
LAKE CHELAN COMPREHENSIVE FISHERY MANAGEMENT PLAN

Final

**LAKE CHELAN HYDROELECTRIC PROJECT
FERC Project No. 637**

December 7, 2001



**Public Utility District No. 1 of Chelan County
Wenatchee, Washington**

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SECTION 1: INTRODUCTION

Lake Chelan Hydroelectric Project, FERC No. 637, relicensing stakeholders have stated that one goal of the relicensing process is to develop and periodically review a Comprehensive Fishery Management Plan (CFMP) for Lake Chelan.

The impetus for a such a comprehensive plan stems from the sometimes overlapping authorities and responsibilities of various resource managers and others currently involved in managing some portion of Lake Chelan waters and/or its tributaries, the biological resources therein, and surrounding lands.

The Washington Department of Fish and Wildlife (WDFW) has primary responsibility for fishery management in Lake Chelan under Revised Code of Washington (RCW 77.04.012). However, other stakeholders have significant roles in managing the Lake Chelan fishery. These include:

- The U.S. Forest Service, as a manager of large tracts of land adjacent to Lake Chelan, and of tributaries to the Lake, has its own fishery management responsibilities in regard to habitat.
- The National Park Service manages the natural resources of the parks to maintain them in an unimpaired condition for future generations in accordance with NPS-specific statutes, including the NPS Organic Act and the National Parks Omnibus Management Act of 1998, general environmental laws such as the Clean Air Act, the Clean Water Act, the Endangered Species Act of 1973, NEPA, the Wilderness Act, Executive Orders, and applicable regulations.
- The U.S. Fish and Wildlife Service, particularly through the Endangered Species Act, does have an interest in the restoration of bull trout to the Lake Chelan watershed.
- The Washington Department of Ecology (WDOE) has responsibility to maintain water quality and quantity.
- Native American tribes, especially the Yakama Nation, are interested in exploring the feasibility of introducing sockeye salmon into Lake Chelan.
- The Lake Chelan Sportsman's Association seeks to protect and maintain a viable sport fishery on the lake. To support this effort they seek cooperative efforts with other stakeholders to educate sport fishers as well as contribute funds and volunteer labor for stocking and habitat improvement efforts.

A major objective of the CFMP is to coordinate the plans and actions of these and other stakeholders in developing and implementing fishery management measures in Lake Chelan.

An early draft of WDFW's "Lake Chelan and Chelan River Fishery Management Plan" (Viola and Foster, in press) served as the starting point for developing the CFMP. Representatives from various stakeholders, principally the WDFW, the U.S. Fish and Wildlife Service, the U.S. Forest Service (USFS), the National Park Service (NPS), the Lake Chelan Sportsman's Association

(LCSA), the city of Chelan, and Chelan County Public Utility District (PUD), have worked cooperatively to develop the CFMP for use in the relicensing process and over the term of the license. The CFMP is to be included as a supporting document to fisheries Protection, Mitigation, and Enhancement (PM&E) measures in the new license for the Lake Chelan Project. The CFMP is designed to: 1) provide guidance for the management of the fishery resources in Lake Chelan; 2) maintain a healthy recreational sport fishery in Lake Chelan; 3) and develop a monitoring and evaluation (M&E) framework to assess the efficacy of management actions.

Described in the CFMP is a set of proposed management actions for each species currently inhabiting Lake Chelan, and a process for developing an M&E program, which will, ultimately, lead to developing specific species management goals and objectives. Also described is a process for reviewing the CFMP on a periodic basis to allow for the collaborative planning and future changes over the term of the license.

Relicensing studies were conducted in 1999, 2000 and 2001 to determine the current status of fishery resources in Lake Chelan. Studies investigated: (1) sport catch through conducting a creel survey; (2) incidence of barriers to upstream spawning migration in lake tributaries; (3) timing of fry emergence; (4) tributary spawning and rearing habitat availability; (5) tributary fish populations; (6) limnological conditions; (7) reference and/or synopsis of 2000/2001 Stehkin River fish study; and (8) role of large woody debris (LWD). Much of the relicensing work repeated studies conducted by Brown (1984) so that current conditions could be compared with conditions that existed in 1982 and 1983.

The primary management objectives of the CFMP for Lake Chelan are to:

1. Emphasize restoration/enhancement of native species, where feasible;
2. Support the recreational sport fishery;
3. Manage the lake elevation to enhance tributary production and recreation (see Section 2.1 and Figure 1);
4. Determine compatibility of management actions with potential future bull trout re-introduction;
5. Develop an M&E framework that provides flexibility for future changes (see Section 3).

The Lake Chelan Hydroelectric Project area is shown in Figure 1.

