STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION COMMISSION ON ITS OWN MOTION TO DEFINE THE VERTICAL AND AREAL EXTENT OF AQUIFERS POTENTIALLY VULNERABLE TO CONTAMINATION BY THE SURFACE DISPOSITION OF WATER PRODUCED IN CONJUNCTION WITH THE PRODUCTION OF OIL AND GAS IN McKINLEY COUNTY, RIO ARRIBA, SANDOVAL AND SAN JUAN COUNTIES, NEW MEXICO.

CASE NO. 8224
Order No. R-7940

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9:00 o'clock a.m. on February 20 and April 3, 22, and 23, 1985, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this 12th day of June, 1985, the Commission, a quorum being present, having considered the testimony presented and the exhibits received at said hearing, and being fully advised in the premises,

FINDS THAT:

(1) Due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) Section 70-2-12 B(15) authorizes the Oil Conservation Division and Commission "to regulate the disposition of water produced or used in connection with the drilling for or producing of oil or gas, or both, and to direct surface or subsurface disposal of such water in a manner that will afford reasonable protection against contamination of fresh water supplies designated by the state engineer;".

(3) The State Engineer has designated all surface waters of the State and all ground waters containing 10,000 milligrams per liter (mg/l) of total dissolved solids (TDS), or less, for which there is a reasonably foreseeable future use as fresh water.

(4) Much production of crude oil and natural gas in New Mexico is accompanied by the co-production of water from the same formation (produced water).

(5) The volume of produced water varies from well to well and may range from barely measurable to several hundred barrels per day.

(6) The quality of produced water may vary from essentially fresh to highly or fully saturated with contaminants.

(7) New Mexico has two primary oil and gas producing areas defined as follows:

The Southeast producing area consisting of Eddy, Chaves, Lea, and Roosevelt Counties;

The Northwest producing area consisting of Rio Arriba, Sandoval, San Juan and McKinley Counties.

(8) In general, produced waters in the Southeast occur at higher volumes and substantially higher contaminant levels than in the Northwest.

(9) An order generally prohibiting the disposal of volumes of produced water in excess of one barrel per day (BPD) in unlined pits has been in effect in the Southeast since 1970.

(10) On June 7, 1984, the Oil Conservation Division, hereinafter referred to as "the Division, called this case before a hearing examiner to consider prohibition of the disposal of produced water in unlined pits or on the surface (surface waters or surface of the ground) in the Northwest producing area, at which time it was continued indefinitely.

(11) In July, 1984, the Director of the Oil Conservation Division appointed a committee to study and report on the disposal of produced water in the Northwest to assure that produced water disposal practices resulted in protection of fresh waters.

(12) Said committee was composed of representatives of the industry, the Environmental Improvement Division, the Bureau of Land Management, area Indian Tribes, environmental groups, the public and the Division.

(13) The committee divided itself into a long term and short term committee, the Short Term Committee being assigned the following tasks:

(a) Determine what constitutes an aquifer in the Northwest producing area which is vulnerable to contamination by the surface disposal of produced water;

(b) map the vulnerable aquifer(s);

(c) attempt to determine the probability unlined pits may have of contaminating the vulnerable aquifer (s); and

(d) prepare a recommendation to the Division for an order which will address the problems identified by the subcommittee.

(14) The Long Term Committee is to deal with issues unresolved from the efforts of the Short Term Committee.

(15) That upon completion of the work of the Short Term Committee, the subject case was readvertised in its present form to be heard by the Commission.

(16) In the subject case, the Commission seeks to define and describe the areal extent of aquifers in the Northwest producing area which are potentially vulnerable to contamination from the disposal of produced waters in unlined pits or on the surface.

(17) The Commission further seeks to prohibit and/or limit the disposition of such produced waters in such vulnerable area(s) as may be necessary for the purpose of affording reasonable protection against contamination of fresh water supplies therein.

(18) The Short Term Committee gathered considerable data as to well locations, (oil, gas and water), well depths, volumes of produced water and ground water quality in this area.

(19) The Short Term Committee agreed that the terms aquifer and vulnerable aquifer should be defined as follows:

(a) Aquifer: An aquifer is a saturated permeable geologic unit of a geological formation, group of formations, or part of a formation) that can transmit significant quantities of water under ordinary hydraulic gradients.

For purposes of this definition, the word significant means that the water from the aquifer is used for or may reasonably be presumed to be usable for municipal, industrial, domestic, agricultural, or stock watering purposes.

(b) Vulnerable Aquifer: For the purpose of this order, the following are defined as vulnerable aquifers:

(1) Unconfined aquifers that are less than 50 feet from the surface, or

(2) Unconfined aquifers in floodplain areas, or

(3) Aquifers in unconsolidated materials.

(20) The Short Term Committee agreed that the vulnerable l areas should constitute the following:

(a) That area which is defined as being within the valleys of the San Juan, Animas, and La Plata Rivers which is bounded by the topographic line on either side of the river that is 100 vertical feet above the river channel measured perpendicularly to the river channel.

(b) Those areas outside the above described area in which ground water is subsequently found to be within 50 feet of the ground surface currently to include:

SECTION	TOWN SHIP, NORTH	RANGE WEST	SECTION	TOWN SHIP, NORTH	RANGE WEST
17	28	8	13	30	12
18	28	11	15	30	12
26	28	15	27	30	12
16	29	10	33	30	12
24	29	12	1	30	13
17	29	18	6	30	15
23	29	19	16	30	15
30	29	19	21	30	15
5	30	10	29	30	16
3	30	11	34	30	19
7	30	11	13	31	10
8	30	11	35	31	11
10	30	11	10	32	10
19	30	11	23	32	11
			25	32	12

(c) Those areas that lie between the above-named rivers and the following ditch

Highland Park Ditch
Hillside Thomas Ditch
Cunningham Ditch
Farmers Ditch
Halford Independent Ditch
Citizens Ditch
Hammond Ditch

(21) The Short Term Committee agreed to the definitions of the various types of pits which receive produced water including:

(a) Produced Water Pit: That pit which receives water produced from primary separation in conjunction with the production of crude oil and/or natural gas whether or not such pit is located at the site of production.

(b) Ancillary Pit: Those pits not receiving fluids from primary separation including but not limited to dehydrator pits, tank drain pits, pipeline drip collector pits, blowdown pits, and compressor scrubber pits. Examples are listed below:(1) Dehydrator Pit: Those pits which normally receive produced water only from a dehydration unit.

(2) Blowdown Pit: Those pits which receive liquids only when a well is blown down.

(3) Tank Drain Pit: Those pits which receive water that is occasionally drained from a production storage tank.

(4) Pipeline Drip Collector Pit: Those pits which receive liquids which accumulate in gas pipelines.

(5) Compressor Scrubber Pit: Those pits which receive liquids at the compressor suction in event of primary separator failure.

(22) The Short Term Committee could not reach agreement on the issue of what, if any, small volume of produced water could be disposed of in unlined pits in the area while affording reasonable protection to fresh water.

(23) Per well produced water volumes vary from essentially 0 to more than 5 BPD in the area.

(24) Produced water quality varies in the area with some meeting State Engineer standards for fresh water (10,000 mg/l TDS or less).

(25) Contaminants in the produced water include but are not limited to chlorides, sulfates, arsenic, iron, manganese, and organics including benzene, toluene and xylenes.

(26) Benzene and toluene were addressed as the prime organic contaminants of concern in this case.

(27) Evidence presented shows that most of the produced water disposed of in unlined pits in the area, including the contaminant load, enters the subsurface rather than evaporating.

(28) The movement of produced water into the subsurface can result in such waters and the contaminants entering the fresh water supplies in the vulnerable area.

(29) The entry of such contaminated water into the fresh waters could contaminate such waters and cause them to become unfit for use at points of current or foreseeable future use.

(30) The potential for contamination of fresh water supplies is reduced by a variety of attenuation mechanisms and other factors which work to slow, halt, or reduce the concentration of contaminants, including mixing, volatilization, sorption, and microbiological degradation.

(31) A zone of unsaturated or partially saturated material above the water table (vadose zone) is necessary in order for said attenuation mechanisms to work effectively.

(32) The evidence in this case indicated that a minimum vadose zone thickness of 10 feet is necessary to protect ground water supplies under pits receiving even small volumes of produced water.

(33) Extensive expert testimony was offered relative to the microbiological degradation of organic contaminants and in particular benzene and toluene.

(34) The only sampling of produced water disposal sites in the area indicated that the level of benzene in produced waters decreased rapidly in the subsurface within very short distances from the disposal pits.

(35) This sampling was conducted at only three sites in the area and is insufficient to demonstrate that benzene or other organic or inorganic contaminants in produced water as a whole should not be considered as long term threats to fresh waters.

(36) The San Juan Basin, including the proposed vulnerable area, has experienced development of oil and natural gas for a period in excess of forty years.

(37) No party to the hearing presented any definitive evidence of contamination of fresh water resulting from disposal of produced water in unlined pits or on the surface in the area.

