

Commissioners:
T. JAMES DAVIS
LYNN M. HEMINGER
RONALD E. SKAGEN

General Manager:
WILLIAM C. DOBBINS



Public Utility District No. 1 of Douglas County

1161 Valley Mall Parkway • East Wenatchee, Washington 98802-4497 • 509/884-7191 • FAX 509/884-0553 • www.douglaspud.org

Via Electronic Filing

Honorable Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 1st Street N.E.
Washington, D.C. 20426

February 13, 2013

Subject: Wells Hydroelectric Project No. 2149
White Sturgeon Broodstock Collection and Breeding Plan – License Article 401 (a)

Dear Secretary Bose:

Pursuant to Article 401(a) of the new license for the Wells Hydroelectric Project, the Public Utility District No. 1 of Douglas County (Douglas PUD) hereby submits for approval the White Sturgeon Broodstock Collection and Breeding Plan (Sturgeon Plan) for the Project.

Article 401(a) requires Douglas PUD to file a Sturgeon Plan approved by the Washington State Department of Ecology (Ecology) within one year of license issuance. The Sturgeon Plan is attached as Appendix A to this letter and was developed and approved by Ecology and the other parties to the Aquatic Settlement Agreement (ASA), including the United States Fish and Wildlife Service (USFWS), U.S. Bureau of Land Management (BLM), Washington State Department of Fish and Wildlife (WDFW), the Confederated Tribes of the Colville Reservation (CCT) and the Confederated Tribes and the Bands of the Yakama Nation (YN). The Bureau of Indian Affairs (BIA) was also provided an opportunity to review and comment on the Sturgeon Plan during the 30-day comment period under the ASA. The BIA is currently a non-voting observer within the ASA process.

The enclosed Sturgeon Plan is consistent with the White Sturgeon Management Plan that is contained within the ASA and Condition 6.5 of Ecology's Clean Water Act section 401 Water Quality Certification for the Wells Project. The pre-filing consultation record supporting Ecology's approval of the Sturgeon Plan is attached as Appendix B to this letter.

Douglas PUD respectfully requests that the FERC approve the enclosed Sturgeon Plan prior to May 15, 2013 when the sturgeon broodstock collection season begins.

If you have any questions or require further information regarding the Sturgeon Plan, please feel free to contact Andrew Gingerich at (509) 881-2323, andrewg@dcpud.org.

Sincerely,



Shane Bickford
Natural Resources Supervisor

Enclosure: 1) Appendix A – White Sturgeon Broodstock Collection and Breeding Plan.
 2) Appendix B – Pre-filing consultation and approval record for the Sturgeon Plan.

Cc: Mr. Walt Davis - FERC, Portland
 Mr. James Hastreiter - FERC, Portland
 Mr. Erich Gaedeke - FERC, Portland
 Wells Aquatic Settlement Work Group
 Andrew Gingerich - Douglas PUD
 Chas Kyger - Douglas PUD

Appendix A
White Sturgeon Broodstock Collection and Breeding Plan

**WHITE STURGEON BROODSTOCK COLLECTION AND
BREEDING PLAN**

**WELLS HYDROELECTRIC PROJECT
FERC PROJECT NO. 2149**

Public Utility District No.1 of Douglas County
East Wenatchee, WA 98802

September 2011

Table of Contents

1.0 INTRODUCTION 3

1.1 Wells Project Relicensing 3

1.2 Wells Project White Sturgeon Population Status..... 3

1.3 Sturgeon Propagation and Supplementation 4

2.0 PLAN DEVELOPMENT 5

2.1 WSMP Phase I Supplementation Goals..... 6

2.2 Population Model Scenarios 6

3.0 BROODSTOCK COLLECTION 9

4.0 WHITE STURGEON BREEDING PLAN 10

4.1 Factorial Mating Designs for Captive-Spawned Wild Broodstock 10

4.2 Non-factorial Circumstances 12

5.0 LITERATURE CITED 13

1.0 INTRODUCTION

1.1 Wells Project Relicensing

As a component of the FERC relicensing of the Wells Hydroelectric Project (Wells Project), the Public Utility District No. 1 of Douglas County (Douglas) developed a White Sturgeon Management Plan (WSMP; Douglas PUD 2008) as one of six Aquatic Resource Management Plans contained within the Aquatic Settlement Agreement (Agreement). The WSMP was developed in close coordination with agency and tribal natural resource managers (Aquatic Settlement Work Group or Aquatic SWG). During the development of this plan, the Aquatic SWG focused on developing management priorities for resources potentially impacted by Project operations.

The WSMP for the Wells Project was based on similar plans that have been developed in other areas of the middle and upper Columbia River Basin, specifically the Kootenai White Sturgeon Recovery Plan, the Upper Columbia White Sturgeon Recovery Initiative (UCWSRI 2002), the Priest Rapids White Sturgeon Management Plan (Grant PUD 2009), and the Rocky Reach White Sturgeon Management Plan (Chelan PUD 2005). The Kootenai and Upper Columbia recovery programs were implemented in 1996 and 2001, respectively. The Priest Rapids WSMP was initiated in 2009 and the Rocky Reach WSMP was initiated in 2010.

1.2 Wells Project White Sturgeon Population Status

Research to determine the abundance, distribution, population dynamics, biophysical attributes of preferred habitat, seasonal movement patterns, and spawning characteristics of white sturgeon were conducted in Wells Reservoir from 2001 to 2003 (Jerald 2007). This information has been summarized below and where applicable, has been used to tailor the White Sturgeon Broodstock Collection and Breeding Plan to the Wells Project area.

A relatively small population of white sturgeon (estimated at 34 fish; 95% CI of 13 - 217 fish), primarily consisting of adults, is present in the Wells Reservoir. Based on set line capture and radio telemetry movement information, white sturgeon were found primarily near the confluence of the Okanogan and Columbia rivers and in the lower Okanogan River. White sturgeon were not documented during telemetry surveys or setline surveys that took place outside this area during the spawning period. The location of spawning areas and the occurrence of spawning in the reservoir have not been documented.

Sex ratios for white sturgeon captured in the Wells Reservoir were not determined. Captured sturgeon ranged in age from 6 to 30 years old demonstrating that all of these fish recruited to the Wells Reservoir after Wells Dam was completed in 1967 with strong year class recruitment between the years 1972 and 1978 and again between 1988 and 1996. The presence of fish within these age classes suggests that successful recruitment within or to the Wells Reservoir is occurring either through (1) spawning within the Wells Reservoir and/or (2) immigration into the Wells Reservoir from populations upstream.

Catches were dominated by white sturgeon from 60 to 135 cm fork length (FL), which represented fish between the 1988 to 1997 year-class and from 180 to 210 cm FL (1972 to 1978 year-class). These two groups accounted for all captures. The histogram showed a relatively low distribution of younger juvenile white sturgeon, with 15% of the total catch composed of juvenile fish less than 90 cm. However, the use of set lines with large circle hooks (11/0, 13/0 and 15/0) likely reduced the capture of smaller, younger fish.

Two white sturgeon were captured and subsequently recovered to provide growth rate information. One juvenile grew from 65 cm FL at capture on July 11, 2001 to 87 cm FL on September 26, 2002, a growth rate of 22 cm in 14 months. One adult fish caught on August 9, 2001 measured 197 cm FL and when recaptured on September 6, 2002 measured 199 cm FL, a 2 cm growth over approximately 13 months. This fish was subsequently found deceased in October of 2006 and was 228.5 cm FL, which represented an increase of 29.5 cm FL over an approximate four year period (average of 7.4 cm per year).

In total, six white sturgeon were radio-tagged and monitored throughout the study period using mobile and fixed telemetry. Telemetry data along with set line capture data verified that white sturgeon congregated in the Columbia River near the Okanogan River confluence during the summer, fall, and winter months with none of the six fish being detected downstream from Brewster (RM 530) or upstream of Park Island (RM 538). Very little movement of tagged sturgeon was observed during winter months. In the spring of 2002, one adult made an upstream migration into the Okanogan River; in 2003, two different adults undertook movements into the Okanogan River.

