RESPONSIVENESS SUMMARY CONCERNING THE EPA'S OCTOBER 31, 2006 PUBLIC NOTICE PROPOSING TO APPROVE/DISAPPROVE THE ARKANSAS 2004 303(D) LIST

Public Participation Process:

On October 31, 2006, EPA Region 6 published a notice in the legal advertising sections of the Arkansas Democrat-Gazette (Little Rock, AR) and the Morning News of Northwest Arkansas (Springdale, AR) notifying the public of the availability of the Environmental Protection Agency (hereinafter, "EPA") decisions identifying water quality limited segments and associated pollutants in Arkansas. Notice of availability was also published in the Federal Register, Vol. 71, Num. 210, pages 63759-63760 on October 31, 2006. Copies of documents which explain the rationale for the EPA's decisions were provided at the EPA Region 6 public website http://www.epa.gov/earth1r6/6wq/artmdl.htm and were available on request. The public comment period closed on November 30, 2006.

Summary of Public Participation:

One person contacted the EPA Region 6 offices to obtain additional information regarding the federal register notice and what it means.

Carie Breazeal, Projects Director, Office of Congressman John Boozman
E-mail request

The following persons or entities provided written comments during the public comment period:

1. Mark Derichsweiler, P.E.
   Manager Watershed Planning & Stormwater Permitting Section
   Oklahoma Department of Environmental Quality

2. Chris G. Weiser, Chairman
   Water & Sewer Commission
   City of Springdale, Arkansas

3. Tom S. McAlister, Manager
   Rogers Water Utilities

The Arkansas Department of Environmental Quality (hereinafter, "ADEQ") provided written comments in a letter dated December 22, 2006 in response to EPA's approval/disapproval action letter dated October 16, 2006 and EPA's Record of Decision on the 2004 303(d) list. ADEQ's letter was dated and received outside the public comment period which ended November 30, 2006.

Agency's Specific Responses to Comments Made by the Public:

Comment: *The Oklahoma Department of Environmental Quality (hereinafter, "ODEQ") supported EPA's conclusion that Osage Creek (reaches 30 and 930), Spring Creek (reach 931) and Muddy Fork (reach 027) [tributary segments of the Illinois River in Arkansas] should be included on the Arkansas 303(d) list but questioned EPA's omission from the 303(d) list of the downstream segments (Reach 20 and 22) of the Illinois River in Arkansas when the segment on the Oklahoma side was listed.*

RESPONSE: Although the segment on the Oklahoma side was listed on Oklahoma's 303(d) list, Arkansas' list includes only those waters not attaining Arkansas' water quality standards. Arkansas currently has a narrative water quality standard for nutrients. In 2003, Parsons, an environmental and consulting firm in Austin, Texas, conducted an EPA funded intensive survey ("the Parsons Study") of the Arkansas portion of the Illinois River watershed and provided EPA with a summary report of its findings ("the Parsons Report"). The types of data collected by Parsons allowed EPA to use a weight of evidence approach in interpreting Arkansas' nutrient narrative water quality standard, which lists indicators known to cause or measure nutrient impairment. The weight of evidence approach considers physical, chemical and biological indicators and the weight of evidence increases when multiple indicators support a case for nutrient impact. The Parsons Report did not support the listing of the two downstream reaches of the Illinois River. Based on a weight of evidence approach, reach 22 was "slightly impacted" and reach 20 at the state line was "unimpacted". EPA has not proposed to add either of these Illinois River segments to the Arkansas 2004 303(d) list.

Comment: *Springdale Water Utilities and Rogers Water Utilities were opposed to EPA adding two segments of Osage Creek and one segment of Spring creek to the Arkansas 303(d) list based upon results of the EPA funded study conducted by Parsons in 2003. Reference was made to previous correspondence from ADEQ to EPA identifying "extensive and detailed comments which are critical of the Report and its conclusions" to which the commenters concur. Two examples from the ADEQ letter cited by Rogers Water Utilities are 1) "ADEQ had numerous criticisms of the sampling program, and concluded that "due to contractors' time constraint, inaccuracies in the Report, and the somewhat limited data set produced, we [ADEQ] feel the current Report should not be used as an assessment tool" and 2) "ADEQ disagreed with the conclusions that the data supported a finding of impact, in particular when the actual data demonstrated exactly the opposite. For example, ADEQ noted that the Report described the data as follows: "The ecological quality for the downstream most sites in the Arkansas side of the Illinois River Basin (ILL020 and ILL022) was stable, not significantly impaired biologically and with supporting habitat." Although ADEQ pointed out that this data would support a finding of no impact, ADEQ noted that the next to the last sentence in this same paragraph of the Report concludes that the streams "are considered impacted".*