(38) The lack of such evidence of contamination could result from the operation of the aforesaid geohydrological, mechanical, and microbiological conditions in such a manner as to have prevented contamination of fresh water.

(39) The lack of evidence of contamination could also be as a result of a paucity of monitor wells and sampling in the area.

(40) At the time of the hearing, there was insufficient evidence upon which to make an absolute determination that it is necessary that no produced water be disposed of in unlined pits in the area in order to protect fresh water.

(41) Those testifying for the subcommittee and the industry were in general agreement that disposal of more than 5 barrels of produced water per day in unlined pits in the area should be prohibited in order to protect fresh water.

(42) The evidence in this case having shown that produced waters and their contaminant load can move into and contaminate fresh waters, the disposal of highly contaminated produced waters in unlined pits or on the surface in the area should be precluded.

(43) Pending further study, produced waters containing in excess of 10,000 mg/l TDS should be considered highly contaminated.

(44) The disposal of produced waters containing levels of total dissolved solids in excess of 10,000 mg/l in unlined pits or on the surface in the area should also be prohibited to provide protection for fresh water.

(45) The evidence presented in the case established that pits receiving one-half barrel per day of produced water, or less, do not represent a proven threat to fresh water in the area at this time and should be allowed to continue in operation provided that there is a minimum depth of 10 feet to ground water.

(46) In order to determine which disposal operations should be permitted and which should be prohibited, a survey of all produced water pits in the area should be conducted.

(47) Such survey should include operators, transporters, gas processing plants, produced water haulers and any other party who may own or operate produced water pits in the area.

(48) The elements of such survey should include the following information:

(a) name of the pit operator or owner;

(b) appropriate information on the location of the pit, the lease and well served and the type of pit (produced water vs. ancillary);

(c) dimensions of the pit;

(d) the volume of discharge to the pit and how that volume was measured;

(e) the quality of the discharge expressed as total dissolved solids;

(f) the date the TDS was determined; and,

(g) the depth to ground water (if inferred include relevant data)

(49) A reasonable period of time should be provided for the completion of the survey and any required elimination of unlined produced water disposal pits.

(50) The following periods should be considered reasonable:

For the pit survey, six months.

For elimination of unlined pits, 18 months.

(51) To assure that produced water which may be trucked or otherwise moved out of the area is not disposed of in a manner which represents a threat to fresh water, all such movement should be only after approval of the Division.

(52) Any application to dispose of produced water from the Vulnerable Area outside such area should be made in duplicate with one copy each to the Division's Santa Fe and Aztec offices giving such information on produced water quality and on the disposal site as the Division may require.

(53) While the evidence in this case was not sufficient to establish a complete prohibition of the use of unlined disposal pits or only a very low limit of permitted disposal within the Vulnerable Area, it was

sufficient to cause a prudent operator or owner to examine the location and circumstances of his produced water disposal to assure that the same would not result in contamination of fresh water.

(54) Regardless of the terms and conditions of this order, no person should dispose of produced water in the Vulnerable Area at such a location, or in such a manner, or under such conditions as to cause contamination of fresh water.

(55) The Division and the Committee should continue to study the potential for produced waters disposed of in unlined pits or on the surface in the area to contaminate fresh waters in the 18 months following the effective date of this order.

(56) Committee studies should focus on obtaining a greater number of samples near unlined produced water pits and analysis for a broad spectrum of potential contaminants.

(57) The Short Term Committee additionally proposed that an administrative procedure be established for permitting the continued operation of any unlined pit or surface disposal which might otherwise be prohibited as a result of the hearing and subsequent order.

(58) There was little testimony presented relative to the proposed administrative procedure.

(59) There was no demonstration that the procedure would be practical or appropriate.

(60) Until additional experience is gained in granting exceptions to the no unlined pit or surface disposal provisions of this order, no administrative exemption procedure should be established.

(61) The Short Term Committee further proposed that the provisions of this order not apply to any produced water when such water is disposed of in:

> (a) "Any pits, ponds, lagoons, or impoundments resulting from activities regulated by a discharge plan approved and permit issued by NMOCD" (Division) "or NMEID under Water Quality Control Commission Regulations authorized under the New Mexico Water Quality Act."
>
> (b) "Any pits, ponds, lagoons or impoundments resulting from activities regulated by a RCRA or NPDES permit issued by NMEID or EPA under RCRA or NPDES regulations authorized under the Resource Conservation and Recovery Act, New Mexico Hazardous Waste Act, Clean Water Act or Safe Drinking Water Act.", and,
>
> (c) '' Any pits, ponds, lagoons or impoundments resulting from activities regulated by a mining plan approved and permit issued by the New Mexico Coal Surface Mining Commission under the authority of the Surface Mined Lands Reclamation Act."

(62) The Oil and Gas Act does not provide for delegation of the Division's responsibilities under Section 70-2-12 B(15).

(63) Except where a discharge plan approved under the Water Quality Act by the Division specifically authorizes the disposal of produced water in a pit, pond, lagoon or other impoundment, the proposed exceptions should not apply.

(64) To provide reasonable protection to fresh water supplies designated by the State Engineer, a Vulnerable Area should be designated within the Northwest producing area and special rules governing

the disposal of produced water therein should be adopted in conformance with the foregoing findings.

IT IS THEREFORE ORDERED THAT:

(1) Within the San Juan Basin of New Mexico situated within the counties of Rio Arriba, Sandoval, San Juan, and McKinley, there is hereby designated the "Vulnerable Area" constituting the following:

(a) That area which is defined as being within the valleys of the San Juan, Animas, and La Plata Rivers which is bounded by the topographic line on either side of the river that is 100 vertical feet above the river channel measured perpendicularly to the river channel.

(b) Those areas outside the above described area in which ground water is subsequently found to be within 50 feet of the ground surface currently to include:

SECTION	TOWN SHIP, NORTH	RANGE WEST	SECTION	TOWN SHIP, NORTH	RANGE WEST
17	28	8	13	30	12
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23	29	19	16	30	15
30	29	19	21	30	15
5	30	10	29	30	16
3	30	11	34	30	19
7	30	11	13	31	10
8	30	11	35	31	11
10	30	11	10	32	10
19	30	11	23	32	11
			25	32	12

(c) Those areas that lie between the above-named rivers and the following ditches as shown on United States Geological Survey Quadrangle Maps located in and available for the use of operators at the Division district office at Aztec:

Highland Park Ditch
Hillside Thomas Ditch
Cunningham Ditch
Farmers Ditch
Halford Independent Ditch
Citizens Ditch
Hammond Ditch

(2) That Special Rules and Regulations governing the disposal of produced water in the Vulnerable Area of McKinley, Rio Arriba, Sandoval and San Juan Counties, New Mexico, are hereby promulgated as follows:

SPECIAL RULES AND REGULATIONS FOR THE DISPOSAL OF PRODUCED WATER IN THE VULNERABLE AREA IN McKINLEY, RIO ARRIBA, SANDOVAL AND SAN JUAN COUNTIES, NEW MEXICO.

RULE 1. APPLICABILITY:

These rules shall apply to all produced water disposal within the Vulnerable Area.

These rules shall further apply to all produced water from the Vulnerable Area and to its disposal whether within or without said area.

RULE 2. DEFINITIONS:

(a) Aquifer: An aquifer is a saturated permeable geologic unit (a geological formation, group of formations, or part of a formation) that can transmit significant quantities of water under ordinary hydraulic gradients.

For purposes of this definition, the word significant means that the water from the aquifer is used for or may reasonably be presumed to be usable for municipal, industrial, domestic, agricultural, or stock watering purposes.

(b) Fresh Water (to be protected) includes all surface waters and includes all underground waters containing 10,000 milligrams per liter or less of total dissolved solids except for which, after notice and hearing, it is found there is no reasonably foreseeable beneficial use which would be impaired by
contamination of such waters.

(c) Produced Water shall mean those waters produced in conjunction with the production of crude oil and/or natural gas and commonly collected at field storage, processing, or disposal facilities including but not limited to: lease tanks, commingled tank batteries, burn pits, LACT units, dehydrators, and community or lease salt water disposal systems and which may be collected at gas processing plants, pipeline drips and other processing or transportation facilities

(d) Produced Water Pit: That pit which receives water produced from primary separation in conjunction with the production of crude oil and/or natural gas whether or not such pit is located at the site of production.

(e) Ancillary Pit: Those pits not receiving fluids, from primary separation including but not limited to dehydrator pits, tank drain pits, pipeline drip collector pits, blowdown pits and compressor scrubber pits. Examples are listed below:

(1) Dehydrator Pit: Those pits which normally receive produced water only from the dehydration unit.

(2) Blowdown Pit: Those pits which receive liquid only when a well is blown down.

(3) Tank Drain Pit: Those pits which receive water that is drained from a production storage tank.

(4) Pipeline Drip Collector Pit: Those pits which receive liquids which accumulate in gas pipelines.

(5) Compressor Scrubber Pit: Those pits which receive liquids at the compressor suction in event of primary separator failure.

