

Central Valley Salmon and Steelhead Marking/Coded-wire Tagging Program

**Fall-run Chinook Salmon
Spring-run Chinook Salmon
Steelhead**

2015 Marking Season



Prepared by:

**Braden Buttars
Pacific States Marine Fisheries Commission
bbuttars@psmfc.org**

Abstract

The Central Valley Constant Fractional Marking/Tagging Program (CFM) was initiated in the spring of 2007 following the purchase of four automated fish tagging trailers (AutoFish Systems). Planning studies indicated that the optimal marking/tagging rate for the Central Valley CFM program was 25% of the fall-run Chinook production releases. For each production release (fish released at the same time and location), the program therefore targeted marking with an adipose fin-clip and coded-wire tagging a representative 25% of each release of fall-run Chinook salmon from the Central Valley hatcheries in 2007 through 2015. The program was conducted at Coleman National Fish Hatchery, Feather River Fish Hatchery, Nimbus Fish Hatchery, and Mokelumne River Fish Hatchery in these years.

The AutoFish Trailers were also used in the 2011 through 2015 seasons to adipose fin-clip and coded-wire tag 100% of the spring-run Chinook salmon reared at the Feather River Fish Hatchery, and adipose fin-clip 100% of the steelhead reared at Coleman National Fish Hatchery, Feather River Fish Hatchery, Nimbus Fish Hatchery, and Mokelumne River Fish Hatchery. An AutoFish Trailer was also used to adipose fin-clip and coded-wire tag natural production Chinook at Mokelumne River Fish Hatchery in 2015.

This report includes the marking/tagging activities conducted with the AutoFish Systems at the four Central Valley hatcheries in 2015 (Brood Year 2014 fall-run Chinook salmon, spring-run Chinook salmon, natural production Chinook salmon, and steelhead). The program successfully processed 100% of the production releases of fall-run Chinook salmon through the automated marking trailers, a total of 25,655,924 fish. Of the fall-run Chinook total, approximately 26.70% were coded-wire tagged and adipose fin-clipped (a total of 6,850,139 fish). In addition, the program marked and coded-wire tagged 100% of the spring-run Chinook salmon produced at the Feather River Fish Hatchery, a total of 1,768,978 fish, marked and coded-wire tagged 30,863 natural production Chinook at Mokelumne River Fish Hatchery, and adipose fin-clipped 100% of the steelhead produced at Coleman National Fish Hatchery, Feather River Fish Hatchery, Nimbus Fish Hatchery, and Mokelumne River Fish Hatchery, a total of 1,356,326 fish. The Coleman National Fish Hatchery steelhead marking numbers are included in separate report.

Introduction

In most years, approximately 28 million fall-run Chinook salmon are produced at four hatcheries in California's Central Valley, including Coleman National Fish Hatchery, Feather River Fish Hatchery, Nimbus Fish Hatchery, and Mokelumne River Fish Hatchery (Figure 1). Production from these hatcheries contributes to major sport and commercial fisheries in ocean and inland areas. Until 2007, only experimental releases of fall-run Chinook were externally marked and coded-wire tagged on a regular basis.

In 2004, the CALFED Ecosystem Restoration Program (ERP) funded a study to design a constant fractional marking/coded-wire tagging program for production releases of fall-run

Chinook salmon from Central Valley hatcheries, with the goal of estimating in a statistically valid manner the relative contribution of hatchery production. The study recommended the implementation of a system-wide marking/tagging program for production releases.

In 2006, the ERP Program provided the initial funding to begin implementation of the Central Valley Constant Fractional Marking (CFM) program. The initial contract provided funding to Pacific States Marine Fisheries Commission for the purchase of four automated tagging systems (AutoFish Systems) and the first two years of operating costs for marking/tagging production releases of fall-run Chinook salmon at the five major Central Valley hatcheries (in 2007 and 2008).

This program is a cooperative effort of the California Department of Fish and Wildlife, California Department of Water Resources, U.S. Fish and Wildlife Service, Pacific States Marine Fisheries Commission, U.S. Bureau of Reclamation, and East Bay Municipal Utility District. In 2009 through 2015 funding to conduct tagging operations at each hatchery was provided by the following entities: Coleman National Fish Hatchery (U.S. Bureau of Reclamation); Feather River Fish Hatchery (California Department of Water Resources and California Department of Fish and Wildlife); Mokelumne River Fish Hatchery (East Bay Municipal Utility District and California Department of Fish and Wildlife); and Nimbus Fish Hatchery (U.S. Bureau of Reclamation).

From 2002 to 2010, 100% of the spring-run Chinook salmon production at Feather River Hatchery was marked and coded-wire tagged using manual techniques. In 2011 through 2015 the AutoFish Trailers were used for the spring-run Chinook marking/tagging. Funding was provided by the California Department of Water Resources.

The overall objectives of the fall and spring-run Chinook salmon tagging programs are:

1. To evaluate the contribution rates of hatchery fish to Central Valley Chinook salmon populations,
2. To evaluate the Central Valley propagation program's genetic and ecological effects on natural Chinook populations,
3. To estimate exploitation rates of hatchery and natural Central Valley Chinook salmon in ocean and inland fisheries,
4. To evaluate the success of restoration actions designed to increase natural production of Central Valley Chinook salmon,
5. To evaluate the relative impacts of water project operations on hatchery and naturally-produced Chinook salmon,
6. To evaluate the recovery of listed stocks of Chinook salmon.

All of the steelhead reared at Central Valley hatcheries were also marked using the AutoFish Trailers in 2015. Marking allows selective harvest of hatchery-reared steelhead in sport fisheries.

This report covers the ninth year of the CFM program's marking/tagging activities at the four major Central Valley hatcheries in the spring/summer of 2015 (Brood Year 2014 fall-run Chinook). The report also includes the marking/tagging of Brood Year 2014 spring-run Chinook

salmon reared at the Feather River Fish Hatchery, marking/tagging natural production Chinook salmon at Mokelumne River Fish Hatchery, and marking of steelhead reared at Feather River Fish Hatchery, Nimbus Fish Hatchery, and Mokelumne River Fish Hatchery. Coleman National Fish Hatchery steelhead and late-fall run Chinook are included in a separate report.

Methods

The coded-wire tag/adipose fin clip is the method agreed to by the Pacific Salmon Treaty (1999) to monitor Chinook salmon in ocean fisheries along the Pacific Coast. It is a cost-effective method to apply a long-term mark that gives data on hatchery origin and release group, and provides for external identification of tagged fish. The coded-wire tag/adipose fin-clip marking method has been used throughout the West Coast of North America since the 1970's. Currently, over 50 million Chinook and coho salmon are coded-wire tagged each year. This Central Valley program is an integral part of this Coast-wide tagging program; tagged fish are recovered in ocean fisheries throughout the West Coast.

Four state-of-the-art automated tagging trailers were purchased for the Central Valley program in late 2006 and early 2007 from Northwest Marine Technology. The trailers incorporated the latest advanced technology for marking and coded-wire tagging fish. The AutoFish System™ has the capacity to mark and implant coded-wire tags very rapidly without any use of anesthetic or human contact. These systems have been in use for many years in the Pacific Northwest, but the Central Valley trailers were the first to be purchased for use in California.

Planning studies indicated that the optimal marking/tagging rate for the Central Valley CFM program was 25% of the fall-run Chinook production releases. For each production release (fish released at the same time and location), the program therefore targeted marking/tagging a representative 25% in 2007 through 2015. Coded-wire tags for the 2015 season were ordered from Northwest Marine Technology in November 2014. Tags used in the program were all 1.1 mm standard length tags with the exception of the Knagg's Ranch Chinook tagging, which half-length tags were used. Agency only tags were used for the Coleman steelhead that were reared at Nimbus Fish Hatchery.

The program was conducted at Coleman National Fish Hatchery, Feather River Fish Hatchery, Nimbus Fish Hatchery, and Mokelumne River Fish Hatchery (Figure 1). Fall-run Chinook coded-wire tagged and released for experimental purposes were not included in the program. The Merced River Hatchery therefore was not included in the Constant Fractional Marking Program, as the fall-run Chinook at this hatchery were marked and coded-wire tagged using manual techniques in 2015.

The automated marking trailers have the ability to process fish that are a minimum length of 57 mm and a maximum length of 142 mm. With this in mind, timing of AutoFish Trailer operations at each facility was critical to maximize efficiency and productivity while meeting hatchery release deadlines. Double shifts were often used to maximize efficiency and output of the AutoFish Trailers. Trailers were moved as needed when fish at each hatchery reached the appropriate marking size. The fall-run Chinook marking/tagging season began the fourth week

of February at Coleman National Fish Hatchery and ended at Nimbus Fish Hatchery the first week of May. Marking/tagging of hatchery-produced fall-run Chinook in 2015 therefore spanned an 11-week period. The spring-run Chinook marking/tagging season began the first week of February at Feather River Fish Hatchery and was completed the first week of March for a total of 4 weeks. The Central Valley steelhead marking was conducted intermittently based on the number of fish that were the appropriate size to process through the AutoFish Trailers, from the third week of May through the third week of June.