In general, the results of the white sturgeon study in the Wells Reservoir were similar to the results of a study conducted in the neighboring Rocky Reach Reservoir in 2001-2002 (Chelan PUD 2005). Both studies captured similar numbers of sturgeon using similar amounts of effort and similar capture techniques. Radio-telemetry data from both studies suggest that very little activity occurs during the overwintering period. Both studies suggest that limited recruitment into each population is occurring based on the presence of juvenile fish in both reservoirs (Chelan PUD 2005; Jerald 2007).

1.3 Sturgeon Propagation and Supplementation

The first recorded attempts at artificial propagation of sturgeon were made by Ovsyandikov in Russia in 1870 and Green in the U.S. in 1875. Significant efforts to artificially propagate sturgeon continued in North America between 1875 and 1912, however, by 1920 practically all these efforts were abandoned (Conte et al. 1988). Sturgeon hatchery research continued in the Soviet Union and by the 1980s the Soviets operated approximately 20 hatcheries producing 70 to 100 million fingerlings annually. The success of the sturgeon hatchery programs in the Soviet Union rekindled interest in sturgeon research in the U.S. The work of Detlaf, Gerbilisky, Ginzburg, Kozin, Doroshov and their associates laid the groundwork for the advancement of sturgeon programs throughout North America (Conte et al. 1988).

In 1979, a grant from the U.S. Fish and Wildlife Service to researchers at the University of California led to a resurgence of sturgeon research. The development of hatchery technologies for white sturgeon has allowed the advancement of a growing commercial sturgeon aquaculture industry on the West Coast. A hatchery manual for white sturgeon (Conte et al. 1988) was developed by University of California (Davis) researchers.

Within the native range of white sturgeon in North America, early attention has been placed on the advancement of a specific type of sturgeon hatchery involved in what is termed “conservation aquaculture”. Essentially these facilities are used as tools for the recovery of endangered or depressed sturgeon species/stocks. Given the issues associated with legislation regarding endangered species in North America (the Endangered Species Act in the U.S. and the Species at Risk Act in Canada), it is deemed unacceptable to stock large numbers of generic-stock white sturgeon as a method to recover endangered populations. Instead, a conservation aquaculture program was developed that factors in issues/concerns such as genetic make-up, genetic swamping, interaction with adjacent populations, breeding plans, family numbers, etc., as compared to a typical hatchery where production numbers and fish health are the dominant concerns. At present, the four white sturgeon conservation aquaculture facilities presently operating in the Pacific Northwest are:

Kootenai Sturgeon Hatchery constructed in 1991 on the Kootenai River near Bonners Ferry, Idaho and run by the Kootenai Tribe of Idaho. This facility is the main culture facility for the Kootenai white sturgeon recovery program.

Kootenay Trout and Sturgeon Hatchery (KTSH) at the upper end of Lake Koocanusa near Wardner, B.C and run by the British Columbia Ministry of Environment (BCMOE). This facility was originally a trout hatchery and was expanded in 1998 as a failsafe facility to raise sturgeon for the Kootenai white sturgeon recovery program and in 2001 commenced production for the Upper Columbia White Sturgeon Recovery program.

The Washington Department of Fish and Wildlife, Spokane Tribe of Indians, and Colville Confederated Tribes established an aquaculture program in Washington in 2003 at WDFW's Columbia Basin Hatchery (CBH) in Moses Lake to assist with the Upper Columbia White Sturgeon Recovery program. All fish produced in the Washington program were released into the Washington section of the Transboundary Reach of the Columbia River. Initially the Washington program utilized Upper Columbia white sturgeon juveniles, and then eggs and larvae provided from the KTSH. The Washington program became self-sufficient in 2006 when they began collecting and spawning their own broodstock. Spawning activities were conducted at the WDFW Sherman Creek Hatchery located near Kettle Falls, WA. The progeny from these fish were raised at the CBH before being released into the Washington section of the Transboundary Reach of the Columbia River. Beginning in 2010, the Washington program experimented with the capture of wild larvae as alternative to brood capture. After positive results, the program discontinued adult broodstock capture and shifted their entire production to wild caught larvae in 2011.

In 2009, the Yakima Nation initiated construction of a white sturgeon culture facility at Marion Drain near Toppenish, WA. This facility received its first broodstock (from McNary Reservoir) in late spring 2010 and is presently rearing sturgeon to be out planted in 2012 as part of the Priest Rapids WSMP and Rocky Reach WSMP.

The ultimate goal of each conservation aquaculture program is to ensure the continued existence of the population while attempting to maximize genetic diversity and keep hatchery-produced fish as "wild" as possible. This approach is fundamentally different from a traditional fish production facility.

2.0 PLAN DEVELOPMENT

The goal of the WSMP is to promote growth of the white sturgeon population in the Wells Project area to a level that is commensurate with the available habitat and characterized by a diverse age structure consisting of multiple cohorts (juvenile and adult). This White Sturgeon Broodstock Collection and Breeding Plan is a key component of the WSMP and is the initial step toward increasing the white sturgeon population in the Wells Reservoir. Based upon the available information on the white sturgeon population segment (as summarized in Section 2.0), the Aquatic SWG agreed that efforts should focus, initially, on supplementation efforts to increase the population within the Wells Reservoir in order to address Project effects. Once the population numbers have been increased to a level that can be studied, as determined by the Aquatic SWG, Douglas shall implement a monitoring and evaluation program to accurately assess natural recruitment, juvenile habitat use, emigration rates, carrying capacity, and the potential for natural reproduction so as to inform the scope of a future, long-term supplementation strategy.

The White Sturgeon Broodstock Collection and Breeding Plan supports the following objectives as outlined in the WSMP:

- Objective 1: Supplement the white sturgeon population in order to address Project effects, including impediments to migration and associated bottlenecks in spawning and recruitment;
- Objective 2: Determine the effectiveness of the supplementation activities through a monitoring and evaluation program;
- Objective 3: Determine the potential for natural reproduction in the Wells Reservoir in order to appropriately inform the scope of future supplementation activities;
- Objective 4: Adaptively manage the supplementation program as warranted by the monitoring results and in consultation with the Aquatic SWG.

In order to meet these objectives, Douglas, in consultation with the ASWG, is required to develop and implement a White Sturgeon Broodstock Collection and Breeding Plan in Year 1 of the ten year Phase 1 of the implementation of the WSMP. This Plan should be compatible with other similar plans in the Columbia River mainstem. The desired end point is augmentation and maintenance of the sturgeon population through supplementation in order to provide a stable future population.

The following assumptions were considered in the preparation of this Plan:

- natural reproduction is present but appears to be insufficient in the foreseeable future to maintain a stable or increasing population of sturgeon in the Project area;
- the carrying capacity of the Project area is substantially greater than existing white sturgeon population levels;
- recruitment to the existing white sturgeon population at levels necessary to sustain or increase the populations will require supplementation of the existing population;

2.1 WSMP Phase I Supplementation Goals

The annual supplementation target for the WSMP is up to 5,000 yearling white sturgeon annually for four consecutive years (up to 20,000 fish total). Additional years and numbers of juvenile sturgeon to be stocked during Phase I would be determined by the Aquatic SWG and would not exceed 15,000 juvenile sturgeon (total of up to 35,000 juvenile sturgeon during Phase I).

2.2 Population Model Scenarios

Population trajectories were modeled for the white sturgeon populations in Wells Reservoir with a simple age-structure demographic model using: i) hypothetical hatchery and wild sturgeon recruitment rates; ii) current data on abundance, growth, maturation, and juvenile and adult survival; and iii) the assumptions inherent in the most recent version of the model developed for use in the Upper Columbia River. The following scenario represents expected population responses to supplementation measures (i.e., releasing 5000 hatchery-raised juveniles annually for 4 years into Wells Reservoir and 2500 juveniles per year for the remaining 6 years of the 10-year Phase 1 program). Because of the

approximate 25 to 30 year age until full maturation (assumed to be age-25 for the baseline model), the existing adult population is projected to decline to very low numbers over the next 30 years even with the immediate release of hatchery-reared juveniles. After this period, adult numbers build as hatchery sturgeon mature and recruit to the adult population. A key parameter that determines the subsequent status of the population is the number of natural recruits produced by the hatchery-origin adults. This annual recruitment value is unknown at this time, so this input was arbitrarily adjusted to the number required to maintain a stable adult population at the specified target level.

