

**Staff Report for Fisheries Resources  
in response to  
SUWA Petition filed 12/22/2006**

**Prepared by  
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## **1.0 Introduction**

The Southern Utah Wilderness Alliance, and others, submitted a “Petition to Preserve Arch Canyon’s Natural and Cultural Heritage”. The Petition was submitted to the Bureau of Land Management (BLM) Monticello Field Office on December 22, 2006 and includes supporting information provided in Exhibits A through N. In the Petition, SUWA contends that motorized use in Arch Canyon is currently causing and will continue to cause adverse impacts to fish populations and fisheries habitat. The purpose of this report is to assess the effects of motorized use on the fisheries resource in Arch Canyon based on a review of the information provided in the Petition and other relevant literature and available data.

## **2.0 Information Provided in the Petition**

The fisheries resource information provided in the Petition is found within the main text and the supporting information found in Appendix E. Appendix E is titled “Arch Canyon Condition Assessment and Management Recommendations” by Charles Schelz, ecologist (August 2006). The BLM response to the specific contentions and comments in the Petition are found in Table 2 of this report.

## **3.0 BLM Review of Existing Information**

The BLM reviewed all existing fisheries resource information for Arch Canyon which was found relevant to addressing SUWA’s contentions in the Petition. This information is referenced as follows:

Aubry, A.M. 2007a. Arch Canyon stream channel cross section and survey and flood flow estimate. Bureau of Land Management, Moab, Utah.

Breidinger, K. and P. Birdsey. 2007. Determination of Flannelmouth Sucker (*Catostomus latipinnis*), Bluehead Sucker (*Catostomus discobolus*), and Roundtail Chub (*Gila robusta*) distribution in Hydrologic Units 14070001, 14080201, 14080203, 14080205, 14030002, 14060008, 14060005, 14030004, 14030001, and 14070003 during Fall 2006 and Spring 2007. Utah Division of Wildlife Resources, Salt Lake City, Utah.

Jimenez, J. and M. Breen. 2010. The White River, Utah: A Refuge for native fishes! American Fisheries Society, 2010 Western Division and Utah Chapter Annual Meeting presentation. Salt Lake City, Utah.

Sweet, D.E., R.I.Compton, and W.A. Hubert. 2009. Age and growth of Bluehead and Flannelmouth Suckers in headwater tributaries, Wyoming. *Western North American Naturalist* 69(1), pp. 35-41.

State of Utah, Division of Administrative Rules. 2008. Rule R317-2. Standards of quality for waters of the State.

Utah Division of Wildlife Resources. 2006. Range wide conservation agreement and strategy for the Roundtail Chub *Gila robusta*, Bluehead Sucker *Catostomus discobolus*, and Flannelmouth Sucker *Catostomus latipinnis*. Utah Division of Wildlife Resources, Salt Lake City, Utah.

Walker, C. 2004. Surveys to determine potential impacts of off-highway vehicle use on native fishes in Arch Canyon Creek during 2004. Utah Division of Wildlife Resources, Salt Lake City, Utah.

Walker, C. 2005. Surveys to determine the current distribution of Roundtail Chub, Flannelmouth Sucker, and Bluehead Sucker conducted during 2005. Utah Division of Wildlife Resources, Salt Lake City, Utah.

#### **4.0 Additional Studies and Information**

Beyond the existing information cited in section 3, the BLM sought additional studies and information to address the aquatic resource concerns and the SUWA Petition. This information is referenced as follows:

Aubry, A.M. 2007b. Water quality monitoring in Arch Canyon related to permitted jeep and ATV use, 2007. Bureau of Land Management, Moab, Utah.

Aubry, A.M. 2010a. Hydrologic conditions in Arch Canyon. Bureau of Land Management, Moab, Utah.

Aubry, A.M. 2010b. Water quality sampling in Arch Creek. Bureau of Land Management, Moab, Utah.

Aubry, A.M. 2010c. Macroinvertebrate sampling in Arch Canyon. Bureau of Land Management, Moab, Utah.

Breidinger, K. and P. Birdsey. 2009. Status of Native fish living in Arch Canyon Creek, Hydrologic Unit 14080201, in 2007 and 2008. Utah Division of Wildlife Resources, Salt Lake City, Utah.

Douglas, M.R. and M. E. Douglas. 2010. Genetic assessment of Flannelmouth Sucker (*Catostomus latipinnis*) in Arch Canyon and comparison to populations across the Colorado River Basin. Illinois Natural History Survey, Institute for Natural Resource Sustainability, University of Illinois.

Douglas, M. 2010. Personal communication with Dr. Marlis R. Douglas, Curator of Ichthyology at the Illinois Natural History Survey, Institute for Natural Resource Sustainability, University of Illinois.

Graham, T. 2005. Amphibian surveys in Arch Canyon, Utah, spring and fall 2005. Southwest Biological Science Center, Canyonlands Research Station. Moab, Utah.

Miller, S. 2010. Personal communication with Scott W. Miller, Ph.D., Director of the Bureau of Land Management and Utah State University National Aquatic Monitoring Center. Logan, Utah.

Prichard, D., G. Cruz, and P. Curtis. 2007. Arch Canyon PFC review and assessment, May 2007. Bureau of Land Management.

