Northwest Power and Conservation Council

March 31, 2011

DECISION MEMORANDUM

TO: Council members

FROM: Mark Fritsch, project implementation manager

SUBJECT: Step 3 review of the Sekokini Springs Westslope Cutthroat Trout Isolation Facility Master Plan, *Hungry Horse Mitigation Program*, Project #1991-019-03.

PROPOSED ACTION:

I. The Fish and Wildlife Committee recommends that the Council approve this facility for construction and operation.

II. The Fish and Wildlife Committee further recommends that the Council call for additional detail requested by the independent review panel be addressed during the Resident Fish/Blocked Areas review.

SIGNIFICANCE: The Sekokini Springs Westslope Cutthroat Trout Isolation Facility is proposed to aid in the recovery of genetically pure westslope cutthroat trout (WCT) populations in the Flathead River drainage. This action is a component of Project #1991-019-03, *Hungry Horse Mitigation Habitat Restoration and Research, Monitoring, and Evaluation (RM&E)*.

BUDGETARY/ECONOMIC IMPACTS

The total estimated construction costs for the new and modified facilities $1,808,413. The total construction cost estimates includes construction, construction management, and permitting. Planning since 1997 has cost $257,300. In addition, costs to date have addressed capping three wells to prevent contaminating the artesian water source ($57,000), and purchasing the improvements on national forest land from former trout farm owner in 1998 ($78,000) and maintenance and upgrading the existing on-site facility to protect investments ($248,200).

Annual operation and maintenance costs for the Sekokini Springs Isolation Facility after it is fully developed are estimated at $150,000 for the first year and $124,000 after initial start up.

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Annual monitoring and evaluation costs of the Hungry Horse Mitigation Program[1] are estimated at $150,000. Assuming that the existing Hungry Horse Mitigation Program and all of its existing work elements are funded, the monitoring and evaluation for the Sekokini Springs component would not require additional funding for Sekokini Springs.

The following cost figures are based on estimates from Montana Fish, Wildlife & Parks.

Future Costs[2]

FY	11	12	13	14	15	16	17	18	19	20
Con-struction	$152	$847	$557	$252						
O&M	$70	$150	$124	$124	$124	$124	$124	$124	$124	$124
M&E	$150	$150	$150	$150	$150	$150	$150	$150	$150	$150

BACKGROUND

Montana Fish, Wildlife & Parks (MFWP), proposes to use the Sekokini Springs site to conserve unique populations of genetically pure westslope cutthroat trout (WCT) populations in the Flathead River drainage. The Sekokini Springs site will provide isolated rearing areas for wild donor WCT whose progeny will be released to targeted restoration areas. Additionally, the site will provide isolation facilities within which wild spawners can be held for collection of milt for infusion into the existing state broodstock to introduce additional genetic complement (i.e., additional genetic variation and reduced domestication) into targeted restoration streams and lakes.

This project is part of the Hungry Horse Mitigation Program (HHMP) funded by Bonneville Power Administration (Bonneville). In 1991, the *Fisheries Mitigation Plan for Losses Attributable to the Construction and Operation of Hungry Horse Dam* (Mitigation Plan) was prepared by MFWP and the Confederated Salish and Kootenai Tribes (CSKT). This Mitigation Plan provided the Council with documentation of fisheries and habitat losses associated with construction and operation of Hungry Horse Dam (HHD) and a flexible strategy to mitigate for those losses. It addressed six specific program measures identified in the 1987 Columbia River Basin Fish and Wildlife Program and subsequent program amendments. The Council approved the loss statement, including annual fisheries losses of 250,000 juvenile bull trout and 65,000 migratory WCT from the Flathead Lake populations. In addition, an estimated 175,483 adfluvial WCT juveniles were lost in tributary reaches of the Hungry Horse Reservoir (HHR) and Flathead Lake due to construction of the HHD. The Mitigation Plan identified 77 miles (124 kilometers (km)) of critical, low gradient spawning and rearing habitat in streams that were inundated and lost when HHR filled.

[1] Project #1991-019-03, *Hungry Horse Mitigation Habitat Restoration and Research, Monitoring and Evaluation (RM&E),* and Project #1991-019-01, *Hungry Horse Mitigation/Flathead Lake Restoration and Research, Monitoring and Evaluation (RM&E).*

[2] Costs in thousands

The *Hungry Horse Dam Fisheries Mitigation Implementation Plan* (Implementation Plan) was adopted by the Council in 1993 and funded by Bonneville. The Implementation Plan describes specific measures to protect and enhance resident fish and aquatic habitat affected by HHD that do not require changes in dam operation. The hatchery portion of the HHMP is transitioning to experimental culture of native species as directed by the Mitigation Plan and the Implementation Plan. The Council approved the plan and amended it into the 1994 Fish and Wildlife Program (Measure 10.3A).

The activities proposed at Sekokini Springs is a component of Project #1991-019-03 (*Hungry Horse Mitigation Habitat Restoration and Research, Monitoring, and Evaluation (RM&E) Hungry Horse Mitigation*), which addresses fishery losses caused by the construction and operation of HHD in the Flathead Basin. This project implements habitat restoration, fish passage improvement, off-site mitigation and monitoring pertaining to Hungry Horse mitigation and includes enhancement and restoration at numerous tributaries in the basin. In association with this effort, Project #1991-019-01 (*Hungry Horse Mitigation/Flathead Lake Restoration and Research, Monitoring, and Evaluation (RM&E)*) included stream and lake restoration projects and monitoring within the Flathead Basin to verify responses of native fish communities, including WCT, to HHD mitigation measures. The Flathead Subbasin Plan calls for renovating the Sekokini Springs facility.

