

US DEPARTMENT OF AGRICULTURE – FOREST SERVICE		DEPARTMENT / AGENCY		CONTACT / PHONE #
PESTICIDE - USE PROPOSAL (submit to:) Corbin Newman, Regional Forester		USDA Forest Service		Laura P. Moser: Forest Pesticide Use Coordinator; Coconino N. F.; 928-527-3423 1824 S. Thompson St.; Flagstaff AZ 86004
(Reference FSM 2150)		REGION	FOREST	Date Submitted
		03	04	08/23/2012
1) OBJECTIVE a) Project No. b) Specific Target Pest c) Purpose	<p>a) 030406_031204FossilCreekFishRestoration</p> <p>b) Smallmouth bass (<i>Micropterus dolomieu</i>); green sunfish (<i>Lepomis cyanellus</i>); yellow bullhead (<i>Ameiurus natalis</i>); flathead catfish (<i>Pylodictis ovilaris</i>).</p> <p>a) To enhance and protect the native fish community and their habitat in the Fossil Creek watershed. Fossil Creek is part of the Verde River drainage and lies on the border between the Tonto and Coconino National Forests. A large portion of the treatment area lies within the Mazatzal Wilderness Area. For a complete analysis please reference the Final Environmental Assessment for Native Fish Restoration in Fossil Creek, Coconino and Tonto National Forests, Arizona (May 2004). American Fisheries Society has recently released a Rotenone Standard Operating Procedures (2010) which was referenced throughout the Fossil Creek Treatment Plan and this document as AFS-SOP. Collaborative agencies involved in this long term project include: Arizona Game and fish Department (AGFD), US Fish and Wildlife Service (USFWS) AZ Ecological Services, USFWS Fisheries Resources Office, Bureau of Reclamation, Arizona State University, Northern Arizona University, USDA Forest Service, Coconino and Tonto National Forests.</p>			
2) PESTICIDE a) Common Name b) Formulation c) % AI,AE, or lb / Gal. d) Registration No.	<p>a) Rotenone 1: Prentox CFT Legumine™ Fish Toxicant</p> <p>b) Liquid</p> <p>c) 5% w/w</p> <p>d) EPA Reg. # 75338-2</p> <p>a) Rotenone 2: Prentox™ Rotenone Fish Toxicant Powder</p> <p>b) Powder</p> <p>c) 7.4% w/w (minimum guaranteed)</p> <p>d) EPA Reg. # 655-691</p>			
3) FORMULATION a) Form Applied b) Use Strength (%) or Dilution Rate c) Diluent	<p>a) Liquid - Drip centers set up every 1 hr stream flow travel time along target stream reach. CFT Legumine can drain directly into the center of the stream at a rate of 0.85 to 3.4 cc per minute for each cfs (ft³/sec) of stream flow. This is equivalent to 0.5 – 2.0 ppm of product and .025 to 0.10 ppm rotenone.</p> <p>Powder - . Rotenone Fish Toxicant Powder will be utilized in sand /gelatin mix and placed in deep pools and in springs (AFS SOP:13.0).</p> <p>b) 0.5 – 4.0 ppm (stream target concentration is 1 ppm) (tank target concentration varies from 1 ppm to 4 ppm depending on site conditions)</p> <p>A bioassay will be conducted using fish from the treatment area and in accordance with procedures established by the manufacturer, to determine the optimal concentration of piscicide to be deployed. In the Fossil Creek application the target concentration of CFT Legumine will be 1 PPM (two times the MED determined by bioassay, AFS SOP:5).</p> <p>c) Water</p>			

4) RATE
lbs. AI Per Acre
or Other Rate

a) Calculated stream application rate(X in cc/min) = $F(53 \text{ ft}^3/\text{sec} - \text{as of } 8/22/2012) \times R(1\text{ppm}) \times \text{Constant}(1.699) = 90\text{ml/min}$.
 b) Total amount of Product for treatment is calculated with this formula: $Y(\text{gal}) = X(\text{application rate from above}) \times C(8 \text{ hours of stream treatment}) \times \text{Conversion constant}(0.0158)$
 Rate will be calculated onsite and adjusted to daily fluctuations in stream flow, effectiveness monitoring and other variables. (see Fossil Creek Treatment Plan, AGFD)

