BEFORE THE ARKANSAS
POLLUTION CONTROL & ECOLOGY COMMISSION

IN THE MATTER OF AMENDMENTS	)	
TO REGULATION NO. 2 ESTABLISHING	)	
WATER QUALITY STANDARDS FOR	)	
SURFACE WATERS OF THE STATE OF	)	
ARKANSAS	)	**DOCKET NO. ____**

PETITION TO INITIATE THIRD-PARTY
RULEMAKING TO AMEND REGULATION NO. 2

Lion Oil Company ("Lion Oil"), for its Petition to Initiate Third-Party Rulemaking to Amend Regulation No. 2 Establishing Water Quality Standards for Surface Waters of the State of Arkansas ("Petition"), states:

Summary and Basis of Requested Rulemaking

1. This Petition is submitted pursuant to Arkansas Pollution Control and Ecology Commission ("Commission") Regulations 2.303, 2.306, 2.307, 2.308, and 8.809, and the Arkansas Department of Environmental Quality ("ADEQ") Continuing Planning Process. As stated in more detail in paragraphs 46 and 47 of this Petition, Lion Oil requests the Commission to make the following revisions to Regulation No. 2:

- Change the Typical Gulf Coastal Fishery use designation for Loutre Creek (a small waterbody in Union County) to a new sub-category of fishery referred to as a Limited Gulf Coastal Fishery. This proposed subcategory of fishery would include 12 species of fish found in Loutre Creek as compared to the 24 or more species of fish that may characterize a Typical Gulf Coastal Fishery.

- Change the selenium water quality criterion for Loutre Creek from 5 micrograms per liter ("ug/L") (chronic) and 20 ug/L (acute) to 38 ug/L;

- Change the chloride, sulfate and total dissolved solids ("TDS") criteria for Loutre Creek and the first downstream segment of Bayou de Loutre.

- Change the sulfate and TDS criteria for the next downstream segment of Bayou de Loutre.

- Change the sulfate criteria for the remaining downstream segments of Bayou de Loutre to the Louisiana State line.

The Commission has statutory authority to approve these proposed revisions under the Arkansas Water and Air Pollution Control Act, A.C.A. § 8-4-201(b)(1)(A).

2. These regulatory changes are critically important to Lion Oil. In 2004, ADEQ issued a National Pollutant Discharge Elimination System ("NPDES") permit to Lion Oil that contained new sulfate, TDS, and selenium effluent limits based on state water quality criteria designed to protect a fishery that is neither an existing nor an attainable use in Loutre Creek, and set at levels that are not necessary to protect designated uses further downstream in Bayou de Loutre. Lion Oil has undertaken significant efforts to investigate technologies and alternatives to meet these limits. Reasonably available control technology does not exist that would allow Lion Oil to consistently meet these limits.

3. Lion Oil has therefore pursued a two-tiered compliance strategy that entails: (1) changing the criteria used to derive the limits through Third Party Rulemaking; and (2) joining with other dischargers to develop a multi-million dollar pipeline to re-direct most of its treated wastewater to a new outfall on the Ouachita River.

4. In support of the proposed criteria, Lion Oil completed the following:

a. For chloride, sulfate and TDS (collectively "dissolved minerals"), from 2004 to 2006, Lion Oil completed the technical analysis in support of the revised dissolved minerals criteria for Loutre Creek and Bayou de Loutre that the Commission relied on when it approved less stringent criteria for these two waterbodies in 2007. These criteria remain codified in Regulation No. 2, but the U.S. Environmental Protection Agency ("EPA") disapproved them in 2009 and

requested additional information. This Petition includes this additional information regarding dissolved minerals in Loutre Creek and Bayou de Loutre, and requests adoption of revised dissolved minerals criteria that are more stringent than the criteria the Commission approved previously. Although the previously approved criteria are scientifically justified, Lion Oil proposes more stringent criteria because it believes it can now meet the more stringent criteria.

b. For selenium, Lion Oil worked with ADEQ to complete a detailed characterization of the fishery in Loutre Creek, to study the effects of Lion Oil's discharge of selenium on the fishery in Loutre Creek and downstream in Bayou de Loutre, and to develop a proposed sub-category of fishery for Loutre Creek and the associated selenium criterion that would be protective of that subcategory. This Petition includes this information. The technical analysis demonstrates there is no need to modify the current fishery use designation or selenium criteria downstream in Bayou de Loutre.

5. As described above, Lion Oil has also joined other NPDES permit holders in the region to construct a pipeline that will allow Lion Oil to discharge most of its treated wastewater to the Ouachita River, rather than to Loutre Creek. This pipeline is expected to be complete no later than August 31, 2013. Lion Oil will be able to significantly reduce its discharges to Loutre Creek when the pipeline is completed. However, without the regulatory changes requested in this Petition, Lion Oil will not be able to consistently meet the sulfate, TDS, or selenium permit limits that apply to its periodic discharges to Loutre Creek.

6. To support the requested Third Party Rulemaking, this Petition presents the following information organized in seven sections:

- Section 1. Summary of documentation to support Third Party Rulemaking
- Section 2. Background on Lion Oil, Loutre Creek, and Bayou de Loutre
- Section 3. Commission authority to modify designated uses and criteria
- Section 4. Basis to designate a sub-category of fishery for Loutre Creek
- Section 5. Basis for a site specific revision of dissolved minerals criteria
- Section 6. Basis for a site specific revision of selenium criteria
- Section 7. Requested modifications to Regulation No. 2.

