PRE-REHABILITATION PLAN: Sprague Lake and Adjacent Waters

I. PROPOSAL

A. Justification for Proposed Rehabilitation

Description of Resource Area

Sprague Lake is 1,860 surface acres, and is 1 mile south of the City of Sprague. The Sprague Lake fishery supports two resorts, Four Seasons Campground and Sprague Lake Resort. The lake is used as water storage for irrigation, wildlife watching, water sports and recreational angling.

Background Information

Sprague Lake has a long history of providing a fishery to residents and visitors from around the region. Sprague Lake was originally stocked with warmwater fishes in the 1890's. Species likely stocked included: bass, crappie, bluegill, bullhead catfish, tench and common carp. Exact numbers and species are not known, but it was common practice by the U.S. Fish Commission to stock multiple fish species into lakes such as Sprague.

The magnitude of historical use by anglers is not well understood, but the lake had a reputation for yielding good catches of crappie, bass, catfish and common carp. Up to the early 1980's a commercial fishery for common carp was conducted on the lake, but a reduced market demand eventually rendered the commercial fishing valueless. By the late 1970's, the fish population of Sprague Lake was dominated by common carp. The common carp population was dense and stunted, and offered little value to recreational anglers.

In response to a decline in the recreational fishery, the Washington Department of Game (WDG) began investigating possible enhancement measures to increase the productivity of the fishery. A creel survey was conducted to evaluate the amount of angler use on the lake. In 1983, only 1,500 angler days were spent on the Sprague Lake fishery. The lack of angler interest in the fishery lead fisheries managers to consider enhancement measures directed at improving angler use. Ultimately, the WDG began developing plans for treating the lake with rotenone.

In 1985, the lake was treated with rotenone and restocked with warmwater fish and trout. The objectives for the 1985 lake rehabilitation were to remove the carp population, establish warmwater fisheries, and to provide 20 years of productive fisheries following the rotenone treatment.

After the rotenone treatment, the lake was stocked with largemouth bass, smallmouth bass, walleye, bluegill, rainbow trout and Lahontan cutthroat trout. Bullhead catfish, crappie and yellow perch were not intentionally stocked because WDG knew they would wash in from the upper-basin and establish harvestable populations. The rehabilitation was a success and by 1988, a total of 35,000 angler trips annually were expended on Sprague Lake.

Initial angling interest was generated by a robust trout fishery that was intended to provide fishing opportunity until the warmwater populations developed enough to provide a good

fishery. The trout fishery lasted for 5 to 6 years, with peak interest and productivity occurring in 1988. Warmwater fish became established well enough to provide desirable populations by 1989. Initial warmwater populations available for harvest were bluegill, bass, walleye and bullhead catfish. Angler use dropped from a high of 55,000 in 1988 trips to approximately 24,000 by 1992.

Warmwater species maintained a popular sport fishery on the lake through the 1990's. oweveHowever, by the mid 1990's species dominance in the fish population cycled from panfish and bass to walleye. The walleye fishery proved to be popular with anglers and maintained angler use at desirable levels. Over time biological sampling indicated that walleye numbers expanded to a point where they were suspected of limiting recruitment of panfish into the sport fishery through predation. By 2000, most of the fish available to harvest were walleye, and black crappie. In conjunction with the emergence of walleye dominance in the population, complaints from anglers that fishing was poor continued to build. Spot creel checks indicated that fewer fish were harvested from the lake. Angler groups and the public were issuing comments to WDFW that the fishery at Sprague Lake was not productive.

To investigate these claims, WDFW conducted several Standardized Warmwater Surveys in the late 1990's and began Fall Walleye Index Netting (FWIN in October of 2001 the) to determine the status of the walleye population. Findings indicated that angler reports of limited numbers of fish were inaccurate. To the contrary, the surveys revealed that Sprague Lake had a dense walleye population with a large proportion of harvestable sizes fish. Subsequent FWIN surveys conducted annually through October of 2005 indicated that a harvestable population still existed and was under-exploited by anglers.

Despite large numbers of harvestable walleye in the fish population, Sprague continues to be a fishery that receives limited effort. To document fishery use WDFW conducted a creel survey in 2006. The creel survey indicated that only 8,700 angler strips were expended on the lake for the year. While this number isn't as low as the 1983 creel survey, it is substantially lower that the use that WDFW believes should be expended on the recreational fishery on Sprague Lake. The target use for the lake is approximately 16,000 angler trips annually or roughly double the effort that was expended in 2006.

