

EXHIBIT F

DEPARTMENT OF ENVIRONMENTAL QUALITY, WATER DIVISION

SUBJECT: Amendment to the Water Quality Standards; Third Party Rulemaking by Fayetteville

DESCRIPTION: The City of Fayetteville owns and operates the Paul R. Noland Wastewater Treatment Plant (“Noland WWTP”), which discharges treated municipal wastewater under the provisions of NPDES Permit No. AR0020010 issued by ADEQ. The Noland WWTP treats the municipal wastewater from the cities of Fayetteville, Elkins, Greenland, sometimes Farmington and Johnson, as well as industrial and commercial enterprises, and discharges the treated wastewater via Outfall 001 to the White River in Washington County.

Because Fayetteville’s permit contains final discharge limits for chloride (Cl), sulfate (SO₄), and total dissolved solids (TDS) based upon Arkansas water quality standards for the White River, Fayetteville evaluated alternatives through a Use Attainability Analysis (UAA) and a UAA Addendum, which included field studies, toxicity testing, mass balance modeling, engineering analysis of alternatives for discharge and treatment, and an analysis of designated uses for the White River.

Based upon the UAA and the UAA Addendum, Fayetteville is requesting the following site-specific modification to APCEC Regulation No. 2:

modify the Cl, SO₄, and TDS standards for the White River from the outfall of Fayetteville’s Noland WWTP outfall to a point 0.4 miles downstream (WR-02), as follows: Cl from 20 mg/L to 44 mg/L, SO₄ from 20 mg/L to 79 mg/L, and TDS from 160 mg/L to 362 mg/L; and

modify the Cl, SO₄, and TDS standards for the White River from WR-02 to ADEQ Monitoring Station WH10052 (WR-03), as follows: Cl from 20 mg/L to 30 mg/L, SO₄ from 20 mg/L to 40 mg/L, and TDS from 160 mg/L to 237 mg/L.

Fayetteville’s proposed site-specific modifications are supported by the following:

- Fayetteville is not seeking a change from historical water quality conditions in the White River; rather Fayetteville seeks a site-specific modification, which allows the Noland WWTP to be compliant with its NPDES Permit while making certain that its effluent does not limit the attainment of any of the designated uses of the stream segments.
- UAA and UAA Addendum data established that:
 - setting the Cl, SO₄, and TDS at the site-specific levels requested will not cause acute or chronic toxicity in this stream segment;
 - setting the Cl, SO₄, and TDS at the site-specific levels requested will not impair existing or attainable designated uses, including aquatic life in this stream segment; and
 - setting the Cl, SO₄, and TDS at the site-specific levels will not impair Beaver Lake.

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- All sampling locations influenced by Noland WWTP's discharge showed the presence of ecoregion key and indicator species and species composition consistent with the attainment of a Ozark Highlands fishery designated use. The requested changes will have no adverse effect on the aquatic life communities;
- Toxicity testing on *Ceriodaphnia dubia* and *Pimphales promelas* using Noland WWTP effluent and spiked samples of the effluent showed no significant lethal or sub-lethal toxicity in either test organism at concentrations exceeding the levels requested herein;
- There are no current economically feasible treatment technologies for the removal of the minerals. Reverse osmosis treatment technology does exist; however, this technology is not cost effective and generates a concentrated brine, which is environmentally difficult to dispose of. The technology is not required to meet the designated uses and even if implemented would produce no significantly increased environmental protection.
- The basis for site-specific standards is provided in 40 CFR 131.10(g). Fayetteville's request for the modifications set forth above is supported by 40 CFR 131.10(g)(6), which provides that the state may establish less stringent criteria if controls more stringent than those required by section 301(b) and 306 of the Clean Water Act would result in substantial and widespread economic and social impact.
- 40 CFR 131.11(b)(1)(ii) provides states with the opportunity to adopt water quality standards that are "modified to reflect site-specific conditions."