Section 1: Documentation to Initiate Rulemaking

7. Under Regulation 8.809, the documents required to approve Lion Oil's requested changes to Regulation No. 2 are listed below, enclosed, and incorporated by reference in this Petition:

- **Exhibit A.** Marked-up copy of the pages in Regulation No. 2 showing the requested regulatory changes. Regulation 8.808(A)(2).
- **Exhibit B.** Legislative Questionnaire of requested revisions to Regulation No. 2. Regulation 8.808(A)(3).
- **Exhibit C**. Financial Impact Statement of requested revisions to Regulation No. 2. Regulation 8.808(A)(4).
- **Exhibit D.** Memorandum Regarding Submittal of Environmental Impact Statement to Arkansas Economic Development Commission. Regulation 8.808(A)(5).
- **Exhibit E.** Economic Impact / Environmental Benefit Analysis. Regulation 8.808(A)(6).
- **Exhibit F**. Loutre Creek—Section 2.303 Use Attainability Analysis ("UAA"). The UAA defines and characterizes the appropriate fisheries use designation for Loutre Creek and, based on this designation, identifies the appropriate selenium

and dissolved minerals (chloride, sulfate, and TDS) criteria that support the use. This document provides the information required by Regulation 2.303.

- **Exhibit G.** Bayou de Loutre—Section 2.306 Site Specific Water Quality Study ("Bayou de Loutre SSC"). The Bayou de Loutre SSC builds on the technical documentation the Commission relied on in 2007 when it approved revisions to the dissolved minerals criteria for Loutre Creek and Bayou de Loutre. After the Commission approved these criteria in 2007, EPA disapproved them in 2009 and requested additional information before it would approve them. The Bayou de Loutre SSC summarizes this additional information and recommends that the Commission adopt revised dissolved minerals criteria. It contains the information required by Regulation 2.306.

- **Exhibit H.** Proposed Minute Order to Initiate Rulemaking. Regulation 8.808(A)(7).

Section 2: Background on Lion Oil, Loutre Creek, and Bayou de Loutre

8. An oil refinery, storage, and distribution center has operated at the current site in El Dorado, Arkansas, since 1922. Current refinery capacity is approximately 85,000 barrels per day. In order to meet the increasing need for gas and low sulfur diesel fuels, Lion Oil anticipates upgrades to its refinery capacity above 85,000 barrels per day.

9. Lion Oil employs approximately 550 employees with an annual payroll estimated at approximately $38.8 million dollars. The Company's annual impact on the local economy exceeds $200 million dollars. In addition, Lion Oil pays approximately $2.25 million in local and state taxes. Planned increases in production capacity will also result in additional jobs and taxes to the local and state economy.

10. Lion Oil discharges treated wastewater to Loutre Creek through its NPDES permitted Outfall 001 (NPDES No. AR000647). Although there is extensive urban development in the Loutre Creek watershed, Lion Oil is the only NPDES permitted discharger in the watershed.

11. Loutre Creek is a small sub-watershed (less than 5 mi^2) located in the Gulf Coastal Plain and drains the southwest portion of the City of El Dorado. *See* Regulation No. 2 at A-28 (identified on plate GC-2). Loutre Creek is a tributary to Bayou de Loutre, which is also a small watershed (less than 5 mi^2) above the mouth of Loutre Creek. Currently, the fishery for Loutre Creek is designated as a Typical Gulf Coastal Fishery in Regulation No. 2,[1] with a selenium water quality criterion of 5 ug/L (chronic) and 20 ug/L (acute), and dissolved minerals criteria of 18.7 mg/L for chloride, 41.3 mg/L for sulfate, and 138 mg/L for TDS.

12. Bayou de Loutre originates west of the City of El Dorado and meanders to the southeast through Union County, eventually flowing into Louisiana just east of Junction City, Arkansas. Collectively Loutre Creek and Bayou de Loutre drain a combined watershed area of less than 10 square miles at the mouth of Loutre Creek. Due to its location in the oil, gas and brine producing area of south Arkansas, the Bayou de Loutre watershed is heavily industrialized with numerous NPDES dischargers. Currently, Bayou de Loutre is designated as a Typical Gulf Coastal Fishery in Regulation No. 2,[2] with the same selenium criteria as Loutre Creek. The dissolved minerals criteria for Bayou de Loutre vary by location. Above Gum Creek, the criteria are: 250 mg/L for

---

[1] The other designated uses for Loutre Creek are: Secondary Contact Recreation, Industrial Water Supply, and Agricultural Water Supply. *See* Regulation No. 2, A-29. The 2011 publication of Regulation No. 2 does not yet show that the Domestic (drinking) Water Supply use has been removed for Loutre Creek, but it was removed by the Commission in 2007 by Minute Order No. 07-20 (enclosed with the UAA as Attachment C) and approved by EPA by its April 14, 2009 Letter to ADEQ (enclosed with the UAA as Attachment F).

[2] The other designated uses for Bayou de Loutre are: Secondary Contact Recreation, Primary Contact Recreation (downstream of the point where Bayou de Loutre watershed is greater than 10 mi^2), Industrial Water Supply, and Agricultural Water Supply. *See* Regulation No. 2, A-29. The 2011 publication of Regulation No. 2 does not yet show that the Domestic (drinking) Water Supply use has been removed for the remaining segments of Bayou de Loutre, but it was removed by the Commission in 2007 by Minute Order No. 07-20 (enclosed with the UAA as Attachment C) and approved by EPA by its April 14, 2009 Letter to ADEQ (enclosed with the UAA as Attachment F).

chloride, 90 mg/L for sulfate, and 500 mg/L for TDS. Below Gum Creek to the State line, the criteria are: 250 mg/L for chloride, 90 mg/L for sulfate, and 750 mg/L for TDS solids. *See* Regulation No. 2 at A-31 showing use variation No. 16 (Bayou de Loutre from Gum Creek to State line).

Section 3: Commission Authority to Modify Designated Uses and Criteria

13. Under the Federal Clean Water Act, Arkansas has primary authority to develop and implement its water quality standards consisting of designated uses and water quality criteria for water bodies within its boundaries. 33 U.S.C. § 1313. The State designates one or more uses for its waterbodies, and develops water quality criteria to protect these designated uses. 33 U.S.C. § 1313(c)(2)(A); 40 C.F.R. §§ 131.10 and 131.11. These criteria are generally expressed as a specific numeric value for each pollutant. 40 C.F.R. § 131.11. Arkansas' designated uses and criteria must be reviewed and approved by EPA. 33 U.S.C. § 1313(c)(3)-(4).

