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:

APPLICATION OF CHESAPEAKE EXPLORATION, LCC, FOR STATUTORY UNITIZATION OF THE QUAIL-QUEEN UNIT AREA, LEA COUNTY, NEW MEXICO — CASE NO. 14001

AND

APPLICATION OF CHESAPEAKE EXPLORATION, LCC, FOR APPROVAL OF A WATERFLOOD PROJECT AND QUALIFICATION OF THE PROJECT AREA OF THE QUAIL-QUEEN UNIT FOR THE RECOVERED OIL TAX RATE PURSUANT TO THE ENHANCED OIL RECOVERY ACT, LEA COUNTY, NEW MEXICO — CASE NO. 14002

ORDER NO. R-12952-B

ORDER OF THE COMMISSION

THIS MATTER, having come before the New Mexico Oil Conservation Commission ("Commission") on September 11, 2008 at Santa Fe, New Mexico, on application of Chesapeake Exploration, LCC ("Chesapeake") for (i) approval of the unitization of the Quail-Queen Unit Area, Lea County, New Mexico (Case No. 14001) and (ii) approval of a

waterflood project and qualification of the project area of the Quail Queen Unit for the recovered oil tax rate pursuant to the Enhanced Oil Recovery Act, NMSA 1978, §§ 7-29A-1 to -5, (Case No. 14002), the two cases having been consolidated for hearing, and having carefully considered the evidence and other materials the parties submitted, now, on this 6th day of November, 2008, the Commission

FINDS:

1. Due notice has been given, and the Commission has jurisdiction of these cases and their subject matter.

2. By Administrative Order R-12952, dated June 2, 2008, the New Mexico Oil Conservation Division ("Division") entered an Order ("Order"), wherein the Division (i) approved the application of Chesapeake for statutory unitization of 840 acres, more or less, primarily within the Quail-Queen Pool (50450) in Lea County, New Mexico, to be known therefrom as the Quail Queen Unit ("Unit"), conditioned on the Unit Agreement and Operating Agreement being amended and ratified, as amended, as set forth in the Order, and (ii) approved a Quail Queen Waterflood Project ("Project") that had been proposed by Chesapeake, again with conditions as set forth in the Order.

3. Subsequent to entry of the Order, Chesapeake amended the Unit Agreement and Operating Agreement as set forth in the Order and sought ratification from interested parties. The only objecting working interest owner was Respondent, Pintail Production Company, Inc. ("Pintail"), though some owners of smaller working interest percentages did not respond at all to Chesapeake's request for ratification. As of September 11, 2008, ninety-six and sixty-five one-hundredths percent (96.65%) of the working interest had ratified the amended Unit Agreement and Operating Agreement. As of September 11, 2008, the New Mexico Commissioner of Public Lands, the only royalty interest owner, had given preliminary, but not final, approval.

4. At the Commission's September 11, 2008, hearing of this matter, Pintail objected neither to the unitization nor to the waterflood of the Unit. Pintail's objection at the hearing was that pore volume allocated to Pintail's well was too low, when compared to the well's ultimate primary recovery. Pintail offered no evidence that the two should be proportionate for this well. On cross examination, Chesapeake witness Gregory Adams testified that whether there is a direct correlation between ultimate primary recovery and reservoir pore volume can depend on the peculiarities of the subject well and the field, for instance, how long the well has been producing and how connected it is to the reservoir.

5. In the course of the September 11, 2008, hearing Chesapeake offered 3 witnesses and twenty-eight exhibits (Exs. 1-27; Ex. A) into evidence, supporting the findings of the Division's Order.

6. The Division's Order complies with all applicable law.

7. Chesapeake's application to qualify for the recovered oil tax rate, Exhibit No. 23, introduced at the September 11, 2008, hearing, does not specify whether the injection water will be fresh or salt water.

NOW, THEREFORE,

A. The Commission adopts the Division's Order, attached hereto as Attachment 1, including without limitation the Findings and conclusions, as though set forth in full at this point;

B. The Commission approves the Unit and the Project and authorizes the institution of the waterflood operations within the Unit Area (as defined in the Order);

C. The Commission adopts all orders, conditions and provisos set forth in the Order, including without limitation all conditions and provisions related to approval of the Unit, the approval of the Project and the authorization to institute waterflood

operations within the Unit Area; and provides further that there shall be no fresh water used as an injection fluid in the Project.

DONE at Santa Fe, New Mexico on the 6th of November 2008.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

MARK E. FESMIRE, P.E., CHAIR

JAMI BAILEY, CPG, MEMBER

WILLIAM OLSON, MEMBER

SEAL

Attachment

Order No. R-12952

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

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

APPLICATION OF CHESAPEAKE EXPLORATION, L.L.C. FOR STATUTORY UNITIZATION OF THE QUAIL-QUEEN UNIT AREA, LEA COUNTY, NEW MEXICO

CASE NO. 14001

APPLICATION OF CHESAPEAKE EXPLORATION, L.L.C. FOR APPROVAL OF A WATERFLOOD PROJECT AND QUALIFICATION OF THE PROJECT AREA OF THE QUAIL-QUEEN UNIT FOR THE RECOVERED OIL TAX RATE PURSUANT TO THE ENHANCED OIL RECOVERY ACT, LEA COUNTY, NEW MEXICO

CASE NO. 14002

ORDER NO. R-12952

ORDER OF THE DIVISION

BY THE DIVISION:

These cases came on for hearing at 8:15 a.m. on November 1, 2007, at Santa Fe, New Mexico before Examiners Carol Leach, Esq. and William V. Jones.