The population trajectory modeled for Wells Reservoir is illustrated below for the baseline scenario. The results of other model runs to determine effects on changes to model assumptions of stocking rates, survival, and age-at-maturity are discussed.

2.3.1 Baseline Population

A baseline scenario was modeled based on the following assumptions:

- an initial wild population of 34 fish;
- a stocking rate of 5,000 juveniles per year for the first 4 years (commencing in 2014) with 2500 juveniles per year for the following 6 years;
- zero natural recruits per year for the first 25 years and then 200 natural recruits per year after 25 years;
- females maturing at age-25; and
- population metric data (e.g., growth, survival, size-at-maturity, etc.) from adjacent white sturgeon populations in the upper and middle Columbia River.

This scenario produces an initial rapid population increase to approximately 1,800 adults by 2045, with a subsequent decline in population to the target level of approximately 1,000 adults by 2060 when the progeny of the hatchery adults start to mature and begin to contribute to the wild population (Figure 1). Assuming a 1:1 sex ratio of fish surviving to adulthood, approximately half of the adults would be mature females of which about 115 would spawn in any given year (assuming a 5-year spawning interval for females) by 2045 and decline to 80 females by 2060 (Figure 2). Restoration of a relatively stable sturgeon age distribution for this scenario can be expected in approximately 50 years based on a natural recruitment rate after 25 years of 200 age-1 fish annually (Figure 3).

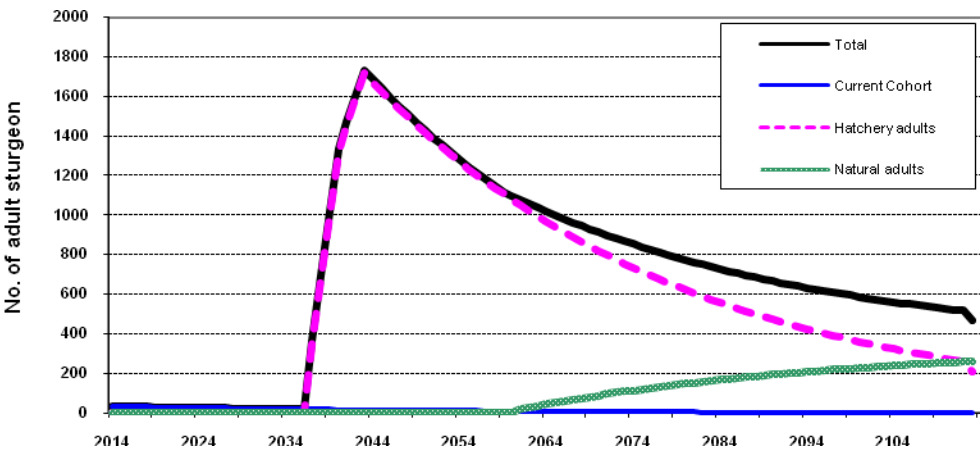


Figure 1 Projected future wild and hatchery adult white sturgeon population size following implementation of a baseline supplementation scenario in Wells Reservoir.

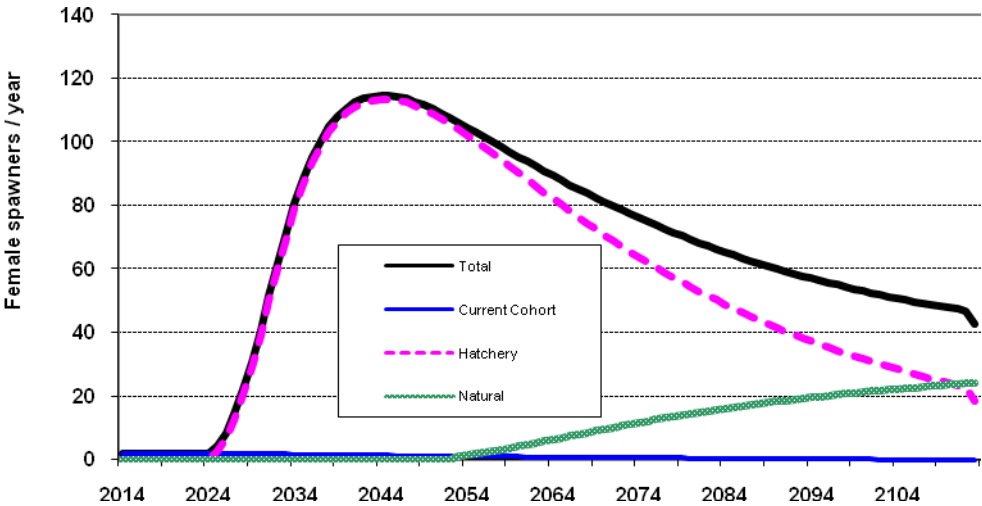


Figure 2 Projected future reproductive potential of white sturgeon following implementation of a baseline supplementation scenario in Wells Reservoir.

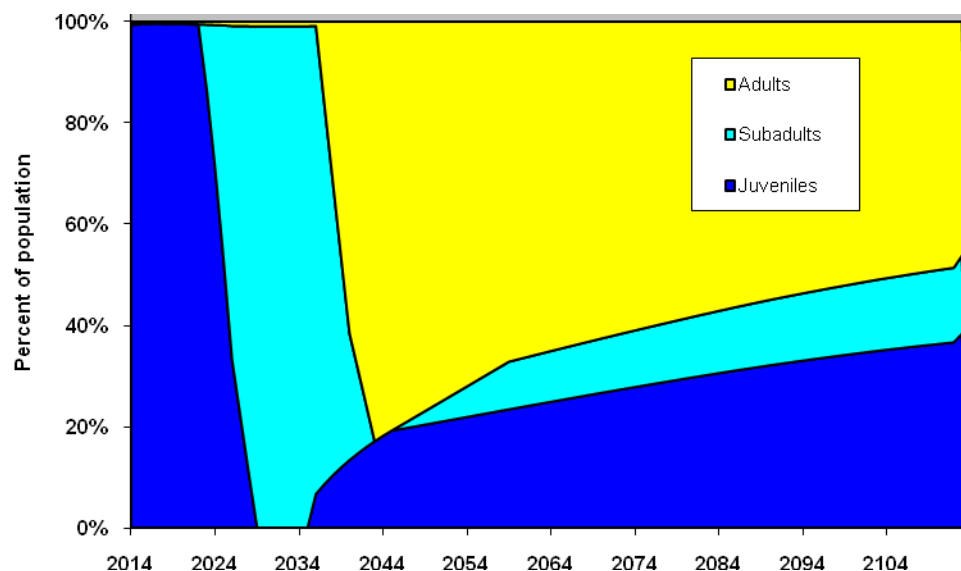


Figure 3 Projected changes in sturgeon age composition following implementation of a baseline supplementation scenario in Wells Reservoir.

Maintenance of an adult population size of more than 1,000 adults may not be achievable or desirable in Wells Reservoir. Monitoring of the population status and growth would be required to identify and mitigate negative density-dependent effects on growth and survival. A controlled harvest for sub-adults can be used as a means to adjust future population levels of adult white sturgeon. Using the model above and applying a 5% annual harvest commencing 10 years after the initial stocking and targeting the 100 – 150 cm FL size-class (pre-spawners), would reduce the maximum population size to 1,400 adults. If this harvest were increased to 10% for this size class, total maximum population would be approximately 1,200 adults. Both these estimates assume constant levels of natural recruitment after 25 years.

3.0 BROODSTOCK COLLECTION

The Wells WSMP requires that “the initial source of brood stock shall be determined within the first year of issuance of the new license. Collection of brood stock shall occur consistent with the brood stock collection plan in years 1-4 of the new license. Any additional years during the Phase I program (first ten years of the new license) in which brood stock collection shall occur in order to facilitate additional juvenile stocking into the Wells Reservoir (Section 4.1.2) will be determined by the Aquatic SWG. The intent of brood stock collection is to use their progeny, if feasible, for future white sturgeon stocking activities in the Wells Reservoir. The brood stock collection plan shall be updated annually, or as otherwise recommended by Douglas in consultation with the ASWG, to incorporate new and appropriate information.