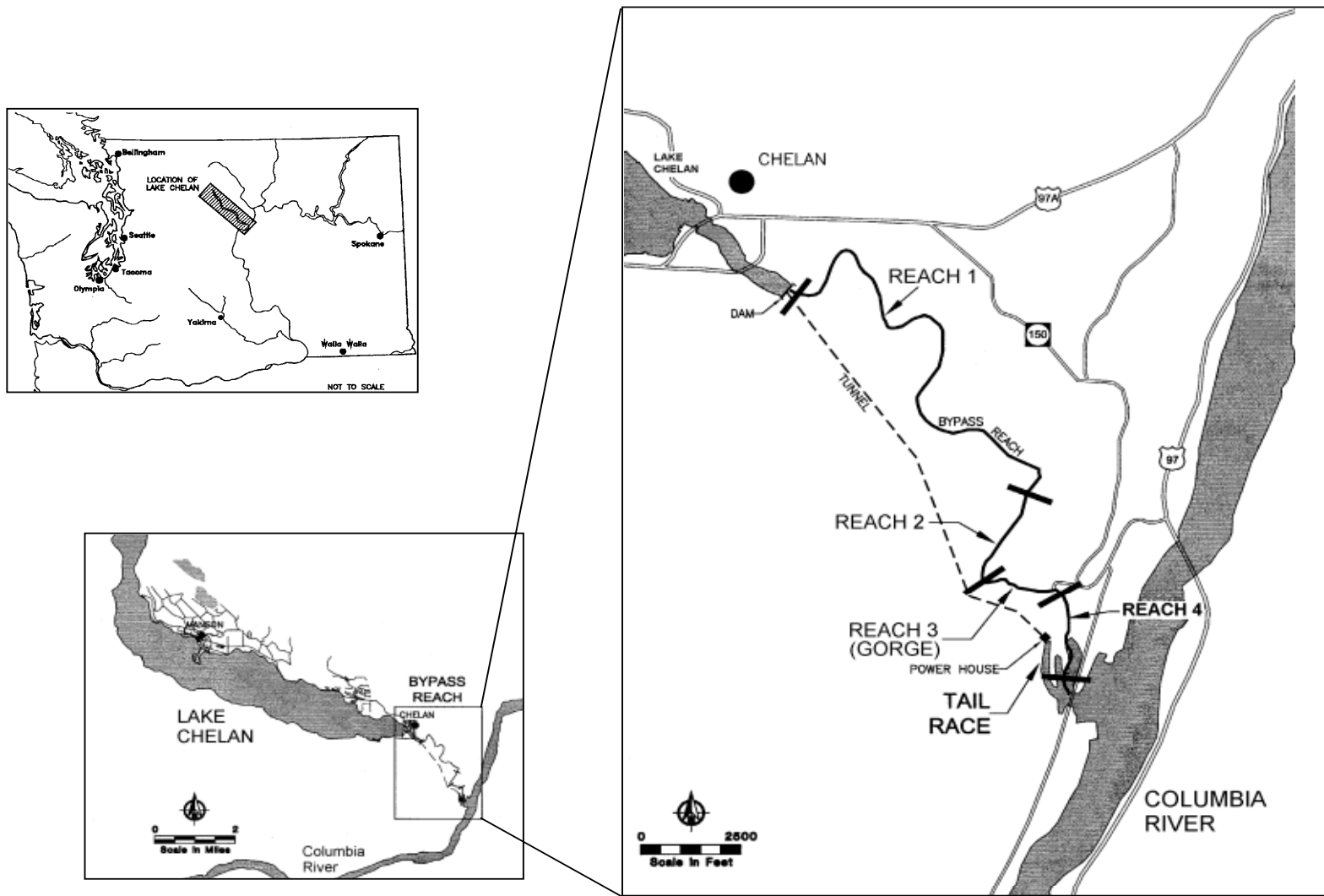


Figure 1: Lake Chelan Hydroelectric Project area

SECTION 2: FISH SPECIES IN LAKE CHELAN

2.1 Westslope cutthroat trout

Few Westslope cutthroat trout were captured during relicensing studies, either in the creel survey or tributary investigations (DES 2000a). The few cutthroat trout caught in the creel survey gives an indication that the current juvenile cutthroat stocking effort, approximately 90,000 annually (1980 to 1999), is not contributing to the cutthroat trout population in the Chelan Basin. Tributary trout populations estimated during relicensing studies, particularly cutthroat trout, appear to be lower than those estimated by Brown (1984). Barriers to upstream spawning migration were identified in most tributary mouths investigated (DES 2000a). Barriers identified were in the form of depth, gradient, and/or velocity barriers. The Natural Sciences Working Group concluded that these barriers were created as a result of Project operations since 1981, the term of the second license, and are, most likely, contributing to trout population decline in the Lake Chelan tributaries. The fishery agencies have stated a strong desire to restore native species in the Chelan Basin, particularly Westslope cutthroat trout, as part of the relicensing process. local community representatives have also stated a strong desire to maintain the existing recreational trout fishery.

