ENVIRONMENTAL ASSESSMENT
WESTSLOPE CUTTHROAT TROUT RECOVERY
EXPANSION OF WESTSLOPE CUTTHROAT TROUT
TRANSFER OF LIVE FISH FROM
WEST FORK COTTONWOOD TRIBUTARY TO WEST FORK COTTONWOOD CREEK

I. Description of proposed action

A. Description of water body and action.

Receiving Water:

Name:	West Fork Cottonwood Creek	Location: T12N R8E Sec 15
Water Code:	16-0900	Elevation: 6001 – 6399 feet
County:	Fergus County	

Donating Water:

Name:	Tributary to West Fork Cottonwood Creek	Location: T12N R8E Sec 14
Water Code:	16-0900	Elevation: 5996 – 6775 feet
County:	Fergus County	

Westslope cutthroat trout (WCT) *Onchorhynchus clarki lewisi* will be introduced into a fishless area approximately 1.5 miles long above a series of waterfall barriers on West Fork Cottonwood Creek (West Fork) in the Judith Drainage (Figure 1). In 2003, an unnamed tributary which enters the West Fork less than 0.5 miles downstream of the fish barriers was surveyed for fish. A robust population of WCT was found to extend at least 1.5 miles upstream of its confluence with the West Fork. These fish are assumed pure or nearly pure based on the purity of recent genetic samples collected immediately downstream of barriers on the mainstem West Fork.

Cottonwood Creek is a tributary of the Judith River and is approximately 32 miles in length. The lower reaches of Cottonwood Creek hold warm water species and brown trout *(Salmo trutta)*. Rainbow trout were stocked in the lower reaches of Cottonwood Creek (near Highway 87) until 1995. The middle and upper reaches support brook trout *(Salvelinus fontinalis)* and rainbow trout *(Oncorhynchus s*p.*)*. Upper Cottonwood Creek and its tributaries (<10 miles of stream total) contain cutthroat and cutthroat x rainbow hybrids. Genetics samples collected in 1996 just upstream of the confluence of the East and West Forks of Cottonwood Creek (Approximately 2 miles downstream of the receiving water) were 98% pure WCT and 2% rainbow trout (Leary 1998). Genetic samples (25 PCR) collected in September 2002 immediately downstream of the barriers on West Fork Cottonwood Creek (Approximately 2 miles upstream of samples collected in 1996) were analyzed and reported to be pure WCT.

Surveys in 2003 by Montana Fish, Wildlife & Parks personnel revealed about 1.5 miles of unfragmented fishless habitat on West Fork between downstream falls barriers and an upstream debris jam (Figure 2). In mid September of 2002 the stream temperature was 43 degrees. The stream has a conductivity of approximately 260 μS/cm, adequate base flows, typical residual pool depths > 1 ft., and heterogeneous habitats with adequate large woody debris (Figures 3 and 4). Habitat features, particularly pool depth and width, indicate that this stream may be a good candidate for translocation (Young and Guenther-Gloss 2004). It is unlikely that this short reach of stream could support the 2,500 minimum WCT population recommended by Hilderbrand and Kershner (2000) and it drains less

than the 5.6 square miles area recommended as a coarse filter for translocations by Harig and Fausch (2002). However, the habitat is better in quality and greater in areal extent than found in many WCT streams in northcentral Montana that have held WCT populations for decades (Tews et al. 2000, Moser et al. 2002). The habitat in West Fork Cottonwood Creek will likely support a self-sustaining population of cutthroat for decades barring catastrophic events, principally fire or a blowout of the upstream debris jam.

The tributary to West Fork Cottonwood Creek discharges as much water as the mainstem Cottonwood Creek (snorkel and habitat surveys conducted September 4, 2003). The first half-mile of the tributary had good habitat with a moderate number of pools. The next three-quarter mile had excellent habitat, numerous fish, multiple age classes, and deep over-wintering pools. The last half-mile surveyed was higher in gradient with less fish and an increasing number of partial fish barriers. There will be 50 to 100 WCT transferred annually from the tributary of West Fork Cottonwood Creek to West Fork Cottonwood Creek for 2 - 3 years. These numbers should be sufficient to prevent a genetic founder effect, which requires a minimum transfer of 25 males and 25 females (Leary et al. 1998). Sex ratios and mortality of the transferred WCT cannot feasibly be determined on-site so a total of 100 – 300 WCT will be transplanted. Population surveys will be completed at the donor site immediately prior to transfers to determine the number of fish to be moved. No more than 20% of the estimated population will be moved.