14. Arkansas' designated uses and water quality criteria are set forth in Regulation No. 2. This regulation specifies dissolved minerals criteria that apply to streams listed in the regulation (like Bayou de L'Outre) and separate eco-region criteria that apply to unlisted streams (like Loutre Creek).[3] *See* Regulation 2.511 (A) and (B). There are also selenium criteria that apply to both of these waterbodies. *See* Regulation 2.508 and A-30.

15. States are authorized to change their designated uses and associated criteria. States are to perform a "use attainability analysis" ("UAA") prior to changing one of the fishable/swimmable uses for a waterbody or adopting a sub-category of the

[3] The 2011 publication of Regulation No. 2 includes Loutre Creek as a listed stream because the Commission approved Lion Oil's Third Party Rulemaking in 2007, but EPA subsequently disapproved the rulemaking.

fishable/swimmable uses (such as a Limited Gulf Coastal Fishery) that require less stringent criteria. 40 C.F.R. §131.10(g) and (j)(2). A UAA is a "[a] structured scientific assessment of the factors affecting the attainment of the fishable/swimmable use which may include physical, chemical, biological and economic factors." Regulation 2.106.

16. Under Regulation 2.303, the Commission can rely on a UAA "[t]o identify a subcategory of a fishable/swimmable use which requires less stringent criteria." One of the regulatory bases on which the Commission can identify a subcategory of a fishery is when the Commission finds that "human caused conditions or sources of pollution prevent attainment of the [current designated] use and cannot be remedied or would cause more environmental damage to correct than leave in place." Regulation 2.303(B)(3).

17. Alternatively, under Regulation 2.306, the Commission can "choose[] to establish less stringent water quality criteria without affecting a fishable/swimmable use ..." In this case, "[t]he Commission may allow a modification of the water quality criteria...to accommodate important economic or social development in a local area, if existing uses are maintained and protected fully ...."

Section 4: Basis for designation of sub-category of fishery for Loutre Creek: initial designation of fishery, authority and findings to designate sub-category of fishery

Initial Designation of Fishery

18. A fishery is "[t]he designated use of a waterbody determined by the fish community and other associated aquatic life." Regulation 2.106. Loutre Creek and Bayou de Loutre are currently designated as supporting a Typical Gulf Coastal Fishery. Regulation No. 2, A-29.[4] This type of fishery is described in the regulations as

[4] More specifically, Loutre Creek is designated as supporting a perennial Gulf Coastal fishery in most areas, with the exception of a stretch of the Creek from the railroad bridge (coordinates: 33°11'14.53" N, 92°40'37.79"W) to the mouth of Loutre Creek which is seasonal. *See* Regulation No. 2 at A-29. A

appropriate for "[s]treams supporting diverse communities of indigenous or adapted species of fish and other forms of aquatic life. Fish communities are characterized by a limited proportion of sensitive species; sunfishes are distinctly dominant followed by darters and minnows." Regulation 2.302(F)(3)(e).

19. The regulation lists 6 "key species" and 6 "indicator species" of fish that generally characterize the Typical Gulf Coastal Ecoregion and its fishery. Regulation 2.302(F)(3)(e). Key species are "... normally the dominant species ... within the important groups such as fish families or trophic feeding levels..."[5] and indicator species are "... readily associated with a specific ecoregion...."[6] Regulation 2.106.

20. Under Regulation 2.302(F)(3)(e), the listed key and indicator species for a Typical Gulf Coastal Fishery are:

"seasonal" fishery means: "[t]he designated fishery use that occurs in some waterbodies only during the period when stream flows increase substantially and water temperatures are cooler. This is normally during the months of December through May." Regulation 2.106.

[5] "Key species" are defined in full as "[f]ishes which are normally the dominant species (except for some ubiquitous species) within the important groups such as fish families or trophic feeding levels. All specified key species need not be present to establish a normal or representative fishery." Regulation 2.106

[6] "Indicator species" are defined in full as "[s]pecies of fish which may not be dominant within a species group and may not be limited to one area of the state, but which, because of their presence, are readily associated with a specific ecoregion. All indicator species need not be present to establish a normal or representative fishery." Regulation 2.106

Key Species	Indicator species
Redfin shiner	Pirate perch
Spotted sucker	Flier
Yellow bullhead	Spotted sunfish
Warmouth	Dusky darter
Slough darter	Creek chubsucker
Redfin pickerel	Banded pygmy sunfish

21. The Typical Gulf Coastal Fishery designation was applied to Loutre Creek without stream specific characterizations, site specific field work, or research to support the designation. Rather, the designation was applied to numerous waterbodies in the area, based on research conducted by the Arkansas Department of Pollution Control and Ecology (the predecessor to ADEQ) on least–disturbed streams in Arkansas' Gulf Coastal Ecoregion. *See* Arkansas Department of Pollution Control and Ecology, *Physical, Chemical and Biological Characteristics of Least Disturbed Reference Streams in Arkansas' Ecoregions*. Volume 1 at 79-209 (1987), available at: http://www.adeq.state.ar.us/water/branch_planning/publications.htm (hereafter "ADEQ, 1987"). At the time of designation, there was no field work to determine whether these key or indicator species were present in Loutre Creek.

Authority and Findings to Support Sub-Category of Fishery on Loutre Creek

22. As noted, the Commission has authority under Regulation 2.303(A)(2) to rely on a UAA "[t]o identify a subcategory of a fishable/swimmable use which requires less stringent criteria." The Commission may identify a subcategory of a fishery when it finds that "human caused conditions or sources of pollution prevent attainment of the use and cannot be remedied or would cause more environmental damage to correct than leave in place." Regulation 2.303(B)(3).

23. Section 3 of the UAA provides the scientific data justifying modification of the fisheries use designation for Loutre Creek. Below is a summary of key findings from the UAA divided into findings that characterize the fishery in Loutre Creek and findings that explain two "human caused conditions or sources of pollution [that] prevent attainment of the [fishery] use" in Loutre Creek: urbanization and historical oil field extraction activities.