Arch Canyon Native Fish Genetic Sampling, November 2009.

Arch Canyon Native Fish Distribution and Spawning Surveys, April 2010.

#### **5.0 BLM Response to Specific Contentions in the Petition**

The BLM responses to specific contentions/comments in the Petition regarding fisheries resources are provided in Table 1.

**Table 1. SUWA Petition Comments and BLM Responses**

SUWA Petition			BLM Response
Comment #	Page #	Comment on Fisheries Resource	Response to Comment
1	xx	The stream in Arch Canyon supports three native fish species, including flannelmouth sucker, a state sensitive species. According to Mr. Schelz, these fish could be "relict populations that have been separated from the species' larger gene pool for over a million years, making them genetically unique and likely candidates for listing under the Endangered Species Act in the near future."	<p>The BLM coordinated with the Utah Division of Wildlife Resources (UDWR) in November 2009 and collected genetic samples of the flannelmouth suckers in Arch Canyon. The samples were sent to Dr. Marlis R. Douglas, Curator of Ichthyology at the Illinois Natural History Survey, Institute for Natural Resource Sustainability, University of Illinois for analysis, although a final report has not been completed it is expected in 2010. Results will not change with additional analyses, but simply put the findings in additional context (i.e., additional comparison to other drainages/populations). Results from the genetic analysis indicate that across the 17 individuals sampled, two haplotypes (i.e., "alleles" or "genotypes") were identified. These two haplotypes are identical to the two most common haplotypes found in flannelmouth sucker populations across the entire Colorado River basin. For the Arch Canyon flannelmouth sucker samples, one haplotype is present in 58.8% (10 out of 17 samples) and the other haplotype is present in 41.2% (7 out of 17) samples. Colorado River Basin-wide percentages are 40% and 34%, respectively.</p> <p>This pattern is consistent with a population that is somewhat isolated in recent times (few hundred years, not thousands) and has undergone population fluctuations (i.e., rare haplotypes, if ever present, would be lost during population reductions). It is a pattern found in other FMS populations throughout the basin. <b>These data do not suggest that flannelmouth suckers in Arch Canyon are genetically different or unique from flannelmouth suckers in other parts of the Colorado River basin, but instead represent "typical" flannelmouth suckers. Arch Canyon flannelmouth suckers represent the same Evolutionarily Significant Unit as other flannelmouth suckers in the Colorado River basin. The analysis did not reveal a distinct evolutionary lineage of Flannelmouth Sucker in Arch Canyon (Douglas, 2010).</b></p>
2	xx	According to Mr. Schelz, the presence of a disjunct population of the sensitive flannelmouth sucker in Arch Canyon "distinguishes the canyon as unique in	See response to comment #1, regarding the population of flannelmouth suckers in Arch Canyon are not genetically different or unique from flannelmouth suckers in other parts of the Colorado River