PUBLIC COMMENT: This proposed rule change was initially filed with the Legislative Council on December 20, 2013, and a public hearing in Fayetteville was held on February 13, 2014. The third party proposing the rulemaking, the City of Fayetteville, subsequently revised the criteria changes that it had proposed and re-filed the revisions, opting to hold a second public hearing and public comment period. That public hearing was held in Fayetteville, Arkansas, on March 27, 2017, and the public comment period expired on April 10, 2017. The following public comment summary was provided detailing the public comments received during the public comment periods and the responses by both the Department and the City of Fayetteville:

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Oral comments (transcribed in part) received at public hearing held on February 13, 2014

Comment 1: Ray Smith stated:

Thank you Commission Henry for this opportunity, I am here on behalf of Trout Unlimited, a conservation organization and we take water quality very seriously. Particularly, for our cold-water trout populations here in Arkansas. My concern, I recognize that Fayetteville has been trying to adhere to the standard and they reached the point where they must increase some of the discharge, levels on the discharge. My concern is that if Fayetteville is permitted to a new standards and discharge more of the chlorine, sulfate, and total solids. It appears that Huntsville is doing likewise and what my concern is that if all the municipalities that are discharging into the White River increase their standards what is the effect overall. Now, I recognize that Fayetteville is just one municipality, but when we put them all together and see what that discharge is into the White River. I think we need more study on that and I see no reason why it would not delay anything to see what all the municipalities are going to have to do before we decide whether the standard Fayetteville wants should be approved or whether we have something in between.

One of the reasons I have such a concern, in Pennsylvania they have no standards on chlorine, the sulfates, and total solids. And as a result, with the fracking processes that are going on in the Marcellus area up there, the pollutants have just been poured into the streams up there. And, it has had quite an effect, not only on the fisheries, but also chlorine, has quite an impact on aquatic insects which is one of the food supplies of fish. So, that's the concern we have.

ADEQ Response: The Department acknowledges the commenter's concerns regarding third-party rulemakings on the White River and protection of aquatic life from elevated mineral concentrations. The United States Geological Survey (USGS) performed a modeling exercise that would demonstrate potential affects to Beaver Lake with elevated mineral concentrations (USGS 2013). Modeling data indicate that impacts to mineral concentrations, particularly chlorides, sulfates, and total dissolved solids, would be minimal near the Beaver Lake dam. Aquatic life, including the Salmonid population, present in the White River below Beaver Lake will be protected.

Fayetteville Response: Fayetteville is not requesting a chlorine water quality criterion; rather it is requesting a chloride water quality criterion. The UAA supporting the requested water quality criteria changes as well as the further evaluation and analysis of the data discussed in response to ADEQ's comment (*see below*) established that the requested changes in the minerals standards will fully support aquatic life in the affected segment of the White River.

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Comment 2: Aubrey Shepard stated:

My interests in reading newspaper story about this project. It hadn't been announced on the city website or anything and we don't have government channel here, so I will be putting this on public access, which also a city operated thing. The question about the mention of food waste being a critical part of the reason that we are not meeting standards, can someone comment on that? My understanding is that, just that one sentence in the paper made me wonder if it has to do with the fact that we are allowing people to use those grinders in their sink. What do they call them? (Commissioner Ann Henry, "Garbage disposals.") Yes, I don't own one. I spoke, since I read that article I spoken several people who happen to be like-minded. Who believe that if people would simply go through the trouble of mulch, compost using food waste, put it out in the woods for the critters. Things like that. That the intensity of these salts getting to the lake or even to the stream would be much reduced and Fayetteville has an attempt to protect the stream from direct pouring of and it's helping, I think, in both watersheds from here. We are constantly having people wanting variances from that ordinance and removal of vegetation and red-dirting the land. Those are the things cities have to deal with to try and protect the watershed from anything. Even if it is simply silt or sediment, but anything that will impair water quality for living things and then for human beings who will be drinking it as well after the treatment process. So, I am hoping that there won't have to be a change in Fayetteville's status. I think it is important considering how many millions of people may be affected by Beaver Lake water. So, I think giving out recommendations to cities about more ways to prevent these problems from occurring would be very helpful and that there is not a rapid rush to change the standards. Let's try and meet the standards.

ADEQ Response: The Department acknowledges this comment.

Fayetteville Response: Comment acknowledged; however, alternative disposal of food waste is beyond the scope of this rulemaking.