B. **Need for Action**

The decline of the WCT is well documented. It is the Montana State Fish and is a Class A Species of Special Concern in Montana. Genetically pure WCT are thought to occupy about 5 – 13 % of their aboriginal range in the Missouri River system and most populations occupy less than 6 miles of habitat (Shepard et al. 1997). In northcentral Montana, only about 4 pure populations occupy more than 5 miles of habitat (Moser et al. 2002). A study that modeled 144 Montana WCT populations east of the continental divide found 71% had a very high risk of extinction. In the model, a very high extinction risk meant the probability of a population lasting 100 years was less than 50% (Shepard et al. 1997). To expedite WCT conservation, the State of Montana has developed a Memorandum of Understanding and Conservation Agreement for WCT with several other groups and agencies to provide direction in conserving WCT (MFWP 1999).

The West Fork Cottonwood Creek WCT population is likely one of only 3 – 5 pure populations in the entire Judith Drainage. Moser et al. (2002) report five pure WCT populations remaining in the Judith drainage. However, one of these populations inhabits less than 0.5 miles of stream, is unprotected, and likely currently not pure (Snow Creek), two are not protected from hybridization by barriers (West Fork Cottonwood and Upper Harrison Creek), and one has a low population size because of poor habitat conditions (North Fork Running Wolf). East Fork Spring Creek has a healthy population of pure WCT that inhabits approximately 2.0 miles of stream (A. Tews *pers. comm*.). Historically the Judith River drainage likely had about 480 miles of WCT habitat (Tews et. al 2000). The objective of the "Memorandum of Understanding and Conservation Agreement for WCT in Montana" is to protect all existing genetically pure populations (MFWP 1999). This transfer will duplicate the West Fork population, which is a recommended method to reduce extinction risk for individual WCT populations (MFWP 1999).

The East and West Forks of Cottonwood Creek support healthy populations of WCT. Initial genetic testing of West Fork fish indicates that fish in the headwater reaches of the East and West forks may

be pure. The lack of a barrier to upstream movement of hybrids puts these pure WCT at risk for introgression with known hybrids less than 2 miles downstream. There is no guarantee fish moved into the empty habitat in West Fork will be 100% pure WCT. However, there is an excellent chance they will be less than 1% hybridized, and not appreciably biologically different from the pure native taxon. A 25 fish sample gives 95% probability of detecting one percent hybridization using 6 diagnostic loci. (Leary et al. 1995; MCTTC 2002)

II. Impacts of the proposed action

Please review the attached checklist on page 7. The impacts of this action are included in the Environmental Assessment checklist. The following text addresses the impacts.

A. Impacts to the Physical Environment

1) Terrestrial and Aquatic Habitat

The proposed project will involve the transfer of WCT from a tributary to West Fork Cottonwood Creek to West Fork Cottonwood Creek. Both streams are in the Judith drainage. Live fish transfers have successfully established cutthroat populations in the past (Tews et al. 2000; Moser et al. 2002). Several mitigation measures have been taken to reduce potential impacts to the aquatic habitat.

Disease Testing: Disease testing was verbally waived by the MFWP Fish Health committee because of the close proximity of donor and receiving waters. The MFWP wild fish transfer policy will be followed and WCT will not be transferred until written approval by the MFWP Fish Health Committee is obtained.

Genetic Purity: Genetics samples (10 Allozyme) collected by the United States Forest Service (USFS) in 1996 just upstream of the confluence of the East and West Forks of Cottonwood Creek (Approximately 2 miles downstream of the receiving water) were 98% pure WCT and were hybridized with rainbow trout. (Leary 1998). Genetic samples (25 PCR) collected in September 2002 immediately downstream of the barriers on West Fork were analyzed and reported to be pure WCT on 7/01/03 (Cook 2003). The WCT technical committee (Leary et al. 1998) has recommended a 50 fish genetic sample for past transfers to insure that 100% pure WCT are transferred. No other fish have been identified for transfer to this stream and it is ecologically preferable to transfer pure or nearly pure fish already adapted to local habitat conditions. Since fish to be transferred are pure or nearly pure, it is unnecessary to collect additional genetic samples. After completion of all transfers, genetic testing may be completed to identify whether the new protected population is indeed pure.

Aquatic Invertebrates and Amphibians: On October 15, 2003, David Moser (MFWP) conducted invertebrate surveys of the donor and receiving waters. Results indicate no rare invertebrates are present (Gustafson 2004). In addition, moderate numbers of *Doroneuria* sp. in the receiving stream indicate this may be a good cutthroat introduction site (Gustafson 2004). Dr. Gustafson has conducted surveys of fishless reaches throughout central Montana. Typically, there is more aquatic macroinvertebrate diversity in the stream reaches that contain fish than in fishless reaches, possibly because fish are cropping the most common invertebrate species (Gustafson 1998).

