

**PRE-REHABILITATION PLAN
East and West Sage Lakes, Grant County**

I. PROPOSAL

A. Justification for Proposed Rehabilitation

1&2.) East and West Sage Lakes are located in the Seep Lakes Unit of the Columbia Basin Wildlife Area and are managed as year-round trout fisheries. These lakes are managed under statewide regulations for daily bag and minimum size limits. The Sage Lakes are stocked with rainbow trout fingerlings in fall. When competing and/or predatory fish species are controlled, these lakes are capable of producing an excellent trout fishery during the late winter through early spring for yearling trout averaging 12 inches and carryovers up to and exceeding 16 inches. Recently, carp have become problematic and their numbers have grown to a point where trout fingerling growth and survival have declined, and angler use has diminished. The presence of carp in these lakes could be the result of an illegal introduction or the survival of carp we attempted to eradicate in 1996. Both lakes are walk-in fisheries and are noted for the quality fishing experience and solitude they provide.

3.) Primary management of this water is not for waterfowl production, although rehabilitations tend to promote waterfowl use.

4.) The Sage Lakes have undergone one rehabilitation in 1996 in order to remove carp. WDFW policy states that lake rehabilitation is an option for eliminating illegally planted fish.

B. Physical Description of Waters Proposed for Rehabilitation

- 1.) WATER: Sage Lakes, East and West
- 2.) LOCATION: Sec 28, T17N R29E Grant Co.
- 3.) SURFACE ACRES: 15 (both lakes)
- 4.) AVERAGE DEPTH: 6.6 feet
- 5.) WATER VOLUME: 100 acre feet (271,629,393 lbs)
- 6.) INLET: none; OUTLET: none
- 7.) STREAM: MILES - NA (Flow (cfs): NA)
- 8.) PUBLIC ACCESS: Entire Lake
- 9.) LAND OWNERSHIP: Public 100%; Private 0 %
- 10.) ESTABLISHED RESORTS: None

C. Proposed Management Actions

- 1.) WATER: Sage Lakes, East and West
- 2.) TARGET SPECIES: Carp
- 3.) DATE LAST REHABED: October 1996
- 4.) PROPOSED TREATMENT DATE: October 2019
- 5.) REPLANTING DATE: February-May 2020

- 6.) SPECIES: Rainbow Trout
- 7.) CATCHABLES: ≤ 1500 FINGERLINGS: $\leq 3,000$ (both lakes)
- 8.) PROPOSED TOXICANT: Rotenone, powder and liquid concentration: ≤ 4.0 ppm
- 9.) AMOUNT (ROTENONE AT 5% ACT. INGRED): ≤ 1088 lbs powder and ≤ 10 gal liquid
- 10.) METHOD OF APPLICATION: pumper boat and airboat/ATV
- 11.) CREW DESCRIPTION: Leader(s): Mike Schmuck + Personnel 1-2

TOTAL PROPOSED TOXICANT: Rotenone Concentration: ≤ 4.0 ppm
AMOUNT (ROTENONE AT 5% ACT. INGRED): $\leq 1,088$ lbs powder and ≤ 10 gal liquid.

II. PURPOSE:

Sage Lakes, East and West are located in the Seep Lakes Unit of the Columbia Basin Wildlife Area and have historically been popular walk-in trout lakes. These lakes are open year-round and are capable of producing good catches of trout in the 12-14 inch range. Currently, the Sage Lakes fish community is comprised of rainbow trout and carp. Carp uproot aquatic vegetation and increase turbidity which reduces water clarity and primary productivity. This, in turn, reduces available food for aquatic invertebrates which are a primary food resource for juvenile trout. Consequently, rainbow trout fingerling growth and survival has been negatively affected to a point at which angler catch rates and effort have declined.

III. INTENDED OUTCOME/MEASURE OF SUCCESS:

Our best measure of success will be increased angler participation as well as improved trout growth and fingerling survival. Given a reasonable chance of eliminating nuisance fish species and provided illegal plants are curtailed, the beneficial effects could be everlasting. If the nuisance fish species are not eliminated, or illegal plants continue, the trout fishery will still benefit for 4-6 years. Also see reasons listed under Resource, Recreational and Economic Impacts. To abandon these lakes as trout fisheries is to invite other incursions across the state.

IV. RESOURCE IMPACTS:

1. The population of the target species (Carp) will be negatively impacted.
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 populations averages 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. Almost no chance of eliminating an entire population exists.

Surveys conducted two months after the rehabilitation of similar lakes in the Columbia Basin revealed that bosminids and daphnia were already flourishing in the lake. The excellent survival and growth of the rainbow trout stock at that time implied the recovery of the zooplankton and benthic communities so important to the production of trout in these lakes.