	<p>the area, and as such this canyon should be afforded special status and increased protection against human-induced impacts. The most serious impact to the flannelmouth sucker is probably the loss of suitable habitat due to the destruction of the streambanks and vegetation by motor vehicles and the accelerated erosion process caused by the presence of a 4-wheel drive route that crosses the stream at least 60 times.”</p>	<p>basin, but instead represent "typical" flannelmouth suckers.</p> <p>The BLM acknowledges that there are isolated disturbances to flannelmouth sucker habitat as a result of where motor vehicle crossings occur (Aubry, 2010a). However, the existing condition of suitable flannelmouth habitat in Arch Canyon is primarily a result of the natural landform and hydrology. This watershed is typical of most canyon slickrock landforms that experience thundershowers and frequent flood events resulting in a flashy system. Stream flows vary from less than .5 cubic feet per second (cfs) base flow to annual peak flow of 25 cfs. The frequent flash flood events that characterize this desert stream system carry high sediment loads which can naturally scour the stream channel in higher gradient areas and result in deposition of fine sediment in lower gradient areas. On October 6, 2006 Arch Canyon experienced a major flow event (100 year) estimated at or above 3,000 cfs (Aubry, 2007a). The isolated disturbances to flannelmouth sucker habitat as a result of motor vehicle crossings in Arch Canyon is minimal compared to the natural alteration associated with these flashy systems.</p> <p>Landform plays a very important role in stability of these flashy systems. These slickrock landforms are relatively stable and not easily disturbed. The high flow event in October 2006 is a good indicator that the system is stable and functioning properly as indicated by pre and post-flood riparian vegetation and streambank conditions (see Aubry, 2007a post flood photo and Aubry, 2010 (a) Attachment #1, Photo Monitoring in Arch Creek Road Related and (b) Attachment #2, Photo Monitoring in Arch Creek Non-Road Related and Prichard et al., 2007).</p> <p>Arch Canyon is primarily intermittent stream flow (where the stream flows only at certain times of the year when it receives water from springs or from some surface source such as melting snow or during storm events) and interrupted steam flow(discontinuities in surface water flow). This type of stream system limits the amount and kinds of vegetation that can be produced (Prichard et al., 2007).</p> <p>Prichard (et al., 2007) found that even though the road crosses the stream at 60 sites, there was little to no impacts to the riparian aquatic habitat because most of the road length is on the higher terraces and</p>
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			<p>most of the crossings are at a right angle to the channel. Of the 60 crossings identified in Arch Canyon, surveys completed by BLM and UDWR in April 2010 identified that the upper most location where fish were found was at or below crossing 40 thus decreasing the number of crossings that could have a direct impact on fish habitat. During base flow approximately 20 of these stream crossings are wetted and the remaining are intermittent (Aubry, 2010a). Flannelmouth suckers are found at or near some of the perennial stream crossings. Recent management decisions in the Monticello Field Office Resource Management Plan (RMP) limit Off Highway Vehicles (OHV) use to designated routes and preclude development of additional stream crossings. These decisions are expected to result in decreasing alternate routes, stream crossings and side trails. UDWR identified that numerous side trails and associated stream crossings have been closed and signed to keep traffic on the designated routes which appears to have resulted in reduced impacts and will keep future riparian degradation to a minimum (UDWR, 2009).</p> <p>A report completed by UDWR in 2009 titled, "The Status of Native Fish Living in Arch Canyon" identifies that habitat conditions in Arch Canyon naturally reach marginal conditions and habitat changes are likely a result of natural variation. This report also identifies that recent conditions have been suitable to maintain all life stages of fish in Arch Canyon. This was also recently verified in cooperative sampling efforts by BLM and UDWR which identified the presence of multiple age classes in April 2010.</p> <p>Closing the road is not expected to create additional aquatic habitat for flannelmouth suckers but could result in isolated improvements to existing habitat.</p>
3	xx and xxi	<p>The Utah Division of Wildlife Resources states that a petition for listing one or more of the fish species found in Arch Canyon under the Endangered Species Act is expected, and that efforts to study and protect these species are needed. Utah Department of Natural Resources, Div. of Wildlife Resources, <u>Surveys to Determine the Current Distribution of Roundtail Cub, Flannelmouth Sucker, and Bluehead Sucker Conducted During 2005</u> (December 2005).</p>	<p>UDWR (2009) identifies that efforts to catalog the presence/absence and abundance of targeted species (i.e., flannelmouth sucker) undertaken in this project provides UDWR with information that will enable a better response to, and possibly prevent, such petitions. Collection of distribution and abundance data is intended to prevent listing of species such as the flannel mouth sucker under the Endangered Species Act. The BLM has coordinated, funded and worked cooperatively with UDWR to provide this kind of information on native fish populations in Arch Canyon since 1993. Fisheries sampling in Arch Canyon has occurred in 2004, 2005, 2007, 2008, 2009 and</p>

		<p>Mr. Scheltz concurs with the Utah Division of Wildlife Resources that these fish species need to be studied and that the BLM should:</p> <p>Fund research studies of the fish of Arch Canyon. Research should focus on their movement patterns, habitat needs, and how long flannelmouth suckers have been isolated from other populations. Comparative genetic studies are recommended...Institute additional measures to protect the fish populations in Arch Canyon.</p>	<p>2010. Several surveys have been conducted and some associated reports have been completed as a result of these efforts.</p> <ul style="list-style-type: none"> <li>• Surveys to Determine the Potential Impacts of Off-Highway Vehicle Use on Native Fishes in Arch Canyon Creek, During 2004.</li> <li>• Surveys to Determine the Current Distribution of Roundtail Chub, Flannelmouth Sucker, and Bluehead Sucker Conducted During 2005.</li> <li>• Determination of Flannelmouth Sucker (<i>Catostomus latipinnis</i>), Bluehead Sucker (<i>Catostomus discobolus</i>), and Roundtail Chub (<i>Gila robusta</i>) distribution in Hydrologic Units 14070001, 14080201, 14080203, 14080205, 14030002, 14060008, 14060005, 14030004, 14030001, and 14070003 during Fall 2006 and Spring 2007.</li> <li>• Status of Native fish living in Arch Canyon Creek, Hydrologic Unit 14080201, in 2007 and 2008.</li> <li>• Arch Canyon Native Fish Genetic Sampling, November 2009.</li> <li>• Arch Canyon Native Fish Distribution and Spawning Surveys, April 2010.</li> </ul> <p>Comparative genetic studies have been completed (see response to comment #1) which conclude that, the population of flannelmouth suckers in Arch Canyon are not genetically different or unique from flannelmouth suckers in other parts of the Colorado River basin, but instead represent "typical" flannelmouth suckers.</p> <p>Additional measures to protect fish populations in Arch Canyon that the BLM has implemented include restricting OHV use to designated routes as required by the Monticello Field Office RMP.</p>
3a	5	In addition to Arch Canyon's rare, arid desert riparian area, the fact that there are three species of native fish in the stream provides unquestionable biological evidence of the uniqueness and importance of this canyon stream. <i>See id</i> at 3-4.	See response to comment #1.
3b	5 and 6	The presence of the flannelmouth sucker and the bluehead sucker highlights this canyon as very atypical of this area due to the large size of these fish species. <i>See id</i> .	<p>See response to comment #1.</p> <p>See response to comment #5.</p> <p>See response to comment #7.</p>
3c	6	Fish of this size are extremely rare in the broader	See response to comment #1.

