



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

MAY 30 1995

Alison Little
FYT
RECEIVED JUN 2 1995

Dr. Ernest A. Mancini, Supervisor
State Oil and Gas Board of Alabama
420 Hackberry Lane
P.O. Box 0, University Station
Tuscaloosa, Alabama 35486

Dear Dr. Mancini:

The LEAF Petition for Promulgation of a Rule Withdrawing Approval of Alabama's Underground Injection Control program has been denied by the EPA Administrator Carol Browner. The cover letter of the petition was faxed to your office at an earlier date. Attached is the complete package of the response sent to LEAF.

Thank you for your assistance in responding to the petition. Your entire staff was extremely helpful and responded promptly to our inquiries. I would like to note the efforts of Richard Raymond who coordinated the responses from the permitting and enforcement personnel. Please extend our appreciation to your staff.

Sincerely,

Jeanne F. Dove

Jeanne F. Dove, Chief
Permits Unit
Underground Injection Control Section
Ground Water Protection Branch

Enclosure



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MAY 5 1995

David A. Ludder, Esq.
General Counsel
Legal Environmental
Assistance Foundation, Inc.
1115 North Gadsden Street
Tallahassee, Florida 32303

THE ADMINISTRATOR

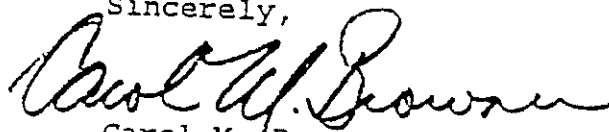
Dear Mr. Ludder:

The Environmental Protection Agency (EPA) has received and carefully reviewed your May 3, 1994, Petition for Promulgation of a Rule Withdrawing Approval of Alabama's Underground Injection Control (UIC) Program. Based on that review, I have determined that Alabama's implementation of its UIC Program is consistent with the requirements of the Safe Drinking Water Act (42 U.S.C. §300h, *et seq.*) and EPA's UIC regulations (40 C.F.R. Part 145). EPA does not regulate--and does not believe it is legally required to regulate--the hydraulic fracturing of methane gas production wells under its UIC Program.

There is no evidence that the hydraulic fracturing at issue has resulted in any contamination or endangerment of underground sources of drinking water (USDW). Repeated testing, conducted between May of 1989 and March of 1993, of the drinking water well which was the subject of this petition failed to show any chemicals that would indicate the presence of fracturing fluids. The well was also sampled for drinking water quality and no constituents exceeding drinking water standards were detected. Moreover, given the horizontal and vertical distance between the drinking water well and the closest methane gas production wells, the possibility of contamination or endangerment of USDWs in the area is extremely remote. Hydraulic fracturing is closely regulated by the Alabama State Oil and Gas Board, which requires that operators obtain authorization prior to all fracturing activities.

Accordingly, I have decided to deny your petition. Enclosed you will find a detailed response to each contention in your petition, which further explains the basis for this denial.

Sincerely,


Carol M. Browner

Enclosure



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RESPONSE OF THE UNITED STATES ENVIRONMENTAL
PROTECTION AGENCY TO PETITION FOR PROMULGATION
OF RULE WITHDRAWING APPROVAL OF ALABAMA'S
UNDERGROUND INJECTION CONTROL PROGRAM

Contention No. 1 This is a petition to the Administrator of the Environmental Protection Agency for the promulgation of a rule withdrawing approval of the Alabama underground injection control program because of Alabama's failure to exercise control over activities required to be regulated under 40 C.F.R. Part 145 (1993) and/or because Alabama's legal authority no longer meets the requirements of 40 C.F.R. Part 145 (1993). It is also a petition to the Administrator for certain ancillary relief prerequisite to promulgation of a rule withdrawing approval of the Alabama underground injection program.

Response No. 1 While EPA does not dispute petitioners' characterization of their petition, EPA denies it presents grounds for withdrawing Alabama's Underground Injection Control (UIC) Program under 40 CFR Part 145 (1993).

Contention No. 2 Section 1422(b)(3) of the Safe Drinking Water Act, 42 U.S.C. §300h-1(b)(3), and 40 CFR §145.33 (1993) authorizes the Administrator of the Environmental Protection Agency to withdraw approval of the Alabama underground injection control program upon finding that Alabama has failed to exercise control over activities required to be regulated under 40 C.F.R. Part 145 (1993), including failure to issue permits, and/or that Alabama's legal authority no longer meets the requirements of 40 C.F.R. Part 145 (1993). Such withdrawal must be accomplished by promulgation of a rule.

Response No. 2 EPA does not dispute petitioners' characterization of Section 1422(b)(3) of the Safe Drinking Water Act (SDWA) or 40 C.F.R. Part 145, but denies that there is any basis in this instance to withdraw Alabama's UIC program.

Contention No. 3 5 U.S.C. §553(e) requires that the Environmental Protection Agency give interested persons the right to petition for the promulgation of a rule. 5 U.S.C. §555(b) requires that the Environmental Protection Agency grant or deny this petition within a reasonable time.

Response No. 3 EPA does not dispute petitioners' characterization of 5 U.S.C. §553(e) or §555(b).