RESPONSE: EPA has very carefully considered the remarks made in the ADEQ letter referenced by both Springdale Water Utilities and Rogers Water Utilities. The first ADEQ remark concerned criticisms of the sampling program and the use of the Parsons Report as an assessment tool. EPA notes the Parsons Study was conducted using the same methodology as the earlier 1997 ADEQ study so that the results would be comparable. Even considering the

limitations of the Parsons Report perceived by ADEQ, the results were similar to those found by ADEQ in 1997.

The second ADEQ remark addressed perceived contradictory statements within a particular paragraph. The paragraph referred to (in the comment above) by ADEQ [page 5-4 of the Parsons Report] reads as follows:

> "*The ecological quality of the downstream most sites in the Arkansas side of the Illinois River basin (ILL020 and ILL022) was stable, not significantly impacted biologically, and with supporting habitats. These sites had elevated nutrients, but had stable high flows, and robust fish and macroinvertebrate communities. However, the high periphyton productivity and P concentrations at these two downstream sites suggest the potential for high algal growth if riparian habitat is altered so that light exposure increases.*"

The next to the last sentence in this paragraph does not conclude that the streams are impacted. To the contrary, it states that while the nutrients were elevated, these sites still had stable high flows and a robust fish and macroinvertebrate community. In fact the Parsons Report concludes (Table 5.2) based on the weight of evidence approach that ILL022 is "slightly impacted" and ILL020 is "unimpacted". The types of data collected allowed EPA to use a weight of evidence approach in interpreting Arkansas nutrient narrative water quality standard which lists indicators known to cause or measure nutrient impairment. The weight of evidence increases when multiple indicators support a case for nutrient impact. The weight of evidence approach considered physical, chemical and biological indicators. EPA has not proposed to add either of these Illinois River segments to the Arkansas 2004 303(d) list.

Comment: *Springdale Water Utilities commented:* ***"****Even if one ignores the limitations of the Parsons study, the conclusions reached in the Parsons study do not support EPA's proposed decision that the segments in question violate the Arkansas narrative nutrient standard. Although the study identifies certain "impacts" in the five segments in question when compared to pristine Ozark reference streams, the study pointedly refrains from any conclusion or suggestion that these impacts amount to a violation of the narrative water quality standard for nutrients. Indeed, the study itself points to limitations inherent in the data collected. The study also points to factors other than nutrients as a source of impacts observed in the study. Stated simply, the Parsons study does not find a violation of the nutrient water quality standard nor does it vie an adequate basis for the EPA or anyone else to do so."*

RESPONSE: Parsons was contracted by EPA to conduct an intensive survey in the Arkansas portion of the Illinois River watershed and write a summary report providing the facts upon which EPA could make an assessment decision. The types of data collected allowed EPA to use a weight of evidence approach in interpreting Arkansas nutrient narrative water quality standard which lists indicators known to cause or measure nutrient impairment. The weight of evidence increases when multiple indicators support a case for nutrient impact. The weight of evidence approach considered physical, chemical and biological indicators.

EPA believes the Parsons Report supports the agency's decision to list Osage and Spring Creeks. The study included 3 sampling events over a 4 month sampling period. Eleven nutrient indicators were identified to interpret the results of this study and reach a decision of impairment. This approach is consistent with the current Arkansas' nutrient narrative water quality standard (hereinafter, "WQS") and ADEQ's recently proposed (2006) evaluation protocol for assessing nutrient impairments in streams. The study revealed indicators of nutrient enrichment including high total phosphorus (hereinafter, "TP"), large day to night swings in dissolved oxygen (hereinafter, "DO"), high volume of attached and floating algae, and poor diversity in the aquatic community. In nutrient enriched systems such as the Illinois River basin, abundant algae produce copious amounts of oxygen during the daytime causing the DO concentration to exceed 100% (become supersaturated with oxygen). Then at night, the DO concentration often drops below the WQS because the algae and aquatic life consume it during respiration. Large swings (6 mg/l) in the daily DO concentration and supersaturation above 125% as were observed in the study can be stressful to the aquatic life and particularly to intolerant species. The study showed a decline in species diversity and a shift in the aquatic community in favor of those species dependent upon algae as a food source, such as algae-eating stone rollers. Also noted was a decline in the habitat where fish and aquatic insects live as compared to that of reference streams such as Flint and Spavinaw Creeks which themselves flow through agricultural watersheds. Degraded stream habitat results in reduced species richness and diversity and increased occurrence of tolerant species. The Parsons Report did not show sediment to be an additional source of impairment to the Illinois River watershed.

