PRE-REHABILITATION PLAN
Upper, Lower, and West Caliche Lakes

I. PROPOSAL

A. Justification for Proposed Rehabilitation

The persistence of sunfish (and perhaps carp) in the Caliche Lakes has had a detrimental effect on the fishery. Rehabilitated in 1983, catch rates reached 4.9 fish per angler two years in a row in this 5 fish limit water before carp again flourished. Upper Caliche was again rehabilitated in 1988 and 1992. Lower Caliche and the drainage to the west have remained carp infested.

These March 1 opening day waters are very popular because of their location near several communities and easy accessibility. Catchables are usually planted whenever problems occur since large crowds are expected regardless of mediocre angling the previous year. Opening day 1992 on Upper Caliche Lake provided an estimated 353 angler trips and 1,413 fish caught. By contrast, neighboring Lower Caliche, no longer planted and abandoned for the near future, had about 16 trips with 1 trout caught. The addition of Lower Caliche Lake to the fishery should provide roughly a third again of the current recreation available for this system.

B. Physical Description of Water Proposed for Rehabilitation

l. WATER: **Upper Caliche Lake**
2. LOCATION: Sec 22, 23 T18N R23E Grant Co.
3. SURFACE ACRES: 13 MAX. DEPTH: 17 ft
4. VOLUME: 221 acft; 250,069,250 lbs of H2O
5. INLET STREAM: Springs
6. OUTLET STREAM: Drains to Lower Caliche Lake
7. PUBLIC ACCESS: Access site along entire west side of lake
8. LAND OWNERSHIP: Public 100%
9. ESTABLISHED RESORTS: None

l. WATER: **Lower Caliche Lake**
2. LOCATION: Sec 22, 27 T18N R23E Grant Co.
3. SURFACE ACRES: 11.7 MAX. DEPTH: 17 ft
4. VOLUME: 49.9 acft; 135,553,841 lbs of H2O
5. INLET STREAM: From Upper Caliche Lake
6. OUTLET STREAM: Drains to West Caliche Lake
7. PUBLIC ACCESS: Access site along entire west side of lake
8. LAND OWNERSHIP: Public ~99% and ~1% Private
9. ESTABLISHED RESORTS: None

l. WATER: **West Caliche Lake and Drainage**
2. LOCATION: Sec 27 T18N R23E Grant Co.
3. SURFACE ACRES: 3.7 MAX. DEPTH: 5 ft
4. VOLUME: 9.2 acft; 24,952,562 lbs of H2O

5. INLET STREAM: From Lower Caliche
6. OUTLET STREAM: none
7. PUBLIC ACCESS: Access site along entire south end of lake
8. LAND OWNERSHIP: Public ~99% and ~1% Private
9. ESTABLISHED RESORTS: None

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

1. WATER: **Upper Caliche Lake**
2. TARGET SPECIES: pumpkinseed sunfish
3. DATE LAST REHABED: Fall 1993
4. PROPOSED TREATMENT DATE: October 2010
5. REPLANTING DATE: spring 2011
6. SPECIES: rainbow trout
7. CATCHABLES: 5,000 if available FINGERLINGS: 5-6,000
8. PROPOSED TOXICANT: Powered and/or Liquid Rotenone
9. CONCENTRATION: ≤ 2.5 ppm
10. AMOUNT (ROTENONE AT 5% ACT. INGRED): 1,503 lbs (powder) and 70 gal (liquid)
11. METHOD OF APPLICATION: Boat
12. CREW DESCRIPTION: Leader(s) Chad Jackson + 3-5 crew

1. WATER: **Lower Caliche Lake**
2. TARGET SPECIES: pumpkinseed sunfish
3. DATE LAST REHABED: Fall 1993
4. PROPOSED TREATMENT DATE: October 2010
5. REPLANTING DATE: spring 2011
6. SPECIES: rainbow trout
7. CATCHABLES: 2-3,000 if available FINGERLINGS: 2-3,000
8. PROPOSED TOXICANT: Powered and/or Liquid Rotenone
9. CONCENTRATION: ≤ 2.5 ppm
10. AMOUNT (ROTENONE AT 5% ACT. INGRED): 339 lbs (powder) and 30 gal (liquid)
11. METHOD OF APPLICATION: Boat
12. CREW DESCRIPTION: Leader(s) Chad Jackson + 3-5 crew

1. WATER: **West Caliche Lake and Drainage**
2. TARGET SPECIES: pumpkinseed sunfish
3. DATE LAST REHABED: Fall 1993
4. PROPOSED TREATMENT DATE: October 2010
5. REPLANTING DATE: spring 2011
6. SPECIES: rainbow trout
7. CATCHABLES: None FINGERLINGS: None
8. PROPOSED TOXICANT: Powered and/or Liquid Rotenone
9. CONCENTRATION: ≤ 2.0 ppm
10. AMOUNT (ROTENONE AT 5% ACT. INGRED): None. West Caliche and drainage will

serve as a dilution/detoxification site for treated water from Upper and Lower Caliche lakes.
11. METHOD OF APPLICATION: Boat
12. CREW DESCRIPTION: Leader(s) Chad Jackson + 3-5 crew

Total Toxicant (ROTENONE AT 5% ACT. INGRED) = 1,842 lbs and 100 gal.

II. PURPOSE:

The Caliche lakes were once connected to the irrigation canals, whereby carp had established their minions in this water. Extensive marshes, springs and problems with isolation make this a difficult rehabilitation. The Caliche lakes system has never been completely treated. The treatment of the entire outflow and associated marshes was determined to be feasible. With the rehabilitation of Upper Caliche completed the fall of 1992, rehabilitation of the downstream resources will further insure that carp are extricated from this system. Treatment will occur in two stages, at least two weeks apart, to assure ourselves of a complete kill.

III. INTENDED OUTCOME/MEASURE OF SUCCESS:

This effort intends the restoration of the fry managed trout fishery for recreational as well as economic reasons. Annual creel surveys on opening day will be the measure of success. The complete elimination of carp from a system of this type is a challenge and certainly no certainty. Without a complete kill we can expect 3 - 5 years of good to excellant angling before rehabilitation is again necessary.

IV. RESOURCE IMPACTS:

1. The populations of the target species will be severely and negatively impacted. All exotic 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. Trout fry survival and growth will be greatly enhanced, and future trout fisheries will attain their previous status. This outcome more than mitigates the small loss of hunting or other human recreation during the planned time of rehabilitation. No removal of dead fish is planned as the nutrient base contained therein is best returned to the lake.

2. No downstream resources exist.

3. No endemic, rare, threatened or otherwise listed species are known from this area.

4. Protective wear for the eyes, face and hands will be supplied on-site for all purveyors of rotenone.

5. Martha Lake will be posted to notify the public of the treatment and discourage the public from possessing or consuming dead fish. Access to the lake will be closed by a gate to limit public contact with the application

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 the Caliche Lake chain 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 the Caliche Lakes 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:

If available, catchable trout will be planted prior to opening day. The complete elimination of sunfish from this part of the system is essential to maintaining the resource at Upper Caliche Lake. The current isolation structure between Lower and Upper Caliche lakes is suspect in its ability to contain carp on its downstream side.

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