



Janice K. Brewer  
Governor

ARIZONA DEPARTMENT  
OF  
ENVIRONMENTAL QUALITY

1110 West Washington Street • Phoenix, Arizona 85007  
(602) 771-2300 • www.azdeq.gov



Benjamin H. Grumbles  
Director

August 27, 2009

Jim Crosswhite  
EC Bar Ranch  
PO Box 44  
Nutrioso, AZ 85932

Re: Nutrioso Creek Delisting

Dear Mr. Crosswhite,

The purpose of this letter is to advise you that the EPA has finished their review of our 2006/08 Assessment in which they state "ADEQ has removed Nutrioso Creek (AZ 15020001-017A) from Category 4a - TMDLs completed and reclassified it as Category 1 - Attaining All Uses. The State has presented evidence that this reach of Nutrioso Creek should be delisted for turbidity/suspended sediment, supported by post-TMDL monitoring data in the 2004-2006 timeframe (ADEQ 2007b), which shows zero exceedences (n=26) of the SSC standard and compliance with the turbidity TMDL load allocations. We concur with ADEQ's assessment that this WQLS is attaining for SSC and turbidity." The rationale for the delisting decision was sent to you previously in a correspondence from Chris Varga, former ADEQ Surface Water Section Manager, dated July 14, 2006.

Nutrioso Creek has been delisted above Nelson Reservoir and is no longer considered not attaining the former turbidity surface water quality standard. This is the first instance in Arizona where a waterbody has been delisted as a result of voluntary mitigation efforts. ADEQ appreciates the time, effort and dedication you have shown to improving the water quality of Nutrioso Creek.

Sincerely,

Jason Sutter, Supervisor  
ADEQ TMDL Unit

Northern Regional Office  
1801 W. Route 66 • Suite 117 • Flagstaff, AZ 86001  
(928) 779-0313

Southern Regional Office  
400 West Congress Street • Suite 433 • Tucson, AZ 85701  
(520) 628-6733



Janet Napolitano  
Governor

# ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

1110 West Washington Street • Phoenix, Arizona 85007  
(602) 771-2300 • [www.azdeq.gov](http://www.azdeq.gov)



Stephen A. Owens  
Director

August 28, 2006

Mr. James Crosswhite  
EC Bar Ranch  
PO Box 44  
Nutrioso, Arizona 85932

Re: Request to Delist Nutrioso Creek

Dear Mr. Crosswhite:

This letter is in response to your May 31, 2006 letter to the Arizona Department of Environmental Quality (ADEQ) requesting Nutrioso Creek be delisted from Arizona's list of impaired waters. **ADEQ appreciates the time and resources that you have spent on restoration efforts along the creek. As outlined in your letter, water quality is not the only indicator of ecosystem health. Through your restoration efforts, there have also been improvements in both wildlife habitat and fish populations along the creek.** ADEQ is obligated, however, to make impairment decisions based on whether applicable water quality standards are being met and maintained. After reviewing your letter and all available data, **ADEQ will recommend to EPA that the reach of Nutrioso Creek, above Nelson Reservoir, be delisted for turbidity.** Below we outline the factors that went into our decision and changes in rules that may affect the status of Nutrioso Creek in the future.

As you are aware, the *Nutrioso Creek TMDL for Turbidity* was completed and approved by the U.S. Environmental Protection Agency (USEPA) in 2000. The TMDL was written to address exceedances of the water quality standard for turbidity in cold water streams of 10 NTU. Unfortunately, NTUs cannot be used in calculating loads because they are a measure of the amount of light refracted in a water sample and not a measure of mass. In order to calculate the TMDL, a turbidity versus total suspended solids (TSS) relationship was established. Using the developed relationship, any given NTU value has a corresponding TSS value in milligrams per liter (mg/L), which was then used to calculate the [MDL.