NOW, on this 2nd day of June, 2008, the Division Director, having considered the testimony, the record and the recommendations of the Examiners,

FINDS THAT:

(1) Due public notice has been given and the Division has jurisdiction of this case and its subject matter.

(2) Cases No. 14001 and 14002 were consolidated at the hearing for the purpose of testimony. Because the cases involve the same property and subject matter, a single order is being issued for both cases.

(3) In Case No. 14001, Chesapeake Exploration, L.L.C. ("Chesapeake" or "applicant"), seeks the statutory unitization, pursuant to the Statutory Unitization Act, Sections 70-7-1 through 70-7-21, NMSA 1978, of 840 acres, more or less, being primarily located within the Quail-Queen Pool (50450), in Lea County, New Mexico, to be known as the Quail Queen Unit, (the "Unit Area"). The applicant further seeks to incorporate the final versions of the Unit Agreement and of the Unit Operating Agreement into the resulting order.

(4) In Case No. 14002, Chesapeake seeks approval of a waterflood project for the injection of water into the Queen formation within this Unit area, initially (Phase I) through conversion to injection of six existing wells – shown on Exhibit "A" attached to this order – and installing injection and production facilities. Chesapeake also seeks to qualify the proposed project as an "Enhanced Oil Recovery Project" pursuant to the "Enhanced Oil Recovery Act" (NMSA 1978 Sections 7-29A-1 through 7-29A-5, as amended).

(5) The proposed Unit Area consists solely of State of New Mexico leases on lands specifically described as follows:

Township 19 South, Range 34 East, NMPM, Lea County, New Mexico

Section 11: NE/4, S/2
Section 13: W/2 NW/4, NW/4 SW/4
Section 14: N/2 NW/4, NE/4

(6) The proposed vertical extent of the Unitized Formation is that interval underlying the Unit Area extending from 5,033 feet to 5,394 feet (-1,059 feet to -1,420 feet subsea), as measured by the Density/Neutron Porosity Log run in 1977 on the Read & Stevens, Inc. Quail State Well No. 1 (API No. 30-025-25536), located 660 feet from the South line and 1980 feet from the East line of Section 11, Township 19 South, Range 34 East, NMPM, Lea County, New Mexico.

(7) The proposed Unit Area lies vertically within the middle of the Queen formation and laterally overlies the majority of the Quail-Queen Pool. This Pool was discovered by the Atlantic Richfield Company State BG Well No. 1 (API No. 30-025-22069), located in Unit H of Section 14, drilled to 10,350 feet on April 30, 1967 as a Bone Spring formation test. Atlantic Richfield Company judged the Bone Spring to be non-commercial and plugged back the hole prior to running casing to 5,462 feet and perforating the Queen formation with the top perforation at 5,126 feet. Oil Conservation Commission Order No R-3280 issued in Case No. 3617, established the Quail-Queen Pool as a new oil pool for production from the Queen formation – with vertical limits not otherwise defined. Since the pool discovery, various sands within the Queen formation have been completed.

(8) All owners of interests within the proposed unit were notified of this application and of this hearing.

(9) Pintail Production Company, Inc. ("Pintail"), Pride Energy Company ("Pride"), and Gene A. Snow Operating Company ("Snow") each entered appearances in these cases. Pintail and Pride appeared at the hearing and Pintail presented testimony from an engineering witness.

(10) Chesapeake presented land, geology, and engineering testimony as follows:

LAND TESTIMONY

There are 9 tracts to be included in this proposed 840-acre unit, and Chesapeake is the operator and majority working interest owner of all but one tract – that being the 80-acre Tract No. 4 which is operated by Pride at 100 percent working interest. Pintail has a 25 percent working interest in (the 40-acre) Tract No. 3 and Snow has less than 2 percent working interest in both (40-acre) Tracts No. 5B and 6A. Using the proposed Tract Participation formula, Chesapeake controls 89 percent of the working interest in this unit.

Chesapeake sent out the first letters to other owners proposing this unit on August 29, 2007 and sent the application for this hearing to the Division on September 4, 2007. There are 17 working interest owners and 12 of these (representing 96 percent of the proposed Tract Participation) have agreed to join in this proposed Unit. The only mineral interest owner is the State of New Mexico. The State Land Office issued preliminary approval of this unit on September 27, 2007. There are 8 total ORRI interest owners and 2 have responded.

At the date of this hearing, Chesapeake still seeks to unitize interests owned by Pride Energy Company, Pintail Production Company, Inc., Gene A. Snow Operating, William D. Bradshaw, and Patricia L. Pruitt.

Chesapeake testified that prior to the hearing it had not received specific proposals from interest owners to modify the Unit Agreement or the Unit Operating Agreement, except for a suggestion from Read & Stevens, Inc. to reduce the proposed Fixed Overhead Rate – which was subsequently reduced. Chesapeake proposed the unit to all owners but did not hold a formal working interest owner's meeting to discuss issues prior to this hearing.