3. Loss of the year 2020 fishery may ensue if catchable sized trout are unavailable for stocking. The meager warmwater fishery will be eliminated. The lakes will be closed to angling, and other recreational uses such as hunting will be curtailed during the planned period of treatment. These waters are not a source of irrigation or drinking water for human use.

4. Professional biologists and other naturalists have visited this site frequently over the past 40 years. To our knowledge, no endemic, rare, threatened or otherwise listed species will be significantly impacted by the rehabilitation.

V. MITIGATING FOR ADVERSE IMPACTS:

1. Catchable sized (2.5 fpp) rainbow trout are available for stocking in late February into Sage Lakes, so no loss of recreational fishing time will occur in 2020. The fingerling-based fishery will again be available by the spring of 2020. Trout survival and growth will be greatly enhanced. Participation in the trout fisheries will exceed that currently found for existing fisheries.

No removal of dead fish is planned as the nutrient base contained therein is best returned to the lake. Disturbance of waterfowl during treatment or by the anticipated fishery will be offset by increased food availability as the uncontrollable number of nuisance fish species are eliminated in favor of an easily balanced population of rainbow trout. It is in the interest of all species, managed or otherwise, to refrain from over-taxing the food-base.

2. No endemic, rare, threatened or otherwise listed species are known to inhabit this area.

3. Protective wear for the eyes, face and hands will be supplied on-site for all rotenone applicators. Superior techniques and equipment not available during previous rehabilitation attempts will be employed during this rehabilitation, further increasing the chances for success.

4. All landowners will be notified of the treatment, and access to the lakes will be posted during treatment according to Department of Ecology NPDES guidelines. Water withdrawals, swimming, possessing or consuming dead fish will cease during the period of toxicity.

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

Recreational angling opportunity will increase if nuisance fish species are removed from these waters and fingerling trout stocking programs are reinstated. Angler success should reach ≥ 3.0 trout harvested per angler in early spring. Yearling trout should average about 12 inches. Carryovers should be expected to be about five percent or more of the catch, and average 14+ inches for 2-year-old fish.

VII. ECONOMIC IMPACTS:

Rehabilitation and fingerling stocking would bring back the fishery and associated economic activity. An estimated 120 trips per season made to Sage Lakes as a result of the proposed management action would result in an economic impact totaling \$4,500 per year (1991 dollars; based WDW estimate of \$37.90 per trip). If used to its full potential, the annual value could be over \$13,500 to the state's economy. The fishery as it now exists generates few trips and likely represents no significant economic benefit to local economies.

The total annual costs to Columbia Basin Hatchery to plant these lakes with 3,000 fingerlings is roughly \$750. The cost of stocking with 1500 catchable-sized trout for the first season after the rehabilitation is \$2,100. The rehabilitation will cost the Department about \$5,000 (including costs of rotenone, time and travel). If the lake is treated every five years, on average, the total five-year program would cost approximately \$10,850.

The cost of stocking with catchable-sized trout, necessary to compete in a mixed species water, for the entire five year program is \$17,500+. Raising catchable-sized fish in the hatchery requires more space and water than raising fingerlings resulting in fewer fish raised overall at the hatchery, thus a catchable trout program would be at the expense of other fisheries. In addition, stocking catchable-sized trout does not produce as desirable a fishery in the angler's eye as fingerling stocking programs.

Estimates for the cost of the enforcement action necessary to curtail the activity of the individuals responsible are not available. However, this cost might be looked upon as a statewide expenditure since some preventive benefit would certainly occur as perpetrators find out the Department takes illegal transport and planting of fish very seriously.

VIII. RELATED MANAGEMENT ACTION:

Sage Lakes will be stocked with $\leq 3,000$ rainbow trout fingerlings at 100 fish/lb. Catchable rainbow trout (≤ 2.5 fpp) will be available for stocking in early spring in order to provide no break in fishing opportunity. Sage Lakes will receive approximately 1,500 catchable rainbow trout in late February. Creel checks will be done as opportunity allows and population surveys will occur as time is available.

IX. PUBLIC CONTACT:

A public meeting to discuss the proposed rehabilitation of Sage Lakes will be held in Ephrata at 6:30PM on May 23rd, 2019 and in Olympia at 6:30PM on May 21st. The purpose of the public meetings is to inform the public about this project, assess public opinion, and address any concerns. The meeting announcement was provided statewide and to local newspapers and radio stations. All opinions and comments will be thoroughly reviewed and taken into consideration of the final decision to rehabilitate Sage Lakes.

Initiated by: Mike Schmuck
District 5 Fish Biologist
Grant and Adams Counties
Region 2 Fish Program