Throughout the season, fin-clipping rate and tag retention studies were conducted for fall and spring-run Chinook salmon to determine actual marking/tagging rates for each coded-wire tag code. Except as otherwise noted below, approximately 800-900 marked/tagged fish per tag code were retained and held separately for a period of approximately 21 days following the completion of each tag code. At Coleman National Fish Hatchery and Mokelumne River Fish Hatchery, approximately 400 fish were held for retention purposes for each tag code. A lower number of fish was used in studies at these facilities due to the large number of tag codes used. Study fish were sampled from throughout the tagging period for each tag code. Fish were electronically tested for tag retentions and visually inspected for fin-clip quality at the end of the study period. During these quality checks, for a fish to be counted as successfully retaining a tag, 60% or more of the adipose fin must be removed and a coded-wire tag must be present. A partial clip resulted in 10-40% of the adipose fin still present but was not counted against the successful clipping rate. If more than 40% of the adipose fin was still intact, it was classified as unclipped and therefore counts against the successful tagging rate (i.e. it likely would not be checked for a CWT since the adipose fin is intact or mostly intact). In some instances fish were held for less than the standard 21-day time period due to specific hatchery release strategies. For some smaller tag codes, tag retention studies were not feasible; for these tag groups, retention rates were extrapolated from larger groups tagged at the same hatchery during similar time periods.

Following the tagging season, coded-wire tag data were summarized for submission to [the Regional Mark Processing Center \(RMPC\)](http://www.rmipc.org), operated by the Pacific States Marine Fisheries Commission (<http://www.rmipc.org>). The RMPC provides regional coordination of salmon tagging and fin marking programs, and maintenance of coastwide databases for coded-wire tag releases, recoveries, and associated catch/sample information, in the Regional Mark Information System (RMIS).

Figure 2 summarizes the annual project work flow.

Results

Daily tagging rates, tag codes, and results of retention studies for the 2015 tagging season are shown in Appendix Tables 1 – 5 for each of the hatcheries. The technology allowed an accurate count of all production fish, and the marking/tagging of an exact percentage of those fish.

The program successfully processed 100% of the 2015 production releases of fall-run Chinook salmon from the Central Valley hatcheries (totaling 25,655,924 fish). The 25% target rate for marking/tagging was achieved for Brood Year 2014 (approximately 26.70% were CWT/ad-clipped, a total of 6,850,139 fish). The AutoFish Trailers also marked and tagged 100% of the Brood Year 2014 spring-run Chinook salmon reared at the Feather River Fish Hatchery, a total of 1,768,978 fish, and 30,863 natural production Chinook at Mokelumne River Fish Hatchery.

The AutoFish Trailers marked 100% of the steelhead reared at Coleman National Fish Hatchery, Feather River Fish Hatchery, Nimbus Fish Hatchery, and Mokelumne River Fish Hatchery.

Tag retention studies for the fall-run Chinook indicated very high rates of tag/mark retention. Retention rates ranged as follows:

- Coleman National Fish Hatchery: 98.62 - 100% with an average of 99.74%
- Feather River Hatchery: 97.10% - 99.56% with an average of 98.78%
- Mokelumne River Hatchery: 99.25% - 100% with average of 99.69%
- Nimbus Hatchery: 99.11% - 100% with an average of 99.67%

Tag retention studies for the spring-run Chinook also indicated high rates of tag/mark retention. Retention rates ranged as follows:

- Feather River Hatchery: 98.57% – 99.57% with an average of 99.10%

The tag retention rate for the Coleman steelhead that were reared and tagged at Nimbus Fish Hatchery was much less than the program goal of 99% due to the uncharacteristic shape of these fish:

- Coleman steelhead at Nimbus Fish Hatchery: 88.33%

The steelhead from each facility are generally released during the winter months and clip quality will be checked just prior to release. No retention rates were attained on the natural production Chinook at Mokelumne River Fish Hatchery since those fish were released a day or two after tagging was completed.

The numbers of fish included in this report were those processed and returned to the raceways during the tagging process. The actual numbers of fish released may differ. Please refer to the RMIS website, <http://www.rmmpc.org>, for the number of fish that were successfully clipped and tagged and then released.

Discussion

Similar to past tagging seasons, finding and retaining qualified technical personnel for program operations continued to be a challenge during the 2015 tagging season. The program had seven Trailer Operators and seven Trailer Assistants employed to start the season. Several of the Trailer Assistants left prior to the completion of the marking season so we had to hire additional Trailer Assistants mid-season in order to maintain an adequate staff to complete the AutoFish Trailer operations.

This report includes all of the anadromous marking/tagging activities in the Central Valley with the exception of the Coleman National Fish Hatchery late-fall-run Chinook and steelhead, Merced River fall-run Chinook, and Livingston Stone National Fish Hatchery winter-run Chinook. These groups of fish are included in separate annual reports.

Acknowledgements

The Constant Fractional Marking Program would not have existed or successfully completed nine years of tagging without significant contributions from a number of people and agencies. I would like to thank the following individuals for their support, dedication and cooperation in this program:

Management, administration, problem solving, and the existence of this program would not have been possible without Heather McIntire, California Department of Fish and Wildlife (CDFW); Stan Allen and Amy Roberts, Pacific States Marine Fisheries Commission (PSMFC); John Hannon, Bureau of Reclamation (USBR), Jose Setka East Bay Municipal Utility District (EBMUD) and Kevin Niemela, U.S. Fish and Wildlife Service (USFWS).

In particular, I want to thank the managers and staff working at the hatcheries where we conduct the marking/tagging program. Without your help, cooperation and support, this program would not be possible. Your willingness to work with us in adjusting the agendas and scheduling is critical in meeting the goals of all of the facilities. Kurtis Brown (USFWS - Coleman National Fish Hatchery), Penny Booth-Crawshaw (CDFW - Feather River Fish Hatchery), Anna Kastner (CDFW - Feather River Fish Hatchery), Paula Hoover (CDFW - Nimbus Fish Hatchery), Gary Novak (CDFW - Nimbus Fish Hatchery), William Smith (CDFW - Mokelumne River Fish Hatchery), and their very professional hatchery staff did a significant amount of work to accommodate the trailers at their hatcheries, and made us feel welcome while we were on-site. I look forward to continuing to work with you all.

I also want to thank Scott Merlette and Mike Memeo (PSMFC) for their work on the data entry and Chad Dale (PSMFC) for all of his maintenance work on the AutoFish Trailers to ensure that everything was operational. I want to thank the rest of the professional and hardworking CFM crew that made this ninth season a great success. They each spent many long days away from home to accomplish the goals of this very demanding program. Trailer Operators included Tom Clifford (PSMFC), Chad Dale (PSMFC), Mike Memeo (PSMFC), Scott Merlette (PSMFC), Jacob Sleasman (PSMFC), Aaryn Smith (PSMFC), and TJ Wilson (PSMFC). Tagging Trailer Assistants included seasonal PSMFC staff members Asha Ajmani, Brenden Barney, Jacob Crawford, Elizabeth Ferris, Kevin Lalla, Kelly Reynolds, Robert Roy, and Erin Tracy.

The IEP Central Valley Salmonid Project Work Team provided the initial guidance in the development of the project. Members included Jim Smith (USFWS), Russell Bellmer (CDFW), Kenneth Lentz (USBR retired), John Hannon (USBR), Rich Dixon (CDFW retired), Alice Low (CDFW), Brad Cavallo (formerly DWR), Pete Adams (NOAA Fisheries retired), Stan Allen (PSMFC) and Joseph Miyamoto (EBMUD retired).

Schedule of Mark Events

- January 20th-January 29th Clipping/Tagging Knaggs Ranch fall-run Chinook at Feather River Fish Hatchery
- February 6th-March 4th Clipping/Tagging spring-run Chinook at Feather River Fish Hatchery
- February 23rd-April 22nd Clipping/Tagging fall-run Chinook at Coleman National Fish Hatchery
- March 5th-April 24th Clipping/Tagging fall-run Chinook at Feather River Fish Hatchery
- March 16th-April 23rd Clipping/Tagging fall-run Chinook at Mokelumne River Fish Hatchery
- March 30th-May 7th Clipping/Tagging fall-run Chinook at Nimbus Fish Hatchery
- May 4th-June 3rd Clipping steelhead at Coleman National Fish Hatchery
- May 4th-June 1st Clipping/Tagging natural production Chinook at Mokelumne River Fish Hatchery
- May 18th-June 2nd Clipping/Tagging steelhead at Nimbus Fish Hatchery
- June 8th-June 18th Clipping steelhead at Feather River Fish Hatchery
- June 9th-June 16th Clipping steelhead at Mokelumne River Fish Hatchery

Figure 1. Hatchery Locations: Central Valley Constant Fractional Marking Program (2015)