On September 4, 2003, the receiving stream was surveyed by MFWP personnel. No amphibians were observed and the stream habitat was not suitable for most amphibians. No amphibians of concern are currently found in the immediate area, though museum voucher records show northern leopard frogs *(Rana pipiens)* historically occupied the northerly draining streams of the Snowy Mountains at lower elevations than the recipient stream and currently occupy prairie streams east and northeast of the transfer site (see Maxell et al. 2003; MFWP *unpublished data* 2004). Moreover, this species is found in low and mid elevation wetlands or slow moving waters; not headwater, mountain streams lacking beaver ponds.

2) Unique, endangered, fragile or limited environmental resources.

This proposed action should benefit WCT. WCT are a species of special concern in Montana. This action will create an additional pure WCT population in the Judith drainage, which historically contained about 480 miles of WCT (Tews et al. 2000) and will replicate and protect from introgression a pure or nearly pure WCT population that currently occupies about 2 miles of stream.

B. Impacts to the Human Environment

1) Agricultural or Industrial production

The fishless section of West Fork Cottonwood Creek where WCT are proposed for introduction lies entirely on national forest lands. The geography and vegetation of this area is not conducive to cattle use. The does not have suitable forage for livestock and is not part of any grazing allotment (Michael Enk, *pers. comm.).*

2) Access to and Quality of Recreational Activities

The proposed action will improve catch and release fishing opportunities by increasing fishable stream length by about 1.5 miles along remote West Fork Cottonwood Creek. The public will have an increased opportunity to catch native westslope cutthroat trout in a wild area.

3) Demands on Government Services

This action will be undertaken as part of normal field operations by a WCT coordination biologist and field crew. Other fisheries projects may be postponed due to the fish transfer. Much of the work for this transfer has already been completed. It is anticipated that it will take two, three person fisheries crews about 3 – 4 days each to complete any additional surveys and to transfer the WCT.

III. Discussion of Reasonable Alternatives

1) No Action

Approximately 1.5 miles of upper West Fork Cottonwood Creek would remain fishless. The West Fork Cottonwood Creek tributary population would not be replicated. There would be no additional costs associated with introduction. The MFWP and USFS have agreed to take

actions to benefit WCT (MFWP 1999). If this project is not completed it will not benefit WCT conservation in Montana.

2) Introduction of WCT from other populations

The only other logical source population would be fish from East Fork Cottonwood Creek. Twenty-five genetic samples were collected in September of 2002 from the headwaters of East Fork Cottonwood Creek. These samples have not been analyzed but they may be pure WCT, especially considering that these samples were taken from fish collected much farther from the confluence of the East and West Forks than the West Fork samples. Future transfers of East Fork fish to upper West Fork Cottonwood may be warranted if population size in the donor tributary limits the number of fish that can be transferred. Should this be necessary, additional MEPA will be completed. In addition, a transfer from East Fork Cottonwood will be much more costly and riskier for the donor fish.

Montana's WCT hatchery brood stock originated primarily from the South Fork Flathead drainage and is not in any danger of extinction because it is the basis for several WCT populations. Stocking of these hatchery fish is not recommended in this precious fishless habitat.

IV. Environmental Assessment Conclusion Section

1) Is an EIS required? No the action is expected to be minor and beneficial.

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Environmental Assessment Checklist

Project: Westslope Cutthroat Recovery – Transfer of live fish from West Fork Cottonwood Creek Tributary (Judith drainage) to West Fork Cottonwood Creek (Judith drainage).
Division: Fisheries Division
Description of Project: Westslope cutthroat trout will be moved from West Fork Cottonwood Creek Tributary to a fishless reach above a series of waterfall barriers on West Fork Cottonwood Creek. West Fork Cottonwood Creek fish are not physically isolated from other fish species in Cottonwood Creek. A total of about 100 – 300 WCT will be transferred over a 2 – 3 year period; 50 –100 WCT will be transferred annually.

Potential Impact on the Physical Environment

	MAJOR	MODERATE	MINOR	NONE	UNKNOWN	COMMENTS ON ATTACHED PAGES
1. Terrestrial & aquatic life and habitats			X			P. 3
2. Water quality, quantity & distribution				X		
3. Geology & soil quality, stability and moisture				X		
4. Vegetative cover, quantity & quality				X		
5. Aesthetics				X		
6. Air quality				X		
7. Unique, endangered, fragile or limited environmental resources		X Benefit				P. 3
8. Demands on environmental resources of land, water, air & energy				X		
9. Historical & archaeological sites				X		