For Nutrioso Creek, spring runoff (snow melt), occurring during the months of February through May, was determined to be the "critical condition" to sediment loading. The critical flow was determined to be 4.3 cubic feet per second (cfs) with a corresponding turbidity value of 55 NTU and a TSS value of 44 mg/L. The critical flow was calculated as the median value recorded by the U.S. Geological Survey gage above Nelson Reservoir, which operated from 1968-1989. The result of the 1'MDL stated that in order for Nutrioso Creek to meet water quality standards, the sediment load would need to be reduced by 837 pounds per day (lbs/day), or a total of approximately 50 tons, during the four months that spring runoff occurs, to a target value of 183 lbs/day. The TMDL implementation section listed several Best Management Practices (BMPs) that could be used to potentially reduce the sediment loading to Nutrioso Creek. BMP implementation for non-point source pollution, as is the case in Nutrioso Creek, is voluntary.

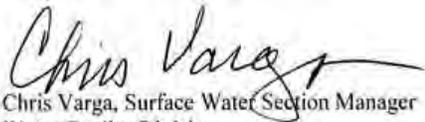
In 2000, you began restoration efforts with the help of ADEQ Water Quality Improvement Grant funds. ADEQ began effectiveness monitoring in 2004 to determine if implemented actions had improved the water quality of Nutrioso Creek. In order to determine that the creek is attaining water quality standards, the effectiveness

monitoring data must be collected under the critical conditions identified in the TMDI.. Ideally, ADEQ would collect data under the critical spring runoff conditions (at or near 4.3 cfs), develop a new turbidity/TSS relationship, and calculate the reduction in sediment loading to Nutrioso Creek. Attainment of both the water quality standards and the load reductions specified in the TMDL would result in delisting the waterbody for the pollutant of concern. In 2002, ADEQ repealed the turbidity standard and replaced it with a Suspended Sediment Concentration (SSC) standard of 80 mg/L as a geometric mean of samples taken at or near baseflow in both warm and cold water streams. The turbidity standard was replaced because ADEQ considers the SSC standard to be a better indicator of water quality impairment than turbidity and to be more protective of aquatic life. This change in the applicable water quality standard has made the interpretation of the Nutrioso Creek effectiveness data more challenging. Through the effectiveness monitoring process, ADEQ staff determined that Nelson Reservoir causes a break in the hydrology of Nutrioso Creek. Therefore, as part of our upcoming triennial review of the surface water quality standards, Nutrioso Creek has been segmented into two reaches: one from the headwaters to the dam at Nelson Reservoir, and another from the dam to Picnic Creek. This response and the data analysis only addresses the reach of Nutrioso Creek above Nelson Reservoir.

The ADEQ collected effectiveness data for the upper segment of Nutrioso Creek from 2004-2006 and developed a new relationship between turbidity and TSS to determine the degree of attainment of the current SSC and old turbidity standards. Discharge data ranged from near zero to twenty cfs. Using the data collected from 2004-2006, at a flow equal to 4.3 cfs, we would expect a turbidity value of approximately 5 NTU and a corresponding TSS value of 5 mg/L (equaling 115.93 lbs/day). These numbers indicate that at critical flow of 4.3 cfs, the old turbidity standard of 10 NTU and the TMDL target load of 183 lbs/day are being met. The SSC geometric mean standard of 80 mg/L also was not exceeded.

After review of available information, **it will be ADEQ's recommendation that the segment of Nutrioso Creek extending from the headwaters to Nelson Reservoir be delisted for turbidity.** ADEQ will make this recommendation to USEPA as part of the 2006 Integrated Report of Water Quality\*. In accordance with the Clean Water Act, EPA must concur with any final delisting decisions. Even if Nutrioso Creek is delisted, ADEQ will continue its effectiveness monitoring and evaluate water quality in the future especially as new surface water quality standards are adopted or revised. Of note, we expect narrative water quality standards for both bottom deposits and biocriteria to be adopted in the upcoming triennial review as well as a numeric cold water SSC standard of 25 mg/L. We will assess the stream for attainment of any new standards.

Sincerely,



Chris Varga, Surface Water Section Manager  
Water Quality Division

SWS06:0103

cc: Jason Sutter, Mgr., TMDI. Unit  
Steve Pawlowski, Mgr., Standards & Assessment Unit

Northern Regional Office  
1801 W Route 66 • Suite 117 • Flagstaff, AZ 86004  
(928) 779-0313

Southern Regional Office  
400 West Congress Street • Suite 433 • Tucson, AZ 85701  
(520)628-6733