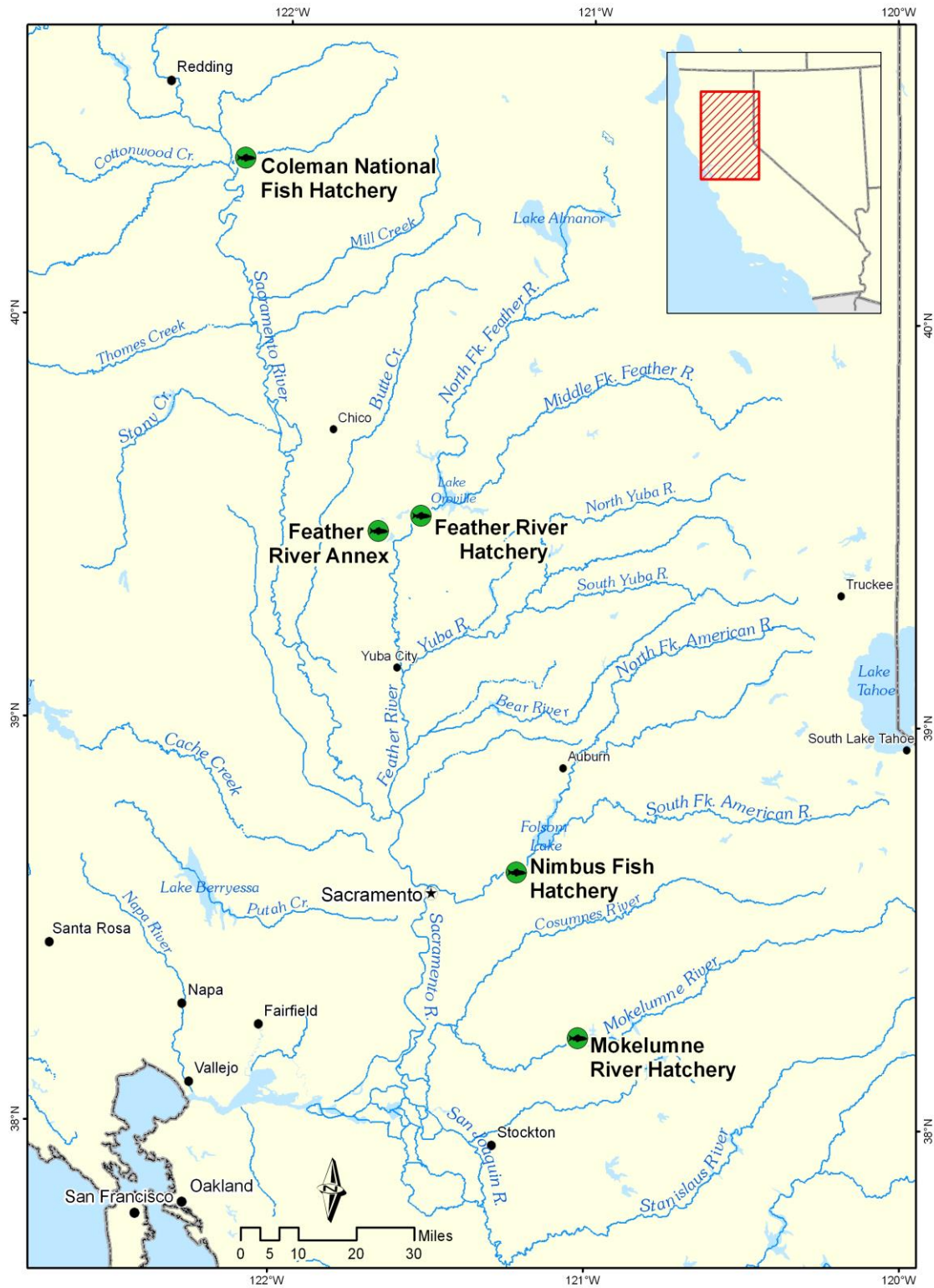
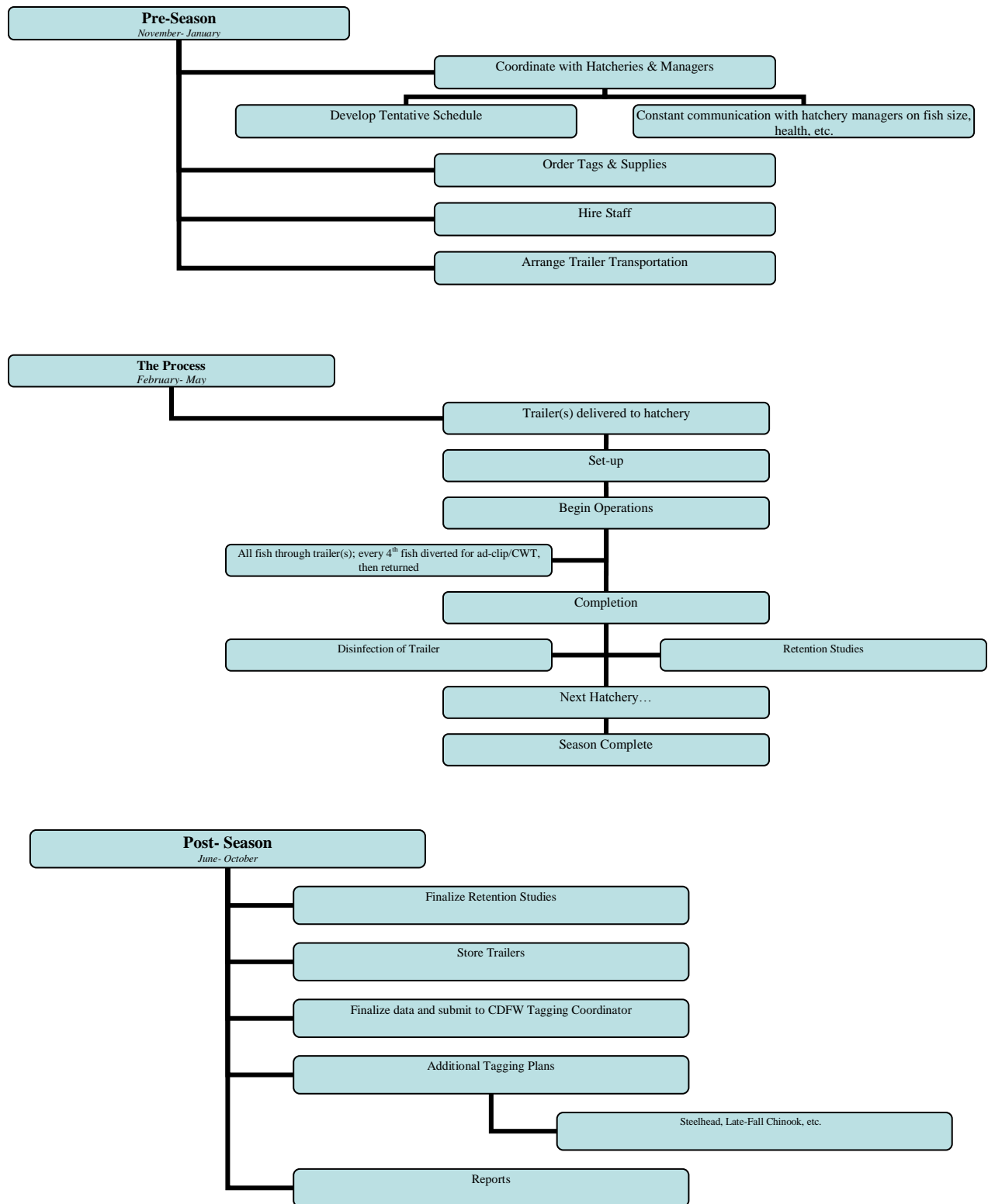


Figure 2. Constant Fractional Marking Program Annual Work Flow Summary



Appendix

Coleman National Fish Hatchery



Table 1a. Daily Tagging Rates at Coleman National Fish Hatchery

Coleman National Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 05/57/80			Size: 105K			Trailer # CA3	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
2/23/2015	1	1	45,880	-	137,772	-	183,652
2/24/2015	1	1	34,469	80,349	103,542	241,314	321,663
2/24/2015	1	1	26,632	106,981	79,938	321,252	428,233
Tag Code Totals:			-	106,981	-	321,252	428,233

Coleman National Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 05/57/81			Size: 105K			Trailer # CA3	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
2/25/2015	2	2	28,547	-	85,749	-	114,296
2/25/2015	2	2	37,412	65,959	112,287	198,036	263,995
2/26/2015	2	2	39,284	105,243	117,930	315,966	421,209
Tag Code Totals:			-	105,243	-	315,966	421,209

Coleman National Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 05/57/82			Size: 105K			Trailer # CA3	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
2/26/2015	3	3	30,328	-	91,026	-	121,354
2/26/2015	3	3	38,705	69,033	116,172	207,198	276,231
2/27/2015	3	3	34,484	103,517	103,494	310,692	414,209
Tag Code Totals:			-	103,517	-	310,692	414,209

Coleman National Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 05/57/83			Size: 105K			Trailer # CA3	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/2/2015	4	4	32,358	-	97,206	-	129,564
3/2/2015	4	4	37,050	69,408	111,219	208,425	277,833
3/3/2015	4	4	41,878	111,286	125,757	334,182	445,468
Tag Code Totals:			-	111,286	-	334,182	445,468