Primary Issues

Phase out rainbow trout (RBT) stocking - WDFW, USFS, LCSA, NPS
Re-establish/supplement tributary populations where suitable – USFS, WDFW
Maintain present angling restrictions – USFS, NPS, WDFW
Restrictive harvest of WSCT until population rebuilds – USFS, NPS, WDFW
Manage water levels to optimize spawning, incubation and rearing – NPS, USFS, WDFW
Monitor levels of hybridization – NPS, WDFW
Minimize loss from entrainment/spills – NPS, LCSA
Support habitat enhancement - WDFW
Delay stocking until spill completed – LCSA
Develop monitoring and evaluation (M&E) program – WDFW, USFS, LCSA, NPS

Management Recommendations

1. Over a four-year period, with careful monitoring and evaluation, replace the current allotment of 100,000 rainbows with increasing proportions of Twin Lakes cutthroat until only cutthroat are stocked.
2. Eliminate, immediately, stocking of rainbow trout in high lakes and tributaries of the Chelan watershed.
3. Move toward stocking Westslope cutthroat trout (WSCT) of Twin Lakes origin. Accomplish through:
 - stocking catchable size Twin Lake WSCT
 - planting Twin Lake WSCT eyed eggs in tributaries
 - maintain recreational trout fishery with Twin Lake WSCT
 - fish management needs of Lake Chelan will take priority in the allocation of Twin Lake WSCT eyed eggs

- locate an alternative source of Twin Lakes cutthroat or other stocks of cutthroat to be used in other waters throughout the state.
- 4. Manage lake water levels and conduct mechanical barrier removal to provide tributary access for spawning, incubation and rearing (See Table 1; Figure 2.).
- 5. Develop monitoring and evaluation (M&E) program to assess efficacy of management actions.
- 6. Delay opening fishing at mouths of lake tributaries to August 1 to protect spring spawning adult salmonids.
- 7. Delay stocking of catchable cutthroat trout until at least mid-September (enable carry-over to next year; after spill terminated).
- 8. Stocking of Westslope cutthroat trout fry/fingerlings into Lake Chelan will be initiated only after lake trout population abundance has been investigated as well as natural reproduction of this species.

Table 1: Average lake levels (feet, USGS) for the original license, existing license, and proposed lake level cycle

Day	Original License (1927-1981)	Existing License (1981-2000)	Working Group Proposal ¹
January 1	1090.7	1091.7	1089.2
February 1	1088.4	1089.2	1087.1
March 1	1086.6	1087.1	1085.8
April 1	1085.6	1086.3	1085.5
May 1	1087.6	1088.0	1087.8
June 1	1094.8	1094.4	1095.3
July 1	1099.3	1099.2	1099.3
August 1	1099.7	1099.7	1099.7
September 1	1098.8	1099.5	1098.9
October 1	1096.9	1098.3	1096.9
November 1	1094.7	1095.8	1094.2
December 1	1092.9	1094.2	1091.8

¹Natural Sciences Working Group (including Chelan PUD)