Contention No. 4 The persons filing this petition are:

Legal Environmental Assistance Foundation, Inc.
1115 North Gadsden Street
Tallahassee, Florida 32303
(904) 681-2591

Ruben DeVaughn McMillian
18944 Watermelon Road
Northport, Alabama 35476
(205) 339-5476

Cynthia Ann McMillian
913 High Street
Hartselle, Alabama 35460
(205) 773-8853

Response No. 4 EPA does not dispute that LEAF, Ruben McMillian and Cynthia McMillian filed this petition.

Contention No. 5 Ruben DeVaughn McMillian owns 40 acres of land located in the Northeast Quarter of the Northwest Quarter of Section 30, Township 18 South, Range 8 West, Tuscaloosa County, Alabama. The land was deeded to Ruben DeVaughn McMillian on June 8, 1970. Deed Book 581, pages 647-652, Tuscaloosa County Courthouse, Tuscaloosa, Alabama.

Response No. 5 EPA does not dispute the statements in Contention No. 5.

Contention No. 6 On the above-described land is a dwelling where Ruben DeVaughn McMillian, together with his wife, has made his permanent residence since 1976.

Response No. 6 EPA does not dispute the statements in Contention No. 6.

Contention No. 7 Also on the above-described land is a 200 foot deep water well, the surface elevation of which is 320 feet above mean sea level. The well, which draws groundwater from the Pottsville Formation, is cased to a depth of 30 feet (290 feet above mean sea level).

Response No. 7 EPA does not dispute the statements contained in Contention No. 7. A U. S. Geological Survey Well Schedule indicates Mr. McMillian's well is constructed with 30 feet of six (6) inch polyvinyl chloride (PVC) casing and is an open hole from 30 to 165 feet below land surface. The well schedule does not indicate that the casing was grouted to surface or that a seal was placed at the surface to prevent contaminants from entering the well bore from the surface.

Contention No. 8 The above-described well was drilled in April 1976 and until September of 1989 it produced an unusually high volume and high quality potable water.

Response No 8 EPA does not dispute the date the McMillian well was drilled. EPA does not possess information regarding the volume or quality of the well's water between April 1976 and May 1989. Sample data from May of 1989 to March of 1993 indicates the McMillian well water produces water of drinkable quality.

Contention No. 9 Cynthia Ann McMillian is the daughter of Ruben DeVaughn McMillian and a frequent visitor at the dwelling and residence of Ruben DeVaughn McMillian.

Response No. 9 EPA does not dispute the statements in Contention No. 9.

Contention No. 10 Between 1976 and 1989, Ruben DeVaughn McMillian and Cynthia Ann McMillian frequently used the potable water produced by the water well at the dwelling and residence of Ruben DeVaughn McMillian for domestic purposes, including drinking, bathing, cooking, etc.

Response No. 10 EPA does not dispute the statements in Contention No. 10. Sample results taken between May 1989 and March 1993 indicate that the well water can be used for domestic purposes.

Contention No. 11 Since the commencement of operations of coalbed methane gas production wells near Ruben DeVaughn McMillian's residence in late 1989, the water quality produced from the water well has diminished substantially.

Response No. 11 EPA disputes the statements in Contention No. 11. Ruben McMillian's well was sampled on 12 occasions between May of 1989 and March of 1993, by the Alabama State Oil and Gas Board (O&GB), the Alabama Department of Environmental Management (ADEM), River Gas Corporation, and EPA's Environmental Services Division. Tests were conducted for compounds associated with coalbed methane well fracturing operations and no fracturing fluid tracer chemicals were detected. Mr. McMillian's well was also sampled for drinking water quality and no constituents exceeding drinking water standards were detected. EPA therefore does not have any evidence to indicate that the quality of the water from the McMillian well has diminished. Mr. McMillian also does not provide any information as to the specific degradation of his well.

Contention No. 12 As a result of the diminished water quality, Ruben DeVaughn McMillian, his wife, and Cynthia Ann McMillian have had to rely on bottled water for drinking and cooking since September 1989.

Response No. 12 EPA disputes the statements in Contention No. 12 that due to diminished water quality, the McMillian's had to rely on bottled water for drinking and cooking purposes since September of 1989.

Contention No. 13 The Legal Environmental Assistance Foundation, Inc. is an Alabama non-profit, membership corporation which is dedicated to the preservation, protection and defense of the environment and which actively supports effective implementation and enforcement of environmental protection laws on behalf of its members and the public.

Response No. 13 EPA does not dispute the statements in Contention No. 13.

Contention No. 14 Ruben DeVaughn McMillian is a member of the Legal Environmental Assistance Foundation, Inc.

Response No. 14 EPA does not dispute that Mr. McMillian is a member of LEAF.

Contention No. 15 Cynthia Ann McMillian is a member of the Legal Environmental Assistance Foundation, Inc.

Response No. 15 EPA does not dispute that Ms. Cynthia McMillian (daughter) is a member of LEAF.

Contention No. 16 Coalbed methane gas production wells produce methane gas from coal beds in the Pottsville Formation. Biomonitoring of a Produced Water Discharge from the Cedar Cove Degasification Field, Alabama, Bulletin 135, Geological Survey of Alabama (1989 at 6.

Response No. 16 EPA does not dispute the statement contained in Contention No. 16.