In conclusion, WDFW believes that use of the fishery has declined substantially and should be addressed by the application of rotenone and the re-start of the recreational fishery. The anticipated increase in recreational use justifies the project, and will create large economic and recreational benefits for Sprague Lake and the associated waters.

Management Options

The apparent lack of angler utilization has lead to requests for WDFW to change management practices. In response to these requests, WDFW developed five potential options for enhancing the fishery:

1. Increase the harvest of walleye through adjusted regulations.

2. Increase the trout-stocking program.

3. Enhance habitat to increase juvenile panfish recruitment and reduce predation

4. Mechanical removal of problem fish species

5. Repeat the 1985 lake rehab and re-establish balanced warmwater fish populations and provide an interim trout fishery

Option 1: Increase the harvest of walleye through adjusted regulations.

WDFW has addressed this alternative and developed a regulation for Sprague Lake that was implemented May 1, 2006.

The new regulation sets the minimum size at 12 inches, daily limit 8, with no more than 1 over 22 inches.

This regulation change allows for the angler to harvest 3 more fish daily, and reduces the minimum size from 16 to 12 inches. This change allows 75 percent of the walleye in the lake to be available to angler harvest. WDFW believes this regulation will increase harvest on walleye if angler participation increases. To determine if angler participation will increase from this regulation change, a two-year creel survey is currently monitoring the fishery, and will be completed in the spring of 2008. Annual FWIN surveys will continue to monitor biological changes in the walleye population.

Estimated cost for option 1: $125,000 for 2-year creel survey, $5,000 for annual FWIN monitoring.

Option 2: Increase trout stocking program.

2A: Currently 25,000 to 35,000 rainbow trout are stocked annually in the lake. The intent of the 1985 rotenone treatment was to phase-out trout stocking. However, the trout program proved to be highly productive and popular with anglers. In response to this success, WDFW continued to stock trout. Currently, 25,000 to 35,000 catchable-sized rainbow trout are stocked annually in the lake. The cost associated with stocking large trout precludes WDFW from stocking enough fish to maintain the original trout fishery as seen following the 1985 rotenone project. To create a trout fishery similar in number and catch rates to 1985 to 1989, WDFW would have to stock approximately 90,000, 10 to 12 inch fish, annually. WDFW does not have the space or water in their hatchery facilities to produce the required amount of fish. Fish to be stocked in Sprague Lake would have to be purchased from private vendors.

Estimated annual cost to implement option 2A: 90,000 one pound fish purchased at $1.20 per fish= $108,000

2B: Use net pens to rear trout and release trout into Sprague Lake.

Net pens have worked in many lakes in eastern Washington. The theory behind rearing fish in net pens is that raising them to a larger size will increase survival. There are some issues with using net pens in Sprague Lake that may limit this option's success. First, the fish must be raised over winter in the nets. Because Sprague Lake freezes and has a highly mobile ice pack, it would be difficult to maintain the net pens. Most winters the net pens would be destroyed by mobile ice. Second, all successful net pen programs rely on volunteer labor to complete the maintenance and feeding. Most volunteer groups rely on large numbers of individuals to complete the work (approximately 600 – 750 hrs per project). There may not be enough individuals in the Sprague Lake area to complete the tasks. Third, net pens need to be placed in water at a minimum of 15 feet deep. Water that deep does not exist along the shorelines of Sprague lake. Therefore the net pens would have to be anchored in the middle of the lake. This requires more volunteers to maintain, and increases the nets pens' susceptibility to damage from the winter mobile ice pack. The likelihood of annual trout stocking success on Sprague Lake using net pens is not good.

Estimated cost to implement option 2B:
Start up - 4 net pens at $7500, equipment $20,000= $27,500
Annual – 100,000 fall fry rainbow trout @ $.40 per fish, fish feed $3,500, pen maintenance $10,000 =$53,500

Option 3: Enhance habitat to increase fish recruitment and reduce predation.

Juvenile fish use complex habitat to avoid predation. It is assumed that if increased numbers of juvenile trout and panfish could avoid predation, they would ultimately recruit to the fishery as adults. Adding habitat also only works if the available habitat has been saturated. Sprague Lake is not known to be lacking in complex habitat, and the amount has been sufficient in the past to protect prey species.