The Wells WSMP calls for the release of up to 5,000 juveniles per year for four years into Wells Reservoir. In consultation with the Aquatic SWG, yearling fish for release shall be acquired from appropriate wild Columbia River sources. Sturgeon for supplementation may be obtained through the

collection of gametes from adult broodstock and/or collection of wild larval, subyearling and/or yearling fish. Gametes and/or fish younger than yearlings will be grown out to yearlings in an artificial production environment.

Broodstock contribution of six male and six female spawning sturgeon that would contribute to six maternal families is the recommended target if broodstock collection is utilized to provide up to 5,000 yearling sturgeon annually. If six maternal families are not available through broodstock collection the total of number of juveniles to be released may be less than the 5,000 maximum target. Juveniles obtained from "drift larval capture" techniques (use of D-Rings nets) may be used to provide juveniles for rearing as an alternative or supplemental strategy. Both broodstock collection and drift larval capture are considered pilot programs in the upper mid-Columbia River (Bonneville Dam to Grand Coulee Dam) at this time.

During spring 2010 and 2011, broodstock collection efforts were conducted in several areas of the Columbia River from Rock Island Dam downstream to Bonneville Dam. These initial efforts to meet the supplementation obligations for the Priest Rapids and Rocky Reach WSMPs produced a 2Mx1F spawning cross in 2010 and a 1x1 cross in 2011. Considering the low sturgeon populations in the Wells, Rocky Reach, and Rock Island reservoirs, it is likely that broodstock capture efforts in these reservoirs would be relatively unproductive and insufficient to meet initial supplementation targets. Therefore, the Aquatic SWG recommends that:

- i. The preferred collection area for year 1 and 2 white sturgeon supplementation efforts is the greater middle Columbia River from Bonneville Dam upstream to Grand Coulee Dam. Additional collection areas may be considered by the Aquatic Settlement Work Group.
- ii. Collection sites, assignments, and appropriate fishing efforts will be coordinated pre-season.
- iii. Participants in supplementation capture efforts for the mid-Columbia PUDs will communicate regularly in-season to discuss collection status and coordinate any necessary changes to collection efforts.

Brood stock and/or gametes originating from the lower (below Bonneville Dam) and/or upper (above Grand Coulee Dam) Columbia River white sturgeon stocks may be acceptable for supplementation in future years.

4.0 WHITE STURGEON BREEDING PLAN

4.1 Factorial Mating Designs for Captive-Spawed Wild Broodstock

The following examples of mating scenarios have been adopted from the breeding plan of the UCWSRI and Nechako White Sturgeon Recovery Initiative and assume that maturation of most fish can be synchronized with hormone injections and temperature manipulations. The example factorial breeding plan calls for the spawning of six male and six female fish. A full 6X6 factorial breeding plan is unlikely to be realized at one spawning event. A more likely scenario is the two – 3X3 breeding matrices scenario described below.

In cases where at least three male and three female fish are retained to spawn at any one time, the partial factorial matrix shown in Table 1 would be employed. In a full factorial design, all six males would be

crossed with all six females and *vice versa*. This would maximize genetic diversity in the breeding design. However, as Busack and Knudson (2007) note, a lesser increase in genetic gain for the breeding population potential is realized by a full factorial matrix increase of 5X5 to 10X10 than can be achieved by an increase from a 2X2 to a 5X5 matrix; the relationship of efficiency is not linear. They also note that in hatchery situations, large full factorial breeding matrices are often impractical. In the scenario where conservation release numbers are capped at the levels of thousands of juveniles, the practicality of dividing a single clutch of eggs into six even groups per female becomes difficult and onerous and small-batch handling effects may negatively influence survival outcomes; it is best to handle eggs effectively and safely to optimize results. To this end, the 6X6 breeding matrix is divided into two partial 3X3 matrices.

In Table 1, three female fish are spawned with each of three males and *vice versa*. If one or more females do not spawn at the same time, fertilization of her/their ova may be completed at a later date providing that the matrix is completed using all the males in the partial matrix. In the end, families will be grouped and cultured by maternal family and therefore there is no need to be temporally synchronized. In this regard, the milt from the male fish may have to be retained and stored under conditions that permit optimal fertilization in the final event, or the male will need to supply additional high-quality milt on a later occasion. If one or more males do not supply milt for a later spawning event to complete the matrix, the default position is to substitute male milt from other donors not currently in the matrix. Imperative here is the preservation of the genetic variability within the maternal family; of secondary importance is the completion of the full factorial matrix as written.

Table 1 Idealized partial factorial breeding design in a 6 female X 6 male scenario resulting in the production of six discrete families and eighteen half-sib families.

Female	1	2	3	4	5	6
Male 1						
Male 2						
Male 3						
Male 4						
Male 5						
Male 6						

4.2 Non-factorial Circumstances

The scenario where few fish in breeding condition are captured and retained in captivity, or where brood females undergo gonad regression, fewer than three fish of either gender may be available. In this circumstance, the matrix should be followed as completely as possible to maximize the genetic diversity in the captive-bred fish. For example, if one of three female fish regress or fail to spawn, then the remaining two viable females should be crossed with the three males. This means a 2 female X 3 male matrix could be followed as opposed to a 2X2 matrix. Other subsequent female fish captured and induced to spawn would also be crossed with the three males to round out the breeding matrix.

The flexibility of the factorial mating design is further illustrated in a scenario where only four or five spawning female sturgeon are captured. The matrix can be adapted to have a 4 female X 6 male or 5 female X 6 male breeding plan to produce 4 or 5 families with 24 and 30 half-sib families, respectively. This flexibility gives the hatchery the maximum capability to produce genetically distinct families to maximize the genetic diversity of juvenile sturgeon entering the system.

5.0 LITERATURE CITED

- Anders, P.J., and M.S. Powell. 2001. Genetic impact of proposed white sturgeon supplementation in Rock Island Reservoir. Memorandum to BPA Project 86-50 Cooperators. February 28, 2001.
- Börk, K.; Drauch, A.; Israel, J. A.; Pedroia, J.; Rodzen, J.; May, B. 2008: Development of new microsatellite primers for white and green sturgeon. *Cons. Genet.* **9**, 973-979.
- Busack, C., and C. M. Knudsen. 2007. Using factorial mating designs to increase the effective number of breeders in fish hatcheries. *Aquaculture* 273:24-32.
- Chelan PUD (Public Utility District No. 1 of Chelan County). 2005. Rocky Reach White Sturgeon Management Plan. Public Utility District No. 1 of Chelan County, Wenatchee, WA.
- Conte, F.S., S.I. Doroshov, P.B. Lutes, and E.M. Strange. 1988. Hatchery Manual for the White Sturgeon *Acipenser transmontanus* Richardson. With application to other North American Acipenseridae. University of California, Davis.
- Douglas PUD (Public Utility District No. 1 of Douglas County) 2008. White Sturgeon Management Plan Wells Hydroelectric Project FERC Project No. 2149.
- Drauch, A.; Börk, K.; May, B.; Rodzen, J. 2006: Development of new microsatellite markers for white sturgeon and continued genetic monitoring of the KTOI broodstock. Unpubl. technical report to Kootenai Tribe of Idaho, Award #01633, Bonners Ferry, ID, pp. 22.
- Dupont-Nivet, M., M. Vandeputte, P. Haffray, and B. Chevassus. 2006. Effect of different mating designs on inbreeding, genetic variance and response to selection when applying individual selection in fish breeding programs. *Aquaculture* 252:161-170.
- Fiumera, A. C., B. A. Porter, G. Looney, M. A. Asmussen, and J. C. Avise. 2004. Maximizing offspring production while maintaining genetic diversity in supplemental breeding programs of highly fecund managed species. *Conservation Biology* 18:94-101.
- Irvine, R. L.; Schmidt, D. C.; Hildebrand, L. R.; 2007: Population status of white sturgeon in the lower Columbia River within Canada. *Trans. Am. Fish. Soc.* **136**, 1472-1479.
- Jerald, T. 2007: White sturgeon (*Acipenser transmontanus*) population assessment in Wells Reservoir. Master's Thesis. Central Washington Univ., Ellensburg, WA. pp. 59.
- Kincaid, H.L. 1993. Breeding plan to preserve the genetic variability of the Kootenai River white sturgeon. Report prepared for the Bonneville Power Administration. Contract No. DE-A179-93B002886. Portland, Oregon.
- Kootenai Tribe of Idaho. 2004. Ireland, S.C., P. J. Anders and R.C.P. Beamesderfer eds. An Adaptive Multidisciplinary Conservation Aquaculture Plan for Endangered Kootenai River White Sturgeon. Management Plan prepared by the Kootenai Tribe of Idaho with assistance from S. P. Cramer and Associates. 56 pp.
- Rodzen, J. A.; May, B. P. 2002: Inheritance of microsatellite loci in the white sturgeon (*Acipenser transmontanus*). *Genome* **45**, 1064-1076.
- Rodzen, J.; May, B.; Anders, P.; Ireland, S. 2004: Initial microsatellite analysis of wild Kootenai River white sturgeon and subset brood stock groups used in a conservation aquaculture program. Unpubl. technical report to Bonneville Power Administration, award #88-64, Portland, OR, pp. 36.