Contention No. 17 More than 4,000 coalbed methane gas production wells have been constructed in nine Alabama counties (Walker, Fayette, Tuscaloosa, Jefferson, Green, Hale, Bibb, Shelby, and St. Clair) since 1984.

Response No. 17 There have been 4,731 coalbed methane construction permits issued by the State of Alabama since 1980; 460 of these drilling permits were later canceled. As of December 31, 1993, 2925 coalbed methane production wells were producing methane gas in the State of Alabama.

Contention No. 18 Coalbed methane gas production wells are generally drilled. Oil and Gas Report 8B, Geological Survey of Alabama 1985) at 9, attached hereto as Exhibit "A."

Response No. 18 EPA does not dispute the statement in Contention No. 18, except to note that air rotary drilling is generally used to prevent contamination of coalbeds which may occur from the use of drilling fluid.

Contention No. 19 During the development of a coalbed methane gas production well, coal beds are routinely hydraulically fractured to induce or stimulate a significant flow of gas. "Hydraulic fracturing" involves the injection of fluids and a propping agent (usually sand) into a coal bed. The application of pressure injects fluids into the coal bed thereby widening natural fractures and inducing the creation of new ones that are held open by the propping agent after the pressure is released. As a result, these fractures provide paths for gas to migrate to the wellbore, thus stimulating gas flow. Oil and Gas Report 8B, Geological Survey of Alabama (1985) at 12-15, attached hereto as Exhibit "A."

Response No. 19 Petitioners have asserted that coalbeds are "routinely" hydraulically fractured. EPA admits that coalbed methane production wells are usually hydraulically fractured at the time they are drilled. However, the wells are not "routinely" fractured after the initial drilling. Alabama fracturing logs maintained by the O&GB show that most wells are only "fractured" one time on each zone of production; further, of the 34 wells within a one (1) mile radius of the McMillian property, only one (1) perforation zone of one (1) well has been fractured twice.

Contention No. 20 Approximately 70% of all fracturing treatments include the injection of guar or hydroxypropylguar-base aqueous fluids into the subsurface. Guar is a long-chain polymer composed of mannose and galactose sugars. Reservoir Stimulation, Prentice Hall (2d ed. 1989) at 4-1.

Response No. 20 EPA does not dispute the statements in Contention No. 20. In the Blue Creek Coal degasification field, water was used approximately 11% of the time for fracturing operations within a one (1) mile radius of Mr. McMillian's well.

Contention No. 21 Approximately 25% of all fracturing treatments include the injection of an energizing gas (foams), such as nitrogen or carbon dioxide into the subsurface. Reservoir Stimulation, Prentice Hall (2d ed. 1989) at 4-1 and 4-8.

Response No. 21 EPA does not dispute the statements in Contention No. 21, except that they inaccurately imply that an energizing gas is itself a foam. Reservoir Stimulation, Prentice Hall (2d ed. '1989) states that "[a] foam is a stable mixture of liquid and gas" and "[n]itrogen and carbon dioxide are used as energizing gases." EPA has determined that nitrogen/gel mixture

was used in approximately 10% of the fracturing treatments in the Blue Creek coal degasification field within a one mile radius of Mr. McMillian's well.

Contention No. 22 Some fracturing treatments include the injection of gelled oil into the subsurface. Reservoir Stimulation, Prentice Hall (2d ed. 1989) at 4-1.

Response No. 22 EPA does not dispute the statement in Contention No. 22. Gel treatments were used in the Blue Creek coal degasification field within a one mile radius of Mr. McMillian's well in approximately 78% of the fracturing operations.

Contention No. 23 Additives are frequently added to fracturing fluids to enhance the viscosity at high temperature, to break the viscosity at low temperature, or to help control leakoff of the fluid to the formation. Such additives include crosslinkers, buffers, bactericides, stabilizers, breakers, surfactants, and diesel. These additives are also injected into the subsurface. Reservoir Stimulation, Prentice Hall (2d ed. 1989) at 4-1, 4-4 to 4-6, 4-8 to 4-12.

Response No. 23 Section 4.5 of Reservoir Stimulation does not indicate the frequency with which the additives are used. Crosslinkers and diesel are treatment fluids, not additives.

Contention No. 24 It is frequently necessary to reintroduce fluids under pressure into previously fractured coal beds to maintain the fractures and reduce or eliminate obstructions to the free flow of methane gas. This operation is referred to herein as "maintenance" and utilizes fluids referred to herein as "maintenance fluids."

Response No. 24 EPA disputes the statement in Contention No. 24 that it is frequently necessary to introduce fluids under pressure into previously fractured coalbeds to maintain the fractures and reduce or eliminate obstructions to the free flow of methane gas. Only eight (8) of the 34 wells within a one (1) mile radius of Mr. McMillian's well have had maintenance fluids introduced into them.

Contention No. 25 The constituents of fracturing fluids and maintenance fluids injected into the subsurface by operators of coalbed methane gas production wells in Alabama have included those listed in Exhibit "B," attached hereto.

Response No. 25 The Alabama State O&GB files do not contain information about the type or amount of additives used in conjunction with fracturing fluids. Records received from River Gas Corporation indicate that some of the compounds listed in Exhibit "B" were used in fracturing the three (3) wells which

McMillian alleged (in his August 9, 1993 Petition to the Alabama O&GB) had impacted his well.