The proposed action at Sekokini Springs was initially discussed with the Council in early 1998. This discussion lead to the Council recommendation on June 27, 2001 associated with the Mountain Columbia provincial review that confirmed the proposed actions associated with the project's activities at Sekokini Springs would trigger a Three-Step Review process. The first master plan was reviewed in 2005.

I. Major Project Review (The Three-Step Review process)

Between 2005 and 2008 the master plan received several reviews by the ISRP and actions by the Council. Based on this the Council, on January 15, 2008, recommended that activities associated with the Sekokini Springs Isolation Facility proceed to NEPA and final design (Step 3). This decision was conditioned on the understanding that the MFWP continue to address the issues raised by the ISRP in its most recent review (ISRP document 2007-16) and submit a response for review prior to final step submittal (i.e., final design and construction costs).

On August 8, 2008 the Council received from MFWP information intended to addressed the issues raised by the ISRP (ISRP document 2007-16), and on September 29, 2008 the ISRP provided its review (ISRP document 2008-12) stating that the response meets scientific criteria (qualified).

On August 5, 2010 the Council received from MFWP a revised master plan (i.e., *Sekokini Springs Westslope Cutthroat Trout Isolation Facility Master Plan*) amended to address the science review issues (i.e., ISRP documents 2007-16 and 2008-12[3]) raised since the last action taken by the Council in January 2008.

[3] ISRP document provided a review on a submittal received from MFWP on August 8, 2008 (MFWP response to ISRP document 2007-16). The ISRP provided a "meets scientific criteria (qualified)" for the response. It was

On February 4, 2011 the ISRP provided its final review (ISRP document 2011-1) stating that the revised master plan meets scientific criteria (qualified).

ANALYSIS

The ISRP found that the revised master plan is ready to move forward with implementation and construction at the Sekokini Springs Westslope Cutthroat Trout Isolation Facility. Below are the three qualifications outlined by the review panel. Essentially the ISRP is seeking additional detail on the project's methodologies, data, and interpretation for management of the WCT restoration program. Additional information has already been provided by the sponsor, some of which is included after each ISRP comment below.

1. *Elimination of hybrids/non-natives before reintroduction*: Addresses the need for additional detail describing the protocol for evaluating whether an eradication effort was completely successful and for confirming the fishless status in each lake before restocking.

MFWP agrees with ISRP that the complete eradication on non-native species (genes) is the best outcome prior to replanting with pure WCT. The existing protocol uses gill nets and shoreline observations to detect any fish surviving after treatment (i.e. no fish captured in nets or observed indicates success). MFWP achieved complete kills since the project began being implemented in 2007. If survival would be detected after a future treatment, MFWP retains the option to treat again per the EIS for the mountain lakes actions.

2. *Use of generic broodstock*: Addresses the issue between the existing re-introduction stock as it relates to targeted lake systems and the downstream barriers and the importance that drainage-specific stocks should be targeted for use sooner rather later.

MFWP agrees with this and is using Sekokini Springs to hold wild WCT for testing (genetics/pathogens), so that wild genes can be infused into the captive M012 broodstock to maintain wild traits. More importantly, Sekokini Springs will become the genetic conservation facility to provide Montana with alternative sources of pure WCT (unique genetic sources from the S. Fork Flathead) for restoration purposes in the Flathead Subbasin. This was the primary impetus for Sekokini Springs.

3. *Objectives' focused monitoring and evaluation*: Addresses the need for more detail and protocols regarding a specific monitoring plan for the master plan.

As mentioned above, the activities at Sekokini Springs comprise just one aspect of the overall Hungry Horse Mitigation Program[4] and the ISRP expects more detail regarding RME protocols for the entire HHM program. MFWP anticipates that compiling RME for

determined that these qualifications will also be addressed as part of the final submittal when NEPA and final design are complete.

[4] Project #1991-019-03, *Hungry Horse Mitigation Program.*

the entire program will enhance understanding of how the various components of the program relate to, and complement each other.

Information received from MFWP is helpful and indicates that they agree with the findings from the ISRP. However the additional information was not necessary to proceed as the ISRP only requested that the above information be addressed as part of the category review associated with Resident Fish/Blocked.

Based on the long history of the project, its importance to the overall Hungry Horse Mitigation Program in the Flathead, and the ISRP review the Fish and Wildlife Committee recommends that the Council approve the Sekokini Springs Westslope Cutthroat Trout Isolation Facility for construction and operation. MFWP will provide additional information requested by the ISRP in upcoming project reviews of the Hungry Horse Mitigation Program.

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Northwest Power and Conservation Council

March 31, 2011

DECISION MEMORANDUM

TO: Council members

FROM: Mark Fritsch, project implementation manager

SUBJECT: Step 1 review of the *Snake River Sockeye Captive Propagation*, Project 2007-402-00. *Springfield Sockeye Hatchery Master Plan for the Snake River Sockeye Program*.

