BEFORE THE COLORADO WATER CONSERVATION BOARD

STATE OF COLORADO

IN THE MATTER OF PROPOSED INSTREAM FLOW APPROPRATION IN WATER DIVISION 4: SAN MIGUEL RIVER (confluence Calamity Draw to confluence Dolores River)

PREFILED WRITTEN TESTIMONY OF WESTERN RESOURCE ADVOCATES AND THE WILDERNESS SOCIETY

Pursuant to the August 2, 2011, First Prehearing Order, Western Resource Advocates ("WRA"), and The Wilderness Society ("TWS") (collectively, "Conservation Groups"), by and through its undersigned counsel, submit the following prefiled written testimony attached hereto in support of the Staff ISF Recommendation on the San Miguel River, Water Division No. 4. *See* Notice of Contested 2011 ISF Appropriations (May 26, 2010), before the Colorado Water Conservation Board ("CWCB" or "Board"):

1) Prefiled Written Testimony of John Woodling, Ph.D, 8/24/2011
2) Written Testimony of Laura Belanger, P.E. Aug. 26, 2011

Respectfully submitted this 26th day of August, 2011.

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CERTIFICATE OF SERVICE

I hereby certify that on August 26, 2011, the above **Prefiled Written Testimony of Western Resource Advocates and The Wilderness Society** was served upon all parties herein by Federal Express, email, or depositing copies of the same in the U.S. mail, postage prepaid and addressed as follows:

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Duly signed original on file at Western Resource Advocates

Prefiled Written Testimony of John Woodling, Ph.D., Woodling Aquatics
8/24/2011

I have reviewed the rebuttal statement of Don Conklin for Montrose County and have made the following observations. I was pleased to see that Mr. Conklin (August 17, 2011) stated that,

> "The Historical flows that have occurred over the recent past were sufficient to maintain the current healthy fishery."

Prior to August 17 Conklin (July 18, 2011 page 1) said basically the same thing,

> "The fish populations in the river at present are being preserved with the historical flows regime that has occurred over the years without designated minimum flows."

I agree with these statements. The current fish assemblage of the claimed reach of the San Miguel River has been maintained and preserved due to the historic flow regime. This flow regime is the culmination of elevated stream flows during the spring and early summer snowmelt period, base flows in the fall and winter months and any stochastic events over a period of many years including drought and flood. None of these flows alone shapes the fish assemblage in a stream reach. The minimum or median flow on any given day is not the event that supports or eliminates the fish assemblage with the exception of a catastrophic event that kills every fish in the river. The principal point of the preceding sentences is that fish respond to the totality of flow levels each individual experiences during their lifetime not just the minimum low flow or maximum spring flow of each year.

As I previously noted in WRA & TWS' Prehearing Statement, the claimed reach of the San Miguel River supports self-maintaining populations of bluehead sucker, flannelmouth sucker and the roundtail chub. The numbers and size of the Three Species currently inhabiting the claimed reach of the San Miguel River are determined to a certain extent by current flow regime. The current flow regime is lower than stream flows of previous centuries. Consequently riffle, run and pool water depth is probably less than what was present prior to the introduction of irrigation based agricultural systems in the late 1800s. The numbers and maximum size of the Three Species may well be less than that which was present prior to extensive dewatering of the river for agricultural and domestic use. The DPW/BLM instream flow recommendations are based on the current, flow regime flowing down a stream channel that developed over the last several hundred years in response to higher flows.

The Three Species prefer waters, greater than 3.3 feet deep as noted in multiple documents submitted or referenced already in this matter. Bluehead suckers select for riffle habitat, the deeper the water in riffle areas the more and larger bluehead sucker present. Water in riffle areas is shallower than in other riverine habitats. All of the fish

assemblage has adequate habitat to survive if flow in riffles supports a bluehead sucker population. The bluehead sucker serves as an Indicator Species of community health. The entire assemblage is protected when the Indicator Species (bluehead sucker) is "healthy." An average depth of 1.0 foot is considered "marginally suitable" riffle habitat for bluehead suckers (Anderson and Stewart 2003 R. Anderson and G. Stewart. 2003. Riverine fish flow investigations Federal Aid Project F-289-R6. DOW Fort Collins, Colorado.). THE DPW/BLM flow proposals result in average riffle water depths of 0.6 feet. In comparison water depths less than the one foot are considered to be "marginally suitable" during the low flow time period of September1 through April 14 each year. The proposal advanced by Montrose County results in average riffle depths of 0.5 feet. I recommended a higher flow of 115 cfs in the fall and winter months (0.8 feet in the riffle), still less than that considered marginally suitable for bluehead sucker.

Montrose County's minimum stream flow proposals relied upon a flow analysis for the years 2001 through 2008 (Conklin August 17, 2011) not the biological needs of the Three Species. This time period includes one of the worst drought years on record 2002. The Montrose County flow recommendation of 60 cfs was compared to the median daily flow levels for the eight years of flow records used (Conklin August 17, 2011) seeming to indicate that the proposed flows were appropriate since "the recommended minimum flows....would have been met over 94% of the days by median flows in this period." Montrose County inappropriately assumes that median flows are connected to long-term species survival.

The Three species are long-lived fishes. Some of the bluehead, flannelmouth sucker and roundtail chub in the San Miguel River were likely born in the years prior to 2001. The Three Species reproduce best in deeper water associated with spring and summer flows. Each fish does not have to spawn successfully each year for the population to survive. In theory each fish has only to replace itself once and once for another partner for the population to remain stable. The timeframe considered by Montrose County is too short to properly evaluate the population demographics of the Three Species that currently inhabit the claimed stream reach. A longer time period would be needed and an analysis of how frequently these fish populations experience a successful spawning event.