Key findings characterizing the fishery in Loutre Creek

- A Typical Gulf Coastal Fishery is characterized by a relatively diverse community (24 species or greater in the ecoregion reference streams), including a majority of the key and indicator species described in Regulation No. 2 (ADEQ, 1987).

- By contrast, during the fish collections that occurred in Loutre Creek in 2009, a total of 12 species of fish were found in the study reaches that spanned most of the Creek. Only three of the six key species (Redfin (grass) pickerel, yellow bullhead, and warmouth) and only three of the six indicator species (creek chubsucker, pirate perch, and spotted sunfish) were identified in the fish collections (See Table 4.9 in Section 4 of the UAA). Although the sunfish were found to dominate the fish community, subdominate trophic groups of fish in a Typical Gulf Coastal Fishery (minnows and darters) were not present in Loutre Creek, even in the upstream reference study reaches.

- In addition to lower species diversity in Loutre Creek, this waterbody supports limited population abundance (i.e. community development) when compared to a Typical Gulf Coastal Fishery. The limitation to community development is directly related to habitat availability and the limited enduring pools for refugia during low flow summer periods. The numerical abundance of the fish communities was limited, with the smallest numbers collected from the upstream reference study reach known as LC-1, above Lion Oil's discharge.

- The aquatic life field study demonstrated that the designated aquatic life use (Typical Gulf Coastal Fishery) is not maintained or attainable in Loutre Creek. Loutre Creek supports a subcategory of fishery, referred to as a Limited Gulf Coastal Fishery, which includes the 12 species of fish identified in Loutre Creek as compared to the 24 or more species of fish that may characterize a Typical Gulf Coastal Fishery, and three of the key species and three of the indicator species.

- As documented in the aquatic life field study, Lion Oil's discharge maintains this fishery, including during the low flow critical season, when this naturally intermittent stream would otherwise be dry.

Key findings regarding human caused conditions or sources of pollution—urbanization

- The Loutre Creek watershed has been and continues to be affected by land use practices that limit the type of fishery that can develop in Loutre Creek.

- Since at least the 1940s, the City of El Dorado has expanded into the Loutre Creek watershed, converting it from a primarily rural and forested watershed to one dominated by urban land use. This expansion is depicted in the historical topographic maps (See Figures 3.4 -3.6 of the UAA) and historical aerial photos (See Figures 1.3-1.6 of the UAA). These figures depict the growth and continued urbanization of the Loutre Creek watershed, which are human caused conditions or sources of pollution that have limited the development of the Loutre Creek fishery.

- Unless measures are implemented to remove the urbanized development from the riparian corridor and return the hydrogeology to the pre-development condition, the effects of urbanization can only continue to be modified, but the watershed cannot return to its pre-development condition. Thus, the urbanized state of the Loutre Creek watershed and the effects of that urbanization cannot be remedied short of a decision to remove existing development and restore the area to its natural condition.

- Increased growth and urbanization in the Loutre Creek watershed has caused increased sediment loading through two primary mechanisms: (1) silt transport into and through Loutre Creek, and (2) increase of impervious surfaces within the watershed.

- With respect to the first mechanism, evidence of heavy and excessive silt transport and turbidity (cloudiness) were documented during the UAA aquatic life field study. Figures 4.8, 4.13 to 4.18, 4.22, 4.24, and 4.28 and Figures 5.14-5.21 depict the effects of storm flow and increased silt transport and deposition in the Loutre Creek watershed. This increased silt transport and deposition in Loutre Creek has impaired the development of the biological communities and limited the development of a Typical Gulf Coastal Fishery.

- In addition to increasing silt transport, urbanization has caused more than 55 percent of the Loutre Creek watershed to be covered by impervious surface (Figure 3.6 of the UAA). This surface coverage has increased runoff velocities and enlarged hydrographs (duration of runoff from a given storm event) in Loutre Creek, resulting in scouring of the creek bed, greater erosion, and modification of the hydrologic characteristics of this small watershed. These conditions preclude the development of a Typical Gulf Coastal Fishery that requires a variety of habitats and stable substrates to support the characteristic food sources (e.g., invertebrates) and habitats (e.g., deep pools) in such a fishery.

- The Loutre Creek fishery is also limited because the watershed is very small and heavily urbanized—two conditions that distinguish it from the types of least disturbed streams used as a reference condition for a Typical Gulf Coastal Fishery. None of the seven least disturbed ecoregion reference streams were similar to Loutre Creek at the time they were used as reference streams for a Typical Gulf Coastal Fishery. For instance, the watersheds for each of these streams were dominated by forest land use with more than 88% of the watersheds forested. This is in stark contrast to the Loutre Creek watershed, which is predominately urbanized (more than 55 percent, see Figure 3.6 of the UAA) and has limited remaining forest land use. In addition, the Loutre Creek watershed is only 2.78 square miles, which is less than $1/8^{th}$ the size of the smallest watershed (Whitewater Creek) used as a reference stream (Figure 1.8 of UAA).

- The Loutre Creek watershed therefore differs significantly from these reference streams and it is highly unlikely this small and urbanized watershed has or ever will support a Typical Gulf Coastal Fishery. Many of the characteristic species for this region are not present in Loutre Creek because the waterbody fails to provide adequate habitat such as undercut banks and root complexes. (See UAA Section 4.2.5). This type of habitat is critical for many species and provides both fish spawning habitat and substrate for food source (e.g. invertebrate community development).

Key findings regarding human caused conditions or sources of pollution—historical hydrocarbon contamination

- The Loutre Creek watershed has an extensive history of resource extraction activities that have been important to economic development in Arkansas. Perhaps most significantly, Loutre Creek watershed was the heart of the state's oil boom in the 1920s. On January 10, 1921, the Union Oil field "discovery well" Busey No. 1 ushered in the South Arkansas oil boom (See Figures 3.1 and 3.2 of the UAA for photographs of the "discovery well."). Significantly, Busey No.1 was located on a hillside a little over a mile southwest of the City of El Dorado. The hillside drained directly to Loutre Creek (Figure 3.3 of the UAA).