RULE 3. PROHIBITIONS:

Effective January 1, 1987, within the Vulnerable Area, disposal of produced water or fluids produced in connection with the production of oil and natural gas, or both, in unlined pits or on the surface is prohibited, except for disposal of produced water specifically exempted herein.

RULE 4. EXEMPTIONS:

(a) The provisions of this order shall not apply to:

(1) Produced water pits which receive five (5) barrels or less per day (daily) of produced water provided that such produced water has a concentration of total dissolved solids of 10,000 milligrams per liter (mg/l) or less and that the base of such pit is at least 10 feet above the water table.

(2) Unlined produced water or ancillary pits which receive one-half (1/2) barrel or less per day (daily) of produced water provided that the base of such pit is at least 10 feet above the water table.

(3) Any pits, ponds, lagoons or impoundments resulting from activities regulated by a discharge plan approved and permit issued by The Division under Water Quality Control Commission Regulations authorized under the New Mexico Water Quality Act which permit specifically authorizes the disposal of produced water.

(b) Notwithstanding the exceptions contained in this rule, the surface disposal of produced water in the Vulnerable Area at such a location or in such a manner or under such conditions as to cause contamination of fresh water is hereby prohibited.

RULE 5. SURFACE DISPOSAL FACILITIES TO BE APPROVED:

(a) Beginning October 1, 1985, no produced water shall be removed from the Vulnerable Area for surface disposal except to such facilities as may be approved by the Division.

(b) Surface disposal facility approval outside the Vulnerable Area may be made after notice and hearing or administratively upon a satisfactory showing that the proposed surface disposal does not endanger fresh water.

(c) No produced water may be disposed of or stored in below grade tanks or lined pits within the Vulnerable Area except after approval of the Division.

(d) The Director of the Division is hereby authorized to approve administratively the use of lined pits or below grade tanks within the Vulnerable Area

RULE 6. PIT REGISTRATION:

(a) By January 1, 1986, the owner/operator of any existing produced water pit or ancillary

pit seeking to continue use of such pit for disposal purposes must have filed a Pit Registration Form with the Division in accordance with the directions thereon as shown on Exhibit "A" attached to this order.

(b) The owner/operator of any unlined produced water pit or ancillary pit constructed on or after the date of this order must file a Pit Registration Form with the Division within 90 days following initial production into or through the facility served by such pit.

RULE 7. PIT CLOSURE:

That any pit which is not registered in accordance with RULE (6) above shall be closed in a manner approved by the Oil Conservation Division.

IT IS FURTHER ORDERED THAT:

(3) Jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

Signed by

JIM BACA, Member

Signed by

ED KELLEY, Member

Signed by

R. L. STAMETS, Chairman and Secretary

S E A L

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION COMMISSION

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION DIVISION UPON ITS OWN MOTION TO CONSIDER AN ORDER REGULATING THE DISPOSAL OR COLLECTION OF PRODUCED WATER, DRILLING FLUIDS, DRILL CUTTINGS, AND COMPLETION FLUIDS AT COMMERCIAL OR CENTRALIZED SURFACE DISPOSAL FACILITIES IN McKINLEY, RIO ARRIBA, SANDOVAL AND SAN JUAN COUNTIES, NEW MEXICO.

CASE NO. 8835
Order No. R-7940-A

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9:00 o'clock a.m. on February 26 and April 9, 1986, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this 9th day of June, 1986, the Commission, a quorum being present, having considered the testimony presented and the exhibits received at said hearing, and being fully advised in the premises,

FINDS THAT:

(1) Due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) Section 70-2-12 B(15) authorizes the Oil Conservation Division and Commission "to regulate the disposition of water produced or used in connection with the drilling for or producing of oil or gas, or both, and to direct surface or subsurface disposal of such water in a manner that will afford reasonable protection against contamination of fresh water supplies designated by the state engineer".

(3) The State Engineer has designated all surface waters of the State and all underground waters containing 10,000 milligrams per liter (mg/l) of total dissolved solids (TDS), or less, for which there is a reasonably foreseeable future use as fresh water.

(4) Much production of crude oil and natural gas in New Mexico is accompanied by the co-production of water from the same formation (produced water) which water often contains constituents which can contaminate fresh water supplies.

(5) Drilling fluids used in the exploration for oil and/or gas, including the resultant drill cuttings, may contain chemicals and additives that can contaminate fresh water supplies.

(6) Completion fluids may contain concentrations of chlorides and other constituents that can contaminate fresh water supplies.

(7) Fresh water supplies may be contaminated through improper disposal of the fluids or materials described in Finding Nos. (4), (5), and (6) above either by direct entry of such materials into surface

waters or percolation of contaminants into ground water from surface disposal sites.

(8) Volumes of such fluids and/or materials disposed of at commercial or centralized facilities are generally greater than volumes disposed of at an individual well site (considering only fluids or materials used or produced at a well site).

(9) The relatively greater volume of fresh water contaminants found at commercial and centralized disposal facilities presents the potential for a greater volume of contaminant movement into the subsurface and fresh water supplies.

(10) The vulnerability to contamination of fresh water supplies is therefore, in part, affected both by the volume and quality of disposed fluids and solids and the hydrogeology of the area.

(11) By its Order No. R-7940, the Commission adopted special rules to control the disposition of water or fluids produced in connection with the production of oil and natural gas in an area of the San Juan Basin found to be the most vulnerable to contamination from such disposition.

(12) In part, Division Order No. R-7940 requires Division approval of surface disposal facilities that receive produced water removed from or disposed of or stored in the defined Vulnerable Area of the San Juan Basin.

(13) Under said special rules, however, a condition can exist where produced water from the Vulnerable Area is disposed of, or stored, in an approved pit in proximity to a pit receiving produced water and other oil field fluids and solids from outside the Vulnerable Area and not requiring approval.

(14) This condition is undesirable in that it cannot be assured that the unpermitted facility does not receive water from the Vulnerable Area, nor is the same degree of protection provided to fresh water under equivalent conditions.

(15) Rule 5(a) of Order No. R-7940 provides that no produced water shall be removed from the Vulnerable Area for surface disposal except to approved facilities, but no method exists for tracking such movement.

(16) In order to ensure that such water does go to facilities approved to receive produced water from the Vulnerable Area, commercial surface disposal facilities should be required to keep records on the volume, source, dates, and types of waste received from the Vulnerable Area or other locations.

(17) In order to rectify the issues described in Findings No. 13 through 16 and otherwise to protect fresh waters and to prevent waste in McKinley, Rio Arriba, Sandoval, and San Juan Counties, the Oil Conservation Division (Division) seeks, on its own motion, the promulgation of special rules to require approval of all commercial disposal or collection facilities and to require commercial disposal pit operators to keep and make available records on the volume, source, dates, type of oil field fluids and solid waste received, and the hauling companies using the commercial facilities.

(18) To further assure the protection of fresh water in said four-county area, the Division seeks registration of centralized disposal or collection facilities utilizing ponds, pits or below-grade tanks which facilities receive more than a minimum volume of fluids daily.

(19) The hydrogeology of the area outside the Vulnerable Area is sufficiently diverse to require site-specific reviews for approval of such centralized collection or disposal facilities.

(20) Such a review can be facilitated through the use of a registration form which details the nature and volume of discharge, the construction and materials of holding tanks or pits, the proximity to watercourses and depth to shallow ground water.

(21) Upon review, any centralized facility which does protect fresh water should be approved and any facility which does not should be modified or closed.

(22) A subcommittee of the Long Term Produced Water Study Committee convened by the Director of the Division to assist the Division in its San Juan Basin water protection efforts met during March 1986, to review Division proposals in this case.

(23) While there was general agreement with the Division proposals, there was no agreement as to threshold volumes or conditions for requiring registration of centralized facilities.

(24) At the hearing, the Commission was presented three threshold pit registration options as follows:

(a) an industry proposal to utilize a numerical rating system involving assigning points to various factors such as depth to ground water, volume of produced water entering the facility, and the total dissolved solids (TDS) in such water;

(b) a Division modification of the numerical rating system; and,

(c) a Division proposal to utilize a maximum 16 barrels per day as a level at and below which registration would not be required, except upon written notice by the Division that the centralized facility may not provide adequate I protection of fresh water.

(25) The information required for the numerical rating system, including the depth to other than shallow ground water or TDS of the produced water, may not always be available to the owner or other person determining if centralized facilities must be registered and may be subject to interpretation.

(26) A 16-barrel per day exemption level is generally consistent with that adopted in the other major producing area of the State, is clear, and should be adopted.

(27) The Director of the Division should be granted the authority to suspend the use of any commercial or centralized disposal or storage facility when such suspension is necessary to protect fresh water.

(28) The Special Rules for Commercial and Centralized Facilities-San Juan Basin, New Mexico, contained in Exhibit "A" attached to this order contain provisions consistent with the foregoing findings and which will assure improved protection of fresh water in the subject four-county area and should be adopted.