Potential Impacts on the Human Environment

	MAJOR	MODERATE	MINOR	NONE	UNKNOWN	COMMENTS ON ATTACHED PAGES
1. Social structures & mores				X		
2. Cultural uniqueness & diversity				X		
3. Local & sate tax base & tax revenue				X		
4. Agricultural or industrial production				X		P. 4
5. Human health				X		
6. Quantity & distribution of community & personal income				X		
7. Access to & quality of recreation and wilderness activities			X benefit			P. 4
8. Quantity & distribution of employment				X		
9. Distribution and density of population & housing				X		
10. Demands for government services				X		P. 4
11. Industrial and commercial activity				X		
12. Demands for energy				X		
13. Locally adopted environmental plans & goals				X		
14. Transportation networks & traffic flow				X		

Other groups or agencies contacted or which may have overlapping jurisdiction: U.S. Forest Service

List of Individuals or groups contributing to this EA: Michael Enk, Fisheries Biologist Lewis and Clark National Forest, Great Falls, MT; Anne Tews, MFWP, Lewistown, MT.

List of all agencies and individuals who have been notified of this proposed transfer: Notification will be done via the Montana Fish, Wildlife and Parks Web Site. The USFS has been involved in drafting the EA.

Recommendation concerning preparation of EIS: No EIS Required. Action expected to be minor.

EA prepared by: David Moser, Fisheries Biologist, **Date:** June 21, 2004

Comments will be accepted until: July 30, 2004

Comments should be sent to: David Moser, MFWP, c/o USFS, P.O. Box 869, Great Falls, MT 59403; dmoser@fs.fed.us

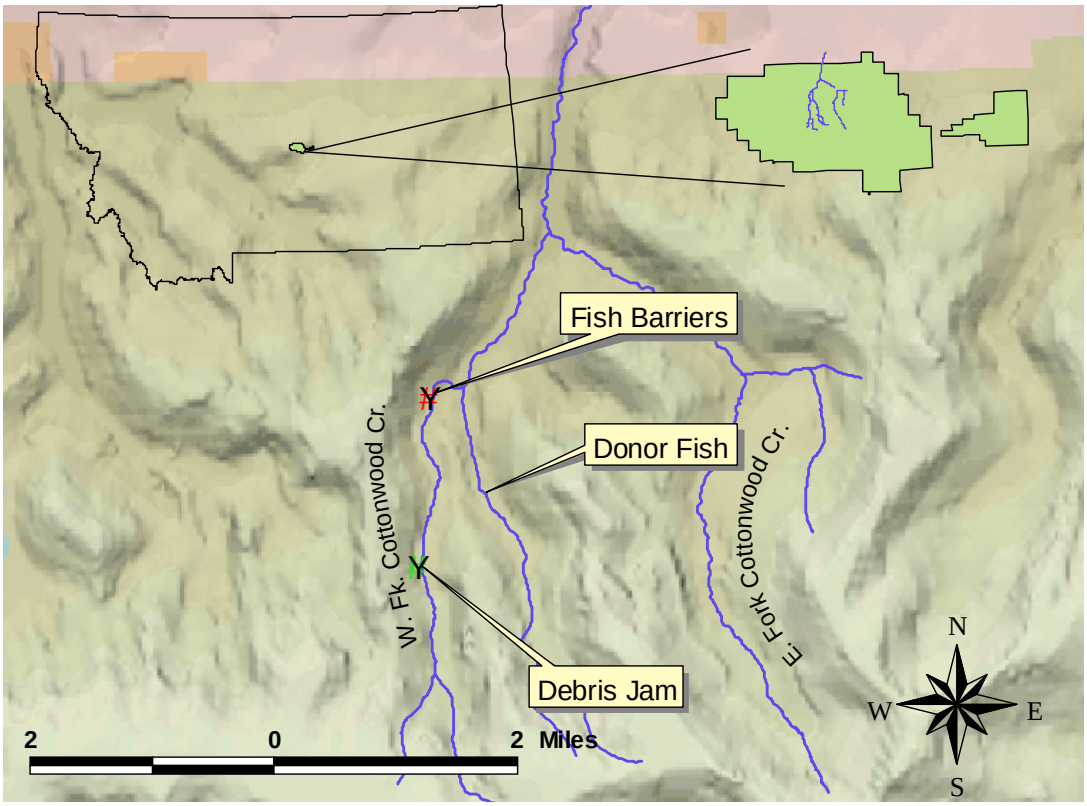

Figure 1. Location of donor and receiving waters, barriers, and debris jam on Cottonwood Creek, Snowy Mountains. The light green inset is part of Lewis and Clark National Forest.

Figure 2. Debris jam that defines upper limit of receiving habitat, West Fork Cottonwood Creek.

Figure 3. Photograph of pool habitat, receiving stream, September 2003.

Figure 4. Photograph of pool habitat, receiving stream, September 2003.