Contention No. 26 In a coalbed fracture, fracturing fluid and maintenance fluid loss occurs mainly at points where the fracture intersects an existing, naturally occurring fracture in the coal. Fluid Loss During the Fracturing of Coalbed Methane Wells, 1991 Coalbed Methane Symposium Proceedings at 269.

Response No. 26 EPA does not dispute the statement contained in Contention No. 26, but shows that the words "fracturing fluid and maintenance" and "naturally occurring" were added to the quoted statement.

Contention No. 27 Twenty to thirty percent of injected fracture stimulation and maintenance fluids remain in the subsurface formation after fracture stimulation and dewatering of the coal bed. Comparison Between Gel-Fracture and Water-Fracture Stimulations in the Black Warrior Basin, 1991 Coalbed Methane Symposium Proceedings at 237.

Response No. 27 The statement made in Contention No. 27 is based on one (1) well in the Oak Grove field and does not purport to be an average for the industry. The 1991 Coalbed Methane Symposium Proceedings state that "[a]ltogether, possibly 20-30% of the injected gel remained in the formation...after one fracturing treatment" (emphasis added).

Contention No. 28 Water wells in the Pottsville Formation obtain water from fractures and openings along bedding planes in the sandstone, shale, and coal beds. Geology and Ground-Water Resources of Tuscaloosa County, Alabama, United States Geological Survey (1958) at 8.

Response No. 28 EPA disputes the statements in Contention No. 28. The total gross Pottsville Formation interval is as much as 4000 feet thick. Geology and Ground Water Resources of Tuscaloosa County, U. S. Geological Survey (1958) at 8. Water wells in the formation are generally less than 200 feet deep. The coalbed methane production zone is 1300 feet or more below land surface in this area. The water wells do not obtain their water from the same zone that produces gas from coalbed methane wells.

Contention No. 29 Groundwater occurrence and movement in the Pottsville Formation is strongly controlled by fracture and fault systems throughout the formation and the occurrence and location of coalbed aquifers. Groundwater moves through the surface rocks along zones of weathering and fractures and infiltrates to various depths depending on the extent and openness of subsurface fractures and joints and upon local elevation of the potentiometric water surface. Biomonitoring of

a Produced Water Discharge from the Cedar Cove Degasification Field, Alabama, Bulletin 135, Geological Survey of Alabama (1989) at 6.

Response No. 29 EPA does not dispute the statement in Contention No. 29.

Contention No. 30 Coal beds are the most permeable rock type in the Pottsville Formation, are the principal aquifers in the Pottsville Formation, and have a strong effect on aquifer behavior in the Pottsville Formation. Regional Analysis of the Black Creek-Cobb Coalbed-Methane Target Interval, Black Warrior Basin, Alabama, Bulletin 145, Geological Survey of Alabama (1991) at 97-98.

Response No. 30 The quoted document actually reads: "Because cleat is closely spaced relative to other fractures, coal is the most permeable rock type in the Pottsville and thus has a strong effect on aquifer behavior." It also states that "Black Creek-Cobb strata have minimal primary permeability, so coal beds are the principal aquifers owing to closely spaced cleat." Due to the depth of the Black Creek-Cobb Strata in the Pottsville Formation (below 900 feet) these aquifers are not used as drinking water aquifers.

Contention No. 31 Faults, joints, and cleats are the dominant means of groundwater movement in the coalbed methane fields in the Pottsville Formation. Regional Analysis of the Black Creek-Cobb Coalbed-Methane Target Interval, Black Warrior Basin, Alabama, Bulletin 145, Geological Survey of Alabama (1991) at 98.

Response No. 31 The quoted document actually states: "Therefore, secondary conduits, such as faults, joints, and cleats, are the dominant source of permeability in the coalbed methane fields." The quote did not state that faults, joints, and cleats, are the dominant means of groundwater movement.

Contention No. 32 The flow of gas and water through a coal bed is controlled primarily by the fractures and joints within the coal. These fracture and joint systems vary in scale from tenths of an inch up to hundreds of feet. A Strategy for Coalbed Methane Production Development Part I: Geologic Characterization, 1989 Coalbed Methane Symposium Proceedings at 5.

Response No. 32 EPA does not dispute the statement in Contention No. 32.

Contention No. 33 Hydraulically induced fractures in coal beds can be either horizontal or vertical and can extend more than 350 feet. A Report on Fracturing Technology and Ground-Water Protection in the Coalbed Methane Development Areas of

Alabama, State/Industry Frac Subcommittee for the Governor's Ground-Water Study Committee (December 1990) at 2.

Response No. 33 The report from the State/Industry Frac Subcommittee for the Governor's Ground-Water Study Committee (December 1990) stated:

Tilt-meter studies, actual mine-through observations, and computer models demonstrate that the orientation and length of induced fractures in coal beds may be primarily controlled by depth and design specification of the frac operation (Appendix B). Accordingly, it can be surmised that frac operations may produce:

- (1) predominantly horizontal pancake-shaped fractures that could extend laterally for approximately 200 feet in shallow beds (to depths of 500 feet);
- (2) predominantly horizontal fractures with minor vertical growth of fractures in intermediate depth coal beds (500 - 1,000 feet); and
- (3) predominantly vertical fractures in deep coal beds (at depths greater than 1,000 feet) that could extend both vertically and laterally for more than 350 feet (emphasis added).