		Four Corners region but are particularly rare in the Arch Canyon location as there is no continuous water connection to a larger river, such as the San Juan River approximately 25 miles away. <i>See id.</i> <b>It is quite possible that these fish are “relict” populations that have been separated from the species’ gene pools for millions of years. <i>See id.</i></b>	See response to comment #5. See response to comment #7.
3d	6	There is no research that has comprehensively studied the Arch Canyon fish populations, including their long-term reproduction, the genetic comparisons with population in larger rivers in the area, and the impacts of the ORV route on their habitat, which causes higher sedimentation, petroleum pollution, and decreased low-water instream flows. <i>See id.</i> At 41.	See response to comment #1. See response to comment #3. See response to comment #7. See response to comment #8. See response to comment #11. See response to comment #12.
3e	9	Indeed, in some places the ORV route was scoured down several feet below the surrounding ground level. This chain of events led to further loss of riparian habitat, including critical Fish habitat upon which the flannelmouth sucker and bluehead sucker depend for survival. <i>See id.</i>	See response to comment #2. See response to comment #7.
3f	14	As described in more detail below, ORV use in the Arch Canyon area is causing and will continue to cause considerable adverse effects to cultural resources, riparian resources – including soils and vegetation – and special status species. Thus pursuant to the Administration Procedures Act, 5 U.S.C. §§ 500 <i>et seq.</i> , 43 CFR § 8341.2, 8342 and 8364.1, Executive Orders 11989 and 11644, <b>BLM must immediately protect the natural and cultural resources of the Arch Canyon area and close the Arch Canyon area to motorized vehicle use.</b>	See response to comment #2.
3g	14 and 15	SUWA bases this petition on the significant adverse effects that ORV use is causing or will cause to cultural resources, riparian and wetland resources, and to fish and wildlife and their associated	See response to comment #2.



		habitats.	
3h	41	The loss of the naturally meandering channel has serious negative effects on the transport of sediment, development and maintenance of habitat for fish, aquatic insects, and aquatic plants, and the transfer of oxygen into the water. <u>These are all major components of healthy fish habitat, the loss of which is a great danger to the continued survival of the flannelmouth sucker in Arch Canyon.</u> Any loss of the channel's sinuosity also lessens the water retention function of the floodplain and thus seriously impacts the ability of the water table to stabilize and sustain a healthy riparian system.	BLM Riparian PFC assessments in Arch Canyon do not reflect that there is a loss of naturally meandering channel or sinuosity (Prichard et. al., 2007).  See response to comment #2.  See response to comment #6.
3i	42	An additional parameter measured by the BLM in SE Utah streams was the presence of Total Petroleum Hydrocarbons (TPH). They detected levels at all sites where vehicles drove through water (USDI 2005). <u>Not all sites were sampled for TPH, but the result clearly suggest that TPH are likely to be present wherever vehicles traverse water. Considering this information, the BLM should be concerned about the cumulative impact of TPH.</u> TPH in water cause chronic and deleterious effects on aquatic organisms, especially algae, plants and aquatic macroinvertebrates. These organisms, are primarily constituents in the natural food chain of desert riparian areas, and they are particularly important to fish. Any leak of TPH into natural waters will adversely affect the food base of fish and other animals of the riparian area, including amphibians, reptiles, and birds. Fish and amphibians can be impacted directly through uptake by the gills, ingestion of oil or oiled prey, effects on eggs and larval survival, loss of algae, or changes in the ecosystem. Oil has the potential to impact spawning success, as eggs and larvae of many fish species are highly sensitive to oil toxins (USDI 2004).	See response to comment #8.
3j	44	Schelz's assessment of damage that resulted from October flood events is as follows: <u>The heaviest</u>	See response to comment #2.

		<p><u>damage was documented in areas where the floodwaters jumped from the channel, and instead of spreading out over the floodplain, as would occur in a properly functioning system, were quickly diverted by the presence of an unvegetated and entrenched 4-wheel drive route that crosses the channel 60 times in 8.5 miles.</u> This interception of the floodwaters by the 4-wheel drive route contributed to a substantial increase in flow velocity and energy because the waters became constricted and concentrated within the artificial channel created by the 4-wheel drive route. <u>This, in turn, contributed to substantially more erosion than what would have occurred if the 4-wheel drive route didn't exist, and it greatly increased the destruction of vegetation and streambanks, in particular in areas where the 4-wheel drive route crosses the stream channel.</u> There are many areas where the stream channel has widened due to streambank failure and vegetation loss during these floods. <u>All of this has contributed to the further loss of riparian habitat, and in particular, fish habitat, upon which the flannelmouth sucker and bluehead sucker depend on for survival.</u></p>	
3k	45	<p>The loss of fish habitat is visible in the form of soil and streambank erosion, and the loss of overhanging vegetation. This kind of impact from increased energy flow could eliminate the flannelmouth sucker and the bluehead sucker from Arch Canyon. These fish populations are physically separated from other populations and could be rare disjunct populations. Movement patterns, genetic studies, and habitat analyses are needed to answer questions about their viability in Arch Canyon.</p>	<p>See response to comment #1.</p> <p>See response to comment #2.</p> <p>See response to comment #7.</p>
3l	53	<p>The flannelmouth sucker and bluehead sucker are native to the Colorado River system of the western United States and northern Mexico. In Utah, the species occur in the main-stem Colorado River, as well as in many of the Colorado River's large tributaries.</p>	<p>No response.</p>

