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

IN THE MATTER OF THE APPLICATION OF THE NEW MEXICO OIL AND GAS ASSOCIATION FOR AMENDMENT OF CERTAIN PROVISIONS OF TITLE 19, CHAPTER 15 OF THE NEW MEXICO ADMINISTRATIVE CODE CONCERNING PITS, CLOSED LOOP SYSTEMS, BELOW GRADE TANKS, SUMPS AND OTHER ALTERNATIVE METHODS RELATED TO THE FOREGOING AND AMENDING OTHER RULES TO CONFORMING CHANGES, STATEWIDE.

CASE NO. 14784

IN THE MATTER OF THE APPLICATION OF THE INDEPENDENT PETROLEUM ASSOCIATION OF NEW MEXICO FOR AMENDMENT OF CERTAIN PROVISIONS OF TITLE 19, CHAPTER 15 OF THE NEW MEXICO ADMINISTRATIVE CODE CONCERNING PITS, CLOSED LOOP SYSTEMS, BELOW GRADE TANKS, SUMPS AND OTHER ALTERNATIVE METHODS RELATED TO THE FOREGOING MATTERS, STATEWIDE.

CASE NO. 14785

NEW MEXICO OIL AND GAS ASSOCIATION'S PROPOSED FINDINGS OF FACT

BY THE COMMISSION:

THESE MATTERS came before the Oil Conservation Commission (Commission) for consideration on May 14, 15, 16, 17, and 18, June 20, 21 and 22, and August 27 and 28, 2012; and the Commission, having carefully considered the evidence, the pleadings, comments, and other materials submitted in support of and in opposition to the proposal, now, this __ day of October, 2012,

FINDS THAT:

1. NMSA 1978, Section 70-2-11 and 70-2-12(B) grant the Oil Conservation Division (Division) authority to implement rules to carry out the purposes of the Oil and Gas Act, Chapter 70, NMSA 1978 Article 2 (the Act). NMSA 1978.

2. Case 14784 this is a rulemaking proceeding initiated by the New Mexico Oil and Gas Association (NMOGA) for the purpose of amending certain provisions of Title 19, Chapter 15 of the New Mexico Administrative Code concerning pits, closed loop systems, below grade tanks, sumps and other alternative methods related to the foregoing and amending other rules to make conforming changes.

3. Case 14785 this is a rulemaking proceeding initiated by the Independent Petroleum Association of New Mexico (IPANM) for the purpose of amending certain provisions of Title 19, Chapter 15 of the New Mexico Administrative Code concerning pits, closed loop systems, below grade tanks, sumps and other alternative methods related to the foregoing and amending other rules to make conforming changes.

4. These cases were consolidated at the hearing and one order shall be issued for both applications.

5. Notice was given of each application and the hearings of these matters, and the Commission has jurisdiction of the parties and the subject matter herein.

6. On September 24, _____ and __, 2012 the Commission deliberated in open session by reviewing the proposed rule changes and voting to accept certain changes proposed to the rules by the parties and the Commission. The following Findings of Fact indicates the Commission's analysis of certain key provisions and of the entire proposal.

Background of this Proceeding and the Proposed Rule Revisions:

7. NMOGA and IPANM applied to the Commission to adopt proposed changes to the Division's rules concerning pits, closed loop systems and below grade tanks, and also proposed revisions to certain definitions presently codified as 19.15.3 or 19.15.17 NMAC.

8. During the hearing witnesses and members of the Commission occasionally suggested revisions to portions of the proposal. At the conclusion of the hearing, the Commission directed parties to file proposed findings citing to the transcript on the issues raised by the NMOGA / IPANM applications.

Participation in the Hearing:

9. At the hearing, NMOGA and IPANM appeared through counsel and presented testimony in support of their proposals. Jalepeno Corporation (Jalepeno) appeared through counsel in support of the proposed revisions. The Division appeared through counsel and presented testimony in support of certain revisions to the proposed procedural revisions but did not take a position on the technical aspects of the proposals. The New Mexico Citizens for Clean Air and Water (NMCCA&W) appeared through their accredited representatives and presented testimony in opposition to the proposed revisions. The Oil and Gas Accountability project (OGAP) appeared through counsel and offered evidence in opposition to the proposals.

10. In addition, numerous other individuals and organizations presented sworn and unsworn written and oral comments at the hearing.

