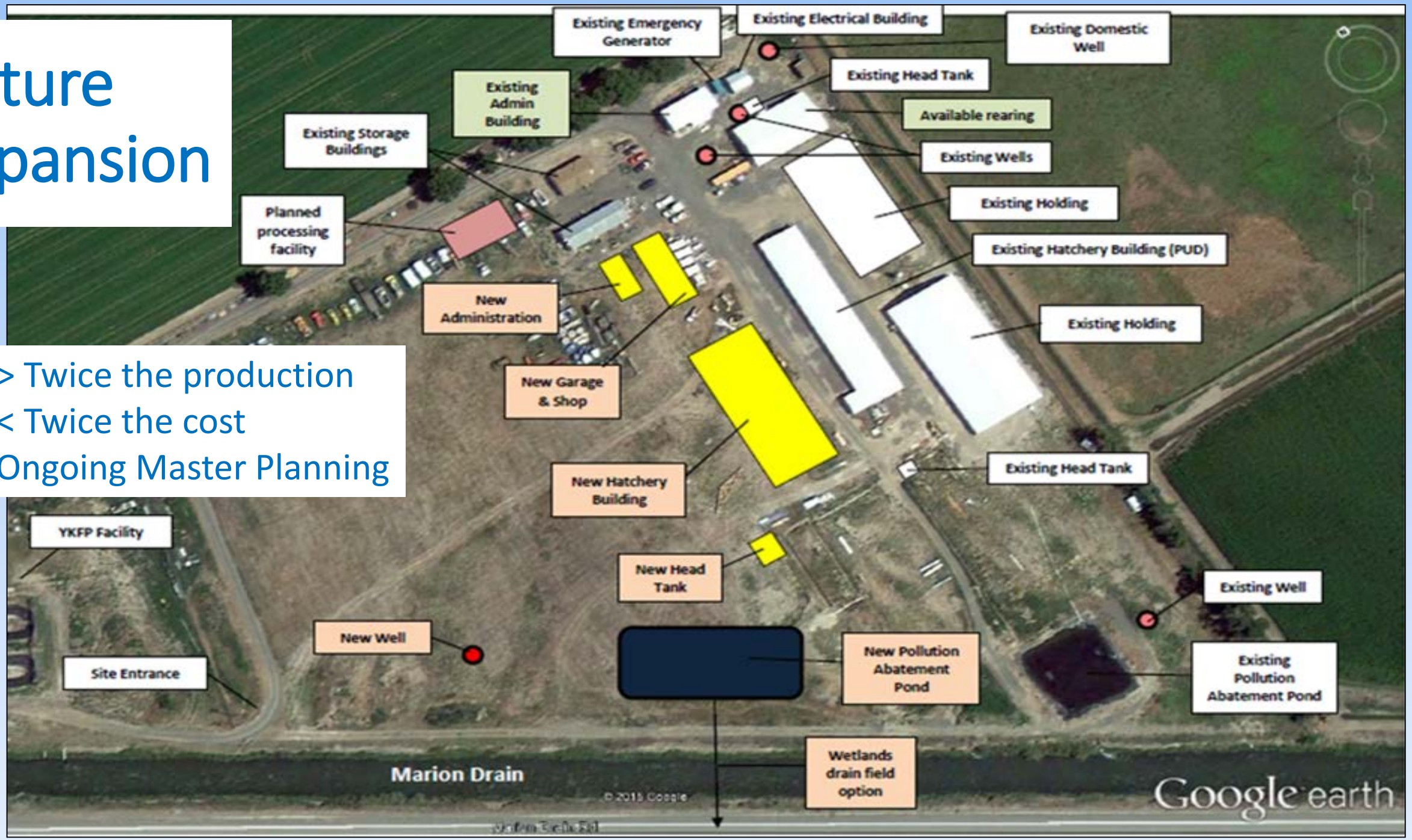
Progress Report:
Annual Supplementation

	Grant		Chelan	Douglas*
Release Year	**Priest Rapids**	**Wanapum**	**Rocky Reach**	**Wells**
2011	2,101	6,986	6,376	0
2012	0	0	137	0
2013	1,717	2,264	7,975	0
2014	1,501	5,094	4,962	5,044
2015	1,495	5,007	6,492	5,009
2016	1,250	2,000	2,277	5,289
2017	1,250	2,000	2,185	5,030
All Years	**9,314**	**23,351**	**30,404**	**20,372**
			Total	**83,441**