3m	53	These populations have suffered reductions in abundance and distribution, similar to other near-extinct endemic fish in the Colorado River drainage. The primary threat to the flannelmouth sucker and bluemouth sucker is habitat degradation "primarily from human-induced activities that divert water, destroy overhanging vegetation, widen stream channels, and change the flow regime in both tributary and main stem streams." Schelz (Aug. 2006) at 29.	The Conservation and Management Plan for Three Species (flannelmouth suckers, bluehead suckers, and roundtail chub) in Utah identifies that that all three species have suffered significant reductions in distribution (ca. 50-55%) due to river regulation, water development, effects of invasive fish species (including hybridization with exotic fish), and regulatory neglect (UDWR, 2006).
3n		Habitat loss occurs when streams are dewatered. Habitat modification occurs when the natural stream flow regime is changed or when stream channels are modified by channelization, scouring, or sedimentation from land use practices such as grazing, building roads in erodible soils, or driving motor vehicles in the stream channel. <i>See id.</i>	See response to comment #2.
3o	54	Modifications can lead to reduced stream flows and increased water temperatures especially in small tributaries, which has been shown to lead to stressed conditions with evidence of adult mortality at higher levels than normal for flannelmouth suckers. <i>See id. at 29-30 (citing Rees et al. 2005).</i>	This is true, however, there is no quantifiable evidence that this is occurring in Arch Canyon.
3p	54	Habitat fragmentation – precluding the exchange of individuals from separate populations –in a small stream such as Arch Canyon, "can eventually lead to habitat loss and extirpation of some of the populations." <i>Id.</i> at 30.	This is true, however, there is no quantifiable evidence that OHV use in Arch Canyon is resulting in habitat fragmentation.
4	54	Incidental to the Conditions Assessment, Mr. Schelz documented the flannelmouth sucker, a state sensitive species, along with the more common speckled dace, in many pools throughout Arch Canyon starting at the outlet near Comb Wash upstream to the U.S. Forest Service boundary. <i>See id</i> at 27.	Surveys completed by BLM and UDWR in April 7, 2010 with liberal amounts of surface water given the timing and magnitude of spring runoff identified that the upper most location where fish were found was at or below crossing 40, approximately 5 miles upstream of the confluence with Comb Wash and approximately 3 miles downstream of the U.S. Forest Service boundary.
5	54	The presence of these fish highlights Arch Canyon as "unique to the area because large fish the size of flannelmouth suckers in canyons of this small size are extremely rare in the Four Corners region,	The adult flannelmouth suckers found in Arch Canyon are small in size compared to other populations in larger river systems such as the San Juan River or White River. Arch Canyon flannelmouth sucker adults sampled by BLM and UDWR in April 2010 ranged from 180mm to

		<p>particularly in situations such as this where there is no continuous water connection to a larger river. See <i>id</i> at 3-4. The nearest large river system is the San Juan River, which is separated from the mouth of Arch Canyon by approximately 25 miles of the mostly dry alluvium of Comb Wash. See <i>id</i> at 3. <b><i>It is possible that the flannelmouth sucker [and bluemouth sucker] is a "relict" population that has been separated from the species' larger gene pool for millions of years."</i></b> <i>Id.</i> at 4 (emphasis added).</p>	<p>200mm and Walker (2004) reported lengths of 220 – 270 mm in May 2004. Compared to flannelmouth adults in the White River with a median size of 426 to 450mm and a range of 375 mm to 550 mm (Jimenez and Breen, 2010). The smaller adult size of the flannelmouth suckers is similar to other intermittent stream type tributary systems (Sweet et al., 2009).</p> <p>See response to comment #1, genetic studies identify that the Arch Canyon pattern is consistent with a population that is somewhat isolated in recent times (few hundred years, not thousands) and has undergone population fluctuations (i.e., rare haplotypes, if ever present, would be lost during population reductions). It's a pattern found in other FMS populations throughout the basin, regarding the population of flannelmouth suckers in Arch Canyon are not genetically different or unique from flannelmouth suckers in other parts of the Colorado River basin, but instead represent "typical" flannelmouth suckers.</p>
6	55	<p>Although the Arch Canyon population was first identified during 2003 surveys, evidence of successful reproduction was not found until this survey.</p>	<p>Additional sampling in 2007 and 2008 identified the presence of multiple age classes of all three species of native fish (flannelmouth suckers, mountain suckers and speckled dace) indicating that recent conditions have been suitable to maintain all life stages of fish in Arch Canyon Creek (Breidinger, 2009). Recent investigations completed by BLM and UDWR in April 2010 also identified that multiple age classes of flannelmouth suckers were present showing evidence of successful reproduction.</p>
7	55	<p>A Utah Division of Wildlife Resources survey (Walker 2003) also found bluehead suckers in Arch Canyon.</p>	<p>Walker (2004) noted that mountain suckers were likely misidentified as bluehead suckers during 2003 surveys conducted in Arch Canyon Creek. All subsequent fish sampling (2004, 2005, 2007, 2008, 2009 and 2010) have identified mountain suckers not bluehead suckers in Arch Canyon. In November 2009 the BLM coordinated with UDWR and collected flannelmouth and mountain sucker samples for genetic testing and verification that the mountain suckers were misidentified as bluehead suckers in the Walker 2003 report. The samples were submitted to Dr. Marlis R. Douglas, Curator of Ichthyology at the Illinois Natural History Survey, Institute for Natural Resource Sustainability, University of Illinois for analysis. Unpublished results indicate that <b>the species in Arch Canyon are mountain suckers not bluehead suckers and the Arch Canyon mountain suckers are not genetically unique</b> (personal communication, Dr. Marlis R. Douglas).</p>