The amount of habitat available to fish could always be increased. Christmas trees, orchard cuttings or synthetic structures could be added to increase habitat complexity. The general rule of thumb for increasing complexity enough to positively influence fish populations is that enough habitat needs to be added to the lake to cover approximately 30 percent of the surface acreage. This equates to adding up to 558 acres of complex habitat to Sprague Lake. Adding habitat once will not be successful. Habitat structures will have to be maintained to replace that habitat that has worn out or lost its effectiveness. Supplementing complex habitat is an annual and long-term project.

Estimated cost to implement Option 3 :
Start Up - $2000 per acre, 558 acres=$1,116,000.
Annual cost following full implementation= $20,000.

Option 4: Mechanical removal of problem fish species

There are many case studies in which fish population structures have been favorably modified by using mechanical removal techniques to reduce population densities of unwanted fish species. Most of these mechanical removal projects have been done in scenarios involving smaller lakes or less productive fish species than carp, tench or walleye. This type of management option could be applied to Sprague Lake to reduce the density of walleye so that prey species could recruit at higher levels, but it is likely that the compensatory response from carp and tench would lead to those species filling the void following the removal of the problem walleye. Solving one problem would lead to another that is just as damaging to the recreational fishery. This option would have to be implemented annually to keep control of the unwanted fish populations. Annual implementation would be costly and time consuming, and would likely have to be combined with several other options to produce a better recreational fishery. Mechanical removal does not appear to be a good fishery management option for Sprague Lake.

Estimated cost to implement Option 4:
Start up - $20,000 for equipment
Cost for full one year implementation= $220,000
Annual cost to keep population reduced = $75,000

Option 5: Implement a lake rehabilitation plan similar to the 1985 lake rehabilitation, and re-establish balanced warmwater fish populations and provide an interim trout fishery.

Initiate and implement a lake rehabilitation plan using similar strategies to those employed in 1985. The only difference would be not stocking walleye, or using only triploid walleye to avoid the predation issues currently affecting the fish populations of Sprague Lake.
This option would re-start fish populations, and would likely result in the immediate return of angler interest to Sprague Lake. This type of project is initially costly but is very cost effective over the long term (probably 20 years).

Estimated cost to implement option 5 is:
Lake rehabilitation including rotenone, equipment and personnel – $379,380
Initial Fish stocking – $68,000
Annual fish stocking – $25,000

B. Physical Description of Water Proposed for Rehabilitation

1. WATER**: Sprague Lake**
2. LOCATION: Adams County/Lincoln County
Section 1, 12, Township 20 North, Range 37 East; Section 5, 6, 7, Township 20 North, Range 38 East; Section 21, 28, 29, 31, 32, Township 21 North, Range 38 East
3. SURFACE ACRES: 1860
4. MAX. DEPTH: 20 ft MEAN DEPTH: 11ft
5. VOLUME: 19650 acre feet, 6,402,952,500 lbs. of water
6. OUTLET: Cow Creek
   FLOW (cfs) The outlet to Sprague Lake is Intermittent. The outlet will be dry by first week in October.

7. PUBLIC ACCESS: One WDFW owned access site
8. LAND OWNERSHIP: Public 3% Private 97%;
9. ESTABLISHED RESORTS: 2 resorts with camping and launching facilities.

1. WATER: **Cow Lake**
2. LOCATION: Adams County, Section 16, 20, 21, Township 19 North, Range 37 East
3. SURFACE ACRES: 240
4. MAX. DEPTH: 21 ft MEAN DEPTH: 6 ft
5.VOLUME: 1300 acre feet, 423,605,000 lbs. of water
6.OUTLET: Cow Creek
FLOW (cfs) outlet is intermittent, expected to be dry during treatment
7. PUBLIC ACCESS: Undeveloped Washington Department of Natural Resources owned access
8. LAND OWNERSHIP: Public 1% Private 99%
9. ESTABLISHED RESORTS: None

1. WATER: **Hallin Lake**
2. LOCATION: Adams County, Section 15, 16, Township 19 North, Range 37 East
3. SURFACE ACRES: 33
4. MAX. DEPTH: 14 ft MEAN DEPTH : 2ft
5. VOLUME: 70 acre feet, 22,809,500 lbs. of water
6. OUTLET: Cow creek to Cow Lake approximately 300 yards of channel – probable to be dry during treatment period
FLOW (cfs) If flowing, less than 1cfs
7. PUBLIC ACCESS: Undeveloped Washington Department of Natural Resources owned access
8. LAND OWNERSHIP: Public 5% Private 95%
9. ESTABLISHED RESORTS: None