The well depth of the shallowest gas well closest to Mr. McMillian's water well is 1350 feet deep; that well is approximately 1/4 mile away. The petition indicates that Mr. McMillian's well is 200 feet deep (paragraph 7). Therefore, a vertical fracture would have to travel 1150 vertical feet in order to reach the depth of McMillian's well. Based on the Governor's Groundwater Study Committee Report, it is highly unlikely that a vertical fracture would travel 1150 vertical feet. This is consistent with the findings made by EPA in reviewing this petition.

Contention No. 34 The Pottsville Formation may be modeled as an unconfined aquifer. Regional Analysis of the Black Creek-Cobb Coalbed-Methane Target Interval, Black Warrior Basin, Alabama, Bulletin 145, Geological Survey of Alabama (1991) at 98.

Response No. 34 The entire quote cited states: "The Pottsville may be modeled as an unconfined aquifer, although low permeability at depth may cause local confinement." This study was based on wells throughout Jefferson and Tuscaloosa Counties. However, without more geological data, it is impossible to assess whether any area, including the area surrounding McMillian's well, is an unconfined aquifer, a leaky confined aquifer, or a confined aquifer, or to determine which model parameters should be used.

Contention No. 35 Faults make the best conduits for the vertical movement of deep basinal water in the Pottsville Formation. Regional Analysis of the Black Creek-Cobb Coalbed-Methane Target Interval, Black Warrior Basin, Alabama, Bulletin 145, Geological Survey of Alabama (1991) at 110.

Response No. 35 The entire cited quote states: "However, drill-stem-test data from Jefferson County indicate strong potential for upward flow from sub-Pottsville strata (Fashin and others, 1990), so faults may (emphasis added) provide conduits for upward migration of deep basinal water (fig. 99)." Since the drill-stem-tests were conducted in Jefferson County, tests would have to be conducted near the McMillian well in Tuscaloosa County to determine if the statement is applicable to the area around the McMillian well.

Contention No. 36 The existence of natural and hydraulically induced fractures provides pathways for the transport of hydraulic fluids and maintenance fluids to other fractures and openings along bedding planes in the sandstone, shale, and coal beds from which water wells in the Pottsville Formation obtain their water.

Response No. 36 LEAF provides no evidence or publications documenting such pathways exist. No evidence has been found by EPA to support LEAF's allegations.

Contention No. 37 The existence of vertical faults and the absence of barriers to the vertical movement of fluid allows the upward movement of hydraulic fracturing and maintenance fluids and deeper formation waters into the surficial aquifer from which drinking water is obtained.

Response No. 37 LEAF provides no evidence or publications documenting such pathways exist. No evidence has been found by EPA to support LEAF's allegations.

Contention No. 38 An unknown number of core wells have been drilled in Alabama in search of coal deposits during previous decades. Most of these core wells are believed to remain unplugged.

Response No. 38 The actual number of core wells drilled by mineral rights owners is not known. Therefore, the number of core wells which potentially remain unplugged cannot be determined. No deep core wells are known to exist around Mr. McMillian's property. LEAF has not provided evidence in this Petition of the existence of core wells on or near Mr. McMillian's property.

Contention No. 39 Core wells, if not properly plugged, may allow a conduit for fluid movement (including methane gas) from the coal seam and non-underground sources of drinking water up into any overlying underground sources of drinking water. A Report on Fracturing Technology and Ground-Water Protection in the Coalbed Methane Development Areas of Alabama, State Industry Frac Subcommittee for the Governor's Ground-Water Study Committee (December 1990) at Appendix A, Groundwater Study Committee: Report G11.

Response No. 39 EPA agrees that if core wells are not properly plugged, they may be a conduit for fluids to migrate from lower formations. However, no data exists which supports a conclusion that this has occurred near McMillian's property. Moreover, the "Ground Water Study Committee: Report G11" was not an EPA issued study but a report from a subcommittee of the Alabama Governor's Ground Water Study Committee of which EPA was a member. The EPA representative's memorandum (Appendix A) was not an official EPA position statement about coalbed methane wells. The sub-committee discussed all potential ways ground water may become contaminated. The sub-committee did not have data supporting its hypothetical determination that the core wells may cause contamination of drinking water aquifers.

Contention No. 40 Contamination of drinking water aquifers may occur from improperly plugged core wells located within the area of influence of methane gas production wells. A Report on Fracturing Technology and Ground-Water Protection in the Coalbed Methane Development Areas of Alabama, State Industry Frac Subcommittee for the Governor's Ground-Water Study Committee (December 1990) at Appendix A, Groundwater Study Committee: Report G11.

Response No. 40 The quote cited is from the "Ground Water Study Committee: Report G11." Petitioners have added the words "of drinking water aquifers" to the cited statement. Further, as noted in Response No. 39 above, there is no evidence that such contamination has occurred in any drinking aquifer in the area of influence of coalbed methane production wells in Alabama.