PROPOSED ACTION:

I. The Fish and Wildlife Committee recommends that the Council approve the *Springfield Sockeye Hatchery Master Plan for the Snake River Sockeye Program* to proceed with Step 2 activities.

II. The Fish and Wildlife Committee further recommends that the Council call for additional information from IDFG to address the six issues raised by the independent peer review for consideration during the Step 2 review.

SIGNIFICANCE:

On December 12, 2010, the Idaho Department of Fish and Game (IDFG) submitted to the Council as part of the Three-Step Review Process a master plan for the *Springfield Sockeye Hatchery Master Plan for the Snake River Sockeye Program*, as part of Project 2007-402-00, *Snake River Sockeye Captive Propagation*.

The master plan proposes to implement the next phase in the Snake River Sockeye Captive Broodstock Program by constructing the Springfield Hatchery near the town of Springfield in Bingham County, Idaho. The master plan addresses the needs as directed in the 2008 Federal Columbia River Power System (FCRPS) Biological Opinion (*Idaho et al. 2008*) and the 2008 Memorandum of Agreement (MOA) between the State of Idaho and the FCRPS Action Agencies.

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The next phase of the Snake River Sockeye Captive Broodstock Program is to construct the hatchery, which will expand the juvenile-fish production component of the program to produce between 500,000 and 1 million full-term smolts annually for release in the Upper Salmon River Subbasin in the Sawtooth basin. This production is intended to build on the captive broodstock phase and respond to population re-colonization goals in Redfish, Pettit, and Alturas lakes.

BUDGETARY/ECONOMIC IMPACTS

I. Overview of Step 1 Project Costs

The program costs presented in the Step 1 Master Plan 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 future costs, evaluate alternatives as the proposed project progresses through the preliminary (Step 2) and final (Step 3) design phases, and implementation. Future cost estimates for both operations and capital construction generally follow the principals for inflation and cost escalation described by the Independent Economic Analysis Board in their white paper on Project Cost Escalation Standards (IEAB document 2007-2). IDFG intends to continue to seek input and review by Bonneville, the Council and IDFG's planning team through the Step 2 and 3 processes.

Project costs provided in the Step 1 Master Plan were based on the proposed programs and conceptual designs. IDFG is proposing to construct new facilities at the Springfield, Idaho site. Cost estimates for facility planning and design, construction, acquisition of capital equipment, environmental compliance, operations and maintenance and research, monitoring, and evaluation are presented for each of the hatchery facilities. A summary of key project expenditures (see Attachment 1) and a summary of future costs projected from Fiscal Year 2010 through Fiscal Year 2020 (see Attachment 2) are provided in the Master Plan and at the end of this document.

Capital and expense funds for the conservation hatchery development including planning, operation and maintenance, acquisition, and construction totaling $20,465,279[1] are reserved in MOA budgets between the State of Idaho and the FCRPS Action Agencies.

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. The estimated one-time costs by program area are as follows:

- Planning & Design Step 1- $298,405 (cost to date for the Step 1 Master Plan as submitted)
- Planning & Design Step 2 - $500,000

[1] This is for Fiscal Year 2008 - 2017 at $13,250,000 capital and $7,215,279 expense funds.

    - Environmental Compliance Step 2 (Permitting, Environmental Assessment, Other) $136,733
- Planning & Design Step 3 - $400,000
- Construction - $13,579,929
- Capital Equipment $218,249[2]

The total budget for the conceptual planning associated with the Master Plan is about $298,405. 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 $500,000 has been identified for Step 2 preliminary planning, environmental compliance, site investigations and design. Initiation of this work is proposed in Fiscal Year 2011. This budget includes costs for drilling test wells, surveying and other investigative geotechnical work.

A placeholder of about $400,000 has been identified for the Step 3 final planning and design stage. It is anticipated that this work will begin in Fiscal Year 2011. Refinement of the Step 3 budget will occur in Step 2 during development of the preliminary design.

The total estimated conceptual construction budget for the Springfield Hatchery as outlined in the master plan is $13,579,929.[3] The budget estimate used master planning guidance of +/- 35 to 50 percent and will be refined as part of the next submittals associated with Steps 2 and 3.

The operations and maintenance (O&M) budgets for the project from Fiscal Year 2007 through Fiscal Year 2010 for the ongoing phase of the program (i.e., captive broodstock phase) averaged $1,588,000 (combined IDFG, SBT, NOAA and ODFW)[4]. The monitoring and evaluation (M&E) budgets for the program from Fiscal Year 2007 through Fiscal Year 2010 averaged $961,000 (combined IDFG and SBT).

Future cost estimates for O&M at Springfield Hatchery is estimated to be about $769,794 annually. Related M&E expenses are estimated to be $323,019 annually. These estimates are in 2013 and 2114 dollars to reflect the anticipated construction and when these activities would be incurred, respectively. The Master Plan shows these costs escalated at 3 percent annually through 2020.

[2] Reflects costs associated with various equipment for office, laboratory and water systems.
[3] This cost does not reflect anticipated needs of the NOAA Manchester Research Station and Burley Creek fish facilities at approximately $350,000 to meet productions needs as outlined in the Master Plan and previous actions (also see Footnote #7).
[4] All Snake River sockeye actions funded through the Program are addresses through Project #2007-402-00, *Snake River Sockeye Captive Propagation*.