The proposed 840-acre unit may be expanded in the future to include a 120-acre federal tract located in the SE/4 of Section 14. This acreage is not available for leasing at this time because of a biology related study being conducted under the supervision of the Bureau of Land Management.

GEOLOGY

Chesapeake's geologist presented a (top of Queen) structure map, a cross-section and pore volume contour maps of the "B" and the "C" sands.

The top of the Queen formation is measured at 4,750 feet on the Type Log for the Quail State Well No. 1 located in Unit O of Section 11. The Queen "B" starts at approximately 5026 feet and the Queen "C" starts at 5097 feet. Chesapeake's geologist testified that the target sands for waterflooding are the Queen "B" and Queen "C" members sands – so the unitized interval begins at the top of the Queen "B" and extends to the bottom of the Queen "C" sand or top of the Grayburg formation.

The Queen sands were laid down in a shallow marine environment. The majority of production within the Queen formation has come from the Queen "C" interval with 20 to 23 percent porosity and 20 to 40 millidarcies of permeability. The Queen reservoirs in this area are not controlled by structure. Sands dip from North to South and are relatively continuous enough to be successfully waterflooded.

From geologic studies performed over this area, the unit area is well suited for secondary recovery operations and all tracts within the unit area should contribute to secondary oil and gas production.

ENGINEERING

Chesapeake's engineer presented an executive summary and waterflood feasibility study showing history of this reservoir, a primary recovery prediction, and predicted secondary recovery.

Currently there are 12 active producing wells in this proposed 840-acre unit producing a total of 23 barrels of oil per day. Current reservoir pressure is approximately 450 psi, down from the original pressure of 1848 psi. Current cumulative production is approximately 788 thousand barrels of oil, and ultimate primary production is predicted to be 867 thousand barrels of oil or 19 percent of original oil in place. Seventy-eight percent of the original oil in place was in the Queen "C" sand and 22 percent in the Queen "B" sand.

Using the current (same as planned) spacing of 40 acres per well grouped into 80 acre 5-spot waterflood patterns, ultimate secondary recovery is predicted to be 725 thousand barrels of oil or 16 percent of original oil in place. Initially Chesapeake plans to utilize 6 wells for injection and will obtain the makeup water from a new Bone Spring well or from the West Pearl Queen Unit.

If waterflooding appears to be successful, Chesapeake plans on continuing to Phase II: drilling two additional wells in the E/2 NE/4 of Section 14, using one of the new wells as an injector, and re-entering the plugged Mobil Well No. 1, located in Unit E of Section 13, and equipping it for injection.

This waterflood is expected to be a success based on analogous waterfloods in the Queen formation – most notably the West Pearl Queen Unit. In addition, the use of the Quail State Well No. 2 as a Salt Water Disposal well (SWD-690) from 1997 until 2006 has shown the Queen oil and gas responds to water displacement.

For allocation of ownership among the 9 tracts, Chesapeake proposes to use a tract participation formula which considers four factors:

- Useable wellbores 40 percent
- Current Average Rate 40 percent
- Ultimate Primary Recovery 10 percent
- Pore Volume 10 percent

Chesapeake's engineer testified that since Chesapeake owns the majority of the interests in this unit under any proposed formula, this formula was crafted with the heaviest weighting on the two most undisputable factors primarily in order to avoid controversy with working interest owners and consequent delays to implementation. Chesapeake believes any formula used could be considered arbitrary, and this formula adequately predicts the secondary recovery potential of each tract within the proposed unit. All 12 active producing wells were (the only wells) considered as "useable wellbores". Chesapeake reported receiving no objections prior to the hearing to these proposed Tract Participation Parameters ("TPP").

(11) PINTAIL and PRIDE expressed the following concerns:

Pintail and Pride were concerned that Chesapeake did not hold a formal working interest owner meeting prior to this hearing. Both Pintail and Pride objected to the proposed Tract Participation Formula, and Pintail presented an engineering witness who proposed a differing formula. Pintail contested the numbers used by Chesapeake for "Average Rate," and Pride contested the definition of "Useable Wellbores". Both Pintail and Pride opined that 40 percent for useable wellbores was too high. Pintail's engineering witness proposed the following changes to Chesapeake's formula: the "Average Rate" should be taken from State production records instead of other sources; and the weighting for "Ultimate Primary" should be increased to 40 percent, and the weighting for "Useable Wells" should be reduced to 10 percent.

Tract No. 4, consisting of 80 acres comprising the W/2 NW/4 of Section 13, is leased by Pride and only contains two wells, both plugged and abandoned. Pride pointed out that Chesapeake's formula is not giving its Tract No. 4 credit for any useable

wellbores, despite a plan in Chesapeake's proposed Phase II to re-enter, as an injector, the Mobil Well No. 1 located within Tract No. 4. Pride also pointed out that Tract No. 4 contains 13 percent of the pore volume of the proposed Unit, but Chesapeake is proposing a tract participation percentage of only 1.4 percent. Pride asked that either the TPP be altered to allow its 80-acre tract a higher participation than the 1.4 percent being proposed by Chesapeake or its Tract No. 4 be excluded from the unit.