LAKE CHELAN ELEVATIONS COMPARISON OF AVERAGES

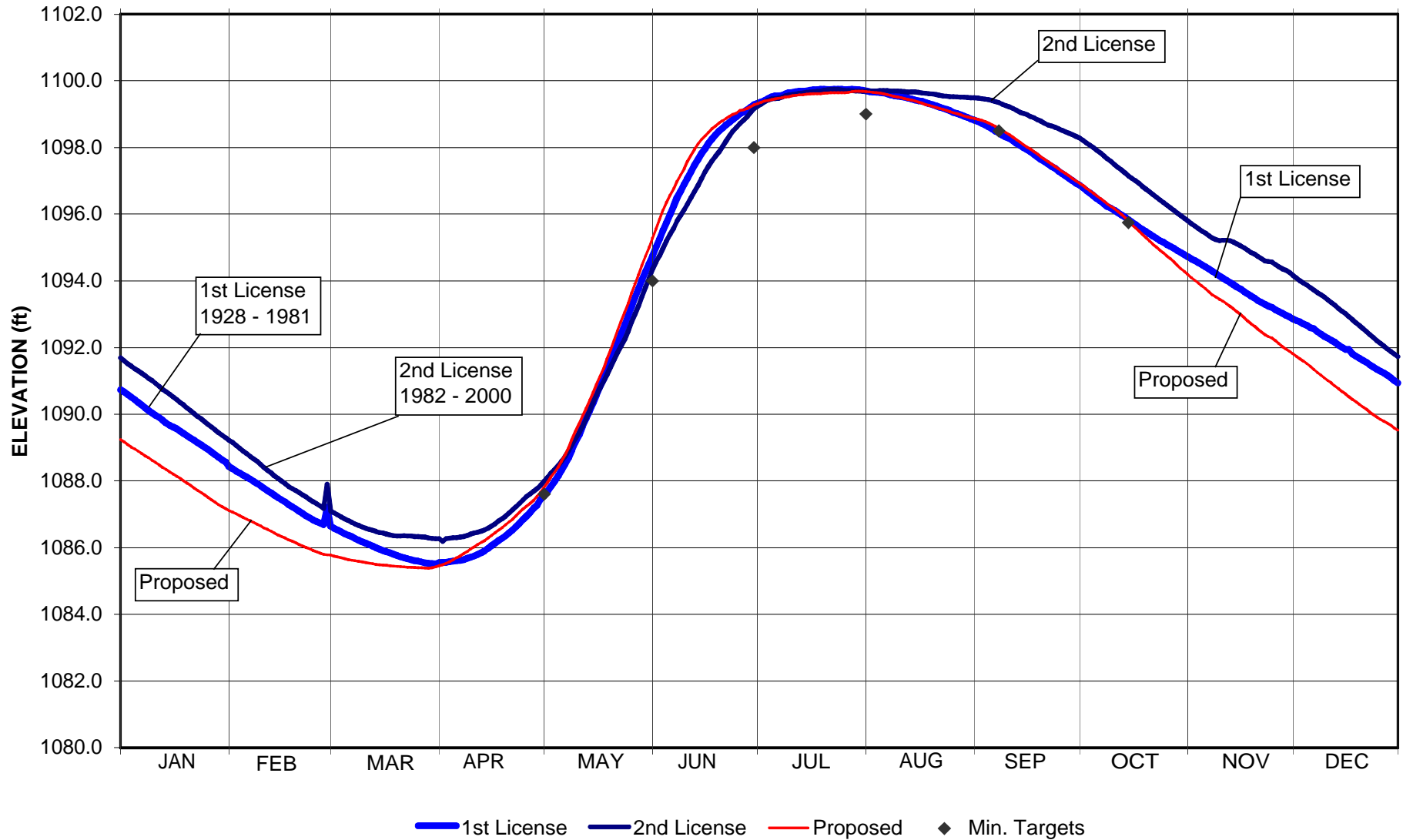


Figure 2: Comparison of averages for Lake Chelan elevations

2.2 Rainbow trout

Rainbow trout have been stocked in Lake Chelan since the early 1900's (DE&S 2000a). Recent stocking efforts, since 1990, have been conducted to make up for a shortfall in kokanee production, and to support a recreational fishery in the Wapato Basin of Lake Chelan. However, it has been well documented in other systems that introduction of rainbow trout has detrimental effects on Westslope cutthroat trout populations due to competition and hybridization. The Natural Sciences Working Group concluded that reducing, and eventually eliminating, rainbow trout stocking would be an important step in restoring Westslope cutthroat trout populations in the Chelan Basin.

Primary Issue

Phase out rainbow trout (RBT) stocking - WDFW, USFS, LCSA, NPS

Management Recommendations

1. Over a four-year period, with careful monitoring and evaluation, replace the current allotment of 100,000 rainbows with increasing proportions of Twin Lakes cutthroat until only cutthroat are stocked.
2. Eliminate, immediately, stocking of rainbow trout in high lakes and tributaries in the Chelan Basin, and in the Lucerne Basin of Lake Chelan.
3. Investigate feasibility of stocking triploid RBT to support recreational fishery if fish in addition to WSCT are needed.

2.3 Kokanee

Kokanee are the most popular recreational fish in Lake Chelan (DES 2000a). Recreational fishers have indicated a strong desire to maintain the size and number of fish at current levels. Spawning surveys conducted in recent years show that the Lake Chelan kokanee population is as high or higher than historical numbers (Fielder 2000). Expanding kokanee populations in the Stehekin River is a growing concern with NPS managers particularly in light of continued stocking. Major NPS concerns regarding kokanee may include impacts to native fish and invertebrate communities, alteration of natural nutrient levels in the Stehekin system, bear/human interactions related to use of kokanee carcasses as a food source, alterations in distributions of other wildlife species that feed on kokanee carcasses or derive benefits from enhanced nutrient levels related to carcass decomposition, and transfer of metals and pesticides from the lake to the river via movement of the large numbers of kokanee into the Stehekin River. The Natural Sciences Working Group members recognize the need to re-evaluate the effectiveness of kokanee and landlocked chinook stocking in light of the biological benefits (i.e. Westslope cutthroat establishment) that will result from the discontinuation of lake trout stocking in the lake. However, population objectives and methods for monitoring population size, species interactions, competition, etc. need to be developed for Lake Chelan. A goal of the M&E program, discussed below, is to develop a methodology for establishing population objectives and evaluating management actions.

Primary Issues

- Conduct annual spawning ground surveys – WDFW, NPS
- Adjust stocking numbers - WDFW
- Develop Lake Chelan strain of kokanee for planting – WDFW, USFS
- Adjust stocking methods: scatter release from barge – WDFW, LCSA
- Remove 25-Mile Creek barrier and rehab. spawning channel – WDFW, USFS, LCSA
- Remove tributary mouth barriers – WDFW, USFS
- Develop pop. mgt. objective compatible with recovery/protection of native species – NPS, USFS, WDFW
- Supplement KOK if pop. objective is not met and only if stocking can be evaluated – NPS, USFS, WDFW
- Improve tributary habitat - USFS
- Rely on natural production – USFS
- Manage as principal sport fish species - USFS
- Delay stocking until spill completed – LCSA
- Reduce predation loss: discontinue stocking of lake trout - NPS, WDFW
- Balance chinook and kokanee abundance to provide an optimal number of kokanee of an acceptable size and as many salmon as needed for this balance -WDFW, USFS, LCSA
- Minimize loss from entrainment/spills – NPS, LCSA
- Develop monitoring and evaluation (M&E) program – WDFW, USFS, LCSA, NPS

Management Recommendations

1. The first priority of the Fishery Advisory Committee (FAC) (see Section 4) upon reaching agreement is to develop an Interim Stocking Plan for all species stocked in Lake Chelan and tributaries, with particular emphasis on recommendations for stocking kokanee, as an interim measure until analyses from the M&E program can be conducted and management recommendations developed.
2. Develop population size objectives compatible with recovery and protection of native fish species, and compatible with park management goals for the Stehekin River.
3. Monitor population:
 - stock if necessary when population size objective exhibits a declining trend
 - use locally adapted or “naturalized” Lake Chelan stock for supplementation instead of Kootenai or Whatcom stocks
 - Maintain recreational fishery
 - Develop M&E program to assess efficacy of management actions, particularly for assessing contribution of kokanee stocking program to the lake population as well as the spawning population in the Stehekin basin.
4. Stocked fish should be released after spill has stopped (September/October).