- Following this major event, the initial development of Busey No. 1 caused oil and salt water from the well to flow into Loutre Creek and then into Bayou de Loutre. Due to the well's location and the lack of controls over oil production practices, it is likely that Loutre Creek has not maintained a Typical Gulf Coastal Fishery and/or aquatic life (benthic) community since the initial crude oil and salt/water/brine flowed unrestricted throughout and over the Loutre Creek watershed, down Loutre Creek and into Bayou de Loutre. Current in-stream conditions related to these historical practices are still evident in the form of:

    - Recovering brine areas, as depicted upstream of Lion Oil and indicated as a "wetland" area on topographic maps (see Figure 3.3 and 3 and as represented in Figures 4.7 and 4.8 of the UAA);

- Areas of petroleum laden sediment deposits that release oil when disturbed, in the upstream reference reach in Loutre Creek and Bayou de Loutre (see Figures 4.9-4.12 of the UAA);

- Legacy sludge deposits in the form of consolidated sediments and oil residuals in Loutre Creek (see Figures 4.17-4.20, 4.24 and 4.27 of the UAA); and

- Soil layers where petroleum seeps along the incised stream channel (see Figures 4.25 and 4.26 of the UAA).

- As a result of these conditions, Loutre Creek has not likely supported a Typical Gulf Coastal Fishery since at least the time Busey No. 1 was developed in 1921. Today, given these historical resource impacts, Loutre Creek supports only a Limited Gulf Coastal Fishery.

- The longstanding and widespread hydrocarbon contamination in the watershed cannot be reasonably remedied in a way that would support a Typical Gulf Coast Fishery, and any attempt to remove the historic contamination would likely cause far more environmental damage than leaving it in place.

- The Typical Gulf Coastal Fishery is not an existing use in Loutre Creek and likely has not been since at least 1921. Rather, the existing fishery use in Loutre Creek is what has been described above as a Limited Gulf Coastal Fishery. The fish community is limited by Loutre Creek's small watershed size (2.78 sq. miles), the continued urbanization of the watershed, and the effects of historical resource extraction activities. These factors have combined to prevent the development of a Typical Gulf Coastal Fishery. Because Loutre Creek has never been verified as having a Typical Gulf Coastal fishery, the proposed modification of the fishery to a Limited Gulf Coastal Fishery would not represent removal of an existing use.

24. Based on these findings, the Commission has authority under Regulation 2.303(A)(2) to rely on the UAA "[t]o identify a subcategory of a fishable/swimmable use which requires less stringent criteria" because "human caused conditions or sources of pollution prevent attainment of the use and cannot be remedied or would cause more environmental damage to correct than leave in place." Regulation 2.303(B)(3).

25. If the Commission and EPA approve this sub-category of fishery, then the selenium criteria should be revised as proposed in Section 6 because it would protect this fishery.

Section 5: Basis for revision of dissolved minerals criteria: background to criteria, permit limits, and findings in support of modified criteria

Background to Dissolved Minerals Criteria for Loutre Creek

26. The dissolved minerals criteria for Loutre Creek and other streams not listed in Regulation No. 2 are derived from field research performed by ADEQ on the least-disturbed streams in Arkansas in the mid-1980s. These streams were selected for research because they had minimal anthropogenic influences. Based on that research, eco-region based dissolved minerals criteria were established as default guidance values for unlisted streams.

27. ADEQ was not initially required to put dissolved minerals effluent limits based on the default guidance values into wastewater discharge permits. ADEQ assured permittees at the time that, if these values ever became more than guidance, permittees could perform site specific studies to establish different site-specific criteria.

28. The eco-region guidance values appear to have been promulgated as enforceable eco-region criteria in Regulation No. 2 in 1991. As a result, ADEQ included eco-region derived effluent limits in permits upon renewal.

29. Once the eco-region criteria became enforceable, numerous permittees petitioned the Commission to adopt revised criteria through Third Party Rulemaking. The Commission and EPA have approved several changes to the eco-region criteria through this site-specific criteria process.

Background to Dissolved Minerals Criteria for Bayou de Loutre

30. The eco-region dissolved minerals criteria do not apply in Bayou de Loutre because it is a stream that is listed specifically in Regulation No. 2. Above Gum Creek, the dissolved minerals criteria for Bayou de Loutre are: 250 mg/L for chloride, 90

mg/L for sulfate, and 500 mg/L for TDS. Below Gum Creek to the State line, the criteria are: 250 mg/L for chloride, 90 mg/L for sulfate, and 750 mg/L for TDS solids. *See* Regulation No. 2 at A-31 showing use variation No. 16 (Bayou de Loutre from Gum Creek to State line).

Lion Oil's Permit Limits for Dissolved Minerals

31. In 2003, Lion Oil entered into a Consent Decree with EPA and ADEQ, which required Lion Oil to install a wet gas scrubber ("scrubber") at the refinery to reduce air emissions of SO_2. The scrubber was installed on the refinery's Fluid Catalytic Cracking Unit in March 2004. The scrubber converts SO_2 to sodium sulfate in a water solution. Although this water is treated along with other facility wastewater, the treatment is not designed to remove dissolved minerals such as sodium sulfate and, even in 2013, there is no treatment technology available for the removal of dissolved minerals that is practical or could be timely installed. As a result, the concentration of dissolved minerals in the discharge increased significantly. In addition, in order to meet the new and more stringent sulfur standards for Tier 2 fuels as mandated by EPA regulations, Lion Oil installed a new diesel hydrotreater and a gasoline hydrotreater, which contribute additional sulfate and TDS to the process wastewater.

32. When Lion Oil's NPDES permit was renewed in 2004, new permit limits were added for sulfate at 68 mg/L monthly average and 102 mg/L daily maximum and for TDS at 207 mg/L monthly average and 310 mg/L daily maximum. The limits became effective in 2007.