Smith, C. T.; Nelson, R. J.; Pollard, S.; Rubidge, E.; McKay, S. J.; Rodzen, J.; May, B.; Koop, B. 2002: Population genetic analysis of white sturgeon (*Acipenser transmontanus*) in the Fraser River. J. Appl. Ichthyol. **18**, 307-312.

UCRWSRI. 2002. Upper Columbia River White Sturgeon Recovery Initiative. Draft Recovery Plan. April 15, 2002. 86p.

Walters, C. 1997. Challenges in adaptive management of riparian and coastal ecosystems. Conservation Ecology [online]1(2):1. <http://www.consecol.org/vol1/iss2/art1>

Appendix B
Pre-filing consultation and approval record for the Sturgeon Plan

Intentionally Blank

Final Conference Call Minutes

Aquatic Settlement Work Group

To: Aquatic SWG Parties

Date: October 12, 2011

From: Michael Schiewe (Anchor QEA)

Re: Final Minutes of September 14, 2011 Aquatic SWG Conference Call



I. Summary of Decisions

1. The Colville Confederated Tribes (CCT), Washington Department of Fish and Wildlife (WDFW), and Douglas PUD representatives approved the revised Wells Broodstock Collection and Breeding Plan and the Sturgeon Supplementation RFP; representatives not present at today's meeting (Yakama Nation [YN], U.S. Fish and Wildlife [USFWS], Bureau of Land Management [BLM], and Washington State Department of Ecology [Ecology]) will be asked to approve the revised Broodstock Collection and Breeding Plan by email.

II. Summary of Action Items

1. Beau Patterson will send the revised Wells Broodstock Collection and Breeding Plan to Mike Schiewe today (September 14, 2011), and Schiewe will circulate the document to the Aquatic SWG representatives not present today for their approval by the end of the day on September 21, 2011 (Item III-4).

III. Summary of Discussions

1. **Welcome, Agenda Review, and Meeting Minutes Review** – Mike Schiewe welcomed the Aquatic SWG members and opened the meeting. Schiewe reviewed the agenda and asked for any additions. Steve Rainey requested that the lamprey discussion be moved up to come first. Beau Patterson requested that a discussion of the swim area weed control be added to the end of the agenda. Schiewe asked for comments or changes to the draft August 10, 2011, meeting minutes. There were no comments or edits and the meeting minutes were approved. Carmen Andonaegui will finalize the meeting minutes and distribute them to the Aquatic SWG.
2. **Update on Current Lamprey Activities at Wells Dam** (Beau Patterson) – Beau Patterson said that the Half-Duplex passive integrated transponder tag (PIT tag) detectors would be installed at Wells Dam in the December 2011 to February 2012 timeframe when the fishways are dewatered for routine maintenance. Steve Rainey asked that USFWS be notified of the exact timing as they would like to see the dewatered ladder. Rainey

asked Patterson if any lamprey had passed Wells Dam since the lamprey operation was implemented. Patterson responded that no lamprey had been counted at Wells Dam since the nighttime 1-foot differential was implemented. Overall, only 1 lamprey has been counted at Wells Dam so far this season (on June 18), and it was almost certainly a lamprey that overwintered in a lower river reservoir. Patterson went on to summarize recent trends in lamprey counts at Wells Dam. He said that conversion from Rocky Reach to Wells for 2001 through 2005 averaged 37 percent (with a range of 18 to 56 percent); however, for the period 2006 through 2010, that average has been only 3 percent (with a range of 0.7 to 5.4 percent). This year looks like it will be similar to last year. Based on average run-timing, more than 80 percent of the lamprey run should have passed through by now, which gives a projected conversion rate for 2011 of 0.4 percent. Patterson believes this marked shift in conversion efficiency is a function of temperature increases and/or altered water chemistry in the Chewuch watershed resulting from the 2006 Tripod Fire. He noted that the Chewuch River watershed probably contains 95 percent of suitable lamprey habitat above Wells Dam. He speculated that with greatly reduced ammocoetes larval densities in recent years, there would be markedly reduced concentrations of pheromones in the water that would attract returning adult lamprey. Patterson further speculated that translocation of lamprey to the Chewuch might be a method to re-establish the ammocoete population in the Chewuch and to re-establish attraction. Rainey asked if it would be premature to attempt translocation without restoration of suitable habitat in the fire-damaged area. Patterson stated that some of the habitat has been restored although it gets worse the closer you get to the headwaters. The trigger for making a translocation attempt should be when summer temperatures in the affected reaches are documented to be reaching a maximum of no more than 22 degrees Celsius, as ammocoete survival declines when temperatures exceed 22 degrees Celsius.

3. Wells Broodstock Collection and Breeding Plan Comments, Revisions, and Approval

(Beau Patterson) – Beau Patterson opened discussion of the Wells Broodstock Collection and Breeding Plan, stating that Douglas PUD is satisfied with the document, but open to any changes members might suggest. The documents were prepared with the goal of being inclusive rather than exclusive. Mike Schiewe reported that prior to this morning's call, Bob Rose called to say that the YN approved both documents provided there were no major changes. Rose also requested one minor correction: on page 10, in the last sentence prior to Section 4.0, he suggested striking out "as recommended by the Wells Reservoir Sturgeon Managers." This correction was approved.

The CCT requested that, also on page 10, the specific dates in parentheses in bullet "i" and in the paragraph below the bullets (just before Section 4.0) be removed, and the group approved these edits. The CCT also requested that the sentence in bullet "i" on page 10 be modified so that it reads "Additional collection areas may be considered by the Aquatic SWG." After discussion, all of these edits were approved by the members present, and the CCT, WDFW, and Douglas PUD voted to approve the Plan. Patterson

requested that members of the Aquatic SWG not present today be asked by email to also approve the Plan. Mike Schiewe asked Patterson to make the approved changes and forward him a revised Plan with the revisions shown in Microsoft Track Changes. Schiewe agreed to send the revised Plan to the YN, USFWS, Ecology, and BLM representatives, and request their approval of the revised Plan by the end of the day on September 21, 2011.