Montrose County asserts that the DPW/BLM recommendations either maximize or optimize habitat in the claimed reach of the San Miguel River. To the contrary, the DPW/BLM flow recommendation for the fall winter months result in mean riffle depths 40% less than the one-foot level deemed "marginally appropriate." The spring flows recommended by DPW/BLM are indeed excellent for flannelmouth sucker but are less than adequate for bluehead sucker. Reproductive failure is attributable to low flows can limit a population as assuredly as lack of habitat in the fall and winter months. Flow levels greater than 325 cfs (DPW/BLM recommendation) are required to help assure appropriate habitat for bluehead suckers, a spring/early summer spawning species. The 325 cfs proposed by the DPW/BLM is not adequate. Accordingly I recommended higher flows for the spring runoff period (500 cfs from April 15 through June 14).

Montrose County proposes substantially lower flows as adequate to support the Three Species to "reasonable" degree while acknowledging that the fish assemblage is

supported by the current historic flow regime. The current flow regime often includes days, weeks or months where river flows are substantially greater than the DPW/BLM, WRA or Montrose County proposals. In many instances flows are less than the various proposals presented to the CWCB in this matter. The fish populations in the San Miguel River develop and persevere based on the total flow regime over a period of years, not the lowest flows present each year.

The discussion presented by Montrose County seems to indicate that the minimum flows appropriate to maintain the current fish assemblage are somehow equal to the median daily flows currently present in the river. The selection of median daily flows was arbitrary. Anyone could claim that the 25th percentile was appropriate or perhaps the 75th percentile. Selection of a given flow statistic based on analysis of daily flow data does not consider the habitat needs (in this case depth) of the species involved. Montrose County inappropriately bases its minimum stream flows on hydrology, rather than biology. Habitat needs of the Three Species indicate flows exceeding those proposed by Montrose County are appropriate in the claimed reach of the San Miguel River. Accordingly I continue to recommend the following as minimum stream flows in the claimed reach of the San Miguel River,

1. A flow of 500 cfs from April 15 through June 14,
2. A flow of 170 cfs from June 15 through July 31,
3. A flow of 115 cfs from August 1 through April 14.

Written Testimony of Laura Belanger, P.E.
For the September 13, 2011, San Miguel River Instream Flow Hearing
August 26, 2011

I have prepared this written testimony after reviewing the public record for the CWCB's proposed instream flow recommendation (ISF) for the San Miguel River.

Upper Terminus of the Recommended Instream Flow Reach

Several opposers referred to a report by Bikis Water Consultants, LLC ("Bikis", Farmers Water Development Company, Prehearing Statement Exhibit 1) which concluded that the proposed ISF segment of the San Miguel River is a gaining reach due to shallow groundwater inflow during the low flow September through February period. Bikis consequently states that less than 80 cubic feet per second (cfs) is needed at the upper terminus to realize the 80 cfs ISF recommendation at Uravan so the ISF recommendation should be decreased. I disagree with any attempts to decrease the ISF recommendation based upon the premise that the reach is gaining. Regardless of surface and groundwater interactions, for there to be 80 cfs anywhere in the reach there must be 80 cfs at Calamity Draw (the upper terminus). Additionally, I believe the Bikis analysis of flows between the Naturita and Uravan gages, and their conclusion that the reach is gaining throughout from groundwater inflows, is inadequate. Their analysis did not consider irrigation return flows below the Naturita gage in the vicinity of the upper terminus as a source of increased flow. Nor did they refer to two studies completed by Dr. David Cooper (included in the appendices of the Colorado Water Conservation Board staff's Executive Summary and Exhibit 2 of Western Resource Advocates and The Wilderness Society's (WRA/TWS) Prehearing Statement) which found the river to be losing at all study sites (one of which was located in the ISF reach, near the Uravan gage). To fully understand surface and groundwater interactions throughout the ISF reach, including spatial and temporal distinctions, additional research would be necessary. Comparing differences between two gages, located approximately 15 river miles apart, is insufficient.

Water Available in Excess of the Recommended Instream Flows

In my July 12, 2011 memo (WRA/TWS Prehearing Statement Exhibit 2), using historical Uravan gage data (a period of 43 years), I calculated "excess flows" or "excesses" to the recommended ISF (water that would be present in the river above the recommended ISF). I also developed an exceedance curve of the probabilities that various annual volumes of excess flows would occur. On average, annual excess flows of 167,183 AF would be physically present in the reach. Looking at the lower and higher end of flows likely to occur, annual excesses of 350,000 AF or more would occur about 13% of years and excesses above 50,000 AF would occur in about 85% of all years.

In response to this analysis, Montrose County included a memo from Deere & Ault (Montrose County, Exhibit M) in their Rebuttal Statement. Deere & Ault confirmed my results but questioned the use of annual volumes of excess flows to estimate water available "for diversion using conventional means (i.e., ditch diversion and/or well pumping)." They provide monthly excess flow data which show that most excesses occur in peak flow months (April through June), which is expected given Colorado's spring runoff-driven hydrology. The crux of Deere & Ault's analysis is that the monthly peak flow period excess flow rates and volumes are large and would be difficult for most water users to divert and store due to infrastructure constraints. This is misleading as it suggests that the peak flow period flow rates and volumes are what would be required were 100% of excess flows to be diverted and stored by one project. This is not at all representative of the incremental water development that is likely to occur in the basin, as documented in Montrose County's own Exhibit J (Montrose County Division 4 Water Court Applications). It also overlooks the fact that Colorado water users – municipal, agricultural, and others - are well accustomed to capturing and storing water during peak flow periods for use later in the year during periods of lower flows. Planning for differences between hydrologic year types (wet, dry, average) is also a necessity and commonplace. I reiterate the results of my original analysis that a significant volume of water is available in excess of the ISF recommendation.