Comment 3: Larry Lloyd stated:

Thank you, Commissioner Henry. I am Larry Lloyd, Chief Operating Officer for Beaver Water District. We are the second largest water utility in the state and provide drinking water to over 300,000 people in Northwest Arkansas with Beaver Lake being our source of supply, of course and it receives water from various White River tributaries. We do anticipate making some written comments later by the deadline. My purpose tonight is to express gratitude to the City of Fayetteville for this process. They have been very open and involved us, kept us informed all the way. I think it represents a very good example of different stakeholders working together throughout this process and we do appreciate their efforts in working with us, cooperating, keeping us well informed.

ADEQ Response: The Department acknowledges this comment.

Fayetteville Response: Comment acknowledged. Fayetteville will continue to work with Beaver Water District to protect the drinking water supply for the people of Northwest Arkansas.

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Written comments received on or before February 27, 2014

Comment 4: Submitted by the Arkansas Department of Health (ADH):

ADH is opposed to the removal of the domestic water supply designated use from any stream within the watershed of Beaver Lake, a source of drinking water for 4 regional public water systems which supply drinking water to much of Northwest Arkansas. These systems and their population served are listed below (Table excluded).

The Paul R. Noland Wastewater Treatment Plant is located and discharges treated effluent into an impaired stream segment of the White River. Beaver Water District, serving a total population of 261,468 Arkansans, uses raw water in an impaired segment of Upper Beaver Lake.

Waterbodies impaired by minerals or turbidity can significantly increase the cost of treatment required to meet Safe Drinking Water Act standards. They can also increase the risk of exposure to regulated pathogenic contaminants. For example, high sediment in a stream increases the cost of the water utility to meet the drinking water standard for turbidity, and sediment is an indicator of the increased presence of microbiological contaminants in the source water, including *E. coli*, *Giardia lamblia*, and *Cryptosporidium*.

ADH requests that any effluent from the WWTP should include concentration limits on TDS, chlorides, and sulfates that meet the Secondary Maximum Contaminant Levels. The national secondary MCLs for TDS, chlorides, and sulfates in drinking water are 500, 250, and 250 mg/L, respectively.

ADEQ Response: Proposed site-specific criteria for segment 023 for the White River are below Secondary Maximum Contaminant Levels of 250 mg/L sulfates, 250 mg/L chlorides, and 500 mg/L total dissolved solids. The City of Fayetteville is not proposing to remove the Domestic Water Supply designated use.

Fayetteville Response: The TDS, chloride, and sulfate water quality criteria requested by Fayetteville upon which the effluent permit limits will be based are 44 mg/L chloride, 79 mg/L sulfate, and 362 mg/L TDS. The city anticipates that permit limits will include concentration limits of chloride, sulfate, and TDS that will meet or be lower than the Secondary Drinking Water Maximum Contaminant Levels.

Comment 5: Robert Cross stated:

I am making these comments as a resident of Fayetteville and as a Research Professor Emeritus of the Ralph E. Martin Department of Chemical Engineering at the University of Arkansas. I have had experience in the design and operation of water treatment and waste treatment plants.

I understand the challenges faced by the Noland WWTP in the treatment of the ever changing wastes received as well as the difficulties faced by ADEQ in regulating discharges in line with environmentally sound guidelines and practical limitations of treatment technology. However, our rivers and streams are a precious resource and once impaired are very difficult to restore to acceptable standards.

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That said, while I can understand that Fayetteville needs relief from the current site specific specifications, I also believe that new specifications should only be set as high as necessary to accommodate the existing situation. The mass balance model used to calculate the proposed water quality criteria, however, utilizes a series of inputs that are combined together in a way that will never occur and result in considerably higher than necessary levels. This is evident by a review of the actual in-stream water quality monitoring data that shows minerals concentrations generally well below the level of the proposed water quality criteria. When these higher than necessary concentrations are combined with the new assessment methodology that allows the water quality criteria to be exceeded twenty-five percent of the time, I believe that the proposed numbers are much higher than are necessary and reasonable.

ADEQ Response: The Department encourages site-specific criteria that are protective of aquatic life and are derived from observed instream data. (See ADEQ Response to Comment 6.)

Fayetteville Response: The re-evaluation and analysis discussed in response to ADEQ's comment (*see below*) led to agreement to revise downward the requested TDS, chloride, and sulfate water quality standards. However, the inputs into the mass balance model were correct in that the standards originally requested have actually occurred in the manner demonstrated by the mass balance model.