4. **Approval of the Sturgeon Supplementation RFP** (Beau Patterson) – Beau Patterson asked if there were any final comments or concerns regarding the content of the RFP. Patterson clarified that there are still several steps involved in the Douglas PUD internal approval process to go through before this RFP is finalized and is released for submission of proposals. The Aquatic SWG representatives recommended no changes to the draft RFP and agreed that Douglas PUD should proceed with moving it through their internal process.
5. **Douglas PUD Pikeminnow Removal and Research Program** (Andrew Gingerich) – Andrew Gingerich said Carmen Andonaegui distributed a report that summarizes the Pikeminnow Removal and Research Program results for 2010 (Final 2010 Douglas PUD Pikeminnow Removal and Research Program report distributed by email September 1, 2011). Over the last 10 years, Douglas PUD has taken out approximately 20,000 pikeminnow annually. Although this program is coordinated with the HCP Coordinating Committees, Gingerich said Douglas PUD wanted to put this program on the Aquatic SWG's radar as it fits with their oversight role for resident fish. For 2011, approximately 13,000 pikeminnow have been removed from the project area so far this year, with a projected total removal of approximately 16,000 pikeminnow for the whole year. The Aquatic SWG had no comments or questions regarding this document or the program.
6. **Swim Area Weed Control** (Beau Patterson) – Beau Patterson reported that Douglas PUD had received complaints about weeds, particularly milfoil, in swimming areas. It has been suggested by some that Douglas PUD should work with Chelan PUD to bring in their rotovators to remove the milfoil. However, Douglas PUD is not planning to pursue this removal action. Patterson said Douglas PUD wanted to raise the issue with the Aquatic SWG as it ties directly into the aquatic nuisance management plan. Douglas PUD does not practice mechanical control of milfoil based on information available and research into the effectiveness of that type of control. Patrick Verhey stated that WDFW understands that rotovators chopping up the milfoil actually often hastens the spread of milfoil, and so they agree with Douglas PUD not employing mechanical control. In November, an Ecology representative will attend the Aquatic SWG meeting (Jenifer Parsons) and make a presentation on aquatic nuisance control, which will coincide nicely with this topic.

V. Next Meetings

1. Upcoming meetings: *October 12, 2011 (conference call, if necessary), November 9, 2011 (in person), and December 14, 2011 (conference call, if necessary).*

List of Attachments

Attachment A – List of Attendees

Attachment A List of Attendees

Name	Role	Organization
Mike Schiewe	SWG Chair	Anchor QEA, LLC
Virginia See	Administrative	Anchor QEA, LLC
Beau Patterson	SWG Technical Rep.	Douglas PUD
Andrew Gingerich	Alt. SWG Technical Rep.	Douglas PUD
Shane Bickford	SWG Policy Rep.	Douglas PUD
Patrick Verhey	SWG Policy Rep.	Washington Department of Fish and Wildlife
Jason McLellan	Technical Resource	Colville Confederated Tribes
Steve Rainey	Technical Resource	U.S. Fish and Wildlife Service contractor

Intentionally Blank

Shane Bickford

From: Mike Schiewe <mschiewe@anchorgea.com>
Sent: Wednesday, September 14, 2011 2:13 PM
To: Andrew Gingerich; Beau Patterson; Bill Towey (bill.towey@colvilletribes.com); ble@longviewassociates.com; Bob Jateff (jatefrjj@dfw.wa.gov); Bob Rose (rosb@yakamafish-nsn.gov); 'Brad James'; 'Bret Nine'; 'Chad Jackson'; Donella Miller (mild@yakamafish-nsn.gov); Jason McLellan; Jeff Korth (korthjwk@dfw.wa.gov); 'Jessi Gonzales'; Joe Peone (joe.peone@colvilletribes.com); 'Jon Merz'; 'Karen Kelleher'; kirk.truscott@colvilletribes.com; Mary Mayo; Mike Schiewe; Molly Hallock (hallomh@dfw.wa.gov); Pat Irle (pirl461@ecy.wa.gov); 'Patrick Luke'; Patrick Verhey (Patrick.Verhey@dfw.wa.gov); Paul Ward (ward@yakama.com); Shane Bickford; 'Steve Lewis'; 'Steve Parker (parker@yakama.com)'; Steve Rainey
Cc: Bob Dach (Robert.dach@bia.gov); Keith Hatch (Keith.Hatch@bia.gov); Carmen Andonaegui; Virginia See
Attachments: Douglas White Sturgeon Broodstock Collection and Breeding Plan 9-14-11conf call version.pdf

AqSWG members :

Attached is a PDF of the White Sturgeon Broodstock Collection and Breeding Plan as approved by AqSWG members present on today's conference call; those Parties included were WDFW, CCT, and DPUD. Because a few changes were made on Page 10 regarding collection area (see track changes on the attached file), I wanted to confirm approval by those members not present today. Although Bob Rose had provided his approval earlier today, I wanted to include him as well because of the changes. Those not on the call today needing to provide their approval of the revised Plan include the USFWS, YN, Ecology, and BOR. Please respond with an email to Carmen (and CC to other AqSWG members) by COB Sept 21, 2011. A non-response will be considered tacit approval by the non-participating Party.

Thanks...please call or email if you have any questions.

Mike

Michael H. Schiewe, PhD

ANCHOR QEA, LLC
mschiewe@anchorgea.com
720 Olive Way, Suite 1900
Seattle, WA 98101
T 206.287.9130
D 206.903.3307
F 206.287.9131
C 360.271.9747

ANCHOR QEA, LLC
www.anchorgea.com

This electronic message transmission contains information that may be confidential and/or privileged work product prepared in anticipation of litigation. The information is intended for the use of the individual or entity named above. If you are not the intended recipient, please be aware that any disclosure, copying distribution or use of the contents of this information is prohibited. If you have received this electronic transmission in error, please notify us by telephone at (206) 287-9130.

Intentionally Blank

Andrew Gingerich

From: Carmen Andonaegui <candonaegui@anchorgea.com>
Sent: Monday, September 19, 2011 1:07 PM
To: Andrew Gingerich; Beau Patterson; Bill Towey (bill.towey@colvilletribes.com); ble@longviewassociates.com; Bob Jateff (jatefrij@dfw.wa.gov); Bob Rose (rosb@yakamafish-nsn.gov); 'Brad James'; 'Bret Nine'; 'Chad Jackson'; Donella Miller (mild@yakamafish-nsn.gov); Jason McLellan; Jeff Korth (korthjwk@dfw.wa.gov); 'Jessi Gonzales'; Joe Peone (joe.peone@colvilletribes.com); 'Jon Merz'; 'Karen Kelleher'; kirk.truscott@colvilletribes.com; Mary Mayo; Mike Schiewe; Molly Hallock (hallomh@dfw.wa.gov); Pat Irle (pirl461@ecy.wa.gov); 'Patrick Luke'; Patrick Verhey (Patrick.Verhey@dfw.wa.gov); Paul Ward (ward@yakama.com); Shane Bickford; 'Steve Lewis'; Steve Parker (pars@yakamafish-nsn.gov); Steve Rainey
Subject: Aquatic SWG: BLM's approval of the sturgeon plan

Hi Aquatic SWG: see BLM's approval below.

Thanks!
Carmen

From: Mike Schiewe
Sent: Monday, September 19, 2011 1:04 PM
To: Carmen Andonaegui
Subject: FW:

Carmen - Please forward BLM's approval of the sturgeon plan to the AqSWG distribution.

Thanks, Mike

Michael H. Schiewe, PhD

ANCHOR QEA, LLC
mschiewe@anchorgea.com
720 Olive Way, Suite 1900
Seattle, WA 98101
T 206.287.9130
D 206.903.3307
F 206.287.9131
C 360.271.9747

ANCHOR QEA, LLC
www.anchorgea.com

This electronic message transmission contains information that may be confidential and/or privileged work product prepared in anticipation of litigation. The information is intended for the use of the individual or entity named above. If you are not the intended recipient, please be aware that any disclosure, copying distribution or use of the contents of this information is prohibited. If you have received this electronic transmission in error, please notify us by telephone at (206) 287-9130.

From: Kelleher, Karen [<mailto:kkelleh@blm.gov>]
Sent: Monday, September 19, 2011 12:36 PM
To: Mike Schiewe
Subject: RE:

Hi Mike,

BLM approves White Sturgeon Broodstock Collection and Breeding Plan changes.