<i>CFT Legumine at 0.25ppm</i>		<i>CFT Legumine at 0.5 ppm</i>		<i>CFT Legumine at 0.75 ppm</i>		<i>CFT Legumine at 1 ppm</i>	
(ft ³ /s)	rate ml/min	(ft ³ /s)	rate ml/min	(ft ³ /s)	rate ml/min	(ft ³ /s)	rate ml/min
40	17	40	34	40	51	40	68
41	17	41	35	41	52	41	70
42	18	42	36	42	54	42	71
43	18	43	37	43	55	43	73
44	19	44	37	44	56	44	75
45	19	45	38	45	57	45	76
46	20	46	39	46	59	46	78
47	20	47	40	47	60	47	80
48	20	48	41	48	61	48	82
49	21	49	42	49	62	49	83
50	21	50	42	50	64	50	85
51	22	51	43	51	65	51	87
52	22	52	44	52	66	52	88
53	23	53	45	53	68	53	90
54	23	54	46	54	69	54	92
55	23	55	47	55	70	55	93
56	24	56	48	56	71	56	95
57	24	57	48	57	73	57	97
58	25	58	49	58	74	58	99
59	25	59	50	59	75	59	100
60	25	60	51	60	76	60	102

5) APPLICATION
a) Method
b) Equipment

a) CFT Legumine can drain directly into the center of the stream at a rate of 0.85 to 3.4 cc per minute for each cfs (ft³/sec) of stream flow. This is equivalent to 0.5 – 2.0 ppm of product and .025 to 0.10 ppm rotenone. Backwater and stagnant areas of stream should be sprayed by hand with a 1-10% v/v solution of product in water. See the Fossil Creek Treatment Plan for details and locations of backwaters to be sprayed. **Rotenone Fish Toxicant Powder** will be utilized in sand /gelatin mix and placed in deep pools and in springs (AFS SOP:13.0). **Neutralization:** Fre-flowing stream sites will be neutralized using potassium permanganate in volumetric feeders ready to dispense powdered KMnO₄ at a starting target concentration of 6 ppm to the main stream channel. Hoppers will be located at the permanent barrier and will direct KMnO₄ into the barrier spillway to enhance mixing.

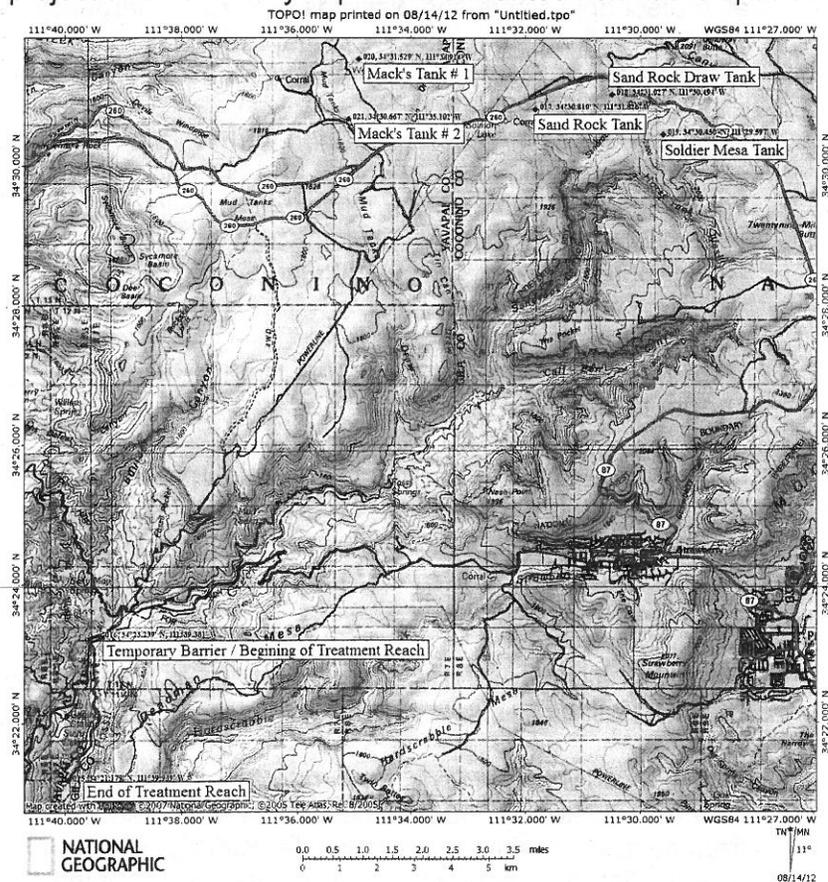
b) Calibrated drip containers will be 5 gallon plastic buckets with lids and an adjustable flow style valve placed at the bottom to titrate the appropriate rate of rotenone concentrate over the course of an 8 hour treatment. A copper breather tube near the valve is necessary to maintain a steady calibrated flow. Spray applications can be done with hand sprayers, backpack sprayers or by motorized boat mounted sprayers. Powder applications are mixed with sand and gelatin in a bucket then distributed by hand.