Contention No. 41 Due to the large number of coalbed methane gas production wells being constructed in Alabama, there is a growing potential for contamination of drinking water aquifers. A Report on Fracturing Technology and Ground-Water Protection in the Coalbed Methane Development Areas of Alabama, State Industry Frac Subcommittee for the Governor's Ground-Water Study Committee (December 1990) at Appendix A, Groundwater Study Committee: Report G11.

Response No. 41 While paragraph 41 paraphrases the "Ground Water Study Committee: Report G11," the sub-committee did not have data supporting their statement that the core wells may cause contamination of drinking water aquifers. No documented case exists of coalbed methane production wells contaminating drinking water aquifers.

Contention No. 42 Part C of the Safe Drinking Water Act, 42 U.S.C, §§300h to 300h-7 was enacted to protect underground drinking water supplies from contamination by the underground injection of fluids.

Response No. 42 EPA does not dispute the statements in Contention No. 42.

Contention No. 43 Under the provisions of Section 1421(d) of the Safe Drinking Water Act, 33 U.S.C. §300h(d), "underground injection" means the subsurface emplacement of fluids by well injection.

Response No. 43 EPA does not dispute the statements in Contention No. 43, except that the correct citation is 42 U.S.C. §300h(d), not 33 U.S.C. §300h(d).

Contention No. 44 Under 40 C.F.R. §144.6 (1993), injection wells are classified as Class I, II, III, IV or V.

Response No. 44 EPA does not dispute the statements in Contention No. 44.

Contention No. 45 Class I injection wells include industrial wells which inject fluids beneath the lowermost formation containing, within one quarter mile of the well bore, an underground source of drinking water. 40 C.F.R. §144.6(a)(2) (1993).

Response No. 45 EPA does not dispute the statements in Contention No. 45.

Contention No. 46 Class II injection wells include "[w]ells which inject fluids...[f]or enhanced recovery of oil or natural gas;..." 40 C.F.R. §144.6(b)(2)(1993).

Response No. 46 EPA does not dispute the statements in Contention No. 46.

Contention No. 47 Class III injection wells include wells which inject for extraction of minerals including mining of sulfur by the Frasch process, in-situ production of uranium or other metals, and solution mining of salts or potash. 40 C.F.R. §144.6(c)(1993).

Response No. 47 EPA does not dispute the statements in Contention No. 47.

Contention No. 48 Class IV injection wells include wells used by generators of hazardous waste to dispose of hazardous waste into or above a formation which within one-quarter (1/4) mile of the well contains an underground source of drinking water. 40 C.F.R. §144.6(d)(1993).

Response No. 48 EPA does not dispute the statements in Contention No. 48.

Contention No. 49 Class V injection wells include all "[i]njection wells not included in Classes I, II, III, or IV." 40 C.F.R. §144.6(e)(1993).

Response No. 49 EPA does not dispute the statements in Contention No. 49.

Contention No. 50 Under Section 1421(b) of the Safe Drinking Water Act, 33 U.S.C. §300h(b), all underground injection is prohibited unless the person engaging in such injection has first satisfied the state that such injection will not endanger drinking water sources and such injection is authorized by a permit (or rule) issued under an underground injection control program. See also 40 C.F.R. §§144.11, 144.31(a)(1993). In addition, the construction of any well required to have a permit is prohibited until the permit has been issued. 40 C.F.R. §§144.11, 144.31(c)(2)(1993). State underground injection control programs must have adequate legal authority to implement these prohibitions and must be administered in conformance with these prohibitions. 40 C.F.R. §§145.11(a)(5), 145.11(a)(10)(1993).

Response No. 50 EPA does not dispute the statements in Contention No. 50, except that the correct citation is 42 U.S.C. §300h(b).

Contention No. 51 Under §3020 of the Solid Waste Disposal Act, 42 U.S.C. §6939b, the underground injection of hazardous waste into or above a formation which contains (within one-quarter (1/4) mile of the well used for such underground injection) an underground source of drinking water is prohibited. See also 40 C.F.R. §144.13 (1993). State underground injection control programs must have adequate legal authority to implement this prohibition and must be administered in conformance with this prohibition. 40 C.F.R. §145.11(a)(7)(1993).

Response No. 51 EPA does not dispute the statements in Contention 51. However, hydraulic fracturing is not underground injection of waste.

Contention No. 52 Under 40 C.F.R. §144.12 (1993), the construction and operation of any injection well that allows the movement of fluid containing any contaminant into an underground source of drinking water is prohibited if the presence of that contaminant may cause a violation of any primary drinking water regulation under 40 C.F.R. Part 142 or may otherwise adversely affect the health of persons. State underground injection control programs must have adequate legal authority to implement this prohibition and must be administered in accordance with this prohibition. 40 C.F.R. §145.11(a)(6)(1993).

Response No. 52 EPA does not dispute the statement in Contention No. 52.

Contention No. 53 The State Oil and Gas Board of Alabama administers the underground injection control program for Class II injection wells in Alabama. This program was approved by the Environmental Protection Agency on August 2, 1982. 40 C.F.R. §147.50 (1993).

Response No. 53 EPA does not dispute the statement in Contention No. 53.