1. WATER: **Finnell Lake, including Cow Creek from Cow Lake to Sheep Springs**
2. LOCATION: Adams County, Section 36, Township 19 North, Range 36 East, Section 2, Township 18 North, Range 36 East, this takes in the Sheep Springs Dam
3. SURFACE ACRES: 31
4. MAX. DEPTH: 13ft MEAN DEPTH: 6ft
5. VOLUME: 186 acre feet, 60,608,100 lbs. of water
6. OUTLET:
FLOW (cfs) less than 1 cfs or possibly dry - no toxic water will be allowed to go below Sheep Springs Dam.
8. PUBLIC ACCESS: None
9. LAND OWNERSHIP: Public 0% Private 100%
10. ESTABLISHED RESORTS: None

1. WATER: **Dixon's Pond /Negro Creek/ Damage Creek**
2. LOCATION: Lincoln County, Section 21, 22, 23, 24, Township 21 North, Range 38 East; Section 13, 14, 19, 22, 23, 26, 27, 28, 29, 30, Township 21 North, Range 39 East: Damage Creek - Section 12, 13, Township 21 North, Range 39 East
3. SURFACE ACRES: Dixon's Pond – 3.8
4. MAX. DEPTH: Dixon's Pond – 26ft MEAN DEPTH: Dixon's Pond 15ft
5. VOLUME: Dixon's Pond – 56 acre feet, 18,247,600 lbs. of water
6. OUTLET:
FLOW (cfs) **Negro Creek** from outlet of Fishtrap through Dixon's Pond to Sprague Lake is intermittent in portions. The flowing portions will have 1 to 1.5 cfs during time of treatment there is approximately 11 miles of potentially treatable stream. A large portion of this will be dry. There will be 2 or 3 marshy enlargements of the channel that will be treated with rotenone. **Damage Creek** will be dry during time of treatment.

7. PUBLIC ACCESS: None
8. LAND OWNERSHIP: Public 0% Private 100%
9. ESTABLISHED RESORTS: None

1. WATER: **Cow Creek between Sprague Lake and Hallin Lake**
2. LOCATION: Adams County, Section 11, 12, 14, 23, 26, 35, Township 20 North, Range 37 East, Section 2, 10, 11, 15, 16, 20 Township 19 North, Range 37 East
3. SURFACE ACRES: NA
4. MAX. DEPTH: NA
5. VOLUME: OUTLET: FLOW (cfs) Volume is expected to be less than 1.5 cfs – flow is intermittent between Sprague Lake and Cow Lake. Cow Creek disappears and re-emerges in several spots along the 6 mile stretch between the lakes. The outlet from Sprague Lake will be dry during the time of treatment. The Creek reemerges approximately 1 mile below Sprague Lake and will be treated in the areas where it runs above ground.
8. PUBLIC ACCESS: None
9. LAND OWNERSHIP: Public 0% Private 100%
10. ESTABLISHED RESORTS: None

1. WATER: **Lugenbeal Creek**
2. LOCATION: Adams County, Section 1, 11, 12, 14, 15, Township 19 North, Range 37 East, if treated further downstream, include: Section 29, 30, 31 Township 19 North, Range 37 East, Section 35, 36, Township 19 North, Range 36 East
3. SURFACE ACRES: 5
4. MAX. DEPTH: 10ft
5. VOLUME: OUTLET: FLOW (cfs) volume is expected to be less than 1 cfs
8. PUBLIC ACCESS: None
9. LAND OWNERSHIP: Public 0% Private 100%
10. ESTABLISHED RESORTS: None

C. Proposed Management Actions

1. WATER: **Sprague Lake**
2. TARGET SPECIES: common carp, tench, walleye
3. DATE LAST REHABED: Oct 3, 1985
4. PROPOSED TREATMENT DATE: Oct 8-10, 2007
5. REPLANTING DATE: Spring 2008.
6. SPECIES: rainbow trout, Lahontan cutthroat, largemouth bass, bluegill, black crappie, white crappie, channel catfish, tiger musky
7. STOCKING: approximately 500,000 fish total
8. PROPOSED TOXICANT: Rotenone, powder and liquid CONCENTRATION: 2 ppm
AMOUNT (ROTENONE AT 5% ACT. INGRED): **102,870 lbs powder**, **396 gallons liquid**