Coleman National Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 05/57/84			Size: 105K			Trailer # CA3	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/3/2015	5	5	33,627	-	100,965	-	134,592
3/4/2015	5	5	40,019	73,646	120,168	221,133	294,779
3/4/2015	5	5	31,549	105,195	94,710	315,843	421,038
Tag Code Totals:			-	105,195	-	315,843	421,038

Coleman National Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 05/57/85			Size: 105K			Trailer # CA3	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/5/2015	6	6	32,984	-	99,108	-	132,092
3/5/2015	6	6	37,301	70,285	111,975	211,083	281,368
3/6/2015	6	6	40,960	111,245	122,982	334,065	445,310
Tag Code Totals:			-	111,245	-	334,065	445,310

Coleman National Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 05/57/86			Size: 105K			Trailer # CA3	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/9/2015	7	7	27,545	-	82,719	-	110,264
3/9/2015	7	7	34,368	61,913	103,200	185,919	247,832
3/10/2015	7	7	25,022	86,935	75,141	261,060	347,995
Tag Code Totals:			-	86,935	-	261,060	347,995

Coleman National Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 05/57/87			Size: 105K			Trailer # CA3	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/10/2015	8	8	26,893	-	80,739	-	107,632
3/11/2015	8	8	31,021	57,914	93,132	173,871	231,785
3/11/2015	8	8	33,864	91,778	101,757	275,628	367,406
3/12/2015	8	8	23,144	114,922	69,501	345,129	460,051
Tag Code Totals:			-	114,922	-	345,129	460,051

Coleman National Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 05/57/88			Size: 105K			Trailer # CA3	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/12/2015	9	9	33,031	-	99,198	-	132,229
3/13/2015	9	9	30,721	63,752	92,202	191,400	255,152
3/13/2015	9	9	4,551	68,303	13,665	205,065	273,368
3/16/2015	9	9	28,658	96,961	86,139	291,204	388,165
Tag Code Totals:			-	96,961	-	291,204	388,165

Coleman National Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 05/57/89			Size: 105K			Trailer # CA3	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/16/2015	10	10	17,625	-	52,908	-	70,533
3/17/2015	10	10	26,087	43,712	78,324	131,232	174,944
3/17/2015	10	10	27,478	71,190	82,488	213,720	284,910
3/18/2015	10	10	38,398	109,588	115,338	329,058	438,646
Tag Code Totals:			-	109,588	-	329,058	438,646

Coleman National Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 05/57/90			Size: 105K			Trailer # CA4	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/6/2015	11	11	5,613	-	16,914	-	22,527
3/6/2015	11	11	15,583	21,196	46,788	63,702	84,898
3/6/2015	11	11	33,947	55,143	101,907	165,609	220,752
3/9/2015	11	11	33,861	89,004	101,763	267,372	356,376
3/9/2015	11	11	17,758	106,762	53,313	320,685	427,447
Tag Code Totals:			-	106,762	-	320,685	427,447

Coleman National Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 05/57/91			Size: 105K			Trailer # CA4	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/9/2015	12	12	16,234	-	48,741	-	64,975
3/10/2015	12	12	35,903	52,137	107,772	156,513	208,650
3/10/2015	12	12	34,838	86,975	104,556	261,069	348,044
3/11/2015	12	12	19,176	106,151	57,594	318,663	424,814
Tag Code Totals:			-	106,151	-	318,663	424,814

Coleman National Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 05/57/92			Size: 105K			Trailer # CA4	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/11/2015	13	13	44,546	-	133,674	-	178,220
3/12/2015	13	13	37,072	81,618	111,285	244,959	326,577
3/12/2015	13	13	21,657	103,275	65,013	309,972	413,247
Tag Code Totals:			-	103,275	-	309,972	413,247

Coleman National Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 05/57/93			Size: 105K			Trailer # CA4	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/13/2015	14	14	30,142	-	90,474	-	120,616
3/13/2015	14	14	29,531	59,673	88,641	179,115	238,788
3/16/2015	14	14	51,799	111,472	155,487	334,602	446,074
Tag Code Totals:			-	111,472	-	334,602	446,074

Coleman National Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 05/57/94			Size: 105K			Trailer # CA4	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/17/2015	15	15	51,256	-	153,876	-	205,132
3/18/2015	15	15	37,833	89,089	113,601	267,477	356,566
3/18/2015	15	15	18,067	107,156	54,243	321,720	428,876
Tag Code Totals:			-	107,156	-	321,720	428,876

Coleman National Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 05/57/95			Size: 105K			Trailer # CA4	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/18/2015	16	16	14,321	-	43,002	-	57,323
3/19/2015	16	16	30,785	45,106	92,442	135,444	180,550
3/19/2015	16	16	37,174	82,280	111,579	247,023	329,303
3/20/2015	16	16	33,005	115,285	99,075	346,098	461,383
Tag Code Totals:			-	115,285	-	346,098	461,383

Coleman National Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 05/57/96			Size: 105K			Trailer # CA4	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/23/2015	17	17	22,890	-	68,781	-	91,671
3/23/2015	17	17	35,857	58,747	107,796	176,577	235,324
3/24/2015	17	17	32,989	91,736	99,012	275,589	367,325
Tag Code Totals:			-	91,736	-	275,589	367,325

Coleman National Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 05/57/97			Size: 105K			Trailer # CA3	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/19/2015	18	18	48,594	-	145,905	-	194,499
3/19/2015	18	18	33,499	82,093	100,602	246,507	328,600
3/20/2015	18	18	20,723	102,816	62,229	308,736	411,552
Tag Code Totals:			-	102,816	-	308,736	411,552

Coleman National Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 05/57/98			Size: 105K			Trailer # CA4	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/24/2015	19	19	29,438	-	88,380	-	117,818
3/25/2015	19	19	29,676	59,114	89,067	177,447	236,561
3/25/2015	19	19	34,026	93,140	102,165	279,612	372,752
3/26/2015	19	19	21,507	114,647	64,584	344,196	458,843
Tag Code Totals:			-	114,647	-	344,196	458,843

Coleman National Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 05/57/99			Size: 105K			Trailer # CA3	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/23/2015	20	20	22,485	-	67,536	-	90,021
3/24/2015	20	20	32,601	55,086	97,878	165,414	220,500
3/25/2015	20	20	32,510	87,596	97,593	263,007	350,603
3/26/2015	20	20	25,659	113,255	77,049	340,056	453,311
Tag Code Totals:			-	113,255	-	340,056	453,311

Coleman National Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 05/58/04			Size: 105K			Trailer # CA3	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/27/2015	21	21	50,609	-	152,013	-	202,622
3/30/2015	21	21	29,127	79,736	87,450	239,463	319,199
3/30/2015	21	21	30,429	110,165	91,419	330,882	441,047
Tag Code Totals:			-	110,165	-	330,882	441,047

Coleman National Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 05/58/05			Size: 105K			Trailer # CA3	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/31/2015	22	22	30,345	-	91,107	-	121,452
3/31/2015	22	22	30,253	60,598	90,993	182,100	242,698
4/1/2015	22	22	35,446	96,044	106,413	288,513	384,557
4/1/2015	22	22	14,475	110,519	43,503	332,016	442,535
Tag Code Totals:			-	110,519	-	332,016	442,535

Coleman National Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 05/58/06			Size: 105K			Trailer # CA3	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/1/2015	23	23	8,506	-	25,584	-	34,090
4/2/2015	23	23	31,961	40,467	95,970	121,554	162,021
4/2/2015	23	23	32,578	73,045	97,890	219,444	292,489
4/3/2015	23	23	27,967	101,012	83,967	303,411	404,423
Tag Code Totals:			-	101,012	-	303,411	404,423

Coleman National Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 05/58/07			Size: 105K			Trailer # CA3	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/3/2015	24	24	33,428	-	100,350	-	133,778
4/6/2015	24	24	29,104	62,532	87,390	187,740	250,272
4/6/2016	24	24	28,401	90,933	85,278	273,018	363,951
4/7/2015	24	24	16,719	107,652	50,220	323,238	430,890
Tag Code Totals:			-	107,652	-	323,238	430,890

Coleman National Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 05/58/08			Size: 105K			Trailer # CA3	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/8/2015	25	25	30,676	-	92,115	-	122,791
4/9/2015	25	25	39,142	69,818	117,504	209,619	279,437
4/9/2015	25	25	32,848	102,666	98,703	308,322	410,988
Tag Code Totals:			-	102,666	-	308,322	410,988

Coleman National Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 05/58/09			Size: 105K			Trailer # CA3	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/9/2015	26	26	28,575	-	85,812	-	114,387
4/9/2015	26	26	32,755	61,330	98,403	184,215	245,545
4/10/2015	26	26	43,239	104,569	129,804	314,019	418,588
Tag Code Totals:			-	104,569	-	314,019	418,588

Coleman National Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 05/58/10			Size: 105K			Trailer # CA3	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/13/2015	27	27	27,193	-	81,651	-	108,844
4/14/2015	27	27	31,839	59,032	95,571	177,222	236,254
4/15/2015	27	27	33,548	92,580	100,728	277,950	370,530
4/16/2015	27	27	12,567	105,147	37,761	315,711	420,858
Tag Code Totals:			-	105,147	-	315,711	420,858