At the hearing, Pride and Pintail asked that Chesapeake's Exhibit E of the Unit Operating Agreement be further modified to reduce the Fixed Overhead Rate and also asked that technical personnel charges be included in this Fixed Overhead and not billed separately. The examiners asked Chesapeake at the hearing to supply supporting data for its proposed method of charging working interest owners. After the hearing, Chesapeake supplied a pamphlet from Ernst & Young showing a survey of Fixed Overhead Rates by county and by well depth within New Mexico.

Both Pride and Pintail objected to the proposed $100,000 AFE limit in the Unit Operating Agreement as abnormally high and equivalent to offshore projects. Chesapeake reported that this higher limit is needed because costs have rapidly escalated, and needed work will be done in a timely fashion without frequent ballots to working interest owners.

Despite the suggestions, Pintail was in general support of this unit and of this waterflood and agreed it should be implemented as soon as possible.

Division Findings

It is obvious from the presentation that this depleted reservoir should be unitized and waterflooded as soon as possible. The Queen formation in this area is relatively deep but should successfully respond to water displacement. In order to put together

contiguous lands necessary to conduct secondary recovery, Chesapeake has recently purchased these leases and completed a thorough land, geology, and engineering study geared toward better management of this reservoir. The proposal in these cases was rapidly put together and presented to other working interest owners and has resulted in a few items the Division must address in order to protect correlative rights and prevent waste. Most of these were outlined at the hearing, but some came to light after review of the record and after review of Division data.

Unit Agreement and Unit Operating Agreement

(12) The definition of the "Unitized Formation" in the Unit Agreement:

The wording of the Unit Agreement's Section 2.(d) is not consistent with the evidence presented in the case and should be corrected by deleting the following: "occurring between a point of 100 feet above the top of the Queen Sand formation" and inserting instead the following: "within the Queen formation". The unitized formation definition should read as follows:

Section 2. DEFINITIONS:

(d) "Unitized Formation" is defined as that stratigraphic interval within the Queen formation underlying the Unit Area, the vertical limits of which extend from 5,033 feet to 5,394 feet (-1,059 feet to -1,420 feet subsea), as measured by the Density/Neutron Porosity Log run in 1977 on the Read & Stevens, Inc. Quail State Well No. 1 (API No. 30-025-25536), located 660 feet from the South line and 1980 feet from the East line of Section 11, Township 19 South, Range 34 East, NMPM, Lea County, New Mexico.

(13) Tract Participation Parameters:

For the reasons outlined below, the formula contained in the proposed Unit Agreement does not allocate the unitized hydrocarbons to the separately owned tracts on a fair, reasonable, and equitable basis. The four factors considered by Chesapeake are all reasonable predictors of future production, but in this case, Ultimate Primary and Pore Volume are the two factors best able to predict future production under secondary recovery and should receive the highest weighting.

(a) Ultimate primary is often considered by reservoir engineers to be a predictor of ultimate secondary and is often heavily weighted in the formula for statutory unitizations – it was used in the West Pearl Queen Unit, which is considered by Chesapeake to be an analogous waterflood. The majority of this proposed unit and of the mapped pore volume has been developed and produced to near-depletion on 40-acre well spacing – so Chesapeake's prediction of ultimate primary oil recovery has a high confidence.

(b) Pore Volume: Adequate wells and electric logs were available to Chesapeake to define the reservoir's lateral limits and to reasonably determine the pore volume by tract within the unit area. Chesapeake's presentation of the study of this reservoir was very thorough. Another helpful aide would have been a contour map of ultimate primary and a comparison of this with the pore volume maps. The mapped Pore Volume is more interpretive than Ultimate Primary, but is also useful

for locating future wells – and new wells will be likely as more marginal portions of this reservoir become economic. At increased product prices, it is likely the operator of this unit will do any peripheral or infill drilling necessary to boost recovery and will place these new wells so as to harvest the mapped pore volumes – so Pore Volume should also receive a heavy weighting.

(c) Current Average Rate is volatile due to the depleted nature of this reservoir. The latest production data by well and by tract varies significantly from month to month. Instead of rounded off "average" production, the "total" 3 month production as found on the state data should be included and given a lower weighting than currently proposed.

(d) Useable Wellbores: The calculation of useable wellbores as "only the current producers" is consistent from tract to tract across the unit and there was testimony at the hearing that drilling a new well to these depths may be less costly on a risked basis than re-entering a plugged well. However this testimony is clouded by Chesapeake's future Phase II plans to re-enter and utilize the plugged and abandoned Mobil Well No 1 at reasonably low cost. The Mobil Well No 1 is located on Tract No 4 and this tract is considered by Chesapeake to be valuable to the unit. The formula as proposed, with a heavy weighting on Useable Wellbores, gives this plugged well or this well location no weighting and therefore gives Tract No 4 little percentage in the unit.

In order to more closely approximate future oil recovery from each tract within this proposed unit and to protect correlative rights of owners of these tracts, Section 12 (Tract Participation) of the Unit Agreement should be amended to reflect the following 4 factors and percentages of each. Exhibit B of the Unit Agreement and Exhibit D of the Unit Operating Agreement should be re-calculated to reflect these changes.

Ultimate Primary	40 percent
Pore Volume	40 percent

Useable Wellbores	10 percent
Current Production	10 percent

The definitions and values for Ultimate Primary, Pore Volume, and Useable Wellbores should be unchanged from Chesapeake's application. The Current Production should be defined as the total barrels of oil equivalent produced within April, May, and June of 2007.