Contention No. 54 In a letter from Ernest A. Mancini, Oil and Gas Board Supervisor, State Oil and Gas Board of Alabama to David A. Ludder, Legal Environmental Assistance Foundation, Inc., dated April 26, 1989 and attached hereto as Exhibit "C," Mr. Mancini indicated that the State Oil and Gas Board of Alabama does not regulate hydraulic fracturing as underground injection because the underground injection control program for Class II injection wells in Alabama "is not applicable to the hydraulic fracturing of coalbed gas wells."

Response No. 54 The April 26, 1989 letter from Dr. Ernest Mancini to Mr. David Ludder of LEAF states that Rule 400-1-5-.04 (UIC) is not applicable to hydraulic fracturing of coalbed gas wells. The O&GB does, however, regulate hydraulic fracturing of coalbed methane wells under Rule 400-4-3-.01. That rule requires that the Supervisor or one of his agents be notified and approval obtained prior to performing any chemical treatment or fracturing operation; the rules also provide that each well shall be fractured in such a manner as will not cause injury to the formation, or result in water encroachment into the oil or gas formation. Rule 400-1-3-.14.

Contention No. 55 In a letter from Ernest A. Mancini, Oil and Gas Board Supervisor, State Oil and Gas Board of Alabama to David A. Ludder, Legal Environmental Assistance Foundation, Inc., dated May 19, 1989 and attached hereto as Exhibit "D," Mr. Mancini reaffirmed that "an oil or gas well in which a hydraulic fracture operation is conducted does not constitute a UIC

Class II Well..." and is not regulated by the State Oil and Gas Board of Alabama.

Response No. 55 In May 19, 1989 letter from Dr. Ernest Mancini (O&GB) to Mr. David Ludder (LEAF) did state that an oil or gas well in which a hydraulic fracture operation is conducted does not constitute a UIC Class II well. The letter did not state or imply that fracture operations were not regulated by the State O&GB. See response to paragraph 54 above.

Contention No. 56 On August 9, 1993, the Petitioners submitted a Petition for Declaratory Ruling to the State Oil and Gas Board of Alabama in which the Petitioners propounded 11 questions for ruling by the Board. Those questions, intended to invoke a more rigorous analysis of the Board's authority and responsibility to regulate the underground injection of hydraulic fracturing and maintenance fluids under the underground injection control program for Class II wells, are reprinted in Exhibit "E." The State Oil and Gas Board declined to respond to Petitioners' Petition for Declaratory Ruling.

Response No. 56 On August 12, 1993, the Alabama O&GB responded to LEAF's August 9, 1993 letter, stating that LEAF would have to submit \$150.00 to the state treasurer to have the petition filed. LEAF was also notified in the letter that they would have to pay the publication costs for the notice of hearing in the paper. LEAF failed to send in the fee; therefore, the Board did not file the petition.

Contention No. 57 The Alabama Department of Environmental Management administers the underground injection control program for Class I, III, IV and V injection wells in Alabama. This program was approved by the Environmental Protection Agency on August 25, 1983. 40 C.F.R. §147.51 (1993).

Response No. 57 EPA does not dispute the statements in Contention No. 57.

Contention No. 58 In a letter from Leigh Pegues, Director of the Alabama Department of Environmental Management to David A. Ludder, Legal Environmental Assistance Foundation, Inc. dated May 10, 1989 and attached hereto as Exhibit "F," Mr. Pegues indicated that the Alabama Department of Environmental Management does not regulate hydraulic fracturing as underground injection because the Department does not have statutory authority to require a permit for the fracturing process where fracturing fluids are used to facilitate gas production and are within the regulatory criteria of the State Oil and Gas Board of Alabama.

Response No. 58 EPA does not dispute the statement in Contention No. 58.

Contention No. 59 In a letter from Thomas L. Johnston, Associate General Counsel for the Alabama Department of Environmental Management to David A. Ludder, Legal Environmental Assistance Foundation, Inc. dated June 29, 1989 and attached hereto as Exhibit "G," Mr. Johnston indicated that the Alabama Department of Environmental Management does not regulate hydraulic fracturing as underground injection because it involves only the "short-term, temporary introduction of fluids followed by retrieval" and does not involve the subsurface "emplacement" of fluids.

Response No. 59 EPA does not dispute the statements in Contention No. 59.

Contention No. 60 On August 9, 1993, the Petitioners submitted a Petition for Declaratory Ruling to the Alabama Department of Environmental Management in which the Petitioners propounded 21 questions for ruling by the Department. Those questions, intended to invoke a more rigorous analysis of the Department's authority and responsibility to regulate the underground injection of hydraulic fracturing and maintenance fluids under the underground injection control program, are reprinted in Exhibit "E." The Alabama Department of Environmental Management declined to respond to Petitioners' Petition for Declaratory Ruling.

Response No. 60 On September 23, 1993, ADEM declined to issue a ruling on LEAF's Petition for Declaratory Ruling, on the ground that the response to LEAF's Petition to the O&GB may answer the questions posed to ADEM. The letter also invited LEAF to resubmit the petition after it obtained a response from the O&GB.

Contention No. 61 None of the more than 4,000 coalbed methane production wells constructed in Alabama, the operation of which result in the emplacement of fluids in the subsurface, have been permitted, controlled, or regulated under the Alabama underground injection control program approved by the Environmental Protection Agency.