Comment: *Springdale Water Utilities commented that the information relied upon by EPA to support its proposed decision is out of date. The last five years in particular have seen dramatic changes. The data generated by the Parsons study do not reflect the results of efforts from point and nonpoint sources in the watershed to reduce their contributions of phosphorus. "For example, the Parsons study identifies the Springdale waste water treatment plant as the largest point source contributor of phosphorus to the Illinois River basin, but the study does not reflect the dramatic reductions in phosphorus levels that have been achieved by Springdale since the date the Parsons samples were collected. The Phosphorus levels discharged by Springdale have declined significantly during the period 2002-2006." Furthermore, the report did not mention and EPA did not consider in its proposed decision the regulatory changes regarding the land application of poultry litter and other fertilizer in the Illinois River watershed in Arkansas.*

RESPONSE: EPA appreciates the efforts made to reduce both point and nonpoint source loads of phosphorus to the watershed since the EPA Study was conducted. The study was designed to measure instream water quality which would be reflective of reduced inputs by point and nonpoint sources at the time of the study (2003). More recent data indicates these efforts have reduced the phosphorus load to Osage and Spring Creeks and subsequently the Illinois River. Without a new study to evaluate the impact of these efforts since 2003, it is unknown if the current phosphorus load has been reduced to an acceptable level to meet instream uses. In the absence of data demonstrating an elimination of impairment to support a delisting, these stream segments must remain on the 303(d) list until a TMDL or EPA approved watershed plan is developed or different conclusory information is collected.

Comment: *Springdale Water Utilities commented that "the proposal to add the five segments to the Arkansas 303(d) list is particularly inappropriate in light of the recent regulatory history regarding phosphorus in the Illinois watershed. As EPA is aware, questions regarding phosphorus in the Illinois River have been a source of significant controversy between Arkansas and Oklahoma. The controversy reached a peak in 2002 when Oklahoma adopted a numeric water quality standard for phosphorus in the Illinois and certain other rivers, to become fully effective in 2012. After much difficult discussion, Arkansas, Oklahoma, and the principal municipalities in Northwest Arkansas reached agreement. In pertinent part, the municipalities agreed to reduce the phosphorus levels in their discharge to 1 ppm and to accept voluntarily in their next permit renewal of 1 ppm 30 day average phosphorus limit. Oklahoma agreed to accept these reductions by the Northwest Arkansas municipalities as adequate, and Oklahoma agreed to reexamine the feasibility and reasonability of its numeric phosphorus limit. This agreement was memorialized with EPA's participation in a Statement of Joint Principles and Actions (hereinafter, "SJPA") in December 2003. Springdale has expended $34 million in making capital improvements since the date of that agreement to assure that it has the capacity to meet its 1 ppm commitment on a long-term basis." Rogers Water Utility pointed out it has undertaken an expansion and improvement project ($20 million) to its waste water treatment facility, which is specifically designed to achieve the 1 mg/l phosphorus limit. "It would be unfair and inappropriate, to say the least, for EPA now to change the rules of the game. The proposed listing of the five stream segments, with the next step of TMDLs and further reductions in phosphorus limits to follow, would represent a radical departure from the difficult compromise [Statement of Joint Principles and Actions in December of 2003] that was only so recently reached. Certainly such a dramatic step should not be taken on inadequate and dated information."*