33. The new permit limits were designed to ensure that Lion Oil's discharges would not cause an exceedance in the eco-region dissolved minerals criteria that apply to

Loutre Creek. At the time these limits were developed, it was known that Lion Oil would be unable to comply with these limits because they were lower than background levels of TDS in the Sparta Aquifer (Lion Oil's source water) and lower than reasonably available treatment technology is able to achieve.

Basis to Adopt Proposed Dissolved Minerals Criteria

34. In 2007, the Commission approved Lion Oil's Third Party Rulemaking to change the dissolved minerals eco-region criteria for Loutre Creek and the dissolved minerals criteria for Bayou de Loutre in accordance with Regulation 2.306.

35. These 2007 Commission-approved criteria remain codified in Regulation No. 2, but were subsequently disapproved by EPA. In response to EPA's disapproval, additional data has been developed for Loutre Creek and is presented in Section 1.5 of the UAA and Section 5.0 of the Bayou de Loutre SSC in support of the dissolved minerals criteria now proposed for adoption.

36. The method to calculate the proposed dissolved minerals criteria for Loutre Creek and Bayou de Loutre is summarized in Section 5.6 of the Loutre Creek UAA and Section 4.3 of the Bayou de Loutre SSC.

37. The Loutre Creek UAA and the Bayou de Loutre SSC provide the basis for the Commission to adopt the proposed criteria. Below is a summary of key findings from Section 2 of the UAA (significant findings and recommendations for Loutre Creek) and Section 4 of the Bayou de Loutre SSC (significant findings and recommendations for Bayou de Loutre) in support of the Commission's approval of the revised criteria:

- Process and air emissions control equipment have been added to the Lion Oil facility in response to a Consent Decree jointly signed by ADEQ and EPA to control air emissions. The air emissions control equipment has resulted in the recent increase in sulfates and TDS in the treated waste water discharged through Outfall 001.

- There is no reasonably available treatment known that would reduce chloride, sulfate, and TDS sufficiently to comply with Lion Oil's NPDES permit limits. After construction of the joint pipeline, Lion Oil will be able to meet the permit limits that apply to its outfall to the Ouachita River, but not the limits that apply to its outfall on Loutre Creek.

- The 2005 aquatic life field study of Loutre Creek and the 2009-2010 aquatic life field study of Loutre Creek and Bayou de Loutre demonstrate that the historical and current dissolved minerals loadings to Loutre Creek maintain and are protective of the existing fishery.

- A review of existing scientific literature indicates that the dissolved minerals criteria proposed for approval are protective of the fishery and other in-stream aquatic life uses of Loutre Creek and Bayou de Loutre, and in fact, the proposed criteria are more stringent than those the Commission and EPA have approved for other stream segments in Arkansas and those that EPA has approved in other states.

- Artificial matrix whole effluent toxicity (WET) testing completed in 2012 demonstrates that the dissolved minerals concentrations consistent with the proposed criteria passed all WET testing endpoints. The concentrations of dissolved minerals did not elicit either lethal or sub-lethal effects. The criteria developed for Bayou de Loutre are more stringent (lower in concentration) than those developed for Loutre Creek, so the Bayou de Loutre Criteria also do not have such effects. These WET tests indicate that the proposed dissolved minerals criteria will not result in lethal or sub-lethal effects in Loutre Creek or Bayou de Loutre and will maintain the designated uses of these receiving streams.

- Past WET tests also demonstrate that Lion Oil's discharge is not toxic to fish. Additional statistical analyses of WET test results found no correlation between the level of dissolved minerals in the discharge and the WET test results.

- The criteria proposed for approval are protective and will maintain the aquatic life of Loutre Creek (a Limited Gulf Coastal Fishery) and Bayou de Loutre (a Typical Gulf Coastal Fishery) as demonstrated by the UAA and the Bayou de Loutre SSC. These documents report the assemblage of fish species that reside in these water bodies without being adversely affected by historical dissolved minerals concentrations. For instance, as explained in Section 4.4 of the UAA, several fish species have healthy populations under historical dissolved minerals concentrations as evidenced by their population numbers, spatial distribution (presence in multiple study reaches), and individuals of the dominant species present in multiple size classes. The concentrations of dissolved minerals do not have adverse sub-lethal effects as evidenced by the fact that, during the 2005 and 2009-2010 aquatic studies, over 1,100 fish were collected, no deformities were observed in any of these fish, females were found to be gravid with developed egg sacs, and males were actively defending nest sites. See Sections 4.4 and 6.7 of the UAA. Further, based on the aquatic studies and

the WET testing using the proposed criteria, the historical concentrations of dissolved minerals in Loutre Creek provide a reasonable basis to derive site specific criteria for this water body that are protective of these populations. Given the fact that the dissolved minerals criteria now proposed for approval for Loutre Creek and for the nine segments in Bayou de Loutre are lower (more stringent) than the historical levels of dissolved minerals in these water bodies, the proposed dissolved minerals criteria are supportive of the aquatic life in both water bodies.

- The proposed dissolved minerals criteria will not preclude the attainment of other designated and attainable uses for Loutre Creek (secondary contact recreation, industrial water supply, and agricultural water supply) or Bayou de Loutre (primary contact recreation, secondary contact recreation, industrial water supply, and agricultural water supply).

38. As in 2007, approval of the proposed site specific dissolved minerals criteria is necessary to "accommodate important economic or social development in [the] local area," consistent with the requirements of Regulation 2.306. Without approval of the proposed criteria, Lion Oil would not be able to meet the permit limits that apply to its discharge to Loutre Creek and the refinery cannot operate without discharging to Loutre Creek. This would cause a serious economic impact on the economic and social development of Union County and the State.

Section 6: Basis for revision of selenium criteria: permit limits and findings in support of modified criteria

Lion Oil's Permit Limits for Selenium

39. The source of the selenium in Lion Oil's wastewater is the crude oil processed at the refinery. The concentration of the selenium in the effluent is variable and highly dependent on the source of the crude oil refined.