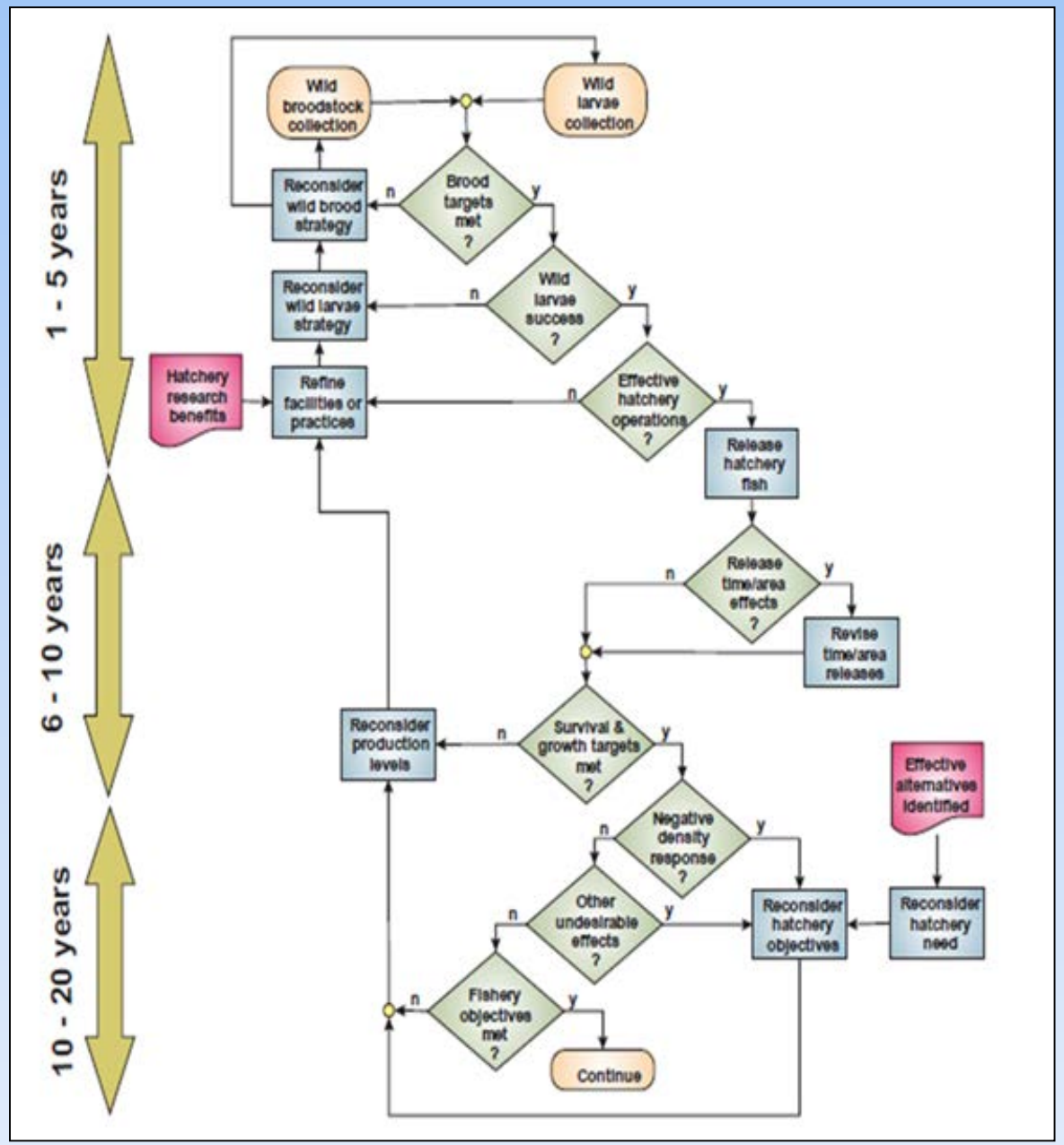
* > 90% of released were wild origin larvae from Lake Roosevelt captured by CCT.