IT IS THEREFORE ORDERED THAT:

(1) Special Rules and Regulations governing the disposal of produced water, drilling fluids, drill cuttings, and completion fluids at all commercial facilities or centralized facilities utilizing ponds, pits or below grade tanks within McKinley, Rio Arriba, Sandoval and San Juan Counties, New Mexico, are hereby promulgated as shown on Exhibit "A" attached to this order.

(2) Jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

Signed by

JIM BACA, Member

Signed by

ED KELLEY, Member

Signed by

R. L. STAMETS,
Chairman and Secretary

S E A L

SPECIAL RULES FOR COMMERCIAL AND CENTRALIZED DISPOSAL AND STORAGE FACILITIES-SAN JUAN BASIN, NEW MEXICO

RULE 1. Applicability

These rules shall apply to all commercial facilities or centralized facilities that dispose of or store produced water, drilling fluids, drill cuttings or completion fluids within McKinley, Rio Arriba, San Juan and Sandoval Counties, New Mexico. The pit registration and approval requirements of these rules shall not apply to those facilities which are regulated by the Oil Conservation Division under the rules and regulations of the New Mexico Water Quality Control Commission.

RULE 2. Definitions

(a) Fresh water (to be protected) includes all surface waters and includes all underground waters containing 10,000 milligrams per liter or less of total dissolved solids except for those which, after notice and hearing, it is found there is no reasonably foreseeable beneficial use which would be impaired by contamination of such waters.

(b) Produced water shall mean those waters produced in conjunction with the production of crude oil and/or natural gas and commonly collected at field storage, processing or disposal facilities, including but not limited to: lease tanks, commingled tank batteries, burn pits, LACT units, dehydrators, and community or lease salt water disposal systems and which may be collected at gas processing plants, pipeline drips and other processing or transportation facilities.

(c) Completion fluids shall mean those fluids which are intended to be or actually are introduced into and recovered from a well after the well is drilled including but not limited to salt solutions, fracturing fluids, acidizing fluids and packer fluids.

(d) Drill cuttings shall mean particles of formation obtained from a well during drilling operations and brought to the surface by drilling fluid or air in rotary I I drilling or bailed out in cable tool drilling.

(e) Drilling fluids shall mean a mixture of water or other fluids and one or more of the various mud-making materials such as clay, weighting materials, chemicals, or any other additives.

(f) Commercial surface disposal or collection facilities shall mean those facilities that receive compensation for collection, disposal, evaporation or storage of produced water, drilling fluids, drill cuttings, and/or completion fluids in surface pits, ponds, or below grade tanks.

(g) Centralized surface disposal or collection facilities shall mean those facilities other than the commercial surface disposal or collection facilities that receive produced water, drilling fluids, drill cuttings, and/or completion fluids from any off-well-site location for collection, disposal, evaporation, or storage in surface pits, ponds, or below grade tanks. Examples include facilities operated by a producer or those operated by any governmental entity including landfills.

(h) Watercourse shall mean any lakebed or gully, draw, streambed, wash, arroyo, or natural or man-made channel through which water flows or has flowed.

RULE 3. Commercial Surface Disposal Facilities to be Approved

(a) Effective July 1, 1986, no produced water, drilling fluids, drill cuttings or completion fluids may be received at commercial surface disposal or collection facilities except at such facilities as may be approved by the Division.

(b) The Director of the Division is hereby authorized to approve administratively the use of lined or unlined pits or below grade tanks at commercial facilities for collection, disposal, or storage of produced water, drilling fluids, drill cuttings, or completion fluids upon a proper showing that the tank or pit is, or will be constructed and operated in such a manner as to ensure structural integrity, and to protect fresh waters.

(c) The operator of any existing unapproved commercial collection or disposal facilities must notify the Division of the location of such facilities on or before September 1, 1986.

RULE 4. Commercial Surface Disposal Facility Records

Each operator of a commercial surface disposal or collection facility shall keep and make available for inspection, records for each calendar month on the source, location, volume and type of waste (produced water, acids, completion fluids, drilling mud, etc.), date of disposal, and hauling company that disposes of fluids or material in their facility. Such records shall be maintained for a period of two years from the date of disposal.

RULE 5. Registration of Centralized Surface Disposal or Collection Facilities

(a) Except as provided by Rule 5(c) and 5(d) below, the owner/operator of any existing centralized surface disposal or collection facility seeking the continued use thereof for

disposal or collection purposes, must file a Pit Registration Form with the Division in the form attached as "Exhibit A" hereto by September 1, 1986.

(b) Except as provided by Rule 5 (c) and 5 (d) below, the owner/operator of any proposed centralized surface disposal or collection facility to be constructed after September 1, 1986, must file a Pit Registration Form with the Division at least ninety days prior to the date of initiation of construction of the facility. Within 30 days of receipt of a registration form, the Division will notify the applicant in writing if there is a need to provide additional information pursuant to Rule 7.

(c) The requirement for filing a Pit Registration Form shall not apply to centralized facilities which never receive during any 24-hour period more than 16 barrels of produced water, or to pipeline drip pits; provided that such facilities are not located within a watercourse or within ten feet to ground water as measured from the base of the pit or tank; provided further, however, that upon written notice by the Division Director to the owner/operator of any such pit(s) or tank(s) that the location, discharge, or other factor(s) relating to the pit or tank may not provide for adequate protection of fresh water supplies, such form shall be filed within thirty days.

(d) These rules shall not apply to any pit that is utilized during emergency drilling conditions for a period of up to ten days provided that such pit is not located within a watercourse or within ten feet to ground water as measured from the base of the pit, and further provided that permission to use such pit shall immediately be sought from the Aztec district office.

(e) Notwithstanding any other provision of these rules, centralized facilities receiving any fluids other than, or in addition to, produced water, such as completion fluids, drilling mud, etc., shall be required to file a Pit Registration Form with the Division, clearly indicating the type and volumes of fluids and other materials disposed of.

RULE 6. Location, Construction and Operation Requirements

(a) Applications for approval of the design, construction, and installation of lined pits or below grade tanks should be made in accordance with Division "Guidelines". The location, construction, and operation of any commercial or centralized disposal or storage facility shall be such as to prevent contamination of fresh water.

(b) The criteria to be utilized by the Division in determining whether facilities covered by these rules present a threat of fresh water contamination are:

1) Volume of Discharge
2) Type of Pit (lined, unlined, tank)
3) Types and Total Dissolved Solids of Fluids
4) Presence and Concentration of Contaminants in Pit Fluids
5) Surface Location and Proximity to Water Courses
6) Nature and Permeability of Vadose Zone
7) Depth to Ground water
8) Aquifer Water Quality
9) Nature and Areal Extent of Aquifer Potentially Affected
10) Such Other Relevant Factors as the Division May Determine

RULE 7. Permits, Additional Information, Appeals

(a) Upon a showing that operation of a centralized facility will not present a hazard to fresh water resources, the Director of the Division shall approve such facility for the stated use.

(b) If, upon review of a Pit Registration Form, the Division determines that utilization of any existing or proposed pit may present a threat of contamination to fresh water supplies, the Division shall request and the owner/operator shall provide such additional relevant information as the Division believes is necessary.

(c) If, upon review of all information regarding a Pit Registration Form, the Division believes that utilization of the facility may present a threat of contamination to fresh water supplies, the Division shall notify the owner/operator in writing of this fact and specify the reasons that the Division believes the facility presents a threat of contamination to fresh water supplies. This notice shall invite the owner/operator to consult with the Division to initiate such design, operation, or site changes as the Division believes are necessary to ensure structural integrity and allow the facility to comply with water protection requirements.

(d) If the Division and the owner/operator of a facility are unable to agree on such changes as the Division believes are necessary, the Division shall issue a second notice to such owner/operator specifying the potential threat(s) to fresh water supplies posed by the facility. The owner/operator of the facility shall then have thirty days from receipt of such notice in which to request a hearing to show that construction or operation of the facility will not result in contamination of fresh water supplies for the reasons set forth by the Division. Failure of the owner/operator to request a hearing shall result in a finding by the Division that the facility as designed or operated poses a threat of contamination to fresh water supplies and such facility, if proposed, shall not be constructed or, if existing, shall immediately cease operations.

RULE 8.

Nothing in these rules shall prohibit the Director of the Division from taking immediate action to suspend the use of any commercial or centralized disposal or storage facility when such suspension is necessary to protect fresh water.

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION COMMISSION

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION COMMISSION FOR THE PURPOSE OF CONSIDERING:

CASE 10436
Order No. R-7940-B

AMENDMENT OF COMMISSION ORDER R-7940 TO PROVIDE FOR THE EXPANSION OF THE DESIGNATED VULNERABLE AREA OF THE SAN JUAN BASIN, ELIMINATION OF DISCHARGES TO UNLINED PITS, CREATION OF WELLHEAD PROTECTION AREAS, ESTABLISHMENT OF DEADLINES FOR COMPLIANCE, AND REGISTRATION OF CERTAIN PITS.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9:00 A.M. on January 16, April 9, and May 21, 1992, at Santa Fe, New Mexico, before the Oil Conservation Commission, hereinafter referred to as the "Commission."