2.4 Landlocked chinook salmon

Landlocked chinook salmon are considered the trophy fish in Lake Chelan. Landlocked chinook supported a very strong recreational and commercial (guided) fishery in the late 1980's and early 1990's. The LCSA depends heavily on the annual Chinook Derby on Lake Chelan to raise funds for implementing fishery enhancement projects in the Lake Chelan basin. Additionally, the

Chinook Derby is a significant economic event for the community of Chelan, as it is very well attended and draws participants from all parts of Washington and adjoining states. The LCSA, and Chelan community, has a very strong desire to rebuild the chinook fishery and maintain the annual Chinook Derby. Conversely, the NPS and USFWS believe that chinook, like kokanee, Lake trout and rainbow trout, have been stocked in Lake Chelan in spite of continuing declines in native fish populations and without careful evaluation of primary and secondary trophic level impacts. Additionally, the NPS and USFWS believe that it is prudent for the FAC to develop, immediately upon reaching agreement, an Interim Stocking Plan until stocking affects can be evaluated by way of biological investigation.

The population of this species has declined over the past several years as indicated by harvest statistics (DES 2000a). The Natural Sciences Working Group has examined many possible causes of decline, such as low survival of stocked fish, low natural reproduction, changes in race/deme of stocked fish, changes in rearing conditions of stocked fish, smolt emigration from the lake, excessive harvest, etc. As with other Lake Chelan species, an important part of the CFMP is developing an M&E program to assess species interactions and affects of management actions.

Primary Issues

- Rear chinook 19-20 months prior to release – WDFW, LCSA
- Release fish no earlier than mid to late September (after spill terminated) - LCSA
- Stock identified spawning areas with eyed eggs – WDFW, LCSA
- Reduce daily limit – WDFW, LCSA
- Experiment with different stock - WDFW
- Coded wire tag (CWT), ventral clip - WDFW
- Balance kokanee/chinook - WDFW
- Reduce stocking 50% - USFS
- Limit future stocking to triploid chinook only – WDFW, NPS, USFS
- Collect data on species interactions during M&E period (5 yrs?), results will be basis for future management – USFS, WDFW, NPS
- Allow natural production to sustain fishery long-term – USFS
- Significantly reduce stocking of chinook until evaluation of impacts to native species is completed - NPS
- Monitor natural production and evaluate effects on native fish - NPS

Management Recommendations

1. The first priority of the Fishery Advisory Committee (FAC) (see Section 4) upon reaching agreement is to develop an Interim Stocking Plan for all species stocked in Lake Chelan and tributaries, with particular emphasis on recommendations for stocking kokanee, as an interim measure until analyses from the M&E program can be conducted and management recommendations developed.
2. Focus on landlocked chinook as apex predator species:
 - investigate feasibility of stocking triploid chinook
 - set interim harvest restrictions to protect population size
 - support recreational fishery

3. Evaluate impacts of chinook on native fish species in Lake Chelan and investigate management actions that would limit potential impacts. Support recreational fisheries for chinook if impacts to native fish populations are minimal.
4. Discontinue Lake trout stocking:
 - discontinue stocking juveniles
 - reduce adult population
 - study presence/absence of natural reproduction in Lake Chelan and associated tributaries.
5. Develop M&E program to assess efficacy of management actions.

2.5 Bull trout

Bull trout have not been observed in the Chelan Basin, either in tributaries or the lake, since the early 1950's. Causes of decline, and apparent demise of the bull trout population, has been speculated to be a catastrophic epizootic (disease), unsuccessful spawning and loss of spawning habitat during floods in the late 1940's and early 1950's, excessive harvest, or a combination of the above (Brown 1984). There is interest from several relicensing stakeholders, primarily the US Fish and Wildlife Service (USFWS), in investigating the feasibility of restoring bull trout in the Chelan Basin. The USFWS is currently preparing a Bull Trout Recovery Plan, which may address Chelan Basin recovery efforts. However, Natural Sciences Working Group members have expressed serious concern about Chelan Basin perturbations i.e., non-native species introductions, remaining presence of pathogens, availability of bull trout donor stock, etc., that may preclude bull trout re-introduction. Due to these concerns, the Working Group has focused, initially, on conducting a bull trout restoration feasibility assessment before actually attempting to re-introduce the species into the basin.

The following paragraph describes the proposed methodology to be used for investigating reintroduction of bull trout into the Lake Chelan Basin. If feasible, the ultimate goal of the state and federal agencies is to attempt to reintroduce self-sustaining populations of bull trout in waters they historically inhabited in the tributaries that drain into the Stehekin River or directly into Lake Chelan. The first effort should be to conduct a survey designed to locate any bull trout population that might still exist in the system. If a fluvial bull trout population is found, then determine if habitat conditions exist which have limited their re-colonization of the system. The next step would be to eradicate the factor(s) that have been limiting bull trout or determine if enough fish exist to use as a brood stock, so we could avail them the survival advantage of the hatchery system. If no bull trout population is found, then, if feasible, an appropriate stock of fluvial fish from another river may be chosen to use for reintroduction. Possibly bull trout from the Chiwawa River stock, which are adfluvial, could be used.