8	56	<p>According to Mr. Schelz:  The most serious impact to the flannelmouth sucker is probably the loss of suitable habitat due to the destruction of the streambanks and vegetation by motor vehicles and the accelerated erosion processes caused by the presence of the 4 wheel drive route that crosses the stream at least 60 times. <i>Id</i> at 37. It is also probable that the "effects of total Petroleum Hydrocarbons (THP) on water quality has direct and indirect negative effects on the flannelmouth suckers in Arch Canyon. <i>Id</i></p>	<p>See response to comment #2.</p> <p>Aubry (2010b) Water Quality Monitoring in Arch Creek Staff Report documents detailed water quality sampling. Additional detailed sampling has been conducted as part of a monitoring program for vehicle recreation permits including Jeep Safari, ATV Safari, Jeep Jamboree and other events. Samples were collected at the lower sample site (Arch Creek near the confluence with Comb Wash) by BLM staff. Lab analysis was completed by American West Labs in Salt Lake City, Utah an Environmental Protection Agency and Utah State Department of Water Quality approved lab. Samples were collected 2006 through 2009 and usually taken several days before the event, the day of the event and several days after the event. A total of 34 samples were collected over 30 days. Lab tests included several hydrocarbon analysis, total suspended solids, and total dissolved solids. See of attachment 2 of Aubry (2010b) for detailed water quality information.</p> <p>Hydrocarbon analysis included Total Recoverable Petroleum Hydrocarbons (TRPH). No lighter or medium range hydrocarbons (gasoline or diesel range hydrocarbons) have been detected in the samples. Minor amounts of TRPH were detected after several permitted events. Values ranged from 3.0 to 4.4 mg/L, these values are very close to the level of detection, with the level of detection equaling 3.0 mg/L. This indicates that the levels of TRPH found are slightly over the limit of detection, meaning these levels are very low Aubry (2007b). The State of Utah established Standards of Quality for Waters of the State, which are listed in the Utah Administrative Code R317-2 (State of Utah, 2008), however, there are no numeric standards for petroleum hydrocarbons.</p>
9	56 and 57	<p>In addition to Mr. Schelz's recommendation to close the ORV route in Arch Canyon to help protect and restore the riparian area and protect the fish (discussed in previous section), both UDWR and Mr. Schelz recommend further research and investigations of the flannelmouth sucker and bluehead sucker in Arch Canyon. UDWR anticipates that petitions to list the bluehead sucker and the flannelmouth sucker under the Endangered Species Act are imminent and that the effort to</p>	<p>See response to comments #2, #3 and #7.</p>

		catalog the presence or absence, and abundance of these species will provide "information that will enable a better response to, and possibly prevent, such petitions." UDWR (2005) at 1, attached as Exhibit K.	
10	57	Based on the current database of information about the flannelmouth sucker and bluehead suckers in the region, and the dearth of scientific data about these species in Arch Canyon and surrounding BLM lands, Mr. Schelz and UDWR recommend that <i>BLM Fund research studies of the fish of Arch Canyon and in particular the flannelmouth sucker and the bluehead sucker. Research should focus on their movement patterns, habitat needs, and how long the flannelmouth suckers have been isolated from other populations. Comparative genetic studies are recommended.</i> UDWR notes that greater knowledge of the life histories of these fish would also enhance the effectiveness of future conservation efforts. <i>See id.</i> at 15, and Schelz at 41.	See response to comment #1, #3, and #7.
11	57 and 58	Mr. Schelz recommends that BLM institute additional measures to protect the fish populations, and in particular the flannelmouth sucker and the bluehead sucker, in Arch Canyon and to enhance their habitat. The general lack of information for the flannelmouth sucker suggests that management should begin with a <i>detailed survey of each drainage on BLM-managed land that could potentially hold populations of flannelmouth sucker.</i> <i>See id.</i> at 41. This effort should be coordinated with relevant agencies (i.e., UDWR and adjacent states Game and Fish Departments, U.S. Forest Service, U.S. Fish and Wildlife Service) to obtain information concerning stream reaches that are off BLM system land, yet may be influenced by BLM management activities. The BLM could use this information on habitats and populations to coordinate management	See response to comments #3 and #7. Detailed drainage surveys have been completed see Walker (2005) and Breidinger (2009). The BLM has been in a Cooperative Agreement Challenge Cost Share Agreement with the UDWR since 1993 which the BLM provides approximately \$10,000/year for Three Species (flannelmouth suckers, bluehead suckers and roundtail chub) work on BLM lands. The work accomplished through this agreement involves completing many activities relating to three species conservation including: habitat surveys to gain knowledge on current distribution, movement and live history studies, genetic studies, potential reintroductions into historical habitats, work to maintain water in important habitats, habitat restoration/improvements which help conserve the Three Species. The BLM is also a signatory to the Three Species Conservation and Management Plan, participating in annual meetings and coordinating with all signatories including UDWR, U.S. Fish and Wildlife Service, Bureau of Reclamation, U.S. Forest Service, National Park Service, The Nature Conservancy, Ute Indian Tribe, and Utah Reclamation