NOW, on the 5th day of August, 1992, the Commission, a quorum being present, having considered the testimony presented and the exhibits. received at said hearing, and being fully advised in the premises,

FINDS THAT:

(1) Due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) Section 70-2-12 B(1S) authorizes the Oil Conservation Division (Division) and Commission "to regulate the disposition of water produced or used in connection with the drilling for or producing of oil or gas or both anti to direct surface or subsurface disposal of the water in a manner that will afford reasonable protection against contamination of fresh water supplies designated by the state engineer."

(3) Section 70-2-12 B(21) authorizes the Oil Conservation Division and Commission "to regulate the disposition of nondomestic waters resulting from the exploration, development, production or storage of crude oil or natural gas to protect public health and the environment. "

(4) The State Engineer has designated all surface waters of the State and all ground waters containing 10,000 milligrams per liter (mg/l) of total dissolved solids (TDS), or less, for which there is a reasonably foreseeable future use as fresh water.

(5) In June of 1984, the Oil Conservation Division conducted hearings into proposals for groundwater protection from discharges of produced water into unlined pits in Northwest New Mexico.

(6) In July of 1985 a committee was appointed by the Director of the Oil Conservation Division to study and report on produced water disposal practices in Northwest New Mexico and their resultant impact on groundwater.

(7) Said committee divided itself into long-range and short-range committees.

(8) Data compilation and recommendations from the short-term committee formed the basis for Case No. 8224 which resulted in Oil Conservation Commission Order No. R-7940 which established and defined the "vulnerable area" in Northwest New Mexico where disposal of produced water or production fluids in excess of 5 barrels per day in unlined pits was prohibited.

(9) The long-term committee was charged with investigating unresolved short-term committee issues and met at least 10 times between September, 1985 and October, 1991 resulting in recommendations and suggestions which formed the basis for Oil Conservation Division proposals to expand the vulnerable area and provide for additional groundwater protection measures.

(10) The Division presented unrefuted evidence of ground water contamination from small volume discharges to unlined produced water pits sited in alluvial fill in the currently defined Vulnerable Area.

(11) The high permeability of alluvium allows contaminants, particularly benzene, toluene, ethylbenzene and xylene, to migrate into ground water.

(12) Alluvium is the primary aquifer or subsurface reservoir containing protectable fresh water supplies and as such should be the definitive criteria for establishing water protection measures in an expanded vulnerable area.

(13) Four Corners Gas Producers Association (FCGPA) presented testimony in support of an exemption for dry gas wells outside of the existing vulnerable area producing less than 1 barrel of produced water per day. Evidence was presented to confirm the natural remediation process which works to eliminate groundwater contamination.

Finding: The soil sample evidence present by FCGPA raised sufficient doubt as to whether dry gas wells were a source of groundwater contamination but lacked critical produced water discharge analysis data and underlying groundwater analysis data to warrant an exemption for dry gas wells at this time.

(14) The New Mexico Oil and Gas Association presented testimony in support of extending the time limit for compliance with discharge elimination in the expanded vulnerable area and requested an exemption for dehydration pits, downstream of producing wells. Both positions were supported by economic arguments. The Oil Conservation Division proposal allows for a one-year extension of time.

Finding: For good cause shown, an extension of up to one and one-half years will adequately accommodate unexpected contingencies and provide adequate protection to ground water. There was no supporting scientific evidence to show that discharges from dehydration pits would not contaminate groundwater so an exemption based solely on economic arguments should not be implemented.

(15) B.C.O. Inc. presented testimony in support of an exception for the Lybrook area based upon the contention that alluvium was not present, and that the relatively impermeable shales of the Nacimiento formation overlaid the Ojo Alamo Sandstone which contained the only potable water supply in the area. Much of the BCO testimony was discredited by subsequent testimony showing protectable ground water in alluvium deposits within the Lybrook area.

Finding: The evidence does not support a no pit exemption for the Lybrook area.

(16) Southwest Research and Information Center (SRIC) presented testimony in support of shorter time frames for compliance in discharge elimination; expanding the proposed expanded vulnerable area to

include alluvium underlying the Lee Acres Land Fill, expanding the protection zone around all fresh water discharge points to 1,000 horizontal feet, and to generally expand notice requirements in variance applications.

Finding: Finding 14 provides for an adequate compliance schedule balancing the need for immediate action with the economic realities within the oil field infrastructure. The vulnerable area should be expanded to include the Lee Acres Land Fill alluvium. Public health and the environment will be adequately protected with notification to the owner of the surface and other property owners and occupants within 1/2 mile of the site for which a variance is sought, a public notice requirement, the 31-day waiting period for objections and the public hearing process.

(17) Based upon public health and environmental risk assessment, all parties agreed that there should be no blanket exclusions within the existing vulnerable area because of higher population densities.

(18) The economies of pit closure were addressed in testimony but this issue is not germane to this case since pits would eventually be closed at well abandonment even if granted an exception.

(19) The economic impact of prohibiting operators from discharging production fluids into unlined earthen pits could be substantial with resultant negative effects on state revenues because many marginal gas wells could not sustain the additional burden of installing tanks or lining pits, but providing reasonable protection to fresh water supplies requires implementation of rules and regulations which prohibit discharges of production fluids into unlined pits in water bearing alluvium and protection of fresh water sources such as water supply wells and springs.

(20) To prevent unnecessary regulation which imposes unnecessary costs on operators resulting in corresponding reductions in revenues without offsetting public health and environmental benefits, there should be a reasonable procedure established to grant variances to discharge prohibition where the applicant can demonstrate that:

(a) the discharge site is not located in water bearing alluvium or is outside the boundaries of the Vulnerable or Expanded Vulnerable Areas; or

(b) the discharge quality meets or exceeds New Mexico Water Quality Control Commission (WQCC) Ground Water Standards; or

(c) no protectable ground water (as defined by the New Mexico State Engineer) is present or if present, will not be adversely affected by the discharge; and

(d) the discharge is not located within a Wellhead Protection Area.

IT IS THEREFORE ORDERED THAT:

(1) The areas currently defined as "Vulnerable Area" under OCC Order R-7940 (1) (a, b and c) are expanded to include those alluvial areas which lie within 59 vertical feet, measured perpendicularly to the drainage channel, of all major perennial and ephemeral creeks, canyons, washes, arroyos and draws located within the oil and gas producing areas of the San Juan Basin in northwestern New Mexico.

(2) To protect fresh waters, Special Rules and Regulations governing the disposal of oil and gas wastes in the Vulnerable Area of San Juan, McKinley, Rio Arriba and Sandoval Counties are hereby promulgated as follows:

SPECIAL RULES AND REGULATIONS FOR THE DISPOSAL OF OIL AND NATURAL GAS WASTES IN THE VULNERABLE AREA IN SAN JUAN, MCKINLEY, RIO ARRIBA AND SANDOVAL COUNTIES, NEW MEXICO

RULE 1. APPLICABILITY

These rules shall apply to the disposal of all oil and natural gas waste within the Vulnerable Area whether such wastes are disposed of within or without said area.

RULE 2. DEFINITIONS

(a) Alluvium includes detrital material which have been transported by water or other erosional forces and deposited at points along the flood plain of a watercourse. It is typically composed of sands, silts and gravels, exhibits high porosity and permeability and generally carries fresh water.

(b) Fresh water to be protected includes the water in lakes and playas, the surface waters of all streams regardless of the quality of the water within any given reach, and all underground waters containing 10,000 milligrams per liter (mg/l) or less of total dissolved solids (TDS). The water in lakes and playas shall be protected from contamination even though it may contain more than 10,000 mg/1 of TDS unless it can be shown that hydrologically connected fresh water will not be adversely affected.

(c) Oil and natural gas wastes shall mean those wastes produced in conjunction with the production, refining, processing and transportation of crude oil and/or natural gas and commonly collected at field storage, processing or disposal facilities, and waste collected at gas processing plants, refineries and other processing or transportation facilities.

(d) Field storage, processing or disposal facilities include but are not limited to: separators, dehydrators, blowdown pits, workover pits, burn pits, lease tanks, commingled tank batteries), LACT units, community or lease salt water disposal systems, gathering and transmission line drip pits.

(e) Pits are defined as below grade or surface excavations which receive any type of oil and gas waste as described above.

RULE 3. PROHIBITIONS

(a) Disposal of oil and natural gas wastes produced within the Vulnerable Area onto the ground surface or into unlined pits is prohibited.

(b) Current discharges of oil and natural gas wastes to unlined pits within the Vulnerable Area will be eliminated pursuant to the following schedule:

(1) All discharges of oil and natural gas wastes to all unlined pits located in the areas defined as the original Vulnerable Area by Order R-7940 (1) (a, b, and c) will be eliminated within one year of the effective date of this order.