RESPONSE: Section 303(d) of the Clean Water Act requires States to identify waters not currently attaining the States' applicable water quality standards and to develop TMDLs for those waters. EPA believes there is sufficient evidence in the record to support EPA's finding that the five segments in question are not meeting the State of Arkansas' narrative water quality standard for nutrients. Once such a finding is made, the CWA mandates that these segments be listed on the State's list of impaired waters. EPA fully supports the SJPA signed by the States of Arkansas and Oklahoma, acting through their environmental agencies, in 2003, and EPA realizes that the Cities of Rogers and Springdale are concerned that a TMDL might reduce allowable phosphorus discharges from their treatment plants below the 1 mg/l effluent limit agreed to in that document. However, the 1mg/l limit agreed to in 2003 was part of a tiered approach to achieving water quality goals in the shared Oklahoma Scenic Rivers watersheds and was never intended to be the final step in achieving those goals. The SJPA states that NPDES permits for Rogers and Springdale issued in the year 2012 or beyond must include phosphorus limits stringent enough to meet applicable water quality standards. EPA continues to support the 1mg/l limit as an initial step toward reducing phosphorus in the shared watersheds until such time as an applicable TMDL or Watershed Plan can be developed.

Comment: *Springdale Water Utilities commented EPA should withdraw its proposal to add the five stream segments in question to the Arkansas 303(d) list. Furthermore, EPA should defer any proposed listing pending the development of more accurate and up-to-date information regarding the stream segments in question. Rogers Water Utilities likewise objects.*

RESPONSE: Four of the five stream segments were previously added to the Arkansas 2002 303(d) list. The Parsons Report supported the continued listing of these segments plus the addition of Muddy Fork on the Arkansas 2004 303(d) list. Once a water body is listed on the 303(d) list, new data must be collected to show the water body is in attainment before the water body can be removed from the 303(d) list. The only other way for a water body to be removed from the 303(d) list is for a TMDL or watershed plan to be developed. Discussions are underway with ADEQ and the Arkansas Natural Resource Commission to conduct a new study to support the development of a TMDL or watershed plan. Point source dischargers are free to conduct studies and collect additional data as well.

Comment*: Rogers Water Utility commented that "ADEQ has noted the difficulty in assessing impacts from nutrients in Arkansas waterbodies through its Continuing Planning Process, a water quality planning document formally approved by EPA pursuant to Section 303e of the Clean Water Act, yet that document is being ignored in this rulemaking."*

RESPONSE: EPA is sympathetic to the difficulty in assessing nutrient impacts as ADEQ has stated in its Continuing Planning Process (hereinafter, "CPP") document. However, EPA considered these difficulties in the study design and weight of evidence approach. Multiple sites throughout the Arkansas portion of the Illinois River watershed were sampled on three different occasions over a four month period measuring the spatial and temporal nutrient variability within the watershed. The weight of evidence approach used by EPA in interpreting the Arkansas nutrient narrative water quality standard considered the indirect response variables such as those identified in the CPP and the narrative nutrient water quality standard. Nutrient assimilation processes and the economic burden of phosphorus removal on dischargers would be considered during the development of a TMDL or watershed plan.

Agency's Specific Responses to Comments Made by the Arkansas Department of Environmental Quality:

Comment: *"EPA is approving the continued listing of lakes with a status of impaired. ADEQ disagrees with the listing of these lakes as impaired for nutrients."*

RESPONSE: While EPA took action on the 2002 303(d) list by adding several lakes as impaired for nutrients to the list, ADEQ voluntarily continued these listings on the 2004 303(d) list. EPA does not disagree with ADEQ's action to keep these lakes on the 2004 303(d) list.

EPA conducted a water quality study from August 2004 through July 2005 to collect additional data on these lakes for use in TMDL development. EPA established the TMDL entitled "Nutrient TMDLs for Six Arkansas Lakes" on January 16, 2007.

Comment: *ADEQ adamantly disagrees with EPA's decision process to list Osage Creek and Spring Creek as outlined in the EPA's Decision Record. ADEQ can find no provision in 40 CFR §130.7(b)(3) that required States to consider "potential exceedances for all applicable water quality standards, including designated beneficial uses, numeric and narrative criteria, and*

antidegradation requirements. ADEQ requests that EPA provide clarification of this specific requirement to "consider potential exceedances".

RESPONSE: EPA used the phrase "potential exceedances" to describe nonattainment of any applicable water quality standard, including designated beneficial uses, numeric and narrative criteria, and antidegradation requirements, per the requirements of 40 CFR §130.7. The State's failure to adopt an implementation procedure for the narrative standard does not abrogate the State's responsibility to assess attainment of the standard.