		<p>activities on BLM lands throughout the region. Mr. Schelz emphasizes that <i>"given the known threats to this species, conservation measures should concentrate on maintaining aquatic habitat diversity and natural temperature and flow regimes in stream reaches with existing and adjacent flannelmouth sucker populations."</i> <i>Id</i> at 41.</p>	<p>Mitigation and Conservation Commission. As part of this conservation commitment the BLM provides a staff member as a representative to the Three Species Conservation Team, BLM works cooperatively with UDWR to complete survey and monitoring of three species populations and/or evaluate habitat conditions. The BLM agrees to protect three species populations and suitable habitat located on BLM lands from negative impacts that may be caused by land use activities (UDWR, 2006).</p>
12	58	<p>Finally, Mr. Schelz points out that the effects of the Arch Canyon ORV route on aquatic macroinvertebrates, frogs, toads, and salamanders is completely unknown. He concludes, based on his experience in other riparian areas, that these species' habitat in Arch Canyon is probably being negatively impacted by the ORV route. To have a basis for future management decisions, Mr. Schelz recommends that BLM conduct general surveys for these species and that the agency initiate a research study on the effects of the ORV route on these species' population health. <i>See id.</i> at 42.</p>	<p>Information has been collected and additional work is scheduled to be implemented regarding macroinvertebrates and amphibians in Arch Canyon. Aubry (2010c) Macro-Invertebrate Sampling in Arch Canyon identifies that macroinvertebrate samples have been collected in Arch Canyon four times since 2002 by BLM staff, with identification and assessment reports completed by the National Aquatic Monitoring Center (NAMC), a cooperative venture between Utah State University and BLM.</p> <p>The dominant macro-invertebrate taxa found in order of relative abundance were Diptera, Damselflies, Mayflies, Dragonflies, and water Mites. Several species were not collected that could be expected at this type of hydrologically variable (i.e., flashy) desert stream system, including certain species of Mayflies (e.g., Ephemerellidae, Leptohyphidae, Caenidae) (personal communication, Scott Miller, 2010). Furthermore, almost all observed taxa were represented in moderate to low numbers, such as Dragonflies. However, due to the qualitative nature of the sampling, additional quantifiable sampling is needed to determine the actual macro-invertebrate assemblage and associated conditions.</p> <p>To better understand the macro-invertebrate conditions in Arch Creek, a more intensive quantitative sampling program is being implemented in 2010. Two additional sample sites were established and sampled in coordination with the NAMC during early July, about one month after the spring runoff is over. These samples will be compared with quantitative samples from similar systems.</p> <p>The BLM partnered with the Southwest Biological Science Center, Canyonlands Research Station in the spring and fall of 2005 to</p>

			<p>complete an amphibian study. The objective of the study was to try and determine whether Off Highway Vehicle (OHV) use affects amphibian numbers or activity. The study conclusions indicate that if there is an impact of OHVs on amphibians, it appears to be subtle, and perhaps chronic and /or indirect, primarily affecting behavior rather than immediately increasing mortality (Graham, 2005).</p> <p>In the spring and early summer of the UDWR completed surveys for Great Plains toads and recorded all amphibians found. The only amphibian found was in this area was woodhouse toads (Breidinger, personal communication) in the lower portion of Arch Canyon near the confluence with Comb Wash</p> <p>A report is being drafted.</p>
13		<p>Closing Arch Canyon to motorized vehicle use is necessitated by the lack of data and information about the resident fish, amphibians, and macroinvertebrates. There is ample research that confirms that motor vehicle routes have negative effects on riparian areas -increased soil erosion and compaction, increased water velocity, plant community destruction, loss of terrestrial and aquatic insect communities, increased sedimentation, pollution -resulting in loss of fish habitat, and reduction of fish and wildlife populations. Mr. Schelz's fieldwork and analysis indicate that these adverse effects from ORV use of the route in Arch Canyon mirror the effects documented in these studies. Allowing ORV use to continue in Arch Canyon, with the knowledge that such use is or will cause adverse effects to the flannelmouth sucker, a state sensitive species, the bluemouth sucker -both perhaps genetically unique sub-species -and unknown populations of amphibians and invertebrates violates 43 C.F.R. § 8341.2</p>	<p>See response to comments #1-12.</p>



## **6.0 Conclusions and Recommendations**

Genetic results do not suggest that flannelmouth suckers in Arch Canyon are genetically different or unique from flannelmouth suckers in other parts of the Colorado River basin, but instead represent "typical" flannelmouth suckers. Arch Canyon flannelmouth suckers represent the same Evolutionarily Significant Unit as other flannelmouth suckers in the Colorado River basin. Unpublished results also indicate that the bluehead sucker species discussed in the Scheltz report in Arch Canyon are actually mountain suckers and are not genetically unique (personal communication, Dr. Marlis R. Douglas).