(2) All discharges of oil and natural gas wastes into unlined pits located in those areas included in the expanded Vulnerable Area as defined in this order will be eliminated within two years of the effective date of this order. The

expanded area will include alluvial areas within fifty vertical feet of the following major tributaries of the respective river systems:

a. San Juan River

Armenta Canyon, Laguna Seca Draw, Benito Canyon, Loeke Arroyo, Bloomfield Canyon, Malpais Arroyo,West Fork Bloomfield Canyon, Mansfield Canyon, Caballo Canyon, Manzanares Canyon, Cabresto Canyon, Many Devils Wash, Canon Bancos, Munoz Canyon, Canon Largo, Negro Andy Canyon, Carracas Canyon, Ojo Amarillo Canyon, Chaco River/Chaco Wash, Potter Canyon, Chavez Canyon, Pump Canyon, Collidge Canyon, Rattlesnake Wash, Cottonwood Canyon, Red Wash, Creighton Canyon, Ruins Canyon, Cottonwood Canyon, Red Wash, Creighton Canyon, Ruins Canyon, Dain Arroyo, Salt Creek Wash, Eagle Nest Wash, Shiprock Wash, Eul Canyon, Shumway Arroyo,Farmington Glade, Slane Canyon, Frances Creek, Little Slane Canyon, Gallegos Canyon, Stevens Arroyo, Gobernador Canyon, Stewart Canyon, Green Canyon, Sullivan Canyon, Hare Canyon, Tom Gale Canyon, Head Canyon, Vaca Canyon, Horn Canyon, Valdez Canyon, Kutz Canyon, Waughan Arroyo, La Fragua Canyon, Wright Canyon, La Jara Canyon

Unnamed Arroyo in parts of Section 21 and 22, Township 29 North, Range 12 West, known as the Lee Acres Landfill arroyo.

b. Animas River

Arch Rock Canyon, Hood Arroyo, Barton Arroyo, Johnson Arroyo, Blancett Arroyo, Jones Arroyo, Bohanan Canyon, Kiffen Canyon, Calloway Canyon, Knowlton Canyon, Cook Arroyo, Kochis Arroyo, Cox Canyon, Niller Canyon, Ditch Canyon, Rabbit Arroyo, Estes Arroyo, Tucker Canyon, Flora Vista Arroyo, Williams Arroyo, Hampton Arroyo, Wyper Arroyo, Hart Canyon

c. La Plata River

Barker Arroyo, Murphy Arroyo, Conner Arroyo, Pickering Arroyo, Cottonwood Arroyo, Thompson Arroyo, Coyne Arroyo, Two Cross Arroyo, McDermott Arroyo

(c) All discharges to unlined pits located in alluvial material within fifty vertical feet of all remaining tributaries to the San Juan, Animas and La Plata Rivers will be eliminated within three years from the effective date of this order.

(d) A wellhead protection area to provide protection for springs and fresh water wells outside the original and expanded Vulnerable Area is hereby established. All discharges to unlined pits within a radius of 1000 horizontal feet of such areas will be eliminated within two years from the effective date of this order.

(e) Wellhead protection areas shall not include areas around water wells which are drilled after the effective date of this order if such water wells are located within 1000 feet of an existing source of oil or natural gas waste.

(f) For good cause shown, the Director of the Division may administratively allow an

extension of the time schedule for elimination of discharges to unlined pits, as described above, for a period not to exceed one and one-half years.

(g) The transfer of fluids out of the Vulnerable and Expanded Vulnerable Areas and Wellhead Protection Areas for disposal into unlined or intermitted pits is prohibited unless specifically authorized by the Director of the Division.

RULE 4. SURFACE DISPOSAL FACILITIES TO BE APPROVED/REGISTERED

(a) No oil and natural gas wastes may be disposed of or stored in below grade tanks or lined pits except after application to and approval by the Division. The Division Director may administratively approve the use of lined pits and below grade tanks within the Vulnerable Area for disposal or storage of oil and natural gas wastes upon a proper showing that the tank or lined pit will be constructed and operated in such a manner as to safely contain the wastes to be placed therein and to detect leakage therefrom.

(b) All unlined pits outside the Vulnerable Areas and Wellhead Protection Areas receiving greater than five (5) barrels of fluids per day will be registered with the Oil Conservation Division (OCD) within one year of the effective date of this order.

RULE 5. PIT CLOSURE

(a) Applications or plans to close existing unlined pits in the Vulnerable and Expanded Vulnerable Areas and Wellhead Protection Areas will be submitted to the OCD for approval within sixty (60) days from the date of elimination of discharge.

RULE 6. VARIANCES

(a) The Director of the OCD may administratively approve a variance to the discharge prohibition on a case by case basis if the discharger can demonstrate that:

1. the discharge site is not located in alluvium or is outside the boundaries of the Vulnerable or Expanded Vulnerable Areas; or

2. the discharge quality meets or exceeds New Mexico Water Quality Control Commission (WQCC) Ground Water Standards; or

3. no protectable ground water (as defined by the New Mexico State Engineer) is present or if present, will not be adversely affected by the discharge; and

4. the discharge is not located within a Wellhead Protection Area:

(b) Notice of request for variance for a specific discharge point will be sent by the operator to the owner of the surface and other property owners and occupants within 1/2 mile of the site for which the variance is sought. Notice shall be by certified mail, return receipt requested, or other means of service for which proof of receipt is available. Such persons will be given twenty (20) days from the date of receipt of notice to comment to the OCD on the request. In addition, the applicant must provide, public notice, in a form approved by the Division, by advertisement in a newspaper of general circulation published within the State and circulated within the county in which the variance is sought.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO

OIL CONSERVATION COMMISSION

Signed by

JAMI BAILEY, Member

Signed by

WILLIAM W. WEISS, Member

Signed by

WILLIAM J. LEMAY, Chairman

S E A L

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STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

CASE NO. 10436
Order No. R-7940-B (1)

AMENDMENT OF COMMISSION ORDER NO. R-7940 TO PROVIDE FOR THE EXPANSION OF THE DESIGNATED VULNERABLE AREA OF THE SAN JUAN BASIN, ELIMINATION OF DISCHARGES TO UNLINED PITS, CREATION OF WELLHEAD PROTECTION AREAS, ESTABLISHMENT OF DEADLINES FOR COMPLIANCE, AND REGISTRATION OF CERTAIN PITS.

NUNC PRO TUNC ORDER

BY THE COMMISSION;

It appearing to the Commission that Order No. R-7940-B dated August 5, 1992, does not correctly state the intended order of the Commission,

IT IS THEREFORE ORDERED THAT;

(1) A new Decretory Paragraph (3) is hereby added to read in its entirety as follows:

"(3) The effective date for this order shall be September 1, 1992."

(2) A new Decretory Paragraph (4) is hereby added to read in its entirety as follows:

"(4) Jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary."

(3) The corrections set forth in this order be entered nunc pro tunc as of August 5, 1992.

DONE at Santa Fe, New Mexico, on this 2 7th day of August, 1992.

STATE OF NEW MEXICO

OIL CONSERVATION COMMISSION

Signed by

JAMI BAILEY, Member

Signed by

WILLIAM W. WEISS, Member

Signed by

WILLIAM J. LEMAY, Chairman

SEAL

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION COMMISSION FOR THE PURPOSE OF CONSIDERING THE APPLICATION BY THE OIL CONSERVATION DIVISION TO AMEND COMMISSION ORDER NO. R-7940 TO PROVIDE FOR THE EXPANSION OF THE DESIGNATED VULNERABLE AREA OF THE SAN JUAN BASIN, ELIMINATION OF DISCHARGES TO UNLINED PITS, CREATION OF WELLHEAD PROTECTION AREAS, ESTABLISHMENT OF DEADLINES FOR COMPLIANCE AND REGISTRATION OF CERTAIN PITS.

CASE NO. 10436
Order No. R-7940-B

ORDER GRANTING REHEARING

The Oil Conservation Division grants the petition for rehearing of the captioned case which was applied for by the Four Corners Gas Producers Association and the New Mexico Oil and Gas Association. The Commission will hear evidence only pertaining to the following issues:

1. Time Table For Discharge Elimination.

To reconsider allowing extensions of up to two years to the basic one year- two year- three year timetable for the elimination of discharges;

2. Radius of Protection Area.

To reconsider the establishment of a different radius wellhead protection area around private water wells and springs which are not part of a community or municipal water supply; and

3. Notice Requirements for Variances.

To consider clarifying language for the provision of the order which provides for variances on a "case by case basis" and to determine appropriate notice requirements for a variance request.

DONE at Santa Fe, New Mexico on this 4th day of September, 1992.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

Signed by

WILLIAM J. LEMAY, Chairman

S E A L

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION COMMISSION

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION COMMISSION FOR THE PURPOSE OF CONSIDERING:

CASE 10436
Order No. R-7940-C

AMENDMENT OF COMMISSION ORDER R-7940 TO PROVIDE FOR THE EXPANSION OF THE DESIGNATED VULNERABLE AREA OF THE SAN JUAN BASIN, ELIMINATION OF DISCHARGES TO UNLINED PITS, CREATION OF WELL HEAD PROTECTION AREAS, ESTABLISHMENT OF DEADLINES FOR COMPLIANCE, AND REGISTRATION OF CERTAIN PITS.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9:00 A.M. on January 16, April 9, May 21, 1992, November 12, 1992 and January 14, 1993, at Santa Fe, New Mexico, before the Oil Conservation Commission, hereinafter referred to as the "Commission."