Comment: *ADEQ has concluded that EPA has misinterpreted Section 2.509 of Regulation No. 2. The total phosphorus concentration mentioned in Section 2.509 was a guideline and is not a water quality standard. EPA has failed to demonstrate that an exceedance of the total phosphorus guideline of 100 ug/l has caused "algal production that will interfere with or adversely affect designated uses and/or fish and wildlife propagation" or caused a water quality standard violation.*

RESPONSE: ADEQ revised its Regulation No. 2 in the latter part of 2004. EPA approved the revision which included a revised Section 2.509. The 100 ug/l total phosphorus guideline was removed from the nutrient narrative and replaced with multiple indicators which are known to be reflective of nutrient enrichment. EPA used a multiple indicator weight-of-evidence approach consistent with the revised narrative and the Arkansas nutrient assessment pilot project to evaluate the aquatic life use attainment of waters in the Illinois River. The approach integrated a suite of 11 indicators including instream concentrations of TP, daily fluctuations in DO concentration and DO saturation, elevated pH and total dissolved solids (hereinafter, "TDS"), habitat characteristics, periphyton presence, filamentous algae presence, benthic community structure, and fish community structure. Each of these indicators was assessed relative to a reference condition, ADEQ Regulation 2 criteria, or USEPA guidance to determine the degree of impact within a reach for each sampling event. The TP data from the study was compared to the TP guideline of 100 ug/l. The TP guideline was included in the WQS at the time of the study. TP was only one of many indicators which were collectively utilized to assess impacts.

Comment: *EPA's weight of evidence approach is an evaluation tool that is not consistent with the Assessment Methodology ADEQ used to evaluate the State's water quality. In addition, EPA did not use the weight of evidence approach to evaluate all the State's waters, only "for the waters of concern in Arkansas". This is a biased approach based on arbitrary guidelines used to assess select streams.*

RESPONSE: When the revised Regulation No. 2 was approved in December 2004, one sentence in Section 2.509 was not approved because it referenced a nutrient assessment methodology that has not yet been completed and made accessible to the public. To resolve this issue, ADEQ is currently developing a Nutrient Assessment Methodology. EPA's weight of evidence approach cannot be compared to an assessment methodology that does not currently exist. A weight-of-evidence approach method provided a rational mechanism for integrating chemical, physical, and biological data and drawing logical conclusions from the aggregated results. The weight of evidence approach used by EPA is similar to the approach currently being developed by ADEQ to interpret its nutrient narrative standard. The indicators also included many of those used in the ADEQ's 1997 study.

EPA's review of the 2004 303(d) list found that the previously listed segments of Osage Creek and Spring Creek were omitted from the 2004 303(d) list. No justification was provided by ADEQ for removing these segments. Furthermore, at the time these waters were added to the Arkansas 2002 303(d) list, the Region 6 Administrator ordered a study of the Illinois and Kings River watershed to determine if these waters should continue on the 2004 303(d) list. Therefore, EPA reviewed the data from the study which supported EPA's 2002 listing decision and the continued listing of these segments on the 2004 303(d) list. This does not constitute a biased approach on EPA's part. Furthermore, the data does not exist to conduct a statewide weight of evidence approach for assessing nutrients. Assessing only against the 100 ug/l TP guideline would result in extensive statewide listings of water bodies for nutrients which would not be appropriate.

Comment:

The study referred above is the Water Quality and Biological Assessment of Selected Segments in the Illinois River Basin and Kings River Basin, Arkansas prepared by Parsons and the University of Arkansas. This study is commonly referred to as the Parsons' Report. ADEQ has determined this study had significant shortcomings that are too numerous to list here. However, the study only considered three water quality sampling events and two each; (fish collection, macroinvertebrate collection, and habitat assessments) during the study period from August-December 2003. The period of record for the 2004 section 303(d) list assessment was from October 1, 1998, to September 30, 2003; therefore the results of the Parsons' Report were developed outside the period of record. In addition, the Parsons' Report, which admitted; "while plagued with storm events in September 2003 that prohibited completion of a full suite of water quality, water chemistry, and biological sampling in the critical season and additional rains in October 2003 caused a significant increase in water flow, necessitating removal of sampling equipment, further delaying data collection progress," failed to demonstrate any designated use impairment. From EPA's Decision Document, third and fourth paragraphs on page 12, EPA stated, "based upon this weight of evidence approach, for the Illinois River basin, Osage Creek (reach 930) downstream of Rodgers WWTP was classified as slightly impacted (Score 7), Osage Creek (reach 030) and Muddy Fork (reach 027) downstream of the Prairie Grove WWTP was classified as impacted (both scored 12), and Spring Creek (reach 931) was classified as severely impacted (scored 16). Although Osage Creek (reach 930) was classified as slightly impacted, the decision to add this water to the 2004 303(d) list was heavily weighted on the shift in the biological community towards more nutrient tolerant species such as grazers. "Based upon this weight of evidence approach, for the Kings River basin, Osage Creek (reach 045L) downstream of the Berryville WWTP was classified as severely impacted."

