PRE-REHABILITATION PLAN
Martha Lake

I. PROPOSAL

A. Justification for Proposed Rehabilitation

Martha Lake, just east of George, Washington, has been a popular trout fisheries since the 1960's. Recent surveys indicate heavy statewide use on opening day followed by local angling pressure throughout the season. Anglers caught 4.8 fish/man averaging 11 inches on April's opening day during the early 1970's and 3.8 fish/man averaging 9 inches during the good weather years when Martha Lake was scheduled for the March 1st opener during the 1980's.

Angling statistics during the 1990's have been typical of trout lakes heavily infested with competing species. Catch rates have fallen to 1.5 fish/man despite the introduction of catchables on two of those six years. Initially, the yearling size of 11.7 inches was above average and carryover rates were low, both indicating poor fry survival. During 1993, yearling size fell to 9.4 inches and two carryover age classes averaged 48% of the catch. High carryover rates in small, opening day managed lakes usually occurs due to lack of angling interest the previous year. By 1994, yearlings averaged only 7.6 inches and carryovers were a thin 12.7 inches. Carryover rates remained high (55%), and the additional competition due to uncaught trout may have resulted in diminished yearling and carryover growth. Only the catchables planted for the 1995 opener showed up in the catch.

Definitive numbers were not available for a comparison of recreation at Martha Lake. In its prime on opening day, the shoreline of Martha Lake was congested with anglers and a dozen or more boats plied its waters. Martha Lake is extremely accessible and easy to locate, making it a popular destination for our elder anglers and out-of-town visitors. Currently, a few dozen anglers visit the lake on the opener. Thereafter, an angler is rarely seen.

Martha Lake has been rehabilitated four times, and complete kills were obtained in 1967 and 1977. Pumpkinseed sunfish have been targeted twice during the 1980's, and remain the source of competition resulting in poor trout fry survival. Underground contamination has been suggested, and heavy seeps from an adjacent canal are suspected of harboring remnants of the target population. Illegal introductions of crappie before the 1977 treatment and yellow perch before the 1989 treatment are also known. Proposed WDFW policy states that lake rehabilitation is an option for eliminating illegally planted fish.

B. Physical Description of Water Proposed for Rehabilitation

l. WATER: **Martha Lake**
2. LOCATION: Sec 32 T19N R24E Grant Co.
3. SURFACE ACRES: 20.2 MAX. DEPTH:
4. VOLUME: 161.6 acft; 439,252,170 lbs of H2O
5. INLET STREAM: Springs
6. OUTLET STREAM: none

7. PUBLIC ACCESS: Access site along entire south end of lake
8. LAND OWNERSHIP: Public 100%
9. ESTABLISHED RESORTS: None

C. <u>Proposed Management Actions</u>

1. WATER: **Martha Lake**
2. TARGET SPECIES: pumpkinseed sunfish
3. DATE LAST REHABED: April 10-11, 2000
4. PROPOSED TREATMENT DATE: September - October 2010
5. REPLANTING DATE: spring 2011
6. SPECIES: rainbow trout
7. CATCHABLES: 5-7,000 if available FINGERLINGS: 6-8,000
8. PROPOSED TOXICANT: Powered and/or Liquid Rotenone
9. CONCENTRATION: ≤ 2.5 ppm
10. AMOUNT (ROTENONE AT 5% ACT. INGRED): 1,099 lbs (powder) and 30 gal (liquid)
11. METHOD OF APPLICATION: Boat
12. CREW DESCRIPTION: Leader(s) Chad Jackson + 3-5 crew

Total Toxicant (ROTENONE AT 5% ACT. INGRED) = 1,099 lbs and 30 gal.

II. PURPOSE:
Martha Lake has a long management history as a production trout fishery. Currently, predatory and competing fish species are preventing Martha Lake from being a productive trout fishery. Rehabilitation will eliminate, or drastically reduce, predatory and competing fish species and allow trout fisheries to flourish.

III. INTENDED OUTCOME/MEASURE OF SUCCESS:
If predatory and competing fish species are eliminated and remain absent, good trout fishing should be everlasting at Martha Lake. Angler participation and catch rates during opening day should be high. If predatory and/or competing fish species are illegally re-established or the rehabilitation doesn't completely eliminate target species, trout fish at Martha Lake should be good for a time period between 5-7 years.

IV. RESOURCE IMPACTS:

1. The populations of the target species will be severely and negatively impacted. All exotic fish species.

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

3. 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.

4. Loss of the year 2000 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, boating, and swimming will be curtailed during the planned period of treatment. These waters are not a source of potable water for humans. A portion of the waters treated are sources of drinking water for livestock. Levels of rotenone used in the treatment will be too low to adversely affect the livestock.

5. 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 any be impacted by the rehabilitation.

V. MITIGATING FOR ADVERSE IMPACTS:

1. Provided catchable-sized fish are available the following spring, no loss of recreational fishing time will occur. The fingerling-based fishery will again be available by the spring of 2001. Trout survival and growth will be greatly enhanced. Participation in the trout fisheries will exceed that currently found for existing fisheries. Sizeable or desirable gamefish present, such as bluegill and largemouth bass, will be saved where possible for replanting in other area lakes. The 1999 season may also be extended to provide greater opportunity for harvest of the target species.

2. 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 numbers of spiny-rayed fishes are eliminated in favor of easily balanced populations of trout. It is in the interest of all species, managed or otherwise, to refrain from over-taxing the food-base.

3. The outlet stream of Thread Lake runs at least two miles before entering Owl Lake. Downstream resources will be protected by the distance and volume of untreated water between the Thread Lake and Owl Lake. The concentrations at which the lakes will be treated will not reach Owl Lake, and the small amounts of rotenone which might enter Owl Lake will have little impact on its fishes.

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

5. Protective wear for the eyes, face and hands will be available for all purveyors of rotenone.

6. Lakes will be 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 PROPOSAL I.A.

Recreational opportunity will be increased. When free of competing species, these lakes are conservatively estimated to host 250 angler trips per month during the usual angling season, accounting for at least 3,000 recreation-days per year. The lakes could conservatively sustain five times that amount of pressure at the anticipated levels of success.

Angler success should reach three to five fish per trip. Yearling trout should average about 11 inches. Carryovers should be expected to be about 10% of the catch and average 14 inches for 2-year-olds and 16 inches for 3-year-olds.

VII. ECONOMIC IMPACTS:

An estimated 3-5,000 angler trips a year will be made to Martha Lake as a result of proposed rehabilitation. Many of these trips occur on opening day and following month. Economic impact of the trout fishery (1991 dollars, based on WDFW estimate of $37.90 per trip) ranges from $113,700 to $189,500 annually. Total cost to rehabilitate Martha Lake is about $30,000 (including rotenone cost, time, and per diem). Total cost to stock with trout fry is less than $2,000. Even if the rehabilitation only lasted 5 years, the total economic impact ($568,500-$947,500) is significantly higher than the cost to plant the lake with fry during that time period ($10,000).

VIII. RELATED MANAGEMENT ACTION:

Increased penalties and enforcement activities are desirable if WDFW is ever going to dissuade illegal stocking of state managed waters. Educating the public about the costs in Department dollars and time with emphasis on what WDFW might be able to accomplish with those resources would be a worthwhile activity for O&E. This may result in stemming recruitment to this ill advised group and turning local opinion against the offenders.

IX. PUBLIC CONTACT:

A public hearing will be held in July 28th, 2010 to explain Region Two 2010 rehabilitation proposals, assess public opinion, and address local concerns. The announcement will be provided to area papers and radio stations at least a week in advance of the meeting.

Initiated by: Region Two Fisheries Management