As so revised, the tract participation parameters will allocate production in approximate proportion to the relative values of the tracts in the unit, exclusive of physical equipment as indicated by the evidence presented at the hearing.

(14) Excluding Tract No. 4

Pride suggested in the hearing that Tract No. 4 be left out of this Unit. Excluding Tract No. 4 from the Unit would disrupt the waterflood pattern in the southeastern portion of the unit under Phase II operations and would isolate the prolific Tract No. 3 from pressure support - at least until (or if ever) the 120-acre federal tract in the SE/4 of Section 14 is added to the Unit. Excluding Tract No. 4 would cause waste of secondary recovery oil and gas reserves both inside and outside this tract.

(15) Fixed Overhead Rates and Professional Charges

In October of 2007, the Division approved the Eastland Queen Unit, operated by Beach Exploration, Inc., in Order No. R-12833. This new waterflood could be considered somewhat analogous in size and type (although shallower in depth). Beach proposed, and the Division approved, overhead rates of $4,500 while drilling and $450 while producing with professional charges to be billed separately. Chesapeake's proposed monthly Fixed Overhead Rates for this 5,100 foot depth range ($8,500 while drilling and $850 while producing) are near the top of the rates listed in the Ernst & Young survey. With formation of this unit, Chesapeake is only taking over as operator of one additional lease, and that lease

has no active wells. So it is reasonable to assume that any technical personnel costs incurred by the operator should not be charged separately and should be considered as already included in the Fixed Overhead Rate charges.

(16) AFE Limits

The proposed $100,000 AFE limit in the Unit Operating Agreement should be approved as proposed by Chesapeake in order to prevent delays in capital investments.

STATUTORY UNIT

(17) After approval by Chesapeake of any changes to the Unit and Operating Agreements, over 75 percent of the working interest will have agreed on formation of this unit. After final approval by the New Mexico State Land Office, over 75 percent of the royalty interest will be committed to this proposed unit.

(18) Unitized management, operation and further development of the unit area is necessary to effectively carry on secondary recovery operations and to substantially increase the ultimate recovery of oil and gas from the unit area. Unitization and implementation of waterflood operations in the unit area will benefit the working interest and royalty interest owners within the proposed unit area, and will prevent waste and protect correlative rights of all parties.

(19) The applicant has made a good faith effort to secure voluntary unitization of the unit area.

(20) The final versions of the Unit Agreement and the Unit Operating Agreement should be incorporated by reference into this order.

(21) This order creating a unit comprising the unit area and providing for the unitization and unitized operation of the unit area upon the terms and conditions approved

herein is necessary to protect and safeguard the respective rights and obligations of the working interest owners and the royalty interest owners in the unit area.

(22) The **Quail Queen Unit** should be approved for statutory unitization, but approval should be conditional on ratification of the final versions of these agreements by both Chesapeake and the State Land Office.

(23) Chesapeake Operating, Inc. (OGRID No. 147179) as the operating arm of Chesapeake as the majority working interest owner should be approved as the operator of the unit.

WATERFLOOD PROJECT

(24) The applicant proposes to institute a "waterflood project" within the Quail Queen Unit area. The "project area" of this project should comprise the entire area approved for statutory unitization as described in this order. The Queen reservoir has been depleted to "stripper" status by primary operations, and it is prudent to apply waterflood operations to extend the life of the reservoir and to maximize the ultimate recovery of crude oil from this reservoir.

(25) The proposed waterflood within the project area is feasible and will, with reasonable probability, result in the recovery of substantially more oil and gas than would otherwise be recovered.

(26) The estimated total capital cost associated with this project is approximately 5 million dollars, and the venture is expected to yield net revenue of 40 million dollars. The estimated additional costs of the proposed waterflood operations will not exceed the estimated value of the additional oil and gas recovered plus a reasonable profit.

(27) The proposed waterflood project will prevent waste, protect correlative rights, and should be approved and called the **Quail Queen Waterflood Project**. The project should be governed by Division Rules No. 701 through 708.

(28) Chesapeake is asking for Division approval to inject into 6 wells as the project is implemented in Phase I. Provisions should be made for the operator of the Quail Queen Unit to apply administratively for additional or different injection wells as needed.

(29) An examination of all wellbores within ½ mile of the proposed 6 injection wells indicates that there is no Area of Review ("AOR") remedial cementing required prior to implementing this project. There are 16 active and 11 abandoned known wells, drilled to this depth, within the Areas of Review of the six proposed injection wells. The Quail State Well No. 3 (API No. 30-025-22435) located in Unit I of Section 11 was drilled to 10,500 feet

and then plugged to the surface in 1972 with a plug set below the San Andres formation (5845 feet) and another above the Queen formation at 4060 feet. This well has not been adequately plugged in order to restrict movement of injection waters down below the Queen formation. The attempt to re-enter this well in January of 1979 was unsuccessful. Drillers could only get to 1020 feet and redbeds began to cave, therefore the well was plugged back from there. As that re-entry and re-plug attempt was unsuccessful, no further attempts should be made to re-enter and replug this well.