NOW, on the 14th day of January, 1993, the Commission, a quorum being present, having considered the testimony presented and the exhibits received at said hearing, and being fully advised in the premises,

FINDS THAT:

(1) Due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) This matter was heard by the Commission on January 16, April 9, and May 21, 1992, at Santa Fe, New Mexico. On those dates the Commission took evidence and heard arguments of counsel on behalf of the parties to the proceeding. The Commission also received closing statements and comments from several parties following the close of evidence, and on August 5, 1992, the Commission entered Order number R-7940-B. That order was amended nunc pro tunc by Commission Order R-7940-B(1) on August 21, 1992.

3) Following the entry of Order R-7940-B, the Four Corners Gas Producers Association, (FCGPA), and the New Mexico Oil and Gas Association, (NMOGA), filed with the Commission a Petition for Rehearing. The Commission granted rehearing but limited the issues on rehearing to the following:

(a) to reconsider allowing extensions of up to two years to the basic one-year, two-year, three-year timetable for the elimination of discharges;

(b) to reconsider the establishment of a different radius wellhead protection area around private water wells and springs which are not part of a community or municipal water supply;

(c) to consider clarifying language for the provision of the order which provides for variances on a "case by case" basis and to determine appropriate notice requirements for a variance request.

(4) Without further testimony FCGPA, NMOGA, Southwest Research and Information Center (SRIC) and the New Mexico Oil Conservation Division, (Division) have submitted this proposed revised order setting forth the provisions of the Commission's Order R-7940-B on issues for which rehearing was not granted and language for the specific issues on which the Commission granted rehearing. The provisions of this proposed order are supported by the evidence presented to the Commission during the evidentiary hearings above. Orders R-7940-B and R-7940-B(1) should be withdrawn and this revised order issued in its place to adopt the complete rules in a single order.

(5) Section 70-2-12 B(15) authorizes the Oil Conservation Division (Division) and Commission "to regulate the disposition of water produced or used in connection with the drilling for or producing of oil or gas or both and to direct surface or subsurface disposal of the water in a manner that will afford reasonable protection against contamination of fresh water supplies designated by the state engineer."

(6) Section 70-2-12 B(21) authorizes the Oil Conservation Division and Commission "to regulate the disposition of non-domestic wastes resulting from the exploration, development, production or storage of crude oil or natural gas to protect public health and the environment."

(7) The State Engineer has designated all surface waters of the State and all ground waters containing 10,000 milligrams per liter (mg/1) of total dissolved solids (TDS), or less, for which there is a reasonably foreseeable future use as fresh water.

(8) In June of 1984, the Oil Conservation Division conducted hearings into proposals for groundwater protection from discharges of produced water into unlined pits in Northwest New Mexico.

(9) In July of 1985 a committee was appointed by the Director of the Oil Conservation Division to study and report on produced water disposal practices in Northwest New Mexico and their resultant impact on groundwater.

(10) Said committee divided itself into long-range and short-range committees.

(11) Data compilation and recommendations from the short-term committee formed the basis for Case No. 8224 which resulted in Oil Conservation Commission Order No. R-7940 which established and defined the "vulnerable area" in Northwest New Mexico where disposal of produced water or production fluids in excess of 5 barrels per day in unlined pits was prohibited.

(12) The long-term committee was charged with investigating unresolved short-term committee issues and met at least 10 times between September, 1985 and October, 1991 resulting in recommendations and suggestions which formed the basis for Oil Conservation Division proposals to expand the vulnerable area and provide for additional groundwater protection measures.

(13) The Division presented unrefuted evidence of ground water contamination from small volume discharges to unlined produced water pits sited in alluvial fill in the currently defined Vulnerable Area.

(14) The high permeability of alluvium allows contaminants, particularly benzene, toluene, ethylbenzene and xylene, to migrate into ground water.

(15) Alluvium is the primary shallow aquifer or subsurface reservoir containing protectable fresh water

supplies and as such should be the definitive criteria for establishing water protection measures in an expanded vulnerable area.

(16) *FCGPA presented testimony in support of an exemption for dry gas wells outside of the existing vulnerable area producing less than I barrel of produced water per day. Evidence was presented to confirm the natural remediation process which works to eliminate groundwater contamination.*

Finding: The soil sample evidence presented by FCGPA raised sufficient doubt as to whether dry gas wells were a source of groundwater contamination but lacked critical produced water discharge analysis data and underlying groundwater analysis data to warrant an exemption for dry gas wells at this time.

(17) *The Oil Conservation Division proposed eliminating discharges on a one-year, two- year, three-year schedule for different parts of the vulnerable area The Division proposal allows for a two-year extension of time. NMOGA proposed a one-year, three-year, five-year compliance schedule for elimination of discharges in the vulnerable area, based on the location of sites, plus possible two year extensions for compliance, based upon the economics of eliminating the discharges. SRIC requested a one-year, one and one-half year, two year compliance schedule for compliance with discharge elimination.*

Finding: A phased one-year, two-year, three-year compliance schedule essentially as proposed by the Division will provide adequate protection to ground water while recognizing the economic realities within the oil field infrastructure. The Division should be able to authorize a single extension of up to two years for good cause to accommodate a reasonable compliance plan or unexpected contingencies.

(18) NMOGA requested an exemption from the rules for dehydration pits downstream of producing wells, also based upon economic reasons. There was no supporting scientific evidence to show that discharges from dehydration pits would not contaminate groundwater, and an exemption based solely on economic arguments should not be implemented.

(19) *B.C.O. Inc presented testimony in support of an exception for the Lybrook area based upon the contention that alluvium was not present, and that the relatively impermeable shales of the Nacimiento formation overlaid the Ojo Alamo Sandstone which contained the only potable water supply in the area Much of the BCO testimony was discredited by subsequent testimony showing protectable ground water in alluvium deposits within the Lybrook area* [Italics added]

Finding: The evidence does not support an exemption from the requirement of the proposed rules for the Lybrook area.

(20) SRIC proposed expanding the proposed vulnerable area to include alluvium underlying the Lee Acres Land Fill. Because this area is at risk for contamination, it should be included within the vulnerable area.

(21) The Division proposed a wellhead protection area be established for sites outside of the proposed vulnerable area, and original) recommended that no unlined pits be allowed within 1000 feet of existing water sources. The Division later revised its recommendation to reduce the protection radius to 200 feet around private, domestic water sources, based on the fact that private water sources do not influence as wide an area FCGPA requested radii around municipal water wells of 1,000 feet, 200 feet for public water sources and 100 feet around all other water sources. SRIC supported a protection area of 1,000 feet for all water sources. Both sides testified in support of their respective positions.

FINDING: None of the evidence conclusively showed what area around a water well, spring or other

water source might be affected by discharges to unlined pits. Based upon the limited data available, harm to water sources should be prevented by a wellhead protection area of 1,000 feet, except private, domestic water sources which should be adequately protected by a protection area with a radius of 200 feet. This protection should only apply to water sources in existence at the time of this order.

(22) Based upon public health and environmental risk assessment, all parties agreed that there should be no blanket exclusions within the existing vulnerable area because of higher population densities.

(23) The economics of pit closure were addressed in testimony but this issue is not germane to this case since pits would eventually be closed at well abandonment even if granted an exception.

(24) The economic impact of prohibiting operators from discharging production fluids into unlined earthen pits could be substantial with resultant negative effects on state revenues because many marginal gas wells could not sustain the additional burden of installing tanks or lining pits, but providing reasonable protection to fresh water supplies requires implementation of rules and regulations which prohibit discharges of production fluids into unlined pits in water bearing alluvium and protection of fresh water sources such as water supply wells and springs.

(25) To prevent unnecessary regulation which imposes unnecessary costs on operators resulting in corresponding reductions in revenues without offsetting public health and environmental benefits, there should be a reasonable procedure established to grant variances to discharge prohibition where the applicant can demonstrate that: (a) the discharge site is not located in water bearing alluvium; or (b) the discharge quality is within Ground Water Standards established by the New Mexico Water Quality Control Commission (WQCC); or

(c) no protectable ground water (as defined by the New Mexico State Engineer) is present or if present, will not be adversely affected by the discharge; and (d) the discharge is not located within a Wellhead Protection Area.

(26) In order to provide notice to appropriate parties who may be affected by a variance application, the operator requesting such variance should be required to notify the record owner of all surface lands and occupants of permanent residences within one-half mile of any site for which a variance is requested.

IT IS THEREFORE ORDERED THAT:

(1) Order R-7940-B and R-7940-B(1) are hereby withdrawn.