RESPONSE: The fact that the data fell outside of the 2004 listing cycle reporting period is a moot point. The Illinois River watershed listings on the 2002 303(d) list could not be delisted without new data to support such a decision. The Parsons Study supplied the new data needed to make an assessment decision which supported the continued listing of 2 reaches of Osage Creek, one reach of Spring Creek, and a new listing for one reach of Muddy Fork. The data also reflects conditions which have developed over a period of time rather than a single point in time.

Comment: *In ADEQ's opinion, four flaws in EPA's conclusions based on the Parsons' Report are immediately evident. (1) The weight of evidence approach score for Osage Creek (reach 030) and Muddy Fork (reach 931) were identical, yet EPA only determined that Osage Creek (reach 030) was considered impaired for nutrients.*

RESPONSE: The comment above is not clear because there is no reach 931 for Muddy Fork. The reach for Muddy Fork is reach 27. The only two sites that scored a 12 in the Parsons Report were Osage Creek (reach 030) and Muddy Fork (reach 027) and both were included on the 2004 303(d) list.

Comment: *(2) EPA decided to list Osage Creek (reach 930) as impaired for nutrients due to a "shift in the biological community towards more nutrient tolerant species such as grazers". Yet grazers are typically found below most outfalls of WWTP's and such a shift does not indicate a violation of a water quality standard or a designated use impairment.*

RESPONSE: The shift in the biological community towards more nutrient tolerant species was one factor in addition to other indicators used in the justification for the listing. ADEQ is currently developing an approach using ADEQ's Fish Community Biocriteria (FCB) as one of several indicators of nutrient impairment. The FCB is a set of metrics developed by ADEQ to determine similarity of fish sample data to historical ecoregional fish sample data. Total metric scores are ranked from similar (25-32), most similar (24-17), less similar (16-9) and not similar (8-0). ADEQ's approach identifies shifts in community structure as a possible nutrient indicator. Likewise, it is reasonable for EPA to consider shifts in community structure as an indicator of nutrient impairment.

Comment: *(3) Impact does not necessarily equate to impairment. The Parsons' Report did not conclude there were any designated use impairments.*

RESPONSE: EPA contracted with Parsons to do a field study whose data would be used by EPA to make assessment decisions. Such decisions are considered "inheritently governmental" and cannot be made by outside parties. Therefore, Parsons refrained from making attainment decisions in its report. EPA equated impacted to impaired and supports the position taken to list certain segments as impaired.

Comment: *(4) The Parsons' field study [EPA Study] was based on a limited data set, was for a short duration capturing one sampling season, and was completed outside the period of record for the development of the 2004 30(d) list.*

RESPONSE: Osage and Spring Creeks were listed on the 2002 303(d) list for total phosphorus. The only way to remove these waters from the 303(d) list is to collect new data which shows the impairment no longer exists or to develop a TMDL. Therefore, without new data, it is a moot point that the Parsons Study was completed outside of the period of record for development of the 2004 303(d) list. The Parsons Study is properly included in the body of available information.

Comment: *[Additional Support for Osage Creek (reach 930)] From EPA's Decision Document, first paragraph under this section on page 13, EPA concluded that the five-year (1998-2002) rolling average values for total phosphorus has increased from 0.56 mg/ TP to 0.84 mg/l TP. Yet, EPA has failed to show that these values violate an Arkansas water quality standard or cause designated use impairment. Furthermore, total phosphorus values at ADEQ's monitoring station (ARK 041) have averaged 0.27 mg/l the past two years indicating a downward trend.*