1. WATER: **Cow Lake**
2. TARGET SPECIES: common carp, tench, walleye
3. DATE LAST REHABED: Oct 3, 1985
4. PROPOSED TREATMENT DATE: Oct 3-5, 2007
5. REPLANTING DATE: Spring 2008.
6. SPECIES: rainbow trout
7. STOCKING: approximately 35,000 rainbow trout spring fry
8. PROPOSED TOXICANT: Rotenone, powder and liquid CONCENTRATION: 3ppm
AMOUNT (ROTENONE AT 5% ACT. INGRED):

1. WATER: **Hallin Lake**
2. TARGET SPECIES: common carp, tench, walleye
3. DATE LAST REHABED: Oct 3, 1985
4. PROPOSED TREATMENT DATE: Oct 3-5, 2007
5. REPLANTING DATE: Spring 2008.
6. SPECIES:
7. STOCKING:
8. PROPOSED TOXICANT: Rotenone, powder and liquid CONCENTRATION:
AMOUNT (ROTENONE AT 5% ACT. INGRED): Powder 7850 lbs, liquid 210 gallons

1. WATER: **Finnell Lake, including Cow Creek from Cow Lake to Sheep Springs**
2. TARGET SPECIES: common carp, tench, walleye
3. DATE LAST REHABED: Oct 3, 1985
4. PROPOSED TREATMENT DATE: Oct 3-5, 2007
5. REPLANTING DATE: Spring 2008.
6. SPECIES: NA
7. STOCKING: No restocking
8. PROPOSED TOXICANT: Rotenone, powder and liquid CONCENTRATION: 2ppm
AMOUNT (ROTENONE AT 5% ACT. INGRED): Powder 1000 lbs

1. WATER: **Dixon's Pond /Negro Creek/ Damage Creek**
2. TARGET SPECIES: common carp, tench, walleye
3. DATE LAST REHABED: Oct 3, 1985
4. PROPOSED TREATMENT DATE: Oct 1-3, 2007
5. REPLANTING DATE: Spring 2008.
6. SPECIES: rainbow trout
7. STOCKING: 2000 rainbow spring fry
8. PROPOSED TOXICANT: Rotenone, powder and liquid CONCENTRATION: 3ppm
AMOUNT (ROTENONE AT 5% ACT. INGRED): Powder 400 lbs, Liquid 10 gallons – liquid to be used on Negro Creek and adjacent marsh. Accurate amounts to be applied to achieve prescribed concentrations will be determined based on stream flow within 2 weeks prior to treatment.

1. WATER: **Cow Creek between Sprague Lake and Hallin Lake**
2. TARGET SPECIES: common carp, tench, walleye
3. DATE LAST REHABED: Oct 3, 1985
4. PROPOSED TREATMENT DATE: Oct 3-5 and Oct. 8-10, 2007
5. REPLANTING DATE: Spring 2008.
6. SPECIES: NA
7. STOCKING: NA
8. PROPOSED TOXICANT: Rotenone, powder and liquid CONCENTRATION: 3ppm -
AMOUNT (ROTENONE AT 5% ACT. INGRED): Liquid 20 gallons - Accurate amounts to be applied to achieve prescribed concentrations will be determined based on stream flow within 2 weeks prior to treatment.

1. WATER: **Lugenbeal Creek**
2. TARGET SPECIES: common carp, tench, walleye
3. DATE LAST REHABED: Oct 3, 1985
4. PROPOSED TREATMENT DATE: Oct 3-5, 2007
5. REPLANTING DATE: Spring 2008.
6. SPECIES: NA
7. STOCKING: NA
8. PROPOSED TOXICANT: Rotenone, powder (sand mixture) and liquid
CONCENTRATION: 3ppm

AMOUNT (ROTENONE AT 5% ACT. INGRED): Liquid 15 gallons, Sand Mixture 20 lbs – Accurate amounts to be applied to achieve prescribed concentrations will be determined based on stream flow within 2 weeks prior to treatment.

METHOD OF APPLICATION: For all bodies of water listed above one or more of these methods of application will be employed: pumper boats – slurry and spray; ATV with sprayer; small boat with small sprayer, canoe with small sprayer, backpack sprayers, aerial- fixed wing or helicopter.