40. During the 2004 NPDES permit renewal, permit limits for total selenium at Outfall 001 were established as 5.8 µg/L monthly average and 11.65 µg/L daily maximum. Under the permit, these limits did not go into affect until 2007.

41. Analyses completed prior to 2007 indicated Lion Oil's discharge would occasionally exceed the permit limit. This condition, in addition to other permit issues, led to the development of a Consent Administrative Order (CAO LIS No. 08-104).

42. In accordance with Item 3 of the Consent Administrative Order, Lion Oil developed a Compliance Action Plan for selenium. The Compliance Action Plan contemplated the completion of a UAA and the development of a site specific criterion for selenium in Loutre Creek and potentially in Bayou de Loutre. This work was undertaken in parallel with Lion Oil's initiative with other NPDES permittees to develop the pipeline to transport most of its treated wastewater to an outfall on the Ouachita River.

Basis to Adopt Proposed Selenium Criterion

43. The UAA provides the basis for the Commission to adopt the proposed selenium criterion.

44. The method to calculate the proposed selenium criterion for Loutre Creek is summarized in Section 5.6.1 of the UAA.

45. Below is a summary of key findings from Section 2 of the UAA in support of the Commission's approval of the revised criterion. The findings are separated into two groups—those predominantly related to Loutre Creek and those predominantly related to Bayou de Loutre.

Key findings predominantly related to Loutre Creek

- The source of the selenium in the discharge is the crude oil processed at the refinery. The concentration of the selenium in the effluent is variable and is highly dependent on the source of the crude oil refined.

- Since the waste water treatment process is not designed to remove selenium, and the source of the selenium is the crude oil, it is logical to assume that selenium has been present in the waste water and in Loutre Creek for almost 90 years.

- There is no reasonably available treatment known that would reduce selenium sufficiently to comply with Lion Oil's NPDES permit limits. After construction of the joint pipeline, Lion Oil will be able to meet the permit limits that apply to its outfall to the Ouachita River, but not the limits that apply to its outfall on Loutre Creek.

- The existing concentrations of selenium in Loutre Creek are protective of and maintain the existing fishery use in Loutre Creek and Bayou de Loutre. This is supported by the following data:

    - No deformities. During the 2005 and 2009-2010 aquatic studies, 859 fish were collected across seven study reaches: LC-0, LC-1, LC-2, LC-3, LC-4, BDL-1 and BDL-2. In addition, collections for embryonic development and tissue analyses harvested 252 specimens from the target study reaches. None of these fish (over 1,100 fish) evidenced any defects typically associated with selenium toxicity including but not limited to: (1) telangiectasia (swelling) of gill lamellae; (2) exopthalmus (popeye); (3) necrotic and ruptured mature egg follicles; and (4) teratogenic deformities of the spine, head, mouth, and fins. Further, as demonstrated by the historical record of fathead minnow chronic WET testing performed by the facility, selenium bioaccumulation in eggs larvae has not caused sub-lethal (growth) failures or post-hatch mortality.

    - Population abundance with evidence of reproduction. The most abundant sunfish populations in Loutre Creek are longear sunfish and green sunfish. The 2009-2010 aquatic study confirmed that both species have healthy populations as evidenced by their population numbers and presence in all study reaches and the number of individuals present in multiple size classes. See Tables 6.5 – 6.7 and Figures 6.2 and 6.4 of the UAA. Further, the concentrations of selenium in the creek do not have adverse sub-lethal effects on these species as evidenced by the fact that the majority of fish collected in Loutre Creek were sunfish (fifty-one percent (151 of 293) in the 2009-2010 aquatic study and sixty-three percent (257 of 405) in the 2005 aquatic study). The lack of toxicity is also demonstrated by the fact that no deformities were identified on any of the fish and females were gravid with developed egg masses, and males were actively defending nest sites. See Figures 6.7 and 6.8 of the UAA depicting longear sunfish nests at BDL-2 and LC-3. Although the 2005 aquatic study did not collect bluegill sunfish in Loutre Creek, they were collected as part of the 2009-2010 aquatic study downstream of the discharge, but not upstream of the discharge. See Table 4.9 of the UAA. The populations of bluegill in Loutre Creek are not large compared to longear and green sunfish, but this is likely due to the fact that bluegill typically prefer areas in lentic and lentic-type environments such as ponds, lakes reservoirs

and large low velocity streams. These conditions are not characteristic for Loutre Creek with its riffle/run reaches.

- The criterion proposed for approval is therefore protective and will maintain the aquatic life of Loutre Creek (a Limited Gulf Coastal Fishery) and Bayou de Loutre (a Typical Gulf Coastal Fishery). This finding is based on the analysis of the habitat and composition of macroinvertebrate and fish communities evaluated in the 2009-2010 aquatic study, the comparative diversity of species across study reaches upstream and downstream of the discharge, the analysis of toxicity of selenium in the food web, and the fate and transport of selenium in Loutre Creek and Bayou de Loutre.

- Modification of the total selenium criteria will not preclude the attainment of other designated and attainable uses for Loutre Creek (secondary contact recreation, industrial water supply, and agricultural water supply) or Bayou de Loutre (primary contact recreation, secondary contact recreation, industrial water supply, and agricultural water supply).

Key findings predominantly related to Bayou de Loutre

- The Aquatox modeling accurately predicted the fate and transport of selenium in the effluent in the Loutre Creek ecosystem and predicted limited downstream bioavailability for uptake of selenium by fish in Bayou de Loutre.

- No changes to the selenium criteria are proposed for Bayou de Loutre. Under existing discharge conditions, the long-term data recorded at the State's water quality monitoring station on Bayou de Loutre (OUA0005) demonstrate that the waterbody meets the selenium criteria. Further, increases in the in-stream selenium concentrations in Bayou de Loutre downstream of the mouth of Loutre Creek compared to the in-stream concentrations upstream of the mouth are less than an order of magnitude, so the influx of water from Loutre Creek does not appear to impact the existing fishery use attainment in Bayou de Loutre. The levels of selenium in fish tissue for fish collected in Bayou de Loutre above and below the confluence with Loutre Creek are nominally the same, so the contributions from Loutre Creek do not adversely affect the fishery in Bayou de Loutre.