(2) The areas currently defined as "Vulnerable Area" under OCC Order R-7940 (1) (a, b and c) are expanded to include those alluvial areas which lie within 50 vertical feet, measured perpendicularly to the drainage channel, of all major perennial and ephemeral creeks, canyons, washes, arroyos and draws located within the oil and gas producing areas of the San Juan Basin in northwestern New Mexico.

(3) To protect fresh waters, Special Rules and Regulations governing the disposal of oil and gas wastes in the Vulnerable Area of San Juan, McKinley, Rio Arriba and Sandoval Counties are hereby promulgated as set forth in Exhibit "A" attached hereto and incorporated herein:

(4) This order shall become effective March 1, 1993.

(5) Jurisdiction of this cause is retained for the entry of further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

Signed by

JAMI BAILEY
Member

Signed by

WILLIAM W. WEISS,
Member

Signed by

WILLIAM J. LEMAY,

Chairman

S E A L

dr/

ORDER R-7940-C
EXHIBIT "A"

SPECIAL RULES AND REGULATIONS FOR THE DISPOSAL OF
OIL AND NATURAL GAS WASTES IN THE VULNERABLE AREA IN
SAN JUAN, MCKINLEY, RIO ARRIBA AND SANDOVAL
COUNTIES, NEW MEXICO

RULE 1. APPLICABILITY

These rules shall apply to the disposal of all oil and natural gas wastes generated within the Vulnerable Area whether such wastes are disposed of within or without said area.

RULE 2. DEFINITIONS

(a) Alluvium includes detrital material which has been transported by water or other erosional forces and deposited at points along the flood plain of a watercourse. It is typically composed of sands, silts and gravels, exhibits high porosity and permeability and generally carries fresh water.

(b) Fresh water to be protected includes the water in lakes and playas, the surface waters of all streams regardless of the quality of the water within any given reach, and all underground waters containing 10,000 milligrams per liter (mg/l) or less of total dissolved solids (TDS). The water in lakes and playas shall be protected from contamination even though it may contain more than 10,000 mg/l of TDS unless it can be shown that hydrologically connected fresh water will not be adversely affected.

(c) Oil and natural gas wastes shall mean those wastes produced in conjunction with the production, refining, processing and transportation of crude oil and/or natural gas and commonly collected at field storage, processing or disposal facilities, and waste collected at gas processing plants, refineries and other processing or transportation facilities.

(d) Field, storage, processing or disposal facilities include but are not limited to: separators, dehydrators, blowdown pits, workover pits, burn pits, lease tanks, commingled tank batteries, LACT units, community or lease salt water disposal systems. gathering and transmission line drip pits.

(e) Pits are defined as below grade or surface excavations which receive any type of oil and gas waste as described above.

(f) Water Sources shall mean wells, springs or other sources of fresh groundwater extraction or discharge. Private, domestic water sources shall mean those water sources which are used by less than five households for domestic or stock purposes.

RULE 3. PROHIBITIONS

(a) Disposal of oil and natural gas wastes produced within the Vulnerable Area onto the ground surface or into unlined pits is prohibited.

(b) Current discharges of oil and natural gas wastes to unlined pits within the Vulnerable Area will be eliminated pursuant to the following schedule:

(1) All discharges of oil and natural gas wastes to all unlined pits located in the areas defined as the original Vulnerable Area by Order R-7940 (1) (a,b, and c) will be eliminated within one year of the effective date of this order.

(2) All discharges of oil and natural gas wastes into unlined pits located in those areas included in the expanded Vulnerable Area as defined in this order will be eliminated within two years of the effective date of this order. The expanded area will include alluvial areas within fifty vertical feet of the following major tributaries of the respective river systems:

a. San Juan River

Armenta Canyon, Laguna Seca Draw, Benito Canyon, Locke Arroyo, Bloomfield Canyon, Malpais Arroyo, West Fork Bloomfield Canyon, Mansfield Canyon, Caballo Canyon, Manzanares Canyon, Cabresto Canyon, Many Devils Wash, Canon Bancos, Munoz Canyon, Canon Largo, Negro Andy Canyon, Carracas Canyon, Ojo Amarillo Canyon, Chaco River/Chaco Wash, Potter Canyon, Chavez Canyon, Pump Canyon, Collidge Canyon, Rattlesnake Wash, Cottonwood Canyon, Red Wash, Creighton Canyon, Ruins Canyon, Dain Arroyo, Salt Creek Wash, Eagle Nest Wash, Shiprock Wash, Eul Canyon Shumway Arroyo, Farmington Glade, Slane Canyon,Frances Creek Little Slane Canyon, Gallegos Canyon Stevens Arroyo, Gobernador Canyon, Stewart Canyon, Green Canyon, Sullivan Canyon, Hare Canyon, Tom Gale Canyon, Head Canyon, Vaca Canyon, Horn Canyon, Valdez Canyon, Kutz Canyon. Waughan Arroyo, La Fragua Canyon, Wright Canyon, La Jara Canyon

Unnamed arroyo in parts of Sections 21 and 22, Township 29 North, Range 12 West, known as the Lee Acres Landfill arroyo.

b. Animas River

Arch Rock Canyon, Hood Arroyo, Barton Arroyo, Johnson Arroyo, Blancett Arroyo, Jones Arroyo, Bohanan Canyon, Kiffen Canyon, Calloway Canyon, Knowlton Canyon, Cook Arroyo, Kochis Arroyo, Cox Canyon, Miller Canyon, Ditch Canyon, Rabbit Arroyo, Estes Arroyo, Tucker Canyon, Flora Vista Arroyo, Williams Arroyo, Hampton Arroyo, Wyper Arroyo, Hart Canyon

c. La Plata River

Barker Arroyo, Murphy Arroyo,Conner Arroyo, Pickering Arroyo, Cottonwood Arroyo, Thompson Arroyo, Coyne Arroyo, Two Cross Arroyo, McDermott Arroyo

(3) All discharges to unlined pits located in alluvial material within fifty vertical feet of all remaining tributaries to the San Juan, Animas and La Plata Rivers will be eliminated within three years from the effective date of this order.

(c) A wellhead protection area to provide protection for springs and fresh water wells outside the original and expanded Vulnerable Areas is hereby established. All discharges to unlined pits within a radius of 200 feet of private, domestic water sources and 1,000 horizontal feet of all other water sources will be eliminated within two years from the effective date of this order.

(d) Wellhead protection areas shall not include areas around water wells which are drilled after the effective date of this order if such water wells are located within 1000 feet of an existing source of oil or natural gas waste.

(e) For good cause shown, the Director of the Division may administratively allow an extension of the time schedule for elimination of discharges to unlined pits, as described above, for a period not to exceed two years.

(f) The transfer of fluids out of the Vulnerable and Expanded Vulnerable Areas and Wellhead Protection Areas for disposal into unlined or unpermitted pits is prohibited unless specifically authorized by the Director of the Division.

RULE 4. SURFACE DISPOSAL FACILITIES TO BE APPROVED/REGISTERED

(a) No oil and natural gas wastes may be disposed of or stored in below grade tanks or lined pits except after application to and approval by the Division. The Division Director may administratively approve the use of lined pits and below grade tanks within the Vulnerable Area for disposal or storage of oil and natural gas wastes upon a proper showing that the tank or lined pit will be constructed and operated in such a manner as to safely contain the wastes to be placed therein and to detect leakage therefrom.

(b) All unlined pits outside the Vulnerable Areas and Wellhead Protection Areas receiving greater than five (5) barrels of fluids per day will be registered with the Oil Conservation Division (OCD) within one year of the effective date of this order.

RULE 5. PIT CLOSURE

(a) Applications or plans to close existing unlined pits in the Vulnerable and Expanded Vulnerable Areas and Wellhead Protection Areas will be submitted to the OCD for approval not later than sixty (60) days after the final date scheduled for elimination of the discharge pursuant to Rule 3.

RULE 6. VARIANCES

(a) The Director of the OCD may administratively approve a variance to the discharge prohibition on a case by case basis if the discharger can demonstrate that:

1. the discharge site is (sites are) not located in alluvium; or

2. the discharge quality is within Ground Water Standards established by the New Mexico Water Quality Control Commission (WQCC); or

3. no protectable ground water (as defined by the New Mexico State Engineer) is present or if present, will not be adversely affected by the discharge; and

4. the discharge is not located within a Wellhead Protection Area:

(b) Such variance may be granted for multiple sites under a single application upon a demonstration by the applicant that the sites possess common characteristics that would justify the granting of the variance.

(c) Notice of request for variance for a specific discharge point will be sent by the operator to surface owners of record and occupants of permanent residences within 1/2 mile of the site for which the variance is sought. Notice shall be by certified mail, return receipt requested, or other means of service for which proof of delivery is available. Such persons will be given twenty (20) days from the date of delivery of notice to comment to the OCD on the request. In addition, the applicant must provide public notice, in a form approved by the Division, by legal advertisement in a newspaper of general paid circulation published at least weekly within the county or counties in which the site(s) for which the variance is sought is (are) located .