Future Expansion

> Twice the production
< Twice the cost
Ongoing Master Planning

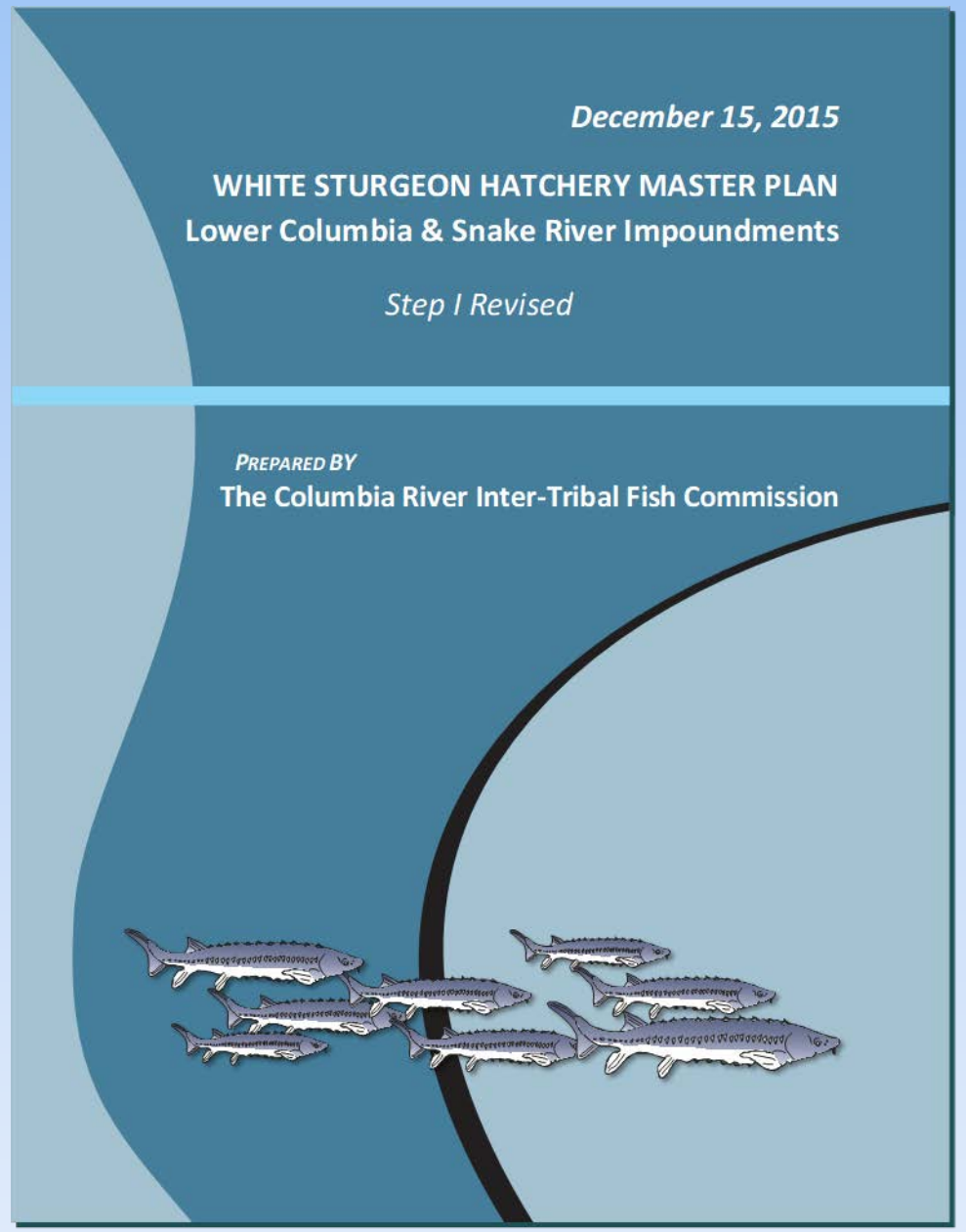


Adaptive Management Decision Framework: 3-Step Process



In Step 2 of Council's 3-Step Hatchery Master Planning Process

Adaptive Management Decision Framework: 3-Step Process



In Step 2 of Council's 3-Step Hatchery Master Planning Process

Preliminary design, & all program details to date can be found in the Step 1 Master Plan

Progress Report: Conclusions

Scientific information & knowledge is growing annually:

- Great talent, enthusiasm, and commitment
- The process works and the efforts are highly successful
- The process is not easy – but getting easier and better!

Long-term challenges:

- Broodstock collection, genetic & demographic management
- Accurately estimating population size and inter-species relationships (lamprey)
- Food web and trophic effects

Thanks for listening and for your support!!

Questions?

Yakama Nation Fisheries