Primary Issues

Goal is to reintroduce fluvial bull trout – WDFW, USFWS

Conduct survey to locate remaining population - WDFW, USFWS

If feasible, attempt to reintroduce using identified stock – WDFW, USFWS, city of Chelan

Determine appropriate donor stock - WDFW, USFWS

Delay re-introduction until issues resolved: - USFS, NPS, USFWS

- interaction with brook/lake trout;
- fish pathogens present;
- stock source;
- potential angling restrictions;
- appropriate locations for re-introduction are identified.

Maintain recreational fishing opportunities for other species as a high priority (Lake Wenatchee mgt.) – USFS, NPS, LCSA, WDFW, city of Chelan

Do not attempt bull trout re-introduction – LCSA, PFLC

Phase out stocking of RBT and discontinue stocking of Lake Trout - NPS, WDFW

Manage KOK and Chi pop. at levels to minimize interference with potential bull trout recovery efforts – NPS, USFS, WDFW

Disease screening of hatchery fish - NPS, WDFW

Manage water levels for fish - NPS

Minimize loss from entrain./spills – NPS, LCSA

Develop monitoring and evaluation (M&E) program – WDFW, USFS, LCSA, NPS

Management Recommendations

1. Investigate feasibility of re-introducing fluvial and adfluvial bull trout
2. Maintain recreational fishing opportunities for other species as a high priority (Lake Wenatchee mgt.)
3. Develop M&E program to assess efficacy of management actions.

2.6 Lake trout

Lake trout have also contributed significantly to the trophy fish fishery in Lake Chelan. The Washington State record, a 33 lb. 6.5 oz. fish, was caught in August 2001. Additionally, a 31 lb. 2.5 oz. fish, was taken during May 2000, and another 30 + lb. fish was taken the same month. Popularity of the Lake trout fishery has increased in recent years as the landlocked chinook salmon fishery has declined. A primary concern of the Natural Sciences Working Group is restoration of native species. Management objectives are aimed at minimizing the impacts of non-native apex predators on native species and to provide additional sportfishing opportunity. Literature acquired from other systems that include Lake trout indicate strong potential for adverse species interactions between Lake trout, kokanee, landlocked chinook, WSCT, and bull trout. Due to the potential adverse effects on native species and landlocked chinook salmon, continued stocking of Lake trout is being questioned at this time. However, an important aspect of the M&E program is to investigate these potential impacts and develop appropriate management actions for Lake trout.

Studies conducted in 1999 and 2000 for relicensing support indicate that Lake trout are reproducing naturally in Lake Chelan (DE&S 2000a). A Lake trout fry, approximately 32 mm in length, was observed off the mouth of First Creek during snorkel surveys conducted in July 2000.

This fish was much smaller than the lake trout planted on June 15, 2000. The two biologists who observed the fry were confident that the fish did not key out as any of the *Oncorhynchus* species or as a bull trout. Upon further investigation they felt very confident that it was a lake

trout fry. Additional evidence supporting Lake trout natural reproduction in Lake Chelan is observation of three Lake trout juveniles (75-100 mm) in a side channel in lower mainstem Stehekin River on September 12, 2000 during snorkel surveys.

Primary Issues

Discontinue stocking program – WDFW (Alt. 1), USFS, NPS

Continue stocking program – LCSA

Survey to determine number and origin of fish – WDFW, LCSA

Increase limit – WDFW

Explore the need for active removal programs - NPS

Assess kokanee population – WDFW, LCSA

Attempt to balance kokanee & lake trout populations – WDFW, LCSA

Develop monitoring and evaluation (M&E) program – WDFW, USFS, LCSA, NPS

Do not support any efforts to significantly reduce population of Lake trout – LCSA, city of Chelan

Management Recommendations

1. Discontinue Lake trout stocking program.
2. Evaluate population size, recruitment, distribution, spawning areas and investigate feasibility of potential eradication methods.
3. Develop M&E program to assess efficacy of management actions.
 - study presence/absence of natural reproduction in Lake Chelan and associated tributaries.

2.7 Burbot

Little is known of the burbot biology and population characteristics in Lake Chelan. The only data currently available are harvest data. The Natural Sciences Working Group has identified the need to investigate burbot population dynamics more thoroughly in order to develop better management actions.

Primary Issues

Assess burbot population trends via index sampling – WDFW, LCSA, NPS

Use otoliths for age structure - WDFW

Routine sample gonads – WDFW, USFS, LCSA

Angling restrictions if population continues to decline – USFS, NPS

Disease screening – NPS

Investigate life history requirements of burbot in the Chelan watershed - NPS

Assess hydro project related impacts - NPS

Management Recommendations

1. Develop M&E program to assess efficacy of management actions.
2. Monitor trends in abundance, survival, recruitment and evaluate effects of angling regulations and disease screening.