6) SITE

- a) Acres or Unit Treated
- b) # of Applications
- c) Number of Sites
- d) Site Description (soil type and nearest water bodies)

- a) Up to 10 mi of stream reach and all bodies of water above this reach in the watershed (up to 8 stock tanks total).
- b) Up to 3 applications to each water body
- c) 9
- d) The proposed treatment area of Fossil Creek is between the temporary barrier located at the confluence of Sally May Wash and Fossil Creek, and the original fish barrier located in the Mazatzal Wilderness about 2.6 miles (4.8 kilometers) downstream. The treatment reach of Fossil Creek is characterized by a steep narrow canyon with some braiding of the main channel and some backwater pools. The beginning of the treatment reach sits at an elevation of about 3,400 feet and descends about 400 feet over the course of 2.6 miles. A few deep fast moving pools are present within the reach with two slow moving pools located at major constriction points within the canyon. Two springs are also present in the treatment reach.

Water in the creek is very clear, only getting turbid during runoff events. Sally May Wash, which is dry except during runoff events, is the only substantial tributary to Fossil Creek in the treatment reach. The confluence of Fossil Creek and the Verde River is located ~ 4.5 miles downstream of the treatment reach. Fossil Creek base flows within the treatment reach are about 42 cubic feet per second (cfs) with pH ranging from 8.9-9.2 and temperatures ranging from 20°C -25°C during summer. Fossil Creek drains a series of canyons and their tributaries originating on the Mogollon rim (Calf pen Canyon, Sand Rock Canyon, Tin Can Draw, Mud Tanks Draw, Boulder Canyon, Cimarron Creek, and Sally May Wash). The treatment area includes Soldier Mesa Tank, Sandrock Tank, and possibly Sandrock Draw Tank, (Figure 1). Currently, only Soldier Mesa and Sandrock Tank are known to hold nonnative fish. These tanks are located on the Coconino National Forest within the upper Fossil Creek watershed and have been treated in the past for illegally introduced fish species. Periodic treatment of these tanks is part of this project and necessary to prevent unwanted non-native species from re-invading.