Fish sampling in 2007 and 2008 identified the presence of multiple age classes of all three species of native fish (flannelmouth suckers, mountain suckers and speckled dace) indicating that recent conditions have been suitable to maintain all life stages of fish in Arch Canyon Creek (Breidinger, 2009). Recent investigations completed by BLM and UDWR in April 2010 also identified that multiple age classes of flannelmouth suckers were present showing evidence of successful reproduction.

The BLM acknowledges that there are isolated disturbances to fish habitat as a result of where motor vehicle crossings occur (Aubry, 2010a). However, the existing condition of suitable fish habitat in Arch Canyon is primarily a result of the natural landform and hydrology. This watershed is typical of most canyon slickrock landforms that experience thundershowers and frequent flood events resulting in a flashy system. Stream flows vary from less than 0.5 cubic feet per second (cfs) base flow to annual peak flow of 25 cfs. The frequent flash flood events that characterize this desert stream system carry high sediment loads which can naturally scour the stream channel in higher gradient areas and result in deposition of fine sediment in lower gradient areas. On October 6, 2006 Arch Canyon experienced a major flow event (100 year) estimated at or above 3,000 cfs (Aubry, 2007a). The isolated disturbances to fish habitat as a result of motor vehicle crossings in Arch Canyon is minimal compared to the natural alteration associated with these flashy systems. Closing the road is not expected to create additional aquatic habitat but could result in isolated improvements to existing habitat. Overall, it is the flashy hydrology and associated peak flows combined with the landform that develop and maintain the fish habitat in Arch Canyon.

Prichard (et. al., 2007) found that even though the road crosses the stream at 60 sites, there was little to no impacts to the riparian aquatic habitat because most of the road length is on the higher terraces and most of the crossings are at a right angle to the channel. Of the 60 crossings identified in Arch Canyon, surveys completed by BLM and UDWR in April 2010 identified that the upper most location where fish were found was at or below crossing 40 thus decreasing the number of crossings that could have a direct impact on fish habitat. During base flow approximately 20 of these stream crossings are wetted and the remaining are intermittent (Aubry, 2010a). Flannelmouth suckers are found at or near some of the perennial stream crossings. Recent management decisions in the Monticello Field Office Resource Management Plan (RMP) limit Off Highway Vehicles (OHV) use to designated routes and preclude development of additional stream crossings. These decisions are expected to result in decreasing alternate routes, stream crossings and side trails. UDWR identified that numerous side trails and associated

stream crossings have been closed and signed to keep traffic on the designated routes which appears to have resulted in reduced impacts and will keep future riparian degradation to a minimum (UDWR, 2009).

A report completed by UDWR in 2009 titled, "The Status of Native Fish Living in Arch Canyon" identifies that habitat conditions in Arch Canyon naturally reach marginal conditions and habitat changes are likely a result of natural variation. This report also identifies that recent conditions have been suitable to maintain all life stages of fish in Arch Canyon. This was also recently verified in cooperative sampling efforts by BLM and UDWR which identified the presence of multiple age classes in April 2010.

Based on the BLM's assessment of the fisheries resource information, it is concluded that motorized use along the designated route within Arch Canyon is not currently causing adverse impacts to fish populations and fish habitat.

To assure the persistence of native and sensitive fish species in Arch Canyon Creek, UDWR and BLM fisheries biologists agree to the following recommendations (UDWR, 2009):

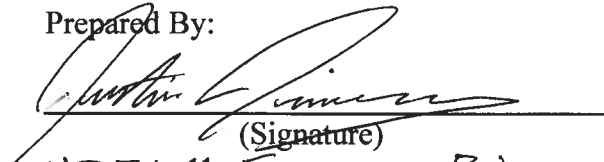
- OHV use and disturbance should be monitored.
- Native fish populations, temperature, instream and riparian habitat should be monitored.
- The fisheries resource appears to be sustainable at the current OHV use levels. However, the BLM and UDWR should continue monitoring in Arch Canyon to determine if OHV use is causing adverse effects to the fisheries resource. If OHV use levels increase and adverse impacts to the fisheries resource are documented then the BLM should revisit appropriate use levels or other management actions to address this impact.
- Off trail OHV use should be discouraged.
- Signage should be placed in the canyon to educate OHV users of the importance of native fish conservation efforts.

In addition, information has been collected and additional work is scheduled to be implemented regarding macroinvertebrates monitoring in Arch Canyon. To better understand the macroinvertebrate conditions in Arch Creek, a more intensive quantitative sampling program is being implemented in 2010 and recommended for subsequent year based on the results of the sampling. Two additional sample sites were established and sampled in coordination with the NAMC during early July, 2010. These samples will be compared with quantitative samples from similar systems.

It is recommended that the BLM require any permitted OHV user groups in Arch Canyon to have a spill containment kit in the event of an accidental gas, diesel or oil spill. It is also recommended that the BLM provide and require all permitted OHV user groups in Arch Canyon to distribute educational information regarding the importance of native fish conservation efforts and habitat protection measures associated with OHV use.

**7.0 Date and Sign**

Prepared By:

  
\_\_\_\_\_  
(Signature)

UT BLM FISHERIES BIOLOGIST  
\_\_\_\_\_  
(Title)

July 30, 2010  
\_\_\_\_\_  
(Date)