Comment 6: Submitted by the Arkansas Department of Environmental Quality

The Department is commenting on the proposed minerals criteria for segment 023 of the White River, in particular the disparity between long-term measured instream minerals concentrations and the proposed concentrations.

The Department has determined the study indicated the aquatic life is not impacted by minerals, and the aquatic life designated use is currently being maintained. The City of Fayetteville proposes 60mg/L chlorides, 100 mg/L sulfates, 440 mg/L total dissolved solids for segment 023 of the White River. The criteria need to be re-evaluated to insure they reflect instream concentrations based on either the submitted data or the minerals concentrations measured over the past 23 years of monitoring data. This historical monitoring data includes measurements taken from monthly samples collected at the Hwy 45 Bridge located approximately 4 miles downstream from the City of Fayetteville discharge.

ADEQ Response: The Department acknowledges that the issue raised in this comment was addressed by Fayetteville's amended petition that incorporated the split-segment proposal. On January 27, 2017, the Commission granted Fayetteville's amended petition by Minute Order 17-04.

Fayetteville Response: Fayetteville re-evaluated the data and gathered additional data, which was further analyzed and submitted to ADEQ. Based on ADEQ's written comments and the related discussions with Department staff, the City revised the criteria changes that it proposes to present to the Commission for final approval. Specifically, the City agrees with the Department's recommendation to divide the affected segment into two reaches, one from the Noland WWTP outfall to a point 0.4 miles downstream (WR-02), and another from WR-02 to WR-03. The new criteria proposed for the two segments are as follows:

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<u>Revised Proposal</u>	<u>Chloride</u>	<u>Sulfate</u>	<u>Total Dissolved Solids</u>
Noland to WR-02	44 mg/L	79 mg/L	362 mg/L
WR-02 to WR-03	30 mg/L	40 mg/L	237 mg/L

Oral Comment (transcribed in part) received at public hearing held on March 27, 2017

Comment 1: Submitted by Emory Brown, Vice President Project Management for Superior Industries

My name is Emory Brown, Vice President Project Management for Superior Industries. Superior Industries is a manufacturer of aluminum wheels for the automotive industry. I am here tonight representing our Fayetteville, AR manufacturing location. Superior's local plant environmental manager, David Miller, has been in contact about the minerals issues since the beginning. He continues to be updated and informed by City officials and third party officials about this matter.

Superior Industry consumes considerable amounts of water in the fabrication of aluminum wheels. Our Fayetteville location continues to minimize the amount of water consumed per wheel produced thereby minimizing the amount of minerals discharged in the local POTW through BMPs. These ISO 14001 BMPs contain documented goals and objectives requiring reporting and annual updating. The BMPs showed results of approximately 30% in total water reduction since 2017.

Superior Industries voices its support of the third party proposal by the City of Fayetteville's proposal to change Regulation 2 (Arkansas Water Quality Standards) before you. Our industry has been closely following these developments and the process the City of Fayetteville has taken with ADEQ and the Third Party rulemaking process. This proposed change to Regulation 2 remains well-grounded and supports the best interest of the State of Arkansas's citizens.

ADEQ Response: The Department acknowledges this comment.

Fayetteville Response: Comment acknowledged.

The proposed effective date is pending legislative review and approval.

FINANCIAL IMPACT: There is no financial impact.

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LEGAL AUTHORIZATION: This amendment to Regulation No. 2, Water Quality Standards, stems from a third party rulemaking request made to the Arkansas Pollution Control and Ecology Commission (“Commission”) by the City of Fayetteville. Arkansas Code Annotated § 8-4-202(c)(1) bestows upon any person the right to petition the Commission for the issuance, amendment, or repeal of any rule or regulation. *See also* Ark. Code Ann. § 8-4-102(5) (defining “person” as “any state agency, municipality, governmental subdivision of the state or the United States, public or private corporation, individual, partnership, association, or other entity”). Pursuant to Ark. Code Ann. § 8-4-202(a), the Commission is given and charged with the power and duty to adopt, modify, or repeal, after notice and public hearings, rules and regulations implementing or effectuating the powers and duties of the Commission and the Arkansas Department of Environmental Quality. It is further given and charged with the power and duty to promulgate rules and regulations, including water quality standards. *See* Ark. Code Ann. § 8-4-201(b)(1)(A). *See also* Ark. Code Ann. § 8-4-202(b)(3).