The Evidence:

11. NMOGA presented the testimony of Bruce Gantner, environmental engineer; Ed Hasely, petroleum engineer and expert in the siting, installation and management of below-grade

tanks used in the oil and gas industry; Michael Lane, petroleum engineer and expert in oil field waste management systems; Jerry D. Fanning, Jr. environmental coordinator and Chair of the industry work group that prepared the revisions to the pit rule contained in NMOGA's application in this case; Dr. Benjamin Thomas, III, a toxicologist and expert in contaminant fate and transport; James Daniel Arthur, petroleum and environmental engineer and hydrologist with expertise in the transport of chemicals from oil and gas operations in soils; and Dr. Bruce Buchanan, a soil scientist. All experts testified as experts in their respective fields.

12. IPANM presented the testimony of Thomas Mullins, petroleum engineer with expertise in the movement of fluids and gases through rock formations; and Larry Scott, professional engineer. Mr. Mullins' testimony included the presentation of his modeling of the transport through soils to ground water of chloride mass from temporary pits used in oil and gas operations. Mr. Scott's testimony reviewed the current problems with Rule 17.

13. The Division presented the testimony of Brandon Powell, Division Inspection and Enforcement Supervisor with expertise in the enforcement of Division rules; and Ed Martin, Supervisor of Division District 4 with expertise in the enforcement of Division rules. Mr. Powell testified about the Division's experience with the administration and enforcement of Rule 17. Mr. Martin testified about specific provisions in the proposed revisions and the ability of the Division to meet its responsibilities if the revisions are adopted.

14. OGAP presented the testimony of Mary Ellen Denomy, petroleum accountant; and Kathy Martin, to testify about petroleum, civil, and environmental engineering. Transcript at 2145. Ms. Denomy testified about the economic competitiveness of closed-loop systems with temporary pits and reviewed government and industry reports that evaluated the economic costs and benefits of temporary pits and closed-loop systems. Ms. Martin's testimony included OGAP's response to NMOGA's proposed rules for multi-well fluid management pits and to the modeling presented by Mr. Mullins.

15. NMCCA&W presented the testimony of Dr. Donald Neeper, physicist, who described research he had done regarding movement of salts in soils and modeling of moisture flow above and beneath buried waste. Dr. Neeper also presented data regarding the salt tolerance of plants and the effect of salt-induced osmotic pressure.

General Findings and Conclusions:

16. NMSA 1978, Sections 70-2-11 and 70-2-12(B) grant the Division authority to implement rules to carry out the purposes of the Oil and Gas Act. NMSA 1978, Section 70-2-6(B) provides that the Commission shall have concurrent jurisdiction or authority with the Division to the extent necessary for the Commission to perform its duties. Generally, the Commission adopts rules, the Division implements those rules, and the Commission hears any final administrative adjudicatory proceedings.

17. Pursuant to the Oil and Gas Act, it is the duty of the Commission and Division to prevent the waste of oil and gas and to protect correlative rights as defined in the Act. NMSA 1978, Section 70-2-11.A The Commission and Division also are charged with (i) the regulation

of 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 (NMSA 1978, Section 70-2-12 B (15)) and (ii) the regulation of the disposition of nondomestic wastes resulting from oil and gas operations pursuant to the enumeration of powers section of the Act, to protect fresh water, public health, and the environment. NMSA 1978, Section 70-2-12.B (15) and (21).

18. "Waste" is defined by the Oil and Gas Act to include: "... the locating, spacing, drilling, equipping, operating or producing, of any well or wells in a manner to reduce or tend to reduce the total quantity of crude petroleum oil or natural gas ultimately recovered from any pool..." NMSA 1978, Section 70-2-3.A.

19. "Correlative rights" is defined by the Oil and Gas Act as "...the opportunity afforded, so far as it is practicable to do so, to the owner of each property in a pool to produce without waste his just and equitable share of the oil or gas or both in the pool, being an amount, so far as can be practicably determined and so far as can be practicably be obtained without waste, substantially in the proportion that that the quantity of the recoverable oil or gas or both under the property bears to the total recoverable oil or gas or both in the pool,... NMSA 1978, Section 70-2-33.H.

20. The Commission and Division are required by law to carry out all of the duties imposed on them by the Act, and may not consider part of their legislative mandate while ignoring other parts of their statutory responsibilities.

21. To carry out its statutory responsibilities when considering proposed revisions to its rules, the Commission is required to balance its duties to prevent waste and protect correlative rights against its responsibilities to provide reasonable protection of fresh water, public health, and the environment to the end that it meets all responsibilities imposed on it by the New Mexico Legislature.