(30) All other AOR wells are either outside the boundaries of the mapped Queen formation or are cased and cemented in order to prevent vertical migration of injected fluids or both. The proposed injection operation will not pose a threat to protectable underground sources of drinking wa. r.

(31) As proposed the six listed wells in the attached Exhibit "A" should be conditionally approved for conversion and use as injection wells. Full approval should be granted only after Chesapeake comes into compliance with the Division Rule 40's limit on inactive wells and after adequate notice is provided of the intended injection and if no protests are received to this injection.

(32) Chesapeake provided an affidavit showing notice was provided to the surface owner and to all operators within the Queen formation within ½ mile of the proposed unit boundaries. However, it appears that the latest requirements for notice as detailed in Division Rule 701B(2) were not followed. Chesapeake should provide proof to the Division of notice to all affected parties (in the absence of an operator, lessees or mineral interest owners in the Queen formation) within ½ mile of all 6 Phase I injection wells as required in Rule 701B(2) and authority for injection into each of these 6 wells should be withheld until 15 days after these affected parties are noticed – unless a protest is received in which event the permission to inject shall be considered at another hearing.

(33) It is necessary to complete and equip all injection wells in a manner to ensure the unitized interval rec ives injection support and to confine injection to only the unitized

interval.

Within the following Phase I injection wells, existing perforations below the unitized interval should be plugged off with bridge plugs and cement:

Quail State #3Y	Isolate or squeeze off perforations below 5350 feet
Wainoco State #1	Isolate or squeeze off perforations below 5309 feet

The following Phase I injection wells are only perforated in the upper portion of the unitized interval. The operator should evaluate the need for additional perforations in each of these wells down to the bottom of the Queen formation.

Quail Queen SWD #1	Consider adding perforations down to 5394 feet
State C #1	Consider adding perforations down to 5374 feet
Pennzoil State #1	Consider adding perforations down to 5356 feet
State BG #2	Consider adding perforations down to 5490 feet

(34) Chesapeake did not address in the hearing the possibility that existing producers within this proposed unit may have produced oil from the upper or lower intervals in addition to the "B" and "C" intervals within the Queen formation. Division records show there are producing wells within this unit which have open perforations deeper than and/or shallower than the vertical limits of this unit.

(35) Because the reservoir drive mechanism will differ between this unit and vertically adjacent production, all producing wells within this unit should be dedicated only to the unitized interval during the life of this waterflood. Remaining reserves from any other intervals should be isolated behind pipe with bridge plugs and/or squeeze cementing operations. Chesapeake should present a plan to the Hobbs district office showing how the unit producing wells are currently completed and how they will be modified in order to produce only from the unitized interval.

(36) After this unit is formed, any production above or below the unit will not have

the same ownership as within the unit. Any approval of diversely owned downhole commingles within this unit should be considered by the Division only after a hearing because of the possibility of waste and a violation of correlative rights.

(37) The Division requires electric logs to be supplied to the district offices. There are wells in this proposed unit that have no electric logs imaged on the Division's online web site – including the Quail Queen SWD Well No. 1 with the Type Log presented at the hearing. Chesapeake should copy all electric logs run on the following Chesapeake operated wells including temperature surveys and cement bond logs and send these copies to the Hobbs district office for scanning:

30-025	WELL_NAME	FTG_NS	NS_CD	FTG_EW	EW_CD	OCD_UL	Sec	TVD_DEPTH
25887	WAINOCO STATE 001	600	N	1980	E	B	11	5380
22841	PENNZOIL ST ATE 001	1980	N	1980	E	G	11	5300
26221	QUAIL STATI 03Y	1841	S	759	E	I	11	5600
25868	QUAIL STATE 002	1980	S	1980	E	J	11	5415
23031	STATE C 001	2080	S	1980	W	K	11	5168
26853	QUAIL STATE 006	660	S	1980	W	N	11	6200
25536	QUAIL QUEEN SWD 001	660	S	1980	E	O	11	5500

EOR CERTIFICATION FOR TAX CREDITS

(38) The evidence establishes that the proposed waterflood project meets all the criteria for certification by the Division as a qualified "Enhanced Oil Recovery (EOR) Project" pursuant to the "Enhanced Oil Recovery Act" (NMSA 1978 Sections 7-29A-1 through 7-29A-5).

(39) To be eligible for the EOR credit, the operator should advise the Division when additional water injection (more than one well) commences in the project area and at

such time request the Division review project performance and recommend certification of the project to the New Mexico Taxation and Revenue Department.

(40) The project area within the waterflood project and/or the producing wells within such area eligible for the recovered oil tax rate may be contracted and reduced dependent upon the evidence presented by the applicant in its demonstration of the occurrence of a positive production response.

IT IS THEREFORE ORDERED THAT:

(1) The application of Chesapeake Exploration, L.L.C., ("Chesapeake") for the statutory unitization of 840 acres, more or less, primarily within the Quail-Queen Pool (50450) in Lea County, New Mexico, to be known as the **Quail Queen Unit** is hereby approved for statutory unitization pursuant to the Statutory Unitization Act, Sections 70-7-1 through 70-7-21, NMSA 1978. Such approval is conditional on amendments specified below to the Unit Agreement and the Unit Operating Agreement and ratification of those amendments by at least 75 percent of the working interest and by at least 75 percent of the mineral interest.