CREW DESCRIPTION:

October 1-6: Leader(s): Chris Donley, Jeff Korth Personnel; 6 to 8
October 8-12: Leader(s): Chris Donley, Jeff Korth Personnel; 35

II. PURPOSE:

Sprague Lake has been managed as a warmwater/trout fishery since 1985. The success of the 1985 rotenone treatment would indicate that a repeat of that project would increase the productivity of the recreational fishery. A complete rehabilitation of the Sprague Lake system is the most cost effective and potentially successful plan. The current fish population is not generating angler participation; the intent is to create a panfish/ largemouth bass with a secondary trout fishery that is attractive to recreational anglers.

III. INTENDED OUTCOME/MEASURE OF SUCCESS:

WDFW intends to restore Sprague Lake to a productive recreational fishery. In 2006, angler use of the fishery was 4.7 angler days per surface acre per year (AD/SA/YR). The goal of the project is to increase angler participation to a minimum of 8 AD/SA/YR over the life of the project. The intended life of the project is 20 years.

IV. RESOURCE IMPACTS:

1. Target species: common carp, tench and walleye

2. District and Regional Habitat, Wildlife and Non-Game biologists have been apprised of our rehabilitation plans. No objections were raised, and only cautionary concerns were expressed on the potential impacts to non-targeted species.

According to Bradbury (1986), the effects of rotenone on benthos are variable, depending on the concentrations and species. Crustaceans are most tolerant while the smaller insects are most affected. Immediate reduction of the population average 25%, and survival doubles when access to bottom sediments exists. Benthic communities generally recover to at least pretreatment levels within two months. Zooplankton is more severely impacted, and communities generally take two to twelve months to fully recover. While relatively tolerant of even heavy doses of rotenone, amphibians (especially larval) are at risk, and herptiles are affected somewhat less so.

3. Participation in the fishery should exceed that currently found for existing fisheries. The water in the lake is used for both irrigation and recreation. Dead fish along the shoreline may be offensive to the property owners for a short time after treatment.

4. Observations by local WDFW biologists indicate the lake is frequently used by osprey, bald eagles, white pelicans and numerous species of waterfowl. Restocking of the lake post-rehab with sufficient fingerling rainbow should provide an uninterrupted food source for the

piscivorous birds. The reduction in carp numbers should increase habitat quality for resident and migratory waterfowl.

V. MITIGATING FOR ADVERSE IMPACTS:

1.Trout, panfish and bass survival and growth will be greatly enhanced. No removal of dead fish is planned as the nutrient base contained therein is best returned to the lake.

2. Disturbance of waterfowl during treatment or by the anticipated fishery will be offset by the increased habitat quality for resident and migratory waterfowl. There is no known chronic risk to any avian species at the levels of rotenone to be applied to the listed waters.

3. There is no known acute or chronic risk to any mammals or birds, wild or domestic, at the levels of rotenone to be applied to the listed waters.

4. The landowners will be notified of the rehabilitation and consequent exposure of livestock to rotenone. There is no known risk to livestock, and there are no label restrictions regarding application of waters used to water livestock.

5. Treatment will be conducted when the irrigation season is over and water is no longer needed.

7. Protective gear for the eyes, face, hands and clothes will be supplied on-site for all purveyors of rotenone.

8. The lake will be closed to fishing, and posted according to Department of Ecology guidelines to notify the public of the treatment and discourage the public from possessing or consuming dead fish.

VI. RECREATIONAL IMPACT: also see I.A., II and III

Recreational angling opportunity will be increased if the undesirable species are removed from Sprague Lake. The level of participation has dwindled to 4.7 AD/SA/YR this trend is likely to continue if no action is taken. Given the success of the planned management action, as many as 60,000 fishing days are expected to be expended on the Sprague Lake recreational fishery.

VII. ECONOMIC IMPACTS:

Rehabilitation would restore the fishery and associated economic activity. An estimated minimum of 25,000 or more trips will be made to Sprague Lake as a result of the proposed management action, with an economic impact totaling $790,000 per year (2007 dollars; based on *USFWS 2001 Survey of Fishing, Hunting and Wildlife-Associated Recreation* estimate of $31.50 per trip).

The cost of treatment will be approximately $447,380, including restocking costs. However, the subsequent boost to statewide, local economies, and potential increases in fishing license sales will more than offset that cost within two years after treatment.