Karen

Karen Kelleher

Field Manager

Wenatchee Field Office, Spokane District

915 Walla Walla Ave

Wenatchee, WA 98801

kkelleh@blm.gov

509-665-2100

From: Mike Schiewe [<mailto:mschiewe@anchorgea.com>]

Sent: Wednesday, September 14, 2011 2:13 PM

To: Andrew Gingerich (andrewg@dcpud.org); Beau Patterson (bpatterson@dcpud.org); Bill Towey (bill.towey@colvilletribes.com); ble@longviewassociates.com; Bob Jateff (jatefrjj@dfw.wa.gov); Bob Rose (rosb@yakamafish-nsn.gov); 'Brad James'; 'Bret Nine'; 'Chad Jackson'; Donella Miller (mild@yakamafish-nsn.gov); Jason McLellan; Jeff Korth (korthjwk@dfw.wa.gov); Gonzales, Jessica; Joe Peone (joe.peone@colvilletribes.com); 'Jon Merz'; Kelleher, Karen; kirk.truscott@colvilletribes.com; 'Mary Mayo'; Mike Schiewe; Molly Hallock (hallomh@dfw.wa.gov); Pat Irle (pir1461@ecy.wa.gov); 'Patrick Luke'; Patrick Verhey (Patrick.Verhey@dfw.wa.gov); Paul Ward (ward@yakama.com); Shane Bickford (sbickford@dcpud.org); Lewis, Stephen; 'Steve Parker' (parker@yakama.com); Steve Rainey

Cc: Dach, Robert; Hatch, Keith; Carmen Andonaegui; Virginia See

Subject:

AqSWG members :

Attached is a PDF of the White Sturgeon Broodstock Collection and Breeding Plan as approved by AqSWG members present on today's conference call; those Parties included were WDFW, CCT, and DPUD. Because a few changes were made on Page 10 regarding collection area (see track changes on the attached file), I wanted to confirm approval by those members not present today. Although Bob Rose had provided his approval earlier today, I wanted to include him as well because of the changes. Those not on the call today needing to provide their approval of the revised Plan include the USFWS, YN, Ecology, and BOR. Please respond with an email to Carmen (and CC to other AqSWG members) by COB Sept 21, 2011. A non-response will be considered tacit approval by the non-participating Party.

Thanks...please call or email if you have any questions.

Mike

Michael H. Schiewe, PhD

ANCHOR QEA, LLC

mschiewe@anchorgea.com

720 Olive Way, Suite 1900

Seattle, WA 98101

T 206.287.9130

D 206.903.3307

F 206.287.9131

C 360.271.9747

ANCHOR QEA, LLC

www.anchorgea.com

This electronic message transmission contains information that may be confidential and/or privileged work product prepared in anticipation of litigation. The information is intended for the use of the individual or entity named above. If you are not the intended recipient, please be aware that any disclosure, copying distribution or use of the contents of this information is prohibited. If you have received this electronic transmission in error, please notify us by telephone at (206) 287-9130.

Intentionally Blank

Andrew Gingerich

From: Mike Schiewe <mschiewe@anchorgea.com>
Sent: Friday, September 16, 2011 5:57 AM
To: Andrew Gingerich; Beau Patterson; Bill Towey (bill.towey@colvilletribes.com); ble@longviewassociates.com; Bob Jateff (jatefrjj@dfw.wa.gov); Bob Rose (rosb@yakamafish-nsn.gov); 'Brad James'; 'Bret Nine'; 'Chad Jackson'; Donella Miller (mild@yakamafish-nsn.gov); Jason McLellan; Jeff Korth (korthjwk@dfw.wa.gov); 'Jessi Gonzales'; Joe Peone (joe.peone@colvilletribes.com); 'Jon Merz'; 'Karen Kelleher'; kirk.truscott@colvilletribes.com; Mary Mayo; Mike Schiewe; Molly Hallock (hallomh@dfw.wa.gov); Pat Irle (pirl461@ecy.wa.gov); 'Patrick Luke'; Patrick Verhey (Patrick.Verhey@dfw.wa.gov); Paul Ward (ward@yakama.com); Shane Bickford; 'Steve Lewis'; 'Steve Parker (parker@yakama.com)'; Steve Rainey
Subject: FW: FW: AqSWG approval of White Sturgeon Broodstock Collection and Breeding Plan

AqSWG - FYI see email below re USFWS approval of the sturgeon plan.

Mike

Michael H. Schiewe, PhD

ANCHOR QEA, LLC
mschiewe@anchorgea.com
720 Olive Way, Suite 1900
Seattle, WA 98101
T 206.287.9130
D 206.903.3307
F 206.287.9131
C 360.271.9747

ANCHOR QEA, LLC
www.anchorgea.com

This electronic message transmission contains information that may be confidential and/or privileged work product prepared in anticipation of litigation. The information is intended for the use of the individual or entity named above. If you are not the intended recipient, please be aware that any disclosure, copying distribution or use of the contents of this information is prohibited. If you have received this electronic transmission in error, please notify us by telephone at (206) 287-9130.

From: Stephen.Lewis@fws.gov [<mailto:Stephen.Lewis@fws.gov>]
Sent: Thursday, September 15, 2011 4:36 PM
To: Mike Schiewe
Subject: Re: FW: AqSWG approval of White Sturgeon Broodstock Collection and Breeding Plan

FWS approves the plan as well...

S-

Stephen T. Lewis
Hydropower and Energy Coordinator
U.S. Fish and Wildlife Service
Central Washington Field Office
215 Melody Lane, Suite 119

Wenatchee, WA 98801

phone: (509) 665-3508 Ext. 14

fax: (509) 665-3523

e-mail: Stephen.Lewis@fws.gov

Intentionally Blank

Shane Bickford

From: Carmen Andonaegui <candonaegui@anchoragea.com>
Sent: Tuesday, September 27, 2011 9:16 AM
To: Andrew Gingerich; Beau Patterson; Bill Towey (bill.towey@colvilletribes.com); ble@longviewassociates.com; Bob Jateff (jatefrjj@dfw.wa.gov); Bob Rose (rosb@yakamafish-nsn.gov); 'Brad James'; 'Bret Nine'; 'Chad Jackson'; Donella Miller (mild@yakamafish-nsn.gov); Jason McLellan; Jeff Korth (korthjwk@dfw.wa.gov); 'Jessi Gonzales'; Joe Peone (joe.peone@colvilletribes.com); 'Jon Merz'; 'Karen Kelleher'; kirk.truscott@colvilletribes.com; Mary Mayo; Mike Schiewe; Molly Hallock (hallomh@dfw.wa.gov); Pat Irle (pirl461@ecy.wa.gov); 'Patrick Luke'; Patrick Verhey (Patrick.Verhey@dfw.wa.gov); Paul Ward (ward@yakama.com); Shane Bickford; 'Steve Lewis'; Steve Parker (pars@yakamafish-nsn.gov); Steve Rainey
Cc: Bob Dach (Robert.dach@bia.gov); Bruce Suzumoto (bruce.suzumoto@noaa.gov); 'Bryan Nordlund (bryan.nordlund@noaa.gov)'; Jim Craig (jim_I_craig@fws.gov); Jim Vasile (jimvasile@dwt.com); Keith Hatch (Keith.Hatch@bia.gov); Keith Kirkendall (keith.kirkendall@noaa.gov); Mark_Miller@fws.gov; RD_Nelle@fws.gov
Subject: Aquatic SWG: approved Final Douglas White Sturgeon Breeding and Broodstock Collection Plan
Attachments: 2011_09_27 Douglas - Final Aquatic SWG Douglas White Sturgeon Broodstock Collection and Breeding Plan 9-26-11.pdf

Hi Aquatic SWG: attached Final Douglas PUD White Sturgeon Breeding and Broodstock Collection Plan as approved by the Aquatic SWG.

Thanks!
Carmen

Carmen Andonaegui
ANCHOR QEA, LLC

candonaegui@anchoragea.com
23 S. Wenatchee Avenue, Suite 120
Wenatchee, WA 98801
T 509.888.0240
C 509.881-0198
F 509.888.2211

www.anchoragea.com

Intentionally Blank

Final Conference Call Minutes



Aquatic Settlement Work Group

To: Aquatic SWG Parties

Date: November 10, 2011

From: Michael Schiewe (Anchor QEA)

Re: Final Minutes of October 12, 2011, Aquatic SWG Conference Call

I. Summary of Decisions

1. There were no decision items at today's conference call meeting.

II. Summary of Action Items

1. Andrew Gingerich will email Carmen Andonaegui the link to the U.S. Fish and Wildlife (USFWS) website to download the *Pacific Lamprey Assessment and Template for Conservation Measures* (October 2011) for distribution to the Aquatic SWG (Item III-2).