(2) If 75 percent of the mineral interest and 75 percent of the working interest in the Unit Area do not approve the plan for unit operations within a period of six months from the date of this order, this order shall cease to be effective, unless the Division shall extend the time for ratification for good cause.

(3) When the required percentage of both mineral and working interest in the Unit Area have approved the plan for unit operations, all other interests in the Unit Area are hereby unitized whether or not the owner of those interests have approved the plan of unitization.

(4) The "Unit Area" shall initially comprise the 9 tracts as proposed by Chesapeake (including Tract No. 4) and consist of the following described 840 acres, more or less, of State of New Mexico lands, all in Lea County, New Mexico:

Township 19 South, Range 34 East, NMPM, Lea County, New Mexico

Section 11: NE/4, S/2
Section 13: W/2 NW/4, NW/4 SW/4
Section 14: N/2 NW/4, NE/4

(5) The Unitized Formation shall be defined in the Unit Agreement. Section 2(d) of the Unit Agreement shall be amended to read as follows:

"Unitized Formation" is defined as that stratigraphic interval within the Queen formation underlying the Unit Area, the vertical limits of which extend from 5,033 feet to 5,394 feet (-1,059 feet to -1,420 feet subsea), as measured by the Density/Neutron Porosity Log run in 1977 on the Read & Stevens, Inc. Quail State Well No. 1 (API No. 30-025-25536), located 660 feet from the South line and 1980 feet from the East line of Section 11, Township 19 South, Range 34 East, NMPM, Lea County, New Mexico.

(6) Section 12 (Tract Participation) of the Unit Agreement shall be amended to reflect the following 4 factors and percentages of each. Exhibit B of the Unit Agreement and Exhibit D of the Unit Operating Agreement shall be re-calculated to reflect these changes.

Ultimate Primary	40 percent
Pore Volume	40 percent
Useable Wellbores	10 percent
Current Production	10 percent

The definitions and values for Ultimate Primary, Pore Volume, and Useable Wellbores shall be unchanged from Chesapeake's application. The Current Production shall

be defined as the total barrels of oil equivalent produced within April, May, and June of 2007.

(7) Overhead rates per well shall be $8,500 per month while drilling and $850 per month while producing and shall be adjusted yearly by the percent increase or decrease published by COPAS. Exhibit E (Accounting Procedure Joint Operations) Section III. (Overhead) of the Unit Operating Agreement shall be amended so as to include expenses specified in subsections I.(ii) and I.(iii) within the overhead rates.

(8) After amending the Unit Agreement and the Unit Operating Agreement, these shall be proposed to the owners within this unit, and the final versions of the Unit Agreement and the Unit Operating Agreement shall be incorporated by reference into this order.

(9) The proposed **Quail Queen Waterflood Project** covering the Unit Area is hereby approved.

(10) The operator of the Quail Queen Unit shall be Chesapeake Operating, Inc. (OGRID 147179) as the operating arm of Chesapeake Exploration, LLC - Article 6.1 of the Unit Operating Agreement.

(11) The operator shall notify the Division in writing of its removal or the substitution of any other working interest owner within the Unit Area as operator. In the event an entity other than Chesapeake assumes operation of the unit established hereby, such entity shall comply with all the terms and provisions of this order.

(12) The unit established hereby shall terminate upon the plugging and abandonment of the last well in the unit area completed in the unitized formation. The last operator shall inform the Division of termination of the unit.

(13) The operator shall copy all available electric logs run on the following Chesapeake operated wells including temperature surveys and cement bond logs and send these copies to the Hobbs district office for scanning:

30-025	WELL_NAME	FTG_NS	NS_CD	FTG_EW	EW_CD	OCD_UL	Sec	TVD_DEPTH
25887	WAINOCO STATE 001	600	N	1980	E	B	11	5380
22841	PENNZOIL STATE 001	1980	N	1980	E	G	11	5300
26221	QUAIL STATE 003Y	1841	S	759	E	I	11	5600
25868	QUAIL STATE 002	1980	S	1980	E	J	11	5415
23031	STATE C 001	2080	S	1980	W	K	11	5168
26853	QUAIL STATE 006	660	S	1980	W	N	11	6200
25536	QUAIL QUEEN SWD 001	660	S	1980	E	O	11	5500

(14) Chesapeake is hereby authorized to institute waterflood operations within the Unit Area by the injection of water into the unitized formation through the six wells shown on Exhibit "A" attached to this order.

PROVIDED HOWEVER THAT: Chesapeake shall provide to the Division:

(a) proof of Chesapeake's compliance with the Division's Rule 40; and

(b) proof of 15 day notice to all affected parties, without protest received, as required in Rule 701B(2). If protested by any one of the affected parties, applications for injection shall be only approved after a hearing.

(15) Each well is specifically permitted for injection only within the depth intervals ("permitted injection intervals") specified on Exhibit "A" attached to this order.

(a) Within the following approved injection wells, existing perforations below the unitized interval should be plugged off with bridge plugs and cement:

Quail State #3Y	Isolate or squeeze off perforations below 5350 feet
Wainoco State #1	Isolate or squeeze off perforations below 5309 feet

(b) Within the following approved injection wells, the operator shall evaluate the need to add additional perforations down to the bottom of the Queen formation.