The estimated 10-year costs to operate the Springfield Hatchery from Fiscal Year 2010 through Fiscal Year 2020 are presented in Attachment 2. The estimated costs are allocated to the fiscal year in which the expense likely will occur. Costs for each program area are escalated to the year in which they are expected to occur. This estimated cost summary assumes planning and implementation of new facilities occur in 2012 through 2013. As previously noted, consistent with Step 1 of the Council's step process, cost estimates at this stage are conceptual. The IDFG will be refining these estimates during the Step 2 and Step 3 planning phases. The 10-year estimated cost summary is designed to be a planning tool and will be updated as costs are refined.

BACKGROUND

The current run of sockeye into the Snake River is one of three remaining populations in the Columbia River Basin; the other two populations, Okanogan Lake sockeye salmon and Wenatchee Lake sockeye salmon, are located in tributaries of the upper Columbia River.

Historically, five Sawtooth Basin lakes (Redfish, Alturas, Pettit, Stanley, and Yellowbelly) in the Upper Salmon River subbasin supported sockeye salmon. Historically, it was estimated that as many as 40,000 sockeye returned to the Upper Salmon River subbasin in some years. However, by 1962, sockeye salmon were no longer returning to Stanley, Pettit, and Yellowbelly lakes. By 1990, Redfish Lake was the only historical spawning, and nursery lake still supporting a remnant anadromous run.

In response to this precipitous decline of Snake River sockeye salmon a petition was submitted in 1990 by the Shoshone-Bannock Tribes and in 1991 the sockeye were listed as endangered under the Endangered Species Act (ESA). In that same year, the IDFG initiated a captive broodstock program to maintain and prevent the extinction this species.

The conservation efforts for Idaho sockeye focus on Redfish, Alturas, and Pettit lakes in the Sawtooth Basin located within the Sawtooth National Recreation Area. The lakes are glacial-carved and range in elevation from 6,512 to 7,014 feet, receive runoff from the Sawtooth and Smoky mountains, are considered ultra-oligotrophic, and lie in the headwaters area of the Salmon River watershed. The Salmon River flows into the Snake River, which in turn flows into the Columbia River, which drains into the Pacific Ocean. The Sawtooth valley is approximately 900 river miles from the mouth of the Columbia River. Redfish Lake is the largest of the three lakes, Pettit Lake is the smallest, and Alturas Lake is intermediate in surface area. Additionally, Redfish Lake supports the species' southernmost population within its recognized range.

Snake River sockeye rearing and spawning habitat in the Sawtooth Basin is considered to be in excellent condition as it is in an area that has experienced limited human impacts. Ongoing effects are related to recreational activities such as hiking, river rafting, fishing and hunting. A number of homes have been built around Redfish, Alturas and Pettit lakes and area parks, campgrounds and boat launches are popular destinations.

At the time of the initial listing in 1991, the greatest in-basin habitat problem faced by the ESU was probably the lack of access to any of the lakes but Redfish. The fish barriers on Alturas and Pettit Lake creeks (an irrigation intake and a concrete rough fish barrier, respectively) were

modified to facilitate passage of anadromous sockeye into these historical habitats in the early 1990s.

Although access to the spawning and rearing lakes is now considered functional, large portions of the migration corridor in the mainstem Salmon River may periodically reach high temperatures in July and August and negatively impact the ability of adult sockeye salmon to reach spawning locations. To evaluate this uncertainty, the USFWS and NOAA's Northwest Fisheries Science Center have proposed a multi-year study to evaluate the migration survival of adult Snake River sockeye salmon from Lower Granite Dam to the Sawtooth Basin. Information generated by this project is expected to help inform decision making about when to consider trapping and transporting adult sockeye salmon to natal spawning areas. In addition, a new project is currently being reviewed that would characterize migration and survival of juvenile Snake River sockeye salmon between the upper Salmon River and Lower Granite Dam[5]. This project will provide information to managers on the relative success of juvenile release strategies employed by the sockeye salmon captive broodstock program.

In addition, the Salmon River Subbasin Plan identifies a list of problem statements, biological objectives, and strategies. The strategies and monitoring activities outlined in the Master Plan for the Springfield Hatchery sockeye program would contribute to meeting a number of the biological objectives identified in the Salmon River Subbasin Plan.

IDFG has submitted a proposed draft Snake River Sockeye Salmon Recovery Strategy to NOAA Fisheries for consideration in recovery planning. This strategy recommends incorporating hatchery facilities, captive broodstock technology, genetic support, and a comprehensive monitoring and evaluation plan to maintain the current population and rebuild the number of naturally produced anadromous sockeye in the basin.

I. History and objectives of the Snake River Sockeye Captive Broodstock Program

The IDFG initiated the captive broodstock and research efforts in 1991 and received Fish and Wildlife Program funding that same year (Project 1991-072-00). Initially, to guard against catastrophic loss at any one brood facility, the captive broodstock component of the program was duplicated at facilities in Idaho (IDFG Eagle Fish Hatchery) and Washington (NOAA Manchester Research Station and Burley Creek fish hatcheries) to provide eyed eggs to meet project conservation needs. The IDFG Sawtooth Hatchery and the ODFW Oxbow Fish Hatchery (near Cascade Locks, Oregon) currently provide 100 percent of the smolt production rearing space for this program. To date, broodstocks have been established from wild anadromous adults, wild residual sockeye salmon, hatchery-produced anadromous adults, and full-term hatchery-produced adults.