III. Summary of Discussions

1. **Welcome, Agenda Review, and Meeting Minutes Review:** Mike Schiewe welcomed the Aquatic SWG members and opened the conference call. Schiewe reviewed the agenda and asked for any additions. There were no additions to today's agenda. Schiewe asked for comments on or changes to the draft September 14, 2011, conference call minutes. There were no comments or edits and the minutes were approved. Carmen Andonaegui will finalize the September 14, 2011, conference call minutes and distribute them to the Aquatic SWG.

As a follow-up on the vote to approve the Wells White Sturgeon Broodstock Collection and Breeding Plan during the September 14, 2011, conference call, concurrence was requested and received by September 23, 2011, from those Aquatic SWG members not present on the September 14, 2011 call: USFWS, the Bureau of Land Management (BLM), Yakama Nation, and Washington Department of Ecology (Ecology).

2. **Update on Lamprey Activities at the Wells Project** (Andrew Gingerich): Andrew Gingerich reported that 3 weeks ago, Douglas PUD requested a Statement of Work (SOW) and budget for installation of Half-Duplex (HD) passive integrated transponder tag (PIT-tag) detection arrays at Wells Dam from two consultants. The deadline for submission is October 14, 2011. Gingerich said that Douglas PUD staff at Wells Dam will

be given the opportunity to install the detection arrays at Wells Dam. If they decline due to workload, a contractor will be selected by October 21, 2011. Installation will occur during normal maintenance and dewatering of the Wells Dam adult fishways during December 2011/January 2012.

Gingerich reported that as of October 7, 2011, only one Pacific lamprey had been counted at Wells Dam. Mike Schiewe asked if this was the fish from June 18, 2011 and Gingerich confirmed. He said that if adult lamprey numbers at Wells Dam remain low, the Aquatic SWG may need to consider how to better address the issue of evaluating adult passage for a fish with such low counts. For discussion with the Aquatic SWG, Gingerich said Douglas PUD is considering the option of trans-locating adult lamprey to the Wells tailrace to support an adult lamprey passage study at Wells Dam in the near future.

Gingerich said that the USFWS released a document this month titled *Pacific Lamprey Assessment and Template for Conservation Measures* (October 2011). He said that the document discusses the status of Pacific lamprey in the Columbia Basin and future conservation approaches. Gingerich said that the Aquatic SWG's consideration of a passage study using trans-located adults and HD PIT-tag detection fits within the recommendations in the USFWS document. Gingerich will email Carmen Andonaegui the link to the USFWS website to download a copy of the document for distribution to the Aquatic SWG.

Steve Lewis asked if adult lamprey had been tagged at the lower Columbia River dams that might be detectable at Wells Dam. Gingerich said that his understanding is that 2 percent of the adult Pacific lamprey run is tagged annually with HD PIT-tags by the U.S. Army Corps of Engineers at their lower Columbia River projects. He said that Douglas PUD does not currently have HD PIT-tag detection capabilities at Wells Dam, but that they do have the capacity to detect passage based on visual counts at the adult fish ladder count windows. He said that Chelan PUD is installing a HD PIT detection array at Rocky Reach Dam, which is not yet fully operational, but that using visual counts, 605 adult lamprey have been counted at the adult fish count window at Rocky Reach Dam in 2011. He said that Grant PUD had HD PIT-tag detection capabilities, but that he did not have this information on hand¹. Lewis asked if Chelan PUD is considering providing lamprey for trans-location this year for a Wells Dam passage study. Gingerich said that Douglas PUD will not be conducting an adult lamprey passage study in 2011 because the HD PIT-tag detection arrays will not be installed until December 2011/January 2012.

Gingerich said that there have been no operational changes implemented at Wells Dam that might change the ability to detect adult lamprey at the fish count windows, and

¹ As of October 10, 2011, total count of adult Pacific Lamprey at Priest Rapids Dam was 3,699 (http://www.fpc.org/lamprey/adultladder_lamprey_query.html).

therefore it is likely that a proportion of lamprey continue past the Wells count windows undetected as reported in previous Douglas PUD lamprey reports. Lewis asked about past lamprey conversion rates. Mike Schiewe noted that conversion rates were reported at the September 14, 2011, Aquatic SWG meeting and are captured in those meeting notes². Gingerich said that adult Pacific lamprey counts from 2001 through 2005 were on the order of 200 annually; from 2006 to October 2011, the annual count has been 35 fish or less.

V. Next Meetings

1. Upcoming meetings: November 9, 2011 (in person), December 14, 2011 (conference call, if necessary), and January 11, 2011 (conference call, if necessary).

Mike Schiewe said that Jenifer Parsons of Ecology will be giving a presentation to the Aquatic SWG at the November 9, 2011, meeting, on aquatic nuisance species control.

List of Attachments

Attachment A – List of Attendees

² Conversion from Rocky Reach to Wells for 2001 through 2005 averaged 37 percent (with a range of 18 to 56 percent); for the period 2006 through 2010, that average was 3 percent (with a range of 0.7 to 5.4 percent).

Attachment A List of Attendees

Name	Role	Organization
Mike Schiewe	SWG Chair	Anchor QEA, LLC
Carmen Andonaegui	Administrative	Anchor QEA, LLC
Andrew Gingerich	Alt. SWG Technical Rep.	Douglas PUD
Patrick Verhey	SWG Policy Rep.	Washington Department of Fish and Wildlife
Molly Hallock	Technical Resource	Washington Department of Fish and Wildlife
Steve Lewis	SWG Technical Rep.	U.S. Fish and Wildlife Service
R.D. Nelle	Technical Resource	U.S. Fish and Wildlife Service

Intentionally Blank

Andrew Gingerich

From: Irle, Pat (ECY) <PIRL461@ECY.WA.GOV>
Sent: Monday, February 11, 2013 2:25 PM
To: Andrew Gingerich
Cc: Shane Bickford
Subject: RE: Final Wells Broodstock and Breeding Plan for White Sturgeon 11-18-11 W Consultation record.pdf - Adobe Acrobat Professional

Follow Up Flag: Follow up
Flag Status: Flagged

Andrew, Shane-

Washington State Department of Ecology approved this plan back in November or 2011.

Pat Irle

WA Dept of Ecology representative

From: Andrew Gingerich [<mailto:andrewg@dcpud.org>]
Sent: Thursday, February 07, 2013 2:08 PM
To: Irle, Pat (ECY)
Cc: Shane Bickford
Subject: FW: Final Wells Broodstock and Breeding Plan for White Sturgeon 11-18-11 W Consultation record.pdf - Adobe Acrobat Professional

Pat,

Towards the end of 2011 we approved this attached sturgeon plan within the ASWG. The FERC requires us to file it with them for final approval. Douglas is getting ready to do that. As we have waded through the consultation record however, we've realized we don't have a formal email from Ecology approving the document. I suspect what actually happened was Mike Schiewe called you directly or you simply signaled your approval at one of the meetings. In this case, the "AWSG approval" would include Ecology's approval. However... since this is a 401 certification requirement, we've been advised to get an email from Ecology that could be included in the consultation record to be filed with the FERC.

What do you think? A simple email will likely do the trick here.

Something that would say "Ecology formally approves the Wells Broodstock and Breeding Plan approved at the September 14 2011 Aquatic Settlement Workgroup meeting". It can be more substantive if you think it's appropriate but the key is to indicate Ecology approves it.

I think if you open the attached document it will help remind you what the heck I'm referring too. It was all the way back in Sept 2011 that we approved this.

I'll try and call you this afternoon to discuss.

Thanks!

Andrew

509-881-2323

Document Content(s)

White Sturgeon Plan - FERC approval request.PDF.....1-41