VIII. RELATED MANAGEMENT ACTION:

Sprague Lake Replanting Plan

SPECIES	1986	2008	fish/surface acre
Bluegill Adults	1,055	1,000	.53
Bluegill Yearlings	15,642	15,000	8.07
Black Crappie Adults	0	1,000	.53
Black Crappie Yearlings	0	15,000	8.07
White Crappie Adults	0	1,000	.53
Largemouth Bass Adults	1,127	300	.16
Largemouth Sub-adults	1,750	2,000	1.08
Largemouth Bass Yearlings	16,430	10,000	5.38
Channel Catfish Yearlings	4,344	10,000	5.4
Tiger Muskie Fingerlings	0	900	
Rainbow Fry	75,460	400,000	
Rainbow Legals	94,198	100,000	
Lahontan Cutthroat Fry	100,162	100,000	53.8
White Sturgeon Yearlings	0	25	.01
Smallmouth Bass Adults	222	0	
Walleye Adults	426	0	
Walleye fry	700,000	0	

The approach to restocking Sprague Lake will be similar to 1985, except there will be no smallmouth or walleye restocked post rehabilitation. WDFW will reserve walleye for a later date, to be used if the proposed predator population cannot control the panfish populations. The only new species to be added will be tiger muskie. Tiger muskies will planted post the establishment of the other warmwater species as an apex predator that will assist in reducing overall densities of panfish and unwanted species.

IX. PUBLIC CONTACT:

Public concern over the decreasing use and quality of the Sprague Lake fishery ultimately instigated the project. There were numerous small meetings in the past 2 years with Sprague Lake Users Group, Ducks Unlimited and The Inland Empire Flyfishing Club. Their efforts to get WDFW involved in correcting the fishery moved us more rapidly in the direction of rehabilitating Sprague Lake.

WDFW formed a formal stakeholders group to discuss fishery management options for Sprague Lake. This group met twice in the past two years. The first meeting occurred May 13th, 2006. The meeting was held to review with the stakeholders all of the possible management options that could be undertaken to improve the fishery at Sprague lake. Additionally WDFW committed to conducting a creel survey to determine angler use and compare it to historical angler use.

The second meeting convened on March 10th, 2007, WDFW presented the findings of the creel survey and it was discussed with the stakeholders that angler use was reduced significantly from the late 1980's and early 1990's. It was discussed and decided amongst the stakeholders that a

steps in fish management should be take to alter the existing fish population in Sprague Lake. At that time, WDFW recommended that the lake be treated with rotenone and the fishery re-started to provide for greater recreational value. It was agreed upon by the stakeholders group that this was a valid approach to improving the fishery. There was some minor opposition to this proposal but the majority of stakeholders saw that the rotenone treatment approach would increase recreational activity and economic productivity.

On March 3, 2007 Chris Donley gave a presentation to the Inland Fish Policy Advisory Group (IFPAG) in Olympia Washington. The IFPAG was presented with the proposal to treat Sprague Lake with rotenone. There was general agreement that the proposal was acceptable and a recommendation was mad to the Director of WDFW to pursue implementation of this project.

Chris Donley, Jeff Korth and Steve Jackson visited multiple walleye and bass clubs statewide to discuss the proposal to treat Sprague Lake with rotenone. There were individuals that were opposed to the treatment, but no club to this date has expressed a formal dissenting opinion towards the project. Clubs visited included Walleyes Unlimited, Western Washington Walleye Club, Spokane Walleye Club, Spokane Bass Club, Inland Empire bass club and others.

Public meetings were held during July 2007 in Ephrata, Spokane, Prosser, and Olympia to explain DFW's 2007-08 rehabilitation proposals, assess public opinion, and address local concerns. The announcement was provided statewide and to area papers and radio stations and mailed to landowners and residents near the lakes.

The public meeting in Ephrata was held at 7 p.m. on July 11 at the WDFW North Central Region Office. Four people attended, including a representative of the WA Dept of Ecology. Most questions concerned the rehabilitation program in general. The public participants were primarily interested in the Chopaka and Sprague lake treatments, and all were in favor.

The public meeting in Spokane was held at 6 p.m. on July 12 at the WDFW Eastern Region Office. Twenty-five people attended, most to discuss the Sprague Lake proposal, and the overall meeting tone was positive. No questions concerning Chopaka Lake arose.

The public meeting in Prosser was held at 7 p.m. July 12 at the Benton Rural Electric Association building. Two people attended. The public participants were primarily interested in the Byron and Sprague lake treatments, and all were in favor. No questions concerning Chopaka Lake arose.

The public meeting in Olympia was held at 7 pm on July 10, 2007 at the Dept of Natural Resources Building. No one from the public attended.