Current production of Snake River sockeye salmon is restricted, due to capacity, to broodstock maintenance at facilities in Idaho (IDFG Eagle hatchery) and Washington (NOAA facilities); insufficient incubation and rearing space continues to limit production of a necessary full-term

[5] Project #2010-076-00, *Characterizing migration and survival for juvenile Snake River sockeye salmon between the upper Salmon River basin and Lower Granite Dam*.

smolt program. This limitation has prevented the current program from growing beyond the conservation phase (Table 1).

Table 1. Annual distribution of SR sockeye eggs under *current* operations.

Facility (Strategy)	**Current Number of Eyed Eggs**
IDFG Eagle (Replacement Brood)	1,000
NOAA Facilities (Replacement Brood)	500
NOAA Facilities (Adult Release)	500
Basin Lakes (Egg-Boxes)	50,000
IDFG Sawtooth (Pre-Smolt Releases)	80,000
ODFW Oxbow (Smolt Releases)	100,000
IDFG (Smolt Releases)	120,000
Total	**352,000**

Coordination of recovery efforts is carried out under the guidance of the Stanley Basin Sockeye Technical Oversight Committee (SBSTOC), a team of technical experts representing the IDFG, NOAA Fisheries, and the Shoshone-Bannock Tribes. Further coordination takes place at the federal level through the ESA Section 10 permitting process. The Bonneville Power Administration provides coordination for the SBSTOC process.

Since 1995, the Shoshone Bannock Tribes have been supplementing nitrogen and phosphorus, and controlling non-native kokanee salmon competitors (i.e., for food resources) in the Sawtooth Basin lakes. Based on annual water quality criteria and biological sampling, this management strategy appears to be increasing the carrying capacities of the lakes for rearing juvenile Snake River sockeye salmon as part of the recovery effort.

In 1999, the first hatchery-produced anadromous sockeye salmon returned to the program. In that year, seven age-3 adults (six males and one female) were trapped at weirs in the Sawtooth subbasin. In 2000, the program experienced its first significant return of hatchery-produced adults when 257 sockeye salmon returned to collection facilities on Redfish Lake Creek and the upper Salmon River at the IDFG Sawtooth Fish Hatchery. Between 2001 and 2010, over 2,929 hatchery-produced sockeye salmon adults returned to the Sawtooth Basin (Table 2).

Table 2. Hatchery and natural sockeye returns to Redfish Lake, 1999-2010.

Return Year	**Total Return**	**Natural Return[6]**	**Hatchery Return**	**Observed (Not Trapped)**	**Naturals Kept for Broodstock**	**Hatchery Kept for Broodstock**
1999	7	0	7	0	0	7
2000	257	10	233	14	4	39
2001	26	4	19	3	0	9

[6] Adult returns from natural production from Redfish, Alturas and Pettit lakes.

Return Year	Total Return	Natural Return[6]	Hatchery Return	Observed (Not Trapped)	Naturals Kept for Broodstock	Hatchery Kept for Broodstock
2002	22	6	9	7	0	0
2003	3	0	2	1	0	2
2004	27	4	20	3	4	20
2005	6	2	4	0	2	4
2006	3	1	2	0	1	2
2007	4	3	1	0	3	1
2008	650	142	457	51	25	48
2009	833	85	732	16	63	84
2010	1,355	178	1,144	33	84	13

The existing captive broodstock program has stabilized the population and prevented an almost certain extinction of this species in Idaho. The adoption of state-of-the-art artificial propagation techniques for the conservation of endangered stocks allowed the program to produce large numbers of spawnable fish in the first generation and rapidly increase the abundance of offspring available for restoration releases in the Sawtooth Valley lakes.

II. Springfield Sockeye Hatchery Master Plan for the Snake River Sockeye Program

To date, the Snake River sockeye program's goal has been to conserve and slow the loss of the genetic diversity and prevent extinction. In fact, program genetic protocols have maintained over 93 percent of the original genetic diversity of the founding populations. As outlined above, the program is supported by a variety of facilities in three states. Adult collection facilities are in the upper Salmon River watershed; incubation and rearing facilities are at Eagle and Sawtooth hatcheries in Idaho, at the Manchester Research Station and Burley Creek Hatchery in Washington, and at Oxbow Hatchery in Oregon.