RESPONSE: The 2004 decision was based on data collected through 2002. Station ARK041 is a long term ambient monitoring station located on Osage Creek near Elm Springs a few miles below its confluence with Spring Creek. A review of the total phosphorus data for Station ARK 041 from 1990 through 2002 indicates total phosphorus is increasing in Osage Creek. The five-year rolling average (1990-1994) has steadily increased from 0.56 mg/l TP to 0.84 mg/l TP for the five-year period 1998-2002. EPA reanalyzed the data from Station ARK041 to include years 2003, 2004, and 2005. The five-year rolling average appears to have stabilized over the last two five-year periods (2000-2004 and 2001-2005) at 1.06 mg/l TP. The national criterion for phosphorus in streams is 0.1 mg/l, well below the concentrations found at this ambient monitoring station. The annual TP concentration has shown a decrease from 1.24 mg/l TP in 2002 to 0.27 mg/l in 2005 which reflects a reduction in the point source contributions; however, this reduction is also reflective of the drought conditions in Arkansas since 2002. It has been well documented that phosphorus concentrations are higher during storm flow conditions because of the contribution from non-point sources. Therefore, it is reasonable to believe that the annual TP concentration may increase when normal rainfall conditions return. Nevertheless, the annual TP concentration is above the national criterion for phosphorus in streams.

Comment: *In this same section, EPA referenced a "national criterion for total phosphorus in streams as 0.1 mg/l." ADEQ requests that EPA provide the source for the 0.1 mg/l TP criterion. How does this criterion apply as a standard in Arkansas?*

RESPONSE: In 2000 EPA published a document *Ambient Water Quality Criteria Recommendations: Information Supporting the Development of State and Tribal Nutrient Criteria, Rivers and Streams in Nutrient Ecoregion XI.* Fourteen aggregate ecoregions were established across the US based on land use, topography, soils, etc. Aggregate Ecoregion 11 is a broad scale ecoregion made up of eight Level III subecoregions spanning numerous states. The national recommended numeric criterion for total phosphorus in streams and rivers in this broad scale ecoregion is 0.1 mg/l. While this is not a numeric criterion in Section 2.509 of Regulation 2, EPA applied it as a guideline or indicator of nutrient impairment. This in addition to ten other nutrient indicators were used in a weight of evidence approach as described in above responses.

Comment: *Based on the above, EPA concluded the results of the Parsons' Report and additional data support the listing of the Following Water Bodies:*

STREAM NAME	HUC	RCH	P-Seg	Parameter
Illinois River Watershed				
Osage Creek	11110103	030	3J	TP
Osage Creek	11110103	930	3J	TP
Spring Creek	11110103	931	3J	TP
Kings River Watershed				

Osage Creek	11010001	045L	4K	TP	

In ADEQ's opinion and pursuant to the state submittal requirements of 40 CFR § 130.10(d)(1), (2), and (3), EPA has failed to show that the above water body segments listed for total phosphorus are: (1) "a listing of those waters within the State which after the application of effluent limitations required under section 301(b)(2) of the CWA cannot reasonably be anticipated to attain or maintain (i) water quality standards for such waters reviewed, revised, or adopted in accordance with section 303(d)(2)(B) of the CWA due to toxic pollutants, or (ii) that water quality which shall assure protection of public health, public water supplies, agricultural and industrial uses, and the protection and propagation of a balanced population of shellfish, fish and wildlife, and allow recreational activities in and on the water"; (2) "a list of all navigable waters in such State for which the State does not expect the applicable standard under section 303 of the CWA will be achieved after the requirements of sections 301(b), 306, and 307(b) are met, due entirely or substantially to discharges from point sources of any toxic pollutants listed pursuant to section 307(a)"; and (3)"for each segment of navigable waters included on such lists, a determination of the specific point source discharging any such toxic pollutant which is believed to be preventing or impairing such after quality and the amount of each such toxic pollutant discharged by each such source."

REPONSE: Sections 130.10(4)(d)(1)(i), (2) and (3) above pertain to toxic substances of which phosphorus is not one. Therefore, only 40 CFR § 130.10(4)(d)(1)(ii) applies to the comment above. It states "that water quality which shall assure protection of public health, public water supplies, agricultural and industrial uses, and the protection and propagation of a balanced population of shellfish, fish and wildlife, and allow recreational activities in and on the water" which applies to these listings. The key phrase here is "balanced population". EPA believes a shift in the fish community to grazers does not constitute a balanced population but one dominated by a particular group of fish rather than a diverse assemblage. This is borne out in the ADEQ Fish Community Biocriteria analysis.