<p>7) TIMING a) Month(s) of Year b) Stages (development of target species)</p>	<p>a) August – October for stream reaches or year round for stock ponds(see life stages below). b) Before spawning or after all eggs have hatched and developing fish have reached a size susceptible to rotenone and when water temperatures are warm enough to ensure piscicide effectiveness.</p>
<p>8) SENSITIVE AREAS a) Areas to be Avoided b) Areas to be Treated with Caution</p>	<p>a)All stream reaches below the project area, or below the fossil fish barrier. b)<u>Recreation Sites</u> -All project areas will be closed to swimming for 72 hours post treatment in flowing water applications. <u>Wildlife Habitat Sites</u> - All sites with tadpole stage native frogs, especially Chiricaua, Lowland and Northern Leopard frogs.</p>
<p>9) REMARKS a) Precautions & BMP's b) Use of Trained / Certified Personnel c) State and Local Coordination d) Other Pesticides Being Applied to Same Site e) Monitoring f) Other g) Reviewed by Pesticide Use Coordinator</p>	<p>a)AGFD will post appropriate signage at trailheads and primary access points to the affected stream segments or water bodies at least two days prior to treatment. Permittees who use the ponds will be notified of the specific treatment dates. Treatments will be planned to minimize interference with the permittees normal period of pond use. After treatment all target fish that are collected, living or dead, shall be properly disposed; none shall be salvaged resuscitated or transferred to another stream. The piscicide will be applied in accordance with all state and federal laws. Personnel mixing or applying piscicide will wear required PPE: long pants, long sleeve shirts, goggles or safety glasses, chemical resistant (nitrile) gloves, and a respirator with an organic-vapor-removing cartridge with a prefilter approved for pesticides or a canister approved for pesticides. A site specific spill plan and relevant MSDS will be kept in the project area, immediately accessible to all project applicators and piscicide mixers. Emergency eye wash bottles will be carried by all personnel mixing or deploying piscicide. Spare parts and tools will be available for any needed repairs to application equipment.</p> <p>b)Applications will be made by trained USFWS and AGFD fisheries biologists. They are experienced in the application and neutralization of piscicides in the arid southwest environments as well as very familiar with the Fossil Creek Project and its environs. Piscicide Application Crew Leads: Mike Lopez, Julie Carter, Matt Rinker of the Arizona Game and Fish Department, Shaula Hedwall, US Fish and Wildlife Service Certified applicators: Roland(Scott) Rogers AZ ADA# PUC60616(Project Lead Applicator) Laura Moser AZ ADA# PUC 373 (FS representative)</p> <p>c) Collaborative agencies involved in this long term project include: Arizona Game and fish Department (AGFD), US Fish and Wildlife Service (USFWS) AZ Ecological Services, USFWS Fisheries Resources Office, Bureau of Reclamation, Arizona State University, Northern Arizona University, USDA Forest Service, Coconino and Tonto National Forests.</p>
	<p>d)No other piscicide will be applied to this project area. Potassium permanganate (KMnO₄) will be applied to neutralize rotenone at end of treatment zone.</p> <p>e) Sentinel fish will be monitored throughout the treatment area and concentrations may be adjusted during an 8 hour treatment to successfully complete the treatment. Potassium permanganate (KMnO₄) will be used to chemically induce deactivation of rotenone at the downstream end of the treatment Area. The target concentration of KMnO₄ will be 6 PPM (4PPM for rotenone, 1PPM for organic</p>

	<p>demand, 1PPM residual, AFS SOP: 7). Concentrations of KMnO4 will be monitored 30 minutes drift (contact) time downstream of the detoxification station and concentration of KMnO4 will be adjusted to maintain a minimum of 1 PPM residual. Two volumetric hoppers will be operated in tandem as primary detoxification and one hopper and generator will be utilized as backups. A four person crew will work the detoxification station (two per 12-hour shift: day and night).</p> <p>f) This project will be accomplished by AGFD, USFWS and Forest Service. AGFD will keep a daily pesticide use log that includes date, quantity of pesticide applied, adjuvants used, application method, local weather data, and any other pertinent data. This information will be provided to the Forest Service by October 1 of each year during the project.</p> <p>g) Pesticide Use Coordinator: <u><i>RMA</i></u> <u><i>8/28/2012</i></u> <i>Aquatics Biologist</i> <i>Ron Maes</i> date</p> <p><u><i>Allen White</i></u> <u><i>8/28/2012</i></u> <i>Allen White</i> date</p>
10) Approval (Signatures of Approving Officials)	
<p>Regional Forester Corbin Newman</p> <p><u><i>C. L. Newman</i></u></p>	<p>Date:</p> <p><u><i>8-30-12</i></u></p>