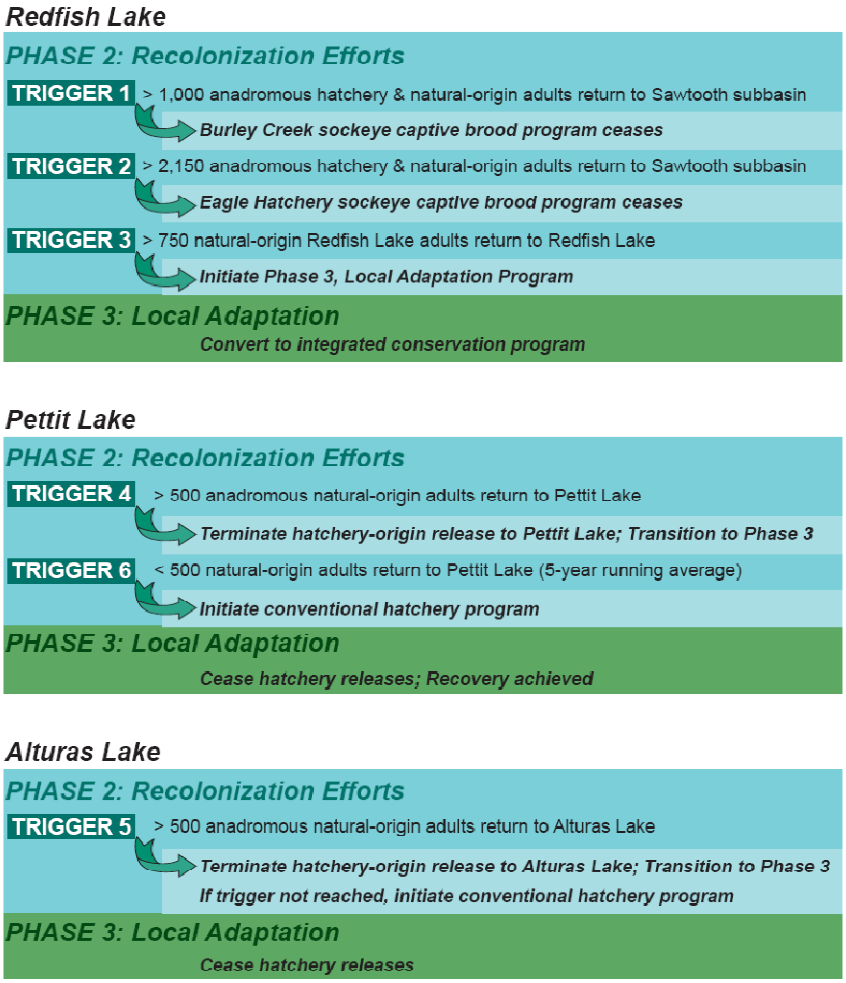
The Springfield Hatchery Master Plan addresses the next phase in the Snake River Sockeye Captive Brood Program through construction of a new sockeye smolt production hatchery and implementation of associated program management goals. The first phase of the program, the captive broodstock phase, has achieved sufficient success that the IDFG is proposing to initiate the next phase of population re-colonization. To address this next phase in recovery, increased production capacity is required to accomplish re-colonization of Sawtooth Basin lakes. The proposed Springfield Hatchery will not only centralize the production of sockeye, but also provide the needed flexibility to meet the capacity needs of the recovery effort.

The biological goal described in the Master Plan is to increase the number of adults spawning naturally in the basin. The survival boost afforded by sockeye smolt releases from the proposed Springfield Hatchery is expected to produce adults in excess to the broodstock needs that would be used for this purpose. Currently, NOAA-Fisheries' interim delisting criteria for this population is 2,000 naturally produced sockeye over at least two consecutive generations. To meet NOAA Fisheries' recovery criteria, 1,000 of these fish must be produced in Redfish Lake

and 500 each in two additional lakes. In the long term, the IDFG goal is to re-establish a natural population (i.e., local adaption phase) that can be de-listed and even provide treaty and sport harvest opportunities.

The phased approach designed by IDFG is based on key criteria and escapement triggers that are built on the success of the current captive broodstock phase. The next phase outlined in the Master Plan is the local adaption phase based on the production potential of the three key nursery lakes. The rationale behind this approach will ensure that the critical life history diversity and past efforts are respected (Figure 1).

Figure 1. Program Management Triggers.



In the re-colonization phase, the existing captive broodstock program will be transitioned to conventional hatchery production that uses anadromous adults as broodstock. Sufficient numbers of anadromous adults have been returning to begin developing this conventional hatchery program. The primary objectives of re-colonization will be for gene banking and generating anadromous adults to re-colonize available habitat. Adequate and consistent returns of anadromous adults will allow managers to eventually phase out the use of Redfish Lake captive

broodstock (starting with the NOAA activities). Following success in Redfish Lake, re-colonization efforts will expand into Pettit and Alturas lakes.

Sockeye production will increase up to 1 million smolts (at 10-20 fish per pound). All fish released from the program will be marked by removal of the adipose fin. A subset of the release will be tagged with a coded-wire tag (250,000) and PIT tag (50,000). These tags will allow managers to calculate harvest rates in fisheries and determine adult and juvenile survival rates through the FCRPS.

The 1 million sockeye smolts required for the re-colonization phase will be produced at the proposed Springfield Hatchery. Although this site is many miles from the Sawtooth Basin, it offers a number of advantages, such as having a high quality and available source of groundwater. In addition, hatchery effluent will not discharge to waters that support anadromous fish production, preventing potential viral and bacterial pathogens from hatchery operations entering streams that support ESA-listed populations. The preferred collection point for re-colonization-phase broodstock will initially be the Redfish Lake weir. Collecting fish here would prevent the program from collecting adults bound for Pettit and Alturas lakes. The re-colonization phase may also include the collection of anadromous adults at Lower Granite Dam; this strategy is currently being evaluated as one possible means to increase the total number of potential spawners returning to the Sawtooth Basin.