Coleman National Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 05/58/11			Size: 105K			Trailer # CA3	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/16/2015	28	28	13,284	-	39,879	-	53,163
4/17/2015	28	28	24,611	37,895	73,902	113,781	151,676
4/20/2015	28	28	23,672	61,567	71,094	184,875	246,442
4/21/2015	28	28	31,656	93,223	95,040	279,915	373,138
4/22/2015	28	28	10,723	103,946	32,226	312,141	416,087
Tag Code Totals:			-	103,946	-	312,141	416,087

	Tagged	Untagged	Total
Hatchery Totals	2,970,104	8,918,508	11,888,612

Retention Range: 98.62 - 100%

Retention Average: 99.74%

Table 1b. Summary of Hatchery Tag Codes and Tag Retention Study

Coleman National Fish Hatchery- Fall Run Chinook										
Tag Code Size and Location			Tag Code Totals			Retention Calculations				
Tag Code	Size	Raceway	Total Tagged	Number Untagged	Total Processed	# of Fish Held	Days Held	% Retention	# Retaining Tags	Calculated Untagged
05/57/80	105K	1	106,981	321,252	428,233	398	21	99.75%	106,714	321,519
05/57/81	105K	2	105,243	315,966	421,209	397	21	100.00%	105,243	315,966
05/57/82	105K	3	103,517	310,692	414,209	397	21	100.00%	103,517	310,692
05/57/83	105K	4	111,286	334,182	445,468	397	21	100.00%	111,286	334,182
05/57/84	105K	5	105,195	315,843	421,038	398	21	100.00%	105,195	315,843
05/57/85	105K	6	111,245	334,065	445,310	405	21	100.00%	111,245	334,065
05/57/86	105K	7	86,935	261,060	347,995	403	21	100.00%	86,935	261,060
05/57/87	105K	8	114,922	345,129	460,051	398	21	99.75%	114,635	345,416
05/57/88	105K	9	96,961	291,204	388,165	391	21	99.74%	96,709	291,456
05/57/89	105K	10	109,588	329,058	438,646	366	21	100.00%	109,588	329,058
05/57/90	105K	11	106,762	320,685	427,447	236	21	100.00%	106,762	320,685
05/57/91	105K	12	106,151	318,663	424,814	400	21	100.00%	106,151	318,663
05/57/92	105K	13	103,275	309,972	413,247	395	21	100.00%	103,275	309,972
05/57/93	105K	14	111,472	334,602	446,074	200	21	100.00%	111,472	334,602
05/57/94	105K	15	107,156	321,720	428,876	401	21	100.00%	107,156	321,720
05/57/95	105K	16	115,285	346,098	461,383	397	21	100.00%	115,285	346,098
05/57/96	105K	17	91,736	275,589	367,325	222	21	100.00%	91,736	275,589
05/57/97	105K	18	102,816	308,736	411,552	400	21	99.75%	102,559	308,993
05/57/98	105K	19	114,647	344,196	458,843	365	21	99.73%	114,337	344,506
05/57/99	105K	20	113,255	340,056	453,311	374	21	100.00%	113,255	340,056
05/58/04	105K	21	110,165	330,882	441,047	362	21	99.72%	109,857	331,190
05/58/05	105K	22	110,519	332,016	442,535	363	21	98.62%	108,994	333,541
05/58/06	105K	23	101,012	303,411	404,423	394	21	99.75%	100,759	303,664
05/58/07	105K	24	107,652	323,238	430,890	335	21	99.40%	107,006	323,884
05/58/08	105K	25	102,666	308,322	410,988	393	21	98.98%	101,619	309,369
05/58/09	105K	26	104,569	314,019	418,588	190	21	99.47%	104,015	314,573
05/58/10	105K	27	105,147	315,711	420,858	404	21	98.76%	103,843	317,015
05/58/11	105K	28	103,946	312,141	416,087	391	21	99.23%	103,146	312,941
Hatchery Totals			2,970,104	8,918,508	11,888,612	Retention Average		99.74%	2,962,293	8,926,319

Feather River Fish Hatchery



Table 2a. Daily Tagging Rates at Feather River Hatchery

Feather River Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 06/06/56			Size: 345K			Trailer # CA2	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/5/2015	F2	Channel	48,743	-	146,364	-	195,107
3/6/2015	F2/F4	Channel	22,056	70,799	66,267	212,631	283,430
3/6/2015	F4	Channel	16,812	87,611	50,514	263,145	350,756
3/9/2015	E2	Channel	24,617	112,228	73,929	337,074	449,302
3/9/2015	E2/E4	Channel	29,237	141,465	87,798	424,872	566,337
3/10/2015	E4/F6	Channel	21,617	163,082	65,016	489,888	652,970
3/10/2015	F6/E6	Channel	28,205	191,287	84,678	574,566	765,853
3/11/2015	E6	Channel	19,063	210,350	57,345	631,911	842,261
3/16/2015	C4	Channel	16,753	227,103	50,373	682,284	909,387
3/17/2015	C4	Channel	28,355	255,458	85,164	767,448	1,022,906
3/18/2015	C4	Channel	30,236	285,694	90,789	858,237	1,143,931
3/19/2015	D2	Channel	28,618	314,312	85,899	944,136	1,258,448
3/20/2015	D2	Channel	33,002	347,314	99,105	1,043,241	1,390,555
3/23/2015	D2/C6	Channel	26,891	374,205	80,748	1,123,989	1,498,194
3/23/2015	C6	Channel	26,297	400,502	78,954	1,202,943	1,603,445
Tag Code Totals:			-	400,502	-	1,202,943	1,603,445

Feather River Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 06/06/57			Size: 345K			Trailer # CA2	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/24/2015	C6	Channel	57,522	-	172,656	-	230,183
3/25/2015	D4	Channel	65,305	122,827	196,053	368,709	491,536
3/26/2015	D4/C2	Channel	66,413	189,240	199,338	568,047	757,287
3/27/2015	C2	Channel	60,997	250,237	183,048	751,095	1,001,332
3/30/2015	C2/D6	Channel	26,105	276,342	78,363	829,458	1,105,800
3/31/2015	D6	Channel	38,586	314,928	115,839	945,297	1,260,225
4/1/2015	D6	Channel	36,528	351,456	109,677	1,054,974	1,406,430
4/2/2015	D6/B4	Channel	30,541	381,997	91,698	1,146,672	1,528,669
4/3/2015	B4	Channel	5,408	387,405	16,269	1,162,941	1,550,346
Tag Code Totals:			-	387,405	-	1,162,941	1,550,346

Feather River Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 06/06/58			Size: 230K			Trailer # CA2	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/3/2015	B4	C6	13,084	-	39,258	-	52,342
4/6/2015	B4/B2	C6	23,821	36,905	71,499	110,757	147,662
4/6/2015	B2	C6	1,424	38,329	4,272	115,029	153,358
4/6/2015	B2	D6	31,794	-	95,433	-	127,227
4/7/2015	B2	D6	5,679	37,473	17,061	112,494	149,967
4/7/2015	B2	C4	37,691	-	113,109	-	150,800
4/7/2015	B2	D4	13,671	-	41,016	-	54,687
4/8/2015	B2/B6	D4	23,843	37,514	71,568	112,584	150,098
4/8/2015	B6	D2	31,670	-	95,049	-	126,719
4/13/2015	A4	D2	24,850	56,520	74,610	169,659	226,179
4/14/2015	A4	C2	37,148	-	111,489	-	148,637
4/15/2015	A4	C2	20,631	57,779	61,956	173,445	231,224
Tag Code Totals:			-	265,306	-	796,320	1,061,626

Feather River Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 06/87/38			Size: 10K			Trailer # CA2	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/15/2015	A4	C2	2,694	-	8,082	-	10,776
Tag Code Totals:			-	2,694	-	8,082	10,776

Feather River Fish Hatchery-Fall Run-100% Mark/Tag Tiburon Group					
Tag Code: 06/05/78		Size: 15K		Trailer # CA2	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Raceway Total
4/16/2015	A2	Top B	10,356	-	10,356
Tag Code Totals			-	-	10,356

Feather River Fish Hatchery-Fall Run-100% Mark/Tag Pillar Point Group					
Tag Code: 06/06/62		Size: 325K		Trailer # CA2	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Raceway Total
4/16/2015	A2	B2	16,888	-	16,888
4/17/2015	A2	B2	36,964	-	53,852
4/20/2015	A2	B2	51,338	-	105,190
4/21/2015	A2	B2	55,597	-	160,787
4/22/2015	A2	B2	59,277	-	220,064
4/23/2015	A2	B2	61,298	-	281,362
4/24/2015	A2	B2	51,393	-	332,755
Tag Code Totals			-	-	332,755

	Tagged	Untagged	Total
Hatchery Totals:	1,399,018	3,170,286	4,569,304

Retention Range: 97.10-99.56%

Retention Average: 98.78%

Table 2b. Summary of Hatchery Fall-run Tag Codes and Tag Retention Study

Feather River Fish Hatchery - Fall Run Chinook										
Tag Code Size and Location			Tag Code Totals			Retention Calculations				
Tag Code	Size	Raceway	Total Tagged	Number Untagged	Total Processed	# of Fish Held	Days Held	% Retention	# Retaining Tags	Calculated Untagged
06/06/56	345K	Channel	400,502	1,202,943	1,603,445	903	21	99.11%	396,938	1,206,507
06/06/57	345K	Channel	387,405	1,162,941	1,550,346	900	21	99.44%	385,236	1,165,110
06/06/58	230K*	C/D	265,306	796,320	1,061,626	900	21	99.56%	264,139	797,487
06/87/38	10K*	C2	2,694	8,082	10,776	900	21	99.56%	2,682	8,094
06/05/78	15K	Top B	10,356	-	10,356	600	20	97.92%	10,141	215
06/06/62	325K	B2	332,755	-	332,755	931	27	97.10%	323,105	9,650
Hatchery Totals			1,399,018	3,170,286	4,569,304	Retention Average		98.78%	1,382,240	3,187,064

* = Fish held with other tag code fish from same raceway. Retention percentage applied to all tag codes in one raceway.