Section 7: Requested Modifications to Regulation No. 2

46. Lion Oil requests the Commission to exercise its authority under Regulation 2.303[7] to revise Regulation No. 2 as it applies to Loutre Creek to create a new

[7] If the Commission decides not to create a subcategory of the fishery for Loutre Creek, then Lion Oil requests that the Commission amend the dissolved minerals criteria for Loutre Creek pursuant to Regulation 2.306 and based upon the information in the Loutre Creek UAA and the Bayou de Loutre SSC and the attachments thereto.

sub-category of fishery and modify the selenium and dissolved minerals criteria as shown below.[8]

Modify fisheries use: From Typical Gulf Coastal Fishery

To Limited Gulf Coastal Fishery (Small/Urbanized/Historical Resource Extraction)

Modify selenium and dissolved minerals criteria:

Loutre Creek from Highway 15 South to the confluence of Bayou de Loutre			
	Existing	**2007 Approved**	**Proposed**
Selenium	5 ug/L (chronic) 20 ug/L (acute)	n/a	38 ug/L
Chlorides	18.7 mg/L	256 mg/L	241 mg/L
Sulfates	41.3 mg/L	997 mg/L	645 mg/L
TDS	138 mg/L	1756 mg/L	1354 mg/L

47. Lion Oil requests the Commission to exercise its authority under Regulation 2.306 to adopt the proposed revisions to the dissolved minerals criteria for the following stream segments of Bayou de Loutre.[9]

For Segment 1: Bayou de Loutre - from Loutre Creek to the discharge for the City of El Dorado South facility			
	Existing	**2007 Approved**	**Proposed**
Chlorides	250 mg/L	264 mg/L	255 mg/L

[8] Exhibit A shows the requested sub-category fishery as No. "41" under Regulation No. 2 at A-30 under "Use Variations Supported by UAA" and as No. "41" on Plate GC-2 of Regulation No. 2 at A-34. The requested selenium and dissolved minerals criteria are shown as No. "41" under Regulation No. 2 at A-32 under "Variations Supported by UAA".

[9] Exhibit A shows the requested dissolved minerals criteria for the nine segments on Bayou de Loutre as Nos. "42 – 50" under Regulation No. 2 at A-32 under "Variations Supported by UAA".

Sulfates	90 mg/L	635 mg/L	410 mg/L
TDS	500 mg/L	1236 mg/L	976 mg/L
For Segment 2: Bayou de Loutre - from the discharge from the City of El Dorado-South downstream to the mouth of Gum Creek			
	Existing	**2007 Approved**	**Proposed**
Sulfates	90 mg/L	431 mg/L	287 mg/L
TDS	500 mg/L	966 mg/L	799 mg/L
For Segment 3: Bayou de Loutre - from the mouth of Gum Creek downstream to the mouth of Boggy Creek			
	Existing	**2007 Approved**	**Proposed**
Sulfates	90 mg/L	345 mg/L	229 mg/L
TDS	750 mg/L	780 mg/L	750 mg/L[10]
For Segment 4: Bayou de Loutre - from the mouth of Boggy Creek downstream to the mouth of Hibank Creek			
	Existing	**2007 Approved**	**Proposed**
Sulfates	90 mg/L	296 mg/L	197 mg/L
For Segment 5: Bayou de Loutre - from the mouth of Hibank Creek downstream to the mouth of Mill Creek			
	Existing	**2007 Approved**	**Proposed**
Sulfates	90 mg/L	263 mg/L	176 mg/L
For Segment 6: Bayou de Loutre - from the mouth of Mill Creek downstream to the mouth of Buckaloo Branch			
	Existing	**2007 Approved**	**Proposed**
Sulfates	90 mg/L	237 mg/L	158 mg/L
For Segment 7: Bayou de Loutre - from the mouth of Buckaloo Branch downstream to the mouth of Bear Creek			
	Existing	**2007 Approved**	**Proposed**

[10] The existing and proposed TDS criterion are the same. The change in this criterion is shown to illustrate the change from the 2007 approved criterion.

Sulfates	90 mg/L	216 mg/L	144 mg/L
For Segment 8: Bayou de Loutre - unnamed tributaries of Bayou de Loutre from the mouth of Bear Creek to the final segment of Bayou de Loutre			
	Existing	**2007 Approved**	**Proposed**
Sulfates	90 mg/L	198 mg/L	133 mg/L
For Segment 9: Bayou de Loutre (Final Segment) - from the mouth of Bear Creek to the Arkansas / Louisiana State Line			
	Existing	**2007 Approved**	**Proposed**
Sulfates	90 mg/L	171 mg/L	115 mg/L

WHEREFORE, Lion Oil requests that the Commission initiate a rulemaking process, adopt the proposed Minute Order, and adopt the proposed amendments to Regulation No. 2.

Respectfully submitted

LION OIL COMPANY
1000 McHenry
P.O. Box 7005
El Dorado, AR 71731-7005

By its counsel:

Charles R. Nestrud, AR Bar 77095

CHISENHALL, NESTRUD & JULIAN, P.A.
400 West Capitol Ave.
Little Rock, AR 72201
Telephone: 501-372-5800
Facsimile: 501-372-4941
CNestrud@cnjlaw.com

Stephen J. Higgs
PERKINS COIE LLP
1120 NW Couch Street, Tenth Floor
Portland, OR 97209
Telephone: 503-727-2000
Facsimile: 503-727-2222
Shiggs@perkinscoie.com

CERTIFICATE OF SERVICE

I, Charles R. Nestrud, state that I have, on this 16 th day of Jan, 2013, hand-delivered a copy of the foregoing Petition to Initiate Third-Party Rulemaking to Amend Regulation No. 2 to Ms. Tammera Harrelson, Chief of Legal Division, Arkansas Department of Environmental Quality, 5301 Northshore Drive, North Little Rock, AR 72118-5317.

Charles R. Nestrud