22. The current Rule 17, adopted in 2008, contains performance standards that ignore the differences in oil and gas operations in different pools and in the different hydrocarbon producing basins in New Mexico and impose confusing and unnecessary regulations upon oil and gas operations which have been interpreted in a subjective way by the various offices of the Division which has caused regulatory uncertainty (Mullins at 1390-1391), increased the costs of producing oil and gas in this state without reducing the risk of oil and gas operations, if any, to fresh water, public health and safety, livestock and the environment. Gantner at 64-65; Scott at 1648-1649; *See,* testimony of Mike Sauck for West Largo Corporation at 864-867. Accordingly, Rule 17 imposes unnecessary restrictions on the locating, spacing, drilling, equipping, operating and producing wells that reduce or tend to reduce the total quantity of crude oil or natural gas ultimately recovered from the oil and gas pools of New Mexico.

23. The only evidence on groundwater contamination was from OGAP's Ms. Martin who presented the results of her study on groundwater contamination from pits with liners. K Martin at 2268; OGAP Exhibit 5. Her study did not contain a single example of any contamination from pits in

Northwest New Mexico (K Martin at 2257) and no example involved a temporary pit that had been constructed pursuant to the liner requirements of Rule 17. K Martin at 2268. There is no proposal before the Commission in these cases to change the liner requirements of Rule 17. K Martin at 2268-2269.

24. NMOGA is proposing revisions to Rule 17 that address the issues that have developed with Rule 17 since its adoption in 2008. These recommended revisions clarify Rule 17, will make it more understandable, and make compliance and enforcement easier. NMOGA's recommendations are risk based and designed to eliminate unnecessary environmental and regulatory risk that tends to reduce the total quantity of oil and gas produced in New Mexico thereby preventing waste. Mullins at 1389-1390.

19.15.17.7 NMAC: DEFINITIONS

25. NMOGA's proposed revisions to the definitions in Rule 17 include amendment of existing terms "below-grade tanks," "closed-loop system," "permanent pit," "significant watercourse," "sump," and "temporary pit," and the deletion of the term "restore." NMOGA also proposes the addition of definitions for "confined groundwater," "continuously flowing watercourse," "floodplain," "low chloride fluids," "measurable," "multi-well fluid management pit," "life-form ratio," "playa lake," "unconfined ground water," and "visible."

26. NMOGA proposes amendment of the definition of **"below-grade tank"**:

(a) To avoid confusion between operators and with the Division concerning (i) what constitutes a surface tank and what is a below-grade tank as it is currently defined in 19.15.2.7 B (5) NMAC and also (ii) clarify the distinction between a below-grade tank and a sump. Hasely at 158-159.

(b) By moving the definition of "below-grade tank" to 19.15.17.7 NMAC and amending the definition as follows:

> "Below-grade tank" means a vessel with greater than a five gallon capacity, excluding sumps and pressurized pipeline drip traps, installed within an excavation or buried below the surrounding ground surface's elevation. Below-grade tank does not include an above ground storage tank that is located above or at the surrounding ground surface's elevation and is surrounded by berms. Hasely at 161; NMOGA Exhibit 5-3.

(c) To exclude from the definition of a "below grade tank" a vessel that contains less than five gallons - which is the Division's definition of a minor release in its current guidelines for spills. Fanning at 338. This change will not result in an overlap with the definition of a "Sump" which, although defined in Rule 17 is as containing 500 gallons or less, may not by definition be used for permanent storage. Fanning at 339.

(d) To differentiate between a "below-grade tank" and a surface tank, by amending this definition to add language that provides that a below-grade tank "must be installed in an excavation." Hasely at 163-164.

(e) The proposed revisions to the definition of "below-grade tank" will clarify this term, avoid confusion and should be **adopted.**

27. The definition of **"closed-loop system"** is amended to clarify that it is a system that does not use below-grade tanks or pits, clarifies the definition consistent with its original intent and should be **adopted.**

28. NMOGA proposes the addition of a new definition for **"confined ground water"** which provides:

(a) "Confined ground water" means water contained within soil or rock below the land surface that is saturated with water where there are layers of impermeable material both above and below and the water is under pressure so that when penetrated by a well, the groundwater will rise. Proposed 19.15.17.7 D NMAC.

(b) This definition requires that the ground water be protected by impermeable layers from above and below and therefore not susceptible to the risk of contamination. Arthur at 535.