Response No. 61 It is true that the Alabama UIC program does not regulate coalbed methane production wells. EPA's position is that the fracturing of methane gas production wells is not an injection operation subject to regulation under the Underground Injection Control (UIC) Program. The fracturing operations are, however, regulated by the Alabama State O&GB.

Contention No. 62 Relief Requested.

The Petitioners request that the Environmental Protection Agency take action pursuant to 40 C.F.R. §145.34 (1993) to immediately commence and within a reasonable time conclude the process of withdrawing approval of Alabama's underground injection control program because of Alabama's failure to exercise control over activities required to be regulated under 40 C.F.R. Part 145 (1993) and/or because Alabama's legal authority no longer meets the requirements of 40 C.F.R. Part 145 (1993). The actions requested include:

(a) making a determination that there is cause to believe that Alabama has failed to exercise control over activities required to be regulated under 40 C.F.R. Part 145 (1993) and/or that Alabama's legal authority no longer meets the requirements of 40 C.F.R. Part 145 (1993) and that Alabama is not administering or enforcing its authorized program in compliance with the requirements of the Safe Drinking Water Act and 40 C.F.R. Part. 145 (1993);

(b) providing Alabama with notice of such determination and the specific areas of alleged noncompliance by registered mail;

(c) reviewing any response to the notice provided by Alabama within 30 days;

(d) scheduling a public hearing not less than 60 days nor more than 75 days following publication of notice of the hearing in the Federal Register to discuss withdrawal of the Alabama underground injection control program if Alabama has not demonstrated its compliance to the satisfaction of the Administrator;

(e) making a finding that Alabama is not in compliance with the requirements of the Safe Drinking Water Act and 40 C.F.R. Part 145 (1993);

(f) notifying Alabama by registered mail of the specific deficiencies in Alabama's underground injection control program and the necessary remedial actions; and

(g) promulgating a rule withdrawing approval of the Alabama underground injection control program if Alabama has not carried out the necessary remedial action identified by the Environmental Protection Agency within 90 days after notice;

(h) granting such other relief as is appropriate to protect underground sources of drinking water from contamination by the subsurface emplacement of fluids associated with the construction and operation of coalbed methane gas production wells in Alabama.

Response No. 62 It is EPA's position that the petition provides no basis for EPA to withdraw approval of Alabama's UIC program. Alabama has not failed to exercise control over activities required to be regulated under 40 CFR Part 145 (1993), nor has it failed to meet the requirements of 40 CFR Part 145 (1993). The UIC program, as consistently implemented and enforced by EPA for nearly 20 years, does not regulate -- and is not legally required to regulate -- hydraulic fracturing of production wells such as those at issue here.

EPA is, of course, aware that Section 300h(d)(1) of the Safe Drinking Water Act and Section 144.3 of the UIC regulations contain broadly written definitions of the terms "underground injection" and "well injection." These provisions define "underground injection" as "the subsurface emplacement of fluids" through a well. EPA does not dispute that a literal reading of these definitions could arguably be understood to cover every drilling-related activity which purposefully or incidentally results in the introduction of fluids into an oil or gas (or other kind of) well. However, EPA does not believe that such a broad, literal reading of these definitions is legally compelled. Moreover, based upon information currently available to the Agency, EPA does not believe that fracturing activities such as those at issue here result in the endangerment of underground sources of drinking water.

Since the inception of the UIC program, EPA has believed that Congress intended for it to regulate only those wells whose principal function is the subsurface emplacement of fluids, and not wells, like those at issue here, whose principal function is the production of oil or gas. See, Proposed State Underground Injection Control Program Regulations, 41 Fed. Reg. 36730, 36731-32 (1976) ("The proposed definition...does not cover a situation such as the construction of an oil or gas production well...") See also, Reproposed State Underground Injection Control Program Regulations, 44 Fed. Reg. 23738, 23754 (1979) ("[o]nly wells whose primary function is the emplacement of fluids would be subject to these regulations."); 120 Cong. Rec. 10800 (daily Ed. Nov. 19, 1974) (Statement of Rep. Rogers) ("the provisions of the bill [the SDWA] are not concerned so much with drilling as with the injection of waste into the ground.")

The purpose of the wells-at issue is gas production, not injection or disposal. Hydraulic fracturing is performed to prepare for production, not to permanently emplace fluids underground. It is typically a one-time occurrence conducted over the course of a few hours, and is incidental to, and not the primary purpose of, methane gas production wells. Accordingly, EPA does not believe it must regulate hydraulic fracturing under its UIC program.'

There is also no basis or reason for the Agency to grant "such other relief as is appropriate" -- including the invocation of its emergency powers under Section 1431 of the SDWA, 42 U.S.C. §300i -- to protect underground sources of drinking water. Repeated testing has failed to substantiate LEAF's allegation that drinking water sources at the McMillian well or elsewhere in Alabama are being contaminated or endangered, nor is there any substantial likelihood that drinking water sources would be contaminated or endangered as a result of these fracturing operations.

For the foregoing reasons, LEAF's Petition for Promulgation of a Rule Withdrawing Approval of Alabama's Underground Injection Control Program is HEREBY DENIED.