Quail Queen SWD #1	Consider adding perforations down to 5394 feet
State C #1	Consider adding perforations down to 5374 feet
Pennzoil State #1	Consider adding perforations down to 5356 feet
State BG #2	Consider adding perforations down to 5490 feet

(16) Upon receipt of this order, the operator shall identify and notify the Division of all producing wells inside the unit which produce from perforations above or below the unitized interval and shall shut-in those wells after the effective date of this Quail Queen Unit until all perforations above and below the unitized interval are isolated with cement squeeze operations or with bridge plugs. The operator shall coordinate modification of well completions with the Hobbs district office.

(17) Any application for downhole commingling of unitized production (within wells located within this unit) with production above or below the unitized interval shall be set for hearing by the applicant.

(18) Chesapeake shall take all steps necessary to ensure that the injected water enters only the permitted injection intervals and is not permitted to escape to other formations or onto the surface from injection, production, or plugged and abandoned wells.

(19) Injection into each of the wells shown on Exhibit "A" shall be accomplished through plastic-lined tubing installed in a packer located within 100 feet of the uppermost injection perforation. The casing-tubing annulus shall be filled with an inert fluid, and a

gauge or approved leak-detection device shall be attached to the annulus in order to determine leakage in the casing, tubing, or packer.

(20) The injection wells or pressurization system shall be equipped with a pressure control device or acceptable substitute that will limit the surface injection pressure to 1000 psi.

(21) The Division Director may administratively authorize a pressure limitation in excess of the above upon a showing by the operator that such higher pressure will not result in the fracturing of the injection formation or confining strata.

(22) The Division Director may administratively authorize additional injection wells within the unit area as provided in Division Rule 701.F(3).

(23) The unit operator shall give 72 hours advance notice to the supervisor of the Division's Hobbs District Office of the date and time (i) injection equipment will be installed, and (ii) the mechanical integrity pressure test will be conducted on the proposed injection wells, so that these operations may be witnessed.

(24) The unit operator shall immediately notify the supervisor of the Division's Hobbs District office of any failure of the tubing, casing or packer in any of the injection wells or the leakage of water, oil or gas from or around any producing or plugged and abandoned well within the project area, and shall promptly take all steps necessary to correct such failure or leakage.

(25) The unit operator shall conduct injection operations in accordance with Division Rules No. 701 through 708, and shall submit monthly progress reports in accordance with Division Rules No. 706 and 1115.

(26) The injection authority granted herein for each Phase I well shown on Exhibit "A" shall terminate one year after the date of this order if the unit operator has not

commenced injection operations into that well; provided, however, the Division, upon written request postmarked or received prior to the one-year deadline, may grant an extension for good cause if such request for extension is received prior to the end of that year.

(27) The Quail Queen Unit Waterflood Project is hereby certified as an "Enhanced Oil Recovery Project" pursuant to the "Enhanced Oil Recovery Act" (NMSA 1978 Sections 7-29A-1 through 7-29A-5). The project area shall comprise the entire Quail Queen Unit; provided the area and/or the producing wells eligible for the enhanced oil recovery (EOR) tax rate may be contracted and reduced based upon the evidence presented by the unit operator in its demonstration of a positive production response.

(28) To be eligible for the EOR tax rate, the unit operator shall advise the Division of the date and time water injection commences into the project area and at such time, request the Division certify the project to the New Mexico Taxation and Revenue Department.

(29) At such time as a positive production response occurs, and within five years from the date the project was certified to the New Mexico Taxation and Revenue Department, the unit operator must apply to the Division for certification of a positive production response. This application shall identify the area benefiting from enhanced oil recovery operations and the specific wells eligible for the EOR tax rate. The Division may review the application administratively or set it for hearing. Based upon the evidence presented, the Division will certify to the New Mexico Taxation and Revenue Department those wells that are eligible for the EOR tax rate.

(30) This order does not relieve the operator of responsibility should its operations cause any damage or threat of damage to protectable fresh water, human health or the environment, nor does it relieve the operator of responsibility for complying with applicable Division rules or other federal, state or local laws or regulations.

(31) Jurisdiction of this case is retained for the entry of such further orders as the Division may deem necessary.

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

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

MARK E. FESMIRE, P.E.
Director

S E A L
Attachments: Exhibit "A"

CASE NO. 14002
R- 12952

EXHIBIT "A"
PHASE I INJECTION WELLS
QUAIL QUEEN UNIT
WELL NAMES AND LOCATIONS

WELL_NAME	API	N-S	E-W	Unit	Sec	Tsp	Rge	Approx Queen Unit Interval
Quail Queen SWD #1	30-025-25536	660 FSL	1980 FEL	O	11	19S	34E	5033-5394
Quail State #3Y	30-025-26221	1841 FSL	759 FEL	I	11	19S	34E	5020-5350
State C #1	30-025-23031	2080 FSL	1980 FWL	K	11	19S	34E	5020-5374
Wainoco State #3	30-025-26707	990 FNL	990 FEL	A	11	19S	34E	4974-5309
Pennzoil State #1	30-025-22841	1980 FNL	1980 FEL	G	11	19S	34E	4980-5356
State BG #2	30-025-25493	1980 FNL	1680 FEL	G	14	19S	34E	5120-5490