2.8 Smallmouth bass

Smallmouth bass were introduced illegally into Lake Chelan some time around 1990. The smallmouth population has increased in the lake and supports an active sport fishery. The Natural Sciences Working Group believes that smallmouth are “here to stay” in Lake Chelan, but desire to confine the population to the Wapato Basin. This species will require some management to maintain control/confinement of the population. No enhancement measures for this species is recommended at this time.

Primary Issues

No change in angling regulations – WDFW

Monitor isolation to Wapato Basin – USFS, LCSA, NPS, WDFW

Remove any developing populations in the Lucerne Basin – NPS, WDFW

WDFW will not direct any enhancement measures toward smallmouth bass.

Develop enforcement efforts necessary to ensure population is controlled and no further “illegal relocations” take place.

Management Recommendations

1. Develop M&E program to assess efficacy of management actions.
2. No enhancement measures for this species is recommended at this time.
3. Conduct temperature monitoring in the Lucerne Basin (i.e. Stehekin Flats)

2.9 Eastern brook trout

Eastern brook trout have become established in Twentyfive Mile Creek and the Stehekin River from historic stocking efforts. The Natural Sciences Working Group has a strong desire to remove brook trout from the Chelan Basin due to adverse impacts from this species through competition and disease on native salmonids. Any recovery efforts for Westslope cutthroat and bull trout populations would be hampered by the presence of brook trout in the Chelan Basin

Primary Issues

Eradicate, if possible, from 25-Mile Creek and Stehekin River – USFS, NPS

Angling regulations to encourage selective harvest will depend on status of bull trout restoration and possibility of incidental catch of bull trout attributed to misidentification – USFS, NPS

Management Recommendations

1. Eradicate, if possible, from Twentyfive Mile Creek and the Stehekin River.
2. Monitor success of eradication efforts.

2.10 Other native fish species

- Pygmy whitefish
- Threespine stickleback
- Peamouth chub

- Chiselmouth
- Northern pikeminnow

The Natural Sciences Working Group is unsure of the effects of non-native fish stocking on these native species. Pygmy whitefish, of particular concern, are listed as a Washington State species of concern. Additional data collection on Pygmy whitefish and other native species need to be included in CFMP M&E program in order to develop sound management actions.

Primary Issues

Periodic surveys to assess population trends and to evaluate status of populations – USFS, NPS
Avoid management actions that would push these species to extirpation – USFS

Management Recommendations

1. Develop M&E program to assess efficacy of management actions.

2.11 Other non-native introductions

Primary Issue

No new introductions of non-native species – USFS, NPS, WDFW, LCSA

Management Recommendations

1. No new introductions of non-native species.
2. No introductions of anadromous fish to the lake – USFS, NPS, WDFW, LCSA

SECTION 3: MONITORING AND EVALUATION PROGRAM

A sound monitoring and evaluation (M&E) program is an important component of any management plan. An M&E program is necessary to assess the efficacy of management actions, and to allow for changes to the plan as future conditions and data analyses dictate. One proposal from the Natural Sciences Working Group (NSWG) is to enlist the services of Dr. Dave Beauchamp, University of Washington, to develop a bioenergetically-based food web model for Lake Chelan. The model can be used as a tool for evaluating the potential impacts of species interactions, production potential, and environmental conditions (i.e., inter-annual changes in temperature regimes) within a temporal, spatial, and size-structured framework. The model, ultimately, will be used to support development and evolution of the Lake Chelan Comprehensive Fishery Management Plan. This approach will allow fishery managers to evaluate current and/or proposed fish stocking strategies and management regulations within the context of ecological feedback from the lake food web. The ultimate goal of the M&E program is to provide information to fishery managers with which to develop biological objectives and make effective management decisions that will provide for sustainable fishery resources in Lake Chelan and its tributaries.

Another important component of the M&E Program identified by the NSWG is to monitor tributary mouth access after alluvial barriers are mechanically removed. Monitoring would involve surveying the tributary mouths on an as-needed basis (once every 3 to 5 years) to identify formation of new depth, velocity, or gradient barriers and ensure that channel integrity, and, therefore, upstream and downstream passage ability, is being maintained.

SECTION 4: IMPLEMENTATION

1. Responsibility for implementing the CFMP

The Washington Department of Fish and Wildlife (WDFW) has the primary responsibility for implementing the CFMP. However, a Fishery Advisory Committee (FAC), with membership as described below, will provide guidance and recommendations to WDFW regarding management of Lake Chelan fishery resources. Other stakeholders have significant roles in managing fishery resources in Lake Chelan, including the U.S. Forest Service (USFS), the National Park Service (NPS), the U.S. Fish and Wildlife Service (USFWS), the Colville and Yakama Tribes, and the Lake Chelan Sportsman's Association (LCSA).

The initial core members of the FAC will be, but are not limited to, representatives from:

- WDFW
- USFS
- NPS
- USFWS
- Colville Confederated Tribes (CCT)
- Yakama Indian Nation (YIN)
- WDOE
- Chelan County PUD
- LCSA
- Port of Chelan County
- PFLC
- city of Chelan

Membership to the FAC will be accomplished via written request to the FAC. Entities petitioning for membership, once accepted, must make best efforts to attend meetings, review materials to be discussed by the FAC prior to meetings, come to meetings prepared to provide meaningful input, and complete tasks assigned by the FAC in a timely manner.