Facilities

The proposed sequencing of the Snake River sockeye program from a captive broodstock program to the re-colonization phase and finally to the local adaptation phase in available habitats will require increasing the available rearing space for smolt production. The proposed method for this transition is to produce significant numbers of adults in excess to broodstock needs. The proposed smolt program at the Springfield Hatchery would be capable of meeting the 500,000 to 1 million smolt goal identified in the FCRPS Biological Opinion and in the Idaho Fish Accord.

Program expansion at the Eagle Fish Hatchery was completed (2009) and modifications are currently underway at NOAA facilities to accommodate the increased number of captive spawners needed to source a Springfield smolt production program[7]. Captive broodstock rearing would be increased to approximately 1,000 – 1,200 adults annually to provide the estimated 1,300,000 eyed eggs needed to source both Springfield and existing in-basin release strategies.

As proposed in the *Springfield Sockeye Hatchery Master Plan*, new facilities required to accomplish this include a new hatchery building with egg incubation stacks, 18 indoor early rearing troughs, 24 outdoor raceways, and all supporting facilities including three new residences for operators. Key attributes of the Springfield site are sufficient high quality groundwater, full

[7] On June 14, 2006 and August 14, 2007 the Council approved within-year requests for Eagle Fish Hatchery and ODFW Oxbow Hatchery modifications to meet the expectations of the FCRPS BiOp and the UPA for the Redfish Lake sockeye salmon. NOAA modifications were addressed as part of the process that consolidated the projects and addressed the UPA needs in 2008.

isolation from other salmonids, adequate space to develop sockeye-appropriate facilities, and an already permitted land use type[8].

As the number of returning anadromous adults increase over time in the re-colonization phase operations, captive broodstock production would decrease as spawning protocols begin to incorporate a greater number of anadromous spawners (ultimately transition to a "conventional" hatchery program using anadromous adults as broodstock). As this transition occurs, the existing brood facilities would be transitioned from NOAA facilities first, then the captive broodstocking efforts at Eagle Fish Hatchery; all captive broodstocking activities could potentially be eliminated when the five-year running average of hatchery- and natural-origin anadromous adults to the Sawtooth Basin exceeds 2,150 adults.

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

On December 12, 2010 the Council received a Master Plan from Idaho Department of Fish and Game intended to initiate the review process (i.e., Major Project Review) associated with a proposed hatchery master plan. The Master Plan (Step 1- conceptual phase) was titled *Springfield Sockeye Hatchery Master Plan for the Snake River Sockeye Program* and is a component of Project 2007-402-00, *Snake River Sockeye Captive Propagation*.

On December 22, 2010 the Master Plan and the associated support documents were submitted to the Independent Scientific Review Panel (ISRP) for review, and on February 7, 2011 the ISRP provided its review summary and recommendation (ISRP Document 2011-2). The ISRP found that the master plan met scientific review criteria "qualified."

The ISRP found the Master Plan to be well written and addressed a challenging situation in the recovery of these endangered species. Though the ISRP found the master plan met review requirements for proceeding to Step 2 (progress review/preliminary phase) the panel requested responses to six qualifying issues during the Step 2 review:

> 1. Clarify the plan for using anadromous hatchery, natural, and captive-reared adults for escapement and production at Springfield Hatchery during the transition from the proposed conservation phase to the re-colonization phase.
>
> 2. Provide a comparison of the program with release goals and explain the justification for the preferred alternative in terms of achieving the recovery and restoration goals of the anticipated Snake River sockeye recovery plan.
>
> 3. Discuss the characteristics ("quality") of the smolts to be produced and what will constitute a smolt with survival capability in terms of ecological fit?
>
> 4. Additional detail and understanding is needed to justify a plan for natural escapement when hatchery and natural adults are in the range of 800 to 1,200 fish.

[8] In addition, IDFG proposes to adopt a design/build approach following completion of the Step 2 (progress review/preliminary phase) review. IDFG would like to competitively solicit a construction firm to work in partnership with the design engineers and fish culturists to develop the Step 3 final design.

5. Develop an experimental management plan, with sufficient monitoring, to evaluate lake carrying capacity. This should be incorporated into the trigger points and decision framework for determining smolt release numbers, natural escapement targets, and PNI.

6. The ISRP recommends that other species not be reared in the facility, in order to restrict opportunities for disease transmission.

ANALYSIS

The IDFG provided a master plan that adequately defended the need for actions to transition the Snake River sockeye salmon program from the current conservation phase to a program that is intended to initiate the recovery of this endangered species. The Council has contributed, since 1992, to a program that has prevented a species from going extinct. This has not been an easy task and the IDFG, NOAA and the SBSTOC need to be recognized for this effort. The opportunity now exists to initiate the next phase and the submitted master plan has provided the necessary detail so that the ISRP has recommended that it move forward to the progress review/preliminary phase (Step 2) step.

The proposed new Springfield facilities will include a hatchery building with egg incubation stacks, 18 indoor early-rearing troughs, 24 outdoor raceways, and all supporting facilities including three new residences for operators. The Springfield site is desirable because of the quantity and quality of groundwater, full isolation from other anadromous salmonids, and because it provides an opportunity to use an existing permitted land use type.