(c) The proposed definition also requires that the water be under pressure so, if the reservoir is penetrated, the water would flow up and thereby prevent contamination. Arthur at 536-537.

(d) Since this definition is used only in connection with temporary drilling pits and multi-well fluid management pits which should be used for only limited periods of time, the adoption of this definition will not pose unreasonable risks to fresh water and should be **adopted.**

29. NMOGA proposes the addition of a new definition for **"continuously flowing watercourse"** which provides:

(a) "Continuously flowing watercourse" means a river, stream or creek that is named or delineated by a solid blue line on a USGS quadrangle map having a scale factor of 1:24,000 and that typically has water flowing during a majority of the days of the year. This does not include ephemeral washes, arroyos, and similar depressions that do not have flowing water during a majority of the days of the year. Proposed 19.15.17.7 E NMAC.

(b) This definition is needed to assure that the Division's district offices interpret the rule in a consistent manner and to assure that every surface

depression is not considered a "continuously flowing watercourse," especially those that contain water only a few days a year. Gantner at 61.

(c) This provision provides a clear definition of what constitutes a continuously flowing watercourse, is easy to use because it is tied to a commonly used USGS map that shows where these watercourses are located, will facilitate planning efforts by operators, provides a useable standard for the Division, and should be **adopted.** Arthur at 538-539.

30. NMOGA proposes the addition of a new definition for **"floodplain"** which provides:

(a) "Floodplain" means US Army Corps of Engineers or FEMA documented 100-year flood plain. Proposed 19.15.17.7 H NMAC.

(b) This term has been subject to varying interpretations by the Division's district offices. Gantner at 79.

(c) The definition provides a clear statement of what constitutes a floodplain, is easy to use because it is tied to a commonly used information source that identifies the location of floodplains, will facilitate planning efforts by operators, provides a useable standard for the Division, and should be **adopted.**

31. NMOGA proposes the addition of a new definition for **"low chloride fluid"** which is reviewed in Findings 80 through 83 of these proposed Findings of Fact.

32. NMOGA proposes the addition of a new definition for **"measurable"** which provides:

(a) "Measurable" means a layer of oil greater than a sheen that is measurable by color cutting of other acceptable method. Proposed 19.15.17.7 J NMAC

(b) This definition differentiates a measurable layer from a sheen, will avoid confusion between these terms, and should be **adopted.**

33. NMOGA proposes the addition to this rule of a new type of temporary pit, the **"multi-well fluid management pit,"** to enable operators to store large quantities of produced water for reuse in well stimulation by hydraulic fracturing and to augment current use of temporary storage tanks for this purpose. Lane at 230

(a) Multi-well fluid management pits should be governed by the general requirements of Section 12.

(b) Pursuant to NMOGA's proposal, multi-well fluid pits are not surface waste management facilities (Lane at 231) for waste may not be disposed in these pits (Lane at 232) and they cannot contain wastes including solids or cuttings (Lane at 233) only produced water (Lane at 245-246).

(c) Under NMOGA's proposed rules, multi-well fluid management pits are not permanent pits which are for the disposal and long-term indefinite storage of waste (Lane at 329) because, like temporary drilling pits, multi-well fluid management pits are for the short term storage of fluids (Lane at 329) and the chemicals in each type of pit should be the same. (Lane at 300).

(d) Because each multi-well fluid management pit is unique, NMOGA's proposed rule revisions remove the temporary pit size limitations for multi-well fluid management pits (19.15.17.10 F (10) NMAC; Lane at 246, 251), authorize the pit to remain in place for more that a year (Lane at 246), and leave site specific issues to be resolved, case by case, at the time of permitting.

(e) Temporary multi-well fluid management pits are similar in use and in terms of their fluid contents to temporary workover pits and applying the same siting requirements (Lane at 247, 249; 19.15.17.9.B (4) NMAC); design and construction requirements (19.15.17.11 NMAC); fencing and inspection requirements (Lane at 246; 19.15.17.11 F (4) NMAC); and reclamation requirements (except for the provisions concerning in place burial (19.15.17.13. B NMAC) which do not apply since no waste is left in the multi-well fluid management pit when the site is closed) (Lane at 257) will be reasonably protective of freshwater, protect human health and the environment.

(f) NMOGA's proposed rules governing multi-well fluid management pits are similar to the rules for temporary pits. (Lane at 232) and should be **adopted.**

(g) The evidence presented by NMOGA on the benefits of using multi-well fluid management pits established that:