Feather River Fish Hatchery - Spring Run - 100% Mark/Tag San Joaquin Group					
Tag Code: 06/04/60		Size: 60K		Trailer # CA2	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Raceway Total
2/6/2015	Vats	H1	12,690	-	12,690
2/7/2015	Vats	H1	20,124	-	32,814
2/8/2015	Vats	H1	22,112	-	54,926
Tag Code Totals			-	-	54,926

Feather River Fish Hatchery - Spring Run - 100% Mark/Tag					
Tag Code: 06/06/54		Size: 450K		Trailer # CA2	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Raceway Total
2/9/2015	G4	G6	71,181	-	71,181
2/10/2015	G4	G6	56,183	-	127,364
2/10/2015	G4	G6	54,577	-	181,941
2/11/2015	G4	G6	67,992	-	249,933
2/11/2015	H4	G6	47,074	-	297,007
2/12/2015	H4	G6	3,220	-	300,227
3/4/2015	H2	G6	9,666	-	309,893
2/12/2015	H4	G4	47,363	-	47,363
2/12/2015	H4	G4	54,702	-	102,065
2/13/2015	H4	G4	46,393	-	148,458
2/26/2021	H4	G4	44,253	-	192,711
Tag Code Totals			-	-	502,604

Feather River Fish Hatchery - Spring Run - 100% Mark/Tag					
Tag Code: 06/07/14		Size: 450K		Trailer # CA2	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Raceway Total
2/17/2015	H4	G3	46,159	-	46,159
2/17/2015	H4	G3	52,783	-	98,942
2/18/2015	H4/G2	G3	52,791	-	151,733
2/18/2015	G2	G1	34,043	-	34,043
2/19/2015	G2	G1	55,066	-	89,109
2/19/2015	G2	G1	53,899	-	143,008
2/20/2015	G2	G1	89,554	-	232,562
2/23/2015	G2	G1	43,429	-	275,991
2/23/2015	G2	G1	53,724	-	329,715
2/24/2015	G2	G1	18,932	-	348,647
Tag Code Totals			-	-	500,380

Feather River Fish Hatchery - Spring Run - 100% Mark/Tag					
Tag Code: 06/04/79		Size: 230K		Trailer # CA2	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Raceway Total
2/24/2015	G2/H2	H4	77,819	-	77,819
2/25/2015	H2	H4	50,252	-	128,071
2/25/2015	H2	H4	57,366	-	185,437
2/26/2015	H2	H4	56,401	-	241,838
2/26/2015	H2	H4	19,099	-	260,937
Tag Code Totals			-	-	260,937

Feather River Fish Hatchery - Spring Run - 100% Mark/Tag					
Tag Code: 06/05/67		Size: 230K		Trailer # CA2	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Raceway Total
2/26/2015	H2	H1	34,773	-	34,773
2/27/2015	H2	H1	50,386	-	85,159
2/27/2015	H2	H1	51,976	-	137,135
3/2/2015	H2	H1	51,021	-	188,156
3/2/2015	H2	H1	58,093	-	246,249
3/3/2015	H2	H1	14,929	-	261,178
Tag Code Totals			-	-	261,178

Feather River Fish Hatchery - Spring Run - 100% Mark/Tag					
Tag Code: 06/86/99		Size: 50K		Trailer # CA2	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Raceway Total
3/3/2015	H2	H4.5	55,162	-	55,162
Tag Code Totals			-	-	55,162

Feather River Fish Hatchery - Spring Run - 100% Mark/Tag					
Tag Code: 06/87/30		Size: 80K		Trailer # CA2	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Raceway Total
3/3/2015	H2	H5	30,777	-	30,777
3/4/2015	H2	H5	60,110	-	90,887
Tag Code Totals			-	-	90,887

Feather River Fish Hatchery - Spring Run - 100% Mark/Tag					
Tag Code: 06/03/81		Size: 40K		Trailer # CA2	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Raceway Total
3/4/2015	H2	H5	42,904	-	42,904
Tag Code Totals			-	-	42,904

Hatchery Totals:
Retention Range: 98.57-99.57%

1,768,978
Retention Average: 99.10%

Table 2c. Summary of Hatchery Spring-Run Tag Codes and Retention Study

Feather River Fish Hatchery - Spring Run Chinook Salmon										
Tag Code Size and Location			Tag Code Totals			Retention Calculations				
Tag Code	Size	Raceway	Total Tagged	Number Untagged	Total Processed	# of Fish Held	Days Held	% Retention	# Retaining Tags	Calculated Untagged
06/04/60	60K*	H1	54,926	-	54,926	-	-	99.10%	54,432	494
06/06/54	450K	G6/G4	502,604	-	502,604	902	21	99.11%	498,131	4,473
06/07/14	450K	G3/G1	500,380	-	500,380	910	22	98.57%	493,225	7,155
06/04/79	230K	H4	260,937	-	260,937	904	20	98.89%	258,041	2,896
06/05/67	230K	H1	261,178	-	261,178	900	21	99.33%	259,428	1,750
06/86/99	50K	H4.5	55,162	-	55,162	900	21	99.56%	54,919	243
06/87/30	80K*	H5	90,887	-	90,887	892	21	99.11%	90,078	809
06/03/81	40K*	H5	42,904	-	42,904	900	21	99.11%	42,522	382
Hatchery Totals			1,768,978	-	1,768,978	Retention Average		99.10%	1,750,775	18,203

* = Fish held with other tag code fish from same raceway. Retention percentage applied to all tag codes in one raceway.

** = Retention fish not checked. Used CFM average to obtain retention rate.

Feather River Fish Hatchery-Steelhead-100% Mark Only					
Trailer # CA3					
Marking Date	Raceway Prior to Marking	Raceway Following Marking	Daily Marked Total	Cumulative Marked Total	Raceway Total
6/8/2015	F2	F1	12,963	-	12,963
6/9/2015	F2	F1	56,746	69,709	69,709
6/10/2015	F2	F1	52,583	122,292	122,292
6/11/2015	F2	F1	69,060	191,352	191,352
6/16/2015	E2	E1	51,028	242,380	51,028
6/17/2015	E2	E1	52,407	294,787	103,435
6/18/2015	E2	E1	38,245	333,032	141,680
Totals			-	-	333,032

Feather River Fish Hatchery - Fall Run - 100% Mark/Tag Knagg's Ranch Group - Half Length Tags					
Tag Code: 06/01/02/09/03		Size: 55K		Trailer # Manual Trailer	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Raceway Total
1/20/2015	F2	D6	3,368	-	3,368
1/21/2015	F2	D6	6,710	-	10,078
1/22/2015	F2	D6	7,305	-	17,383
1/26/2015	F2	D6	6,581	-	23,964
1/27/2015	F2	D6	7,793	-	31,757
1/28/2015	F2	D6	9,093	-	40,850
1/29/2015	F2	D6	4,350	-	45,200
Tag Code Totals			-	-	45,200

No retention fish were held for these fish.