The ISRP recognizes the need to proceed toward establishing a self-sustaining hatchery population as outlined and reviewed in the master plan, and supports this program moving to Step 2 activities (e.g., preliminary design and environmental review). This recommendation from the ISRP is made with the understanding that the IDFG will address the six issues raised by the ISRP in the Step 2 submittal.

Based on the ISRP review, the Fish and Wildlife Committee recommends that the Council approve the *Springfield Sockeye Hatchery Master Plan for the Snake River Sockeye Program* to proceed with Step 2 activities. This recommendation is subject to the requirement that the IDFG addresses the six issues raised by the ISRP as part of the Step 2 submittal.

Attachment 1. Summary of Key Expenditures by Program Area assuming that work proceeds as outlined in the Master Plan.

Program Area	Estimated Cost	Occurrence	Level of Certainty
Planning & Design Step 1*	$298,405	One Time	Contract to develop Step 1 Master Plan
Planning & Design Step 2**	$500,000	One Time	Placeholder (less than concept)
Planning & Design Step 3***	$400,000	One Time	Placeholder (less than concept)
Construction	$13,579,928	One Time	Concept (+/- 35% to 50%) (escalated to 2012 dollars)
Capital Equipment	$218,249	One Time	Concept (+/- 35% to 50%) (escalated to 2013 dollars)
Environmental Compliance Step 2 (Permitting, EA, Other)	$136,733	One Time	Concept (+/- 35% to 50%) Completed during Step 2 (2011 dollars)
Land Purchases, Leases & Easements****	$4,750,000	One Time	Expenditure complete
Annual Operations & Maintenance / Springfield Hatchery Programs	$769,795	Annual	Concept (+/- 35%) (escalated to 2013 dollars)
Monitoring & Evaluation*****	$286,998	Annual	Concept (+/- 35%) (escalated to 2014 dollars)

Notes and Assumptions:
* Shows the actual contract figure for completion of a Step 1 Master Plan
** Shows an estimated placeholder cost estimate based on the conceptual construction cost
*** Shows an estimated placeholder cost estimate based on the conceptual construction cost
**** Land cost was $1.96 million; remainder went to a trust fund totaling $2.79 million with IDFG to offset the loss of the Springfield site as a resident (trout) fish production facility for Idaho
***** Monitoring and Evaluation includes annual tagging costs of over ~$125,000

Attachment 2: Ten year summary of future costs - FY 2010 to FY 2020.

Program Area	Fiscal Year										
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
A. Land Purchases, Leases and Easements											
A.1. Land Purchases, Leases and Easements	$4,750,000										
B. Planning and Design											
B.1. Step 1: Concept Engineering, Planning	$298,405										
B.2. Step 2: Prelim Engineering, Planning, Environmental Compliance		$500,000									
B.3. Step 3: Final Engineering, Planning			$400,000								
C. Construction											
C.1. Estimated Construction Costs			$6,789,964	$6,789,964							
D. Capital Equipment											
D.1. Capital Equipment				$218,249							
E. Environmental Compliance											
E.1. Environmental Compliance		$125,000	$11,733								
F. Operations and Maintenance											
F.1. Springfield Hatchery Programs				$769,795	$792,889	$816,676	$841,176	$866,411	$892,404	$919,176	$946,751
G. Monitoring and Evaluation											
G.1. Monitoring and Evaluation Program					$323,019	$332,709	$342,690	$352,971	$363,560	$374,467	$385,701
Total Estimated Capital Costs	$5,048,405	$625,000	$7,201,696	$7,008,212	$0	$0	$0	$0	$0	$0	$0
Total Estimated O&M Costs	$0	$0	$0	$769,795	$1,115,908	$1,149,385	$1,183,866	$1,219,382	$1,255,964	$1,293,643	$1,332,452
Total Estimated Costs	$5,048,405	$625,000	$7,201,696	$7,778,008	$1,115,908	$1,149,385	$1,183,866	$1,219,382	$1,255,964	$1,293,643	$1,332,452

Notes and Assumptions:

- A.1. Land Purchases, Leases and Easements (land purchase is complete at a cost of $1.96 million; see Section 8.2)
- B.1. Step 1 Planning (based on current expenditures to complete planning)
- B.2. Step 2 Planning based on percentage of estimated construction costs (escalated to FY 2011 dollars)
- B.3. Step 3 Planning based on percentage of estimated construction costs (escalated to FY 2012 dollars)
- C.1. Estimated Construction Costs assume 50% occurs in FY 2012 and 50% in FY 2013 (escalated from FY 2010 to mid FY 2012 dollars)
- D.1. Capital Equipment, estimated lump sum for equipment items not shown in construction estimate (escalated from FY 2010 to FY 2013 dollars)
- E.1. Environmental Compliance Costs (assumes 90% of expenses occur in FY 2011 and 10% of expenses in FY 2012) (escalated from FY 2010 to FY 2011 dollars)
- F.1. O&M Cost Springfield Hatchery Program (costs escalated at 3% annually from 2010 dollars) assumes start-up in FY 2013

- G.1. Monitoring and evaluation program (costs escalated at 3% annually from 2010 dollars) assumes start-up in FY 2014

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