The FAC will make recommendations based on consensus of the members. Consensus is understood to mean that a majority of the participating members agree (do not object) to the decisions being made and that Chelan PUD and those agencies that have mandatory conditioning authority (for those decisions related to the agencies' mandatory conditioning authority) unanimously agree (do not object) to those decisions.

At least annually after license issuance, Chelan PUD shall convene the FAC to discuss issues pertinent to the CFMP.

2. Timing of implementing the CFMP

Low risk actions mutually agreeable to all interested parties e.g., converting stocked catchable trout from rainbow to Westslope cutthroat (WSCT), eliminating Lake trout stocking, adjusting stocked kokanee numbers, eyed-eggs plants of WSCT eggs in First Creek, are being implemented immediately. The Fishery Advisory Committee will compile a list of additional low risk actions that could also be implemented early. Actions relying on results of the Monitoring and Evaluation Program will be reviewed by the FAC on an annual basis.

List of potential low risk actions

- Implement lake level operation proposal (PME07).
- Discontinue lake trout stocking, develop an Interim Stocking Plan for kokanee and chinook stocking pending further evaluation, phase out rainbow trout stocking and replace with native strain cutthroat trout.

3. Development of a Monitoring and Evaluation (M&E) Program

Development of the M&E Program is incumbent upon the interested parties participating in the relicensing process, such as those listed as Fishery Advisory Committee members. The food-web modeling proposed by Dr. Dave Beauchamp appears to be a good start toward developing an M&E program.

Objectives of the M&E program are to:

- 1) gather data for input into fishery management decisions to protect, conserve, and restore native fish populations, and to maintain quality recreational fishing opportunities;
- 2) evaluate whether measures implemented are providing desired results; and
- 3) maintain future options and prevent making any irreversible decisions regarding ecosystem function.
- 4) Prepare annual report of M&E results and provide future recommendations.

4. Responsibility for funding the CFMP and associated M&E Program

WDFW

WDFW will continue funding the landlocked chinook salmon stocking program and a portion of the Chelan Falls Hatchery. Funding from the Lake trout stocking program, which is being discontinued at the present time, may be used for additional proposed stocking efforts and/or implementation of the M&E program. WDFW will also pursue partnerships with federal, state, and private entities and cost-sharing opportunities with other resource co-managers as the preferred funding mechanism.

USFS

The USFS will pursue partnerships with federal, state, and private entities and cost-sharing opportunities with other resource co-managers as the preferred funding mechanism. The USFS will continue to provide data as part of their ongoing M&E program on their lands. Grants will

be sought to provide additional funding for CFMP implementation. The USFS will pursue development of a Large Woody Debris (LWD) Management Plan.

NPS

The NPS will pursue partnerships with federal, state, and private entities and cost-sharing opportunities with other resource co-managers as the preferred funding mechanism. The NPS will continue to provide data as part of their ongoing M&E program on their lands, particularly in the lower Stehekin River. Grants will be sought to provide additional funding for CFMP implementation.

USFWS

The USFWS will pursue partnerships with federal, state, and private entities and cost-sharing opportunities with other resource co-managers as the preferred funding mechanism. The USFWS will provide data sharing and bull trout monitoring in the Stehekin drainage. Grants will be sought to provide additional funding for CFMP implementation.

The Service would like to emphasize the point that agencies' abilities to provide matching funds for the Lake Chelan Monitoring and Evaluation Program will be very marginal in light of ever-changing budget needs.

Chelan PUD

Chelan PUD, upon receipt of a new license or signed agreement of all parties, will provide funding for implementation of their responsibilities highlighted in the Comprehensive Fishery Management Plan (CFMP) submitted with the license application, more specifically items 1-4 below. The geographic scope of the CFMP is Lake Chelan, its bordering lands, and its tributaries. Funding provided by Chelan PUD will be for the following activities:

1. At least annually after license issuance, Chelan PUD shall convene the FAC to discuss issues pertinent to the CFMP. Chelan PUD will provide materials and meeting facilities to the FAC.
2. Within two years of license issuance, Chelan PUD shall provide funding of \$100,000 (2001 \$) into an interest bearing account, to mechanically remove alluvium barriers in tributaries to facilitate access to the tributaries for spawning.
3. Chelan PUD will provide funding of \$30,000 (2001 \$) into an interest bearing account by January 31 of each year for fish stocking and/or tributary enhancement. Specific measures will be determined in coordination with the FAC. At the request of the FAC, funds may be allowed to accumulate for expenditure on projects in future years.
4. Chelan PUD will provide matching funds up to \$7,500 (2001 \$) by January 31 of each year for funding of the monitoring and evaluation program described in the CFMP.

LCSA

The Lake Chelan Sportsman's association has provided funding for projects in the past such as First Creek culvert replacement, eyed WSCT egg plants, fish stocking programs, funding and labor to improve docks, an annual kids fishing program, and continued community efforts to raise awareness about the Lake Chelan fishery. The LCSA has stated continually during the relicensing process that they are willing to fund measures that provide enhancement to Lake

Chelan fisheries. The LCSA has also been a strong proponent of developing a sound M&E program to determine effectiveness of management decisions, and could provide funding for a portion of the M&E program.

SECTION 5: LITERATURE CITED

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