Mokelumne River Hatchery



Table 4a. Daily Tagging Rates at Mokelumne River Hatchery

Mokelumne River Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 06/06/69			Size: 100K			Trailer # CA 1	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/16/2015	B	A	29,667	-	89,238	-	118,905
3/17/2015	B	A	21,152	50,819	63,549	152,787	203,606
3/17/2015	B	A	34,000	84,819	102,087	254,874	339,693
3/18/2015	B/C	A	21,198	106,017	63,723	318,597	424,614
Tag Code Totals:			-	106,017	-	318,597	424,614

Mokelumne River Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 06/06/70			Size: 100K			Trailer # CA1	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/18/2015	C	B	704	-	2,154	-	2,858
3/19/2015	C	B	28,153	28,857	84,510	86,664	115,521
3/19/2015	C	B	18,597	47,454	55,881	142,545	189,999
3/20/2015	C	B	30,313	77,767	91,038	233,583	311,350
3/23/2015	D	B	34,783	112,550	104,475	338,058	450,608
Tag Code Totals:			-	112,550	-	338,058	450,608

Mokelumne River Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 06/06/71			Size: 100K			Trailer # CA1	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/24/2015	D	C	34,358	-	103,197	-	137,555
3/24/2015	D	C	33,925	68,283	101,823	205,020	273,303
3/25/2015	D/E	C	35,299	103,582	106,005	311,025	414,607
3/25/2015	E	C	9,992	113,574	29,976	341,001	454,575
Tag Code Totals:			-	113,574	-	341,001	454,575

Mokelumne River Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 06/06/72			Size: 100K			Trailer # CA1	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/25/2015	E	D	16,005	-	48,048	-	64,053
3/26/2015	E	D	33,595	49,600	100,857	148,905	198,505
3/26/2015	E/F	D	38,281	87,881	114,903	263,808	351,689
3/27/2015	F	D	24,924	112,805	74,823	338,631	451,436
Tag Code Totals:			-	112,805	-	338,631	451,436

Mokelumne River Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 06/06/73			Size: 100K			Trailer # CA1	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/27/2015	F	E	24,706	-	74,151	-	98,857
3/30/2015	F	E	50,663	75,369	152,070	226,221	301,590
3/31/2015	G	E	37,208	112,577	111,669	337,890	450,467
Tag Code Totals:			-	112,577	-	337,890	450,467

Mokelumne River Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 06/06/74			Size: 100K			Trailer # CA1	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/31/2015	G	F	22,133	-	66,414	-	88,547
4/1/2015	G/H	F	63,062	85,195	189,261	255,675	340,870
4/2/2015	H	F	27,156	112,351	81,516	337,191	449,542
Tag Code Totals:			-	112,351	-	337,191	449,542

Mokelumne River Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 06/06/75			Size: 100K			Trailer # CA1	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/2/2015	H	G	21,400	-	64,206	-	85,606
4/3/2015	H	G	35,826	57,226	107,520	171,726	228,952
4/6/2015	I	G	32,889	90,115	98,793	270,519	360,634
4/7/2015	I	G	20,508	110,623	61,563	332,082	442,705
Tag Code Totals:			-	110,623	-	332,082	442,705

Mokelumne River Fish Hatchery- Fall Run Chinook Salmon-100% Mark/Tag Monterey Enhancement Group							
Tag Code: 06/06/61			Size: 220K			Trailer # CA1	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/7/2015	N1	N2	584	-	1,752	-	2,336
4/7/2015	N1	N2	61,681	62,265	-	1,752	64,017
4/8/2015	N1	N2	52,170	114,435	-	1,752	116,187
4/8/2015	N1	N2	58,362	172,797	-	1,752	174,549
4/9/2015	N1	N2	71,099	243,896	-	1,752	245,648
Tag Code Totals:			-	243,896	-	1,752	245,648

Mokelumne River Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 06/06/76			Size: 100K			Trailer # CA1	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/9/2015	N	H	22,858	-	68,610	-	91,468
4/10/2015	N/I	H	37,000	59,858	111,054	179,664	239,522
4/13/2015	I	H	42,066	101,924	126,321	305,985	407,909
4/14/2015	J	H	10,447	112,371	31,386	337,371	449,742
Tag Code Totals:			-	112,371	-	337,371	449,742

Mokelumne River Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 06/06/77			Size: 90K			Trailer # CA1	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/14/2015	J	I	39,112	-	117,387	-	156,499
4/15/2015	J/K	I	39,615	78,727	118,902	236,289	315,016
4/16/2015	K	I	22,686	101,413	68,106	304,395	405,808
Tag Code Totals:			-	101,413	-	304,395	405,808

Mokelumne River Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 06/87/37			Size: 10K			Trailer # CA1	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/15/2015	J	I	11,373	-	34,119	-	45,492
Tag Code Totals:			-	11,373	-	34,119	45,492

Mokelumne River Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 06/05/53			Size: 100K			Trailer # CA1	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/16/2015	K	J	19,670	-	59,037	-	78,707
4/17/2015	K	J	34,184	53,854	102,588	161,625	215,479
4/20/2015	K/L	J	43,910	97,764	131,808	293,433	391,197
4/21/2015	L	J	14,876	112,640	44,667	338,100	450,740
Tag Code Totals:			-	112,640	-	338,100	450,740

Mokelumne River Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 06/06/78			Size: 90K			Trailer # CA1	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/21/2015	L	K	45,651	-	136,995	-	182,646
4/22/2015	L/M	K	51,135	96,786	153,504	290,499	387,285
4/23/2015	M	K	4,872	101,658	14,646	305,145	406,803
Tag Code Totals:			-	101,658	-	305,145	406,803

Mokelumne River Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 06/07/10			Size: 30K			Trailer # CA1	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/23/2015	M	L	32,063	-	96,249	-	128,312
Tag Code Totals:			-	32,063	-	96,249	128,312

	Tagged	Untagged	Total
Hatchery Totals:	1,495,911	3,760,581	5,256,492

Retention Range: 99.25-100%

Retention Average: 99.69%

Table 4b. Summary of Hatchery Tag Codes and Tag Retention Studies

Mokelumne River Fish Hatchery- Fall Run Chinook										
Tag Code Size and Location			Tag Code Totals			Retention Calculations				
Tag Code	Size	Raceway	Total Tagged	Number Untagged	Total Processed	# of Fish Held	Days Held	% Retention	# Retaining Tags	Calculated Untagged
06/06/69	100K	A	106,017	318,597	424,614	421	21	99.52%	105,508	319,106
06/06/70	100K	B	112,550	338,058	450,608	405	21	99.75%	112,269	338,339
06/06/71	100K	C	113,574	341,001	454,575	401	21	99.50%	113,006	341,569
06/06/72	100K	D	112,805	338,631	451,436	405	21	99.51%	112,252	339,184
06/06/73	100K	E	112,577	337,890	450,467	430	21	99.53%	112,048	338,419
06/06/74	100K	F	112,351	337,191	449,542	400	21	99.50%	111,789	337,753
06/06/75	100K	G	110,623	332,082	442,705	438	21	100.00%	110,623	332,082
06/06/61	220K	N2	243,896	1,752	245,648	800	21	99.25%	242,067	3,581
06/06/76	100K	H	112,371	337,371	449,742	400	21	99.75%	112,090	337,652
06/06/77	90K*	I	101,413	304,395	405,808	425	19	99.76%	101,170	304,638
06/87/37	10K*	I	11,373	34,119	45,492	425	19	99.76%	11,346	34,146
06/05/53	100K	J	112,640	338,100	450,740	432	14	100.00%	112,640	338,100
06/06/78	90K	K	101,658	305,145	406,803	412	12	99.76%	101,414	305,389
06/07/10	30K	L	32,063	96,249	128,312	331	12	100.00%	32,063	96,249
Hatchery Totals			1,495,911	3,760,581	5,256,492	Retention Average		99.69%	1,490,284	3,766,208

* = Fish held with other tag code fish from same raceway. Retention percentage applied to all tag codes in one raceway.

Mokelumne River Fish Hatchery- Steelhead- 100% Mark only						
Trailer # CA1						
Marking Date	Raceway Prior to Marking	Raceway Following Marking	Daily Mark Total MATS	Daily Mark Total Manual	Cumulative Marked Total	Raceway Total
6/9/2015	36,23,24	R	7,270	1,388	8,658	8,658
6/10/2015	37,14-17	R	18,470	2,910	21,380	30,038
6/10/2015	13,37	Q	12,270	2,273	14,543	14,543
6/11/2015	15,17-20	Q	12,745	3,070	15,815	30,358
6/11/2015	20,21	P	7,418	1,793	9,211	9,211
6/12/2015	31,25,26	P	10,431	2,669	13,100	22,311
6/15/2015	Troughs	P	7,801	1,595	9,396	31,707
6/15/2015	Troughs	O	4,167	2,227	6,394	6,394
6/16/2015	Troughs	O	9,636	2,449	12,085	18,479
Hatchery Totals			-	-	-	110,582

Mokelumne River Fish Hatchery-100% Mark/Tag Natural Production Chinook Salmon					
Tag Code: 06/03/70		Size:10K		Trailer # CA1	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Raceway Total
5/4/2015	O	P	1,619	-	1,619
5/5/2015	O	P	1,006	-	2,625
5/11/2015	O	P	2,770	-	5,395
5/18/2015	O	P	1,462	-	6,857
5/26/2015	O	P	688	-	7,545
6/1/2015	O	P	115	-	7,660
Tag Code Totals			-	-	7,660

Mokelumne River Fish Hatchery-100% Mark/Tag Natural Production Chinook Salmon					
Tag Code: 06/03/71		Size: 10K		Trailer # CA1	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Raceway Total
5/4/2015	O	P	917	-	917
5/5/2015	O	P	568	-	1,485
5/11/2015	O	P	2,244	-	3,729
5/18//15	O	P	1,331	-	5,060
5/26/2015	O	P	725	-	5,785
6/1/2015	O	P	125	-	5,910
Tag Code Totals			-	-	5,910

Mokelumne River Fish Hatchery-100% Mark/Tag Natural Production Chinook Salmon					
Tag Code: 06/92/01		Size: 10K		Trailer # CA1	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Raceway Total
5/4/2015	O	P	471	-	471
5/5/2015	O	P	279	-	750
5/11/2015	O	P	675	-	1,425
5/18/2015	O	P	204	-	1,629
5/26/2015	O	P	43	-	1,662
6/1/2015	O	P	8	-	1,670
Tag Code Totals			-	-	1,670

Mokelumne River Fish Hatchery-100% Mark/Tag Natural Production Chinook Salmon					
Tag Code: 06/92/02		Size: 10K		Trailer # CA1	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Raceway Total
5/4/2015	O	P	1,176	-	1,176
5/5/2015	O	P	672	-	1,848
5/11/2015	O	P	2,252	-	4,100
5/18/2015	O	P	873	-	4,973
5/26/2015	O	P	242	-	5,215
6/1/2015	O	P	46	-	5,261
Tag Code Totals			-	-	5,261

Mokelumne River Fish Hatchery-100% Mark/Tag Natural Production Chinook Salmon					
Tag Code: 06/92/03		Size: 10K		Trailer # CA1	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Raceway Total
5/4/2015	O	P	174	-	174
5/5/2015	O	P	103	-	277
5/11/2015	O	P	265	-	542
5/18/2015	O	P	68	-	610
5/26/2015	O	P	17	-	627
6/1/2015	O	P	4	-	631
Tag Code Totals			-	-	631

Mokelumne River Fish Hatchery-100% Mark/Tag Natural Production Chinook Salmon					
Tag Code: 06/92/04		Size: 10K		Trailer # CA1	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Raceway Total
5/4/2015	O	P	1,531	-	1,531
5/5/2015	O	P	884	-	2,415
5/11/2015	O	P	2,854	-	5,269
5/18/2015	O	P	1,178	-	6,447
5/26/2015	O	P	389	-	6,836
6/1/2015	O	P	55	-	6,891
Tag Code Totals			-	-	6,891

Mokelumne River Fish Hatchery-100% Mark/Tag Natural Production Chinook Salmon					
Tag Code: 06/92/05		Size: 10K		Trailer # CA1	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Raceway Total
5/4/2015	O	P	560	-	560
5/5/2015	O	P	269	-	829
5/11/2015	O	P	892	-	1,721
5/18/2015	O	P	561	-	2,282
5/26/2015	O	P	415	-	2,697
6/1/2015	O	P	143	-	2,840
Tag Code Totals			-	-	2,840

Hatchery Total:

30,863

Nimbus Hatchery



Table 5a. Daily Tagging Rates at Nimbus Hatchery

Nimbus Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 06/06/63			Size: 150K			Trailer # CA4	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/30/2015	A	A	7,843	-	23,595	-	31,438
3/30/2015	A	A	13,667	21,510	41,028	64,623	86,133
3/31/2015	A	A	33,578	55,088	100,806	165,429	220,517
3/31/2015	A	A	31,768	86,856	95,412	260,841	347,697
4/1/2015	A	A	38,942	125,798	116,937	377,778	503,576
4/1/2015	A	A	38,270	164,068	114,906	492,684	656,752
Tag Code Totals:			-	164,068	-	492,684	656,752

Nimbus Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 06/06/64			Size: 150K			Trailer # CA4	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/2/2015	B	B	32,807	-	98,646	-	131,453
4/2/2015	B	B	36,485	69,292	109,494	208,140	277,432
4/3/2015	B	B	45,630	114,922	136,962	345,102	460,024
4/6/2015	B	B	14,681	129,603	44,097	389,199	518,802
4/7/2015	B	B	30,766	160,369	92,394	481,593	641,962
4/8/2015	B	B	6,972	167,341	20,946	502,539	669,880
Tag Code Totals:			-	167,341	-	502,539	669,880

Nimbus Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 06/06/65			Size: 150K			Trailer # CA4	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/20/2015	C	C	14,395	-	43,257	-	57,652
4/21/2015	C	C	35,717	50,112	107,223	150,480	200,592
4/22/2015	C	C	29,398	79,510	88,242	238,722	318,232
4/23/2015	C	C	37,067	116,577	111,246	349,968	466,545
4/24/2015	C	C	17,700	134,277	53,133	403,101	537,378
4/27/2015	C	C	27,155	161,432	81,531	484,632	646,064
Tag Code Totals:			-	161,432	-	484,632	646,064

Nimbus Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 06/06/66			Size: 150K			Trailer # CA4	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/28/2015	D	D	34,511	-	103,593	-	138,104
4/28/2015	D	D	28,827	63,338	86,514	190,107	253,445
4/29/2015	D	D	35,742	99,080	107,289	297,396	396,476
4/29/2015	D	D	36,945	136,025	110,919	408,315	544,340
4/30/2015	D	D	31,227	167,752	93,849	502,164	669,916
Tag Code Totals:			-	167,752	-	502,164	669,916

Nimbus Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 06/06/67			Size: 150K			Trailer # CA4	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/30/2015	E	E	31,721	-	95,271	-	126,992
5/1/2015	E	E	41,990	73,711	126,099	221,370	295,081
5/4/2015	E	E	61,224	134,935	183,768	405,138	540,073
5/5/2015	E	E	24,996	159,931	75,114	480,252	640,183
Tag Code Totals:			-	159,931	-	480,252	640,183

Nimbus Fish Hatchery- Fall Run Chinook Salmon							
Tag Code: 06/06/68			Size: 150K			Trailer # CA4	
Tagging Date	Raceway Prior to Tagging	Raceway Following Tagging	Daily Tagged Total	Cumulative Tagged Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
5/5/2015	F	F	45,343	-	136,116	-	181,459
5/6/2015	F	F	38,302	83,645	115,008	251,124	334,769
5/6/2015	F	F	37,762	121,407	113,340	364,464	485,871
5/7/2015	F	F	43,175	164,582	129,675	494,139	658,721
Tag Code Totals:			-	164,582	-	494,139	658,721

	Tagged	Untagged	Total
Hatchery Totals:	985,106	2,956,410	3,941,516

Retention Range: 99.11-100%

Retention Average: 99.67%

Table 5b. Summary of Fall-Run Tag Codes and Tag Retention Studies

Nimbus Fish Hatchery- Fall Run Chinook Salmon										
Tag Code Size and Location			Tag Code Totals			Retention Calculations				
Tag Code	Size	Raceway	Total Tagged	Number Untagged	Total Processed	# of Fish Held	Days Held	% Retention	# Retaining Tags	Calculated Untagged
06/06/63	150K	A	164,068	492,684	656,752	913	21	100.00%	164,068	492,684
06/06/64	150K	B	167,341	502,539	669,880	896	21	99.89%	167,157	502,723
06/06/65	150K	C	161,432	484,632	646,064	899	14	99.89%	161,254	484,810
06/06/66	150K	D	167,752	502,164	669,916	907	11	99.78%	167,383	502,533
06/06/67	150K	E	159,931	480,252	640,183	900	23	99.11%	158,508	481,675
06/06/68	150K	F	164,582	494,139	658,721	900	21	99.33%	163,479	495,242
Hatchery Totals			985,106	2,956,410	3,941,516	Retention Average		99.67%	981,849	2,959,667

Nimbus Fish Hatchery- Steelhead- 100% Mark only						
Trailer # CA4						
Marking Date	Raceway Prior to Marking	Raceway Following Marking	Daily Mark Total MATS	Daily Mark Total Manual	Cumulative Marked Total	Raceway Total
5/18/2015	Lot 2	A	12,997	3,645	16,642	16,642
5/19/2015	Lot 2/3	A	19,607	4,002	23,609	40,251
5/26/2015	Lot 1	A	24,780	3,328	28,108	68,359
5/27/2015	Lot 5/6	B	16,403	3,114	19,517	19,517
6/3/2015	Lot 4/7	B	28,787	4,397	33,184	52,701
Mark Totals			-	-	-	121,060

Nimbus Fish Hatchery-Coleman Strain Steelhead- 100% Mark/Tag					
Tag Code: 06 (Agency Only)		Size: 200K		Trailer # CA4	
Marking Date	Raceway Prior to Marking	Raceway Following Marking	Daily Marked Total	Cumulative Marked Total	Raceway Total
5/19/2015	Lot 1C	C	11,356	-	11,356
5/20/2015	Lot1C/2C/1CE	C	33,590	44,946	44,946
5/21/2015	Lot 1CE	C	36,309	81,255	81,255
5/22/2015	Lot 1CE	C	19,553	100,808	100,808
5/27/2015	Lot 3C	D	13,671	114,479	13,671
5/28/2015	Lot 3C/4C	D	35,724	150,203	49,395
6/2/2015	Lot 4C	D	26,426	176,629	75,821
Tag Code Totals			-	-	176,629

Table 5c. Summary of Steelhead Tag Codes and Tag Retention Studies

Nimbus Fish Hatchery - Winter Run Steelhead										
Tag Code Size and Location			Tag Code Totals			Retention Calculations				
Tag Code	Size	Raceway	Total Tagged	Number Untagged	Total Processed	# of Fish Held	Days Held	% Retention	# Retaining Tags	Calculated Untagged
06(agency)	200K	C,D	176,629	-	176,629	900	28	88.33%	156,016	20,613
Hatchery Totals			176,629	-	176,629	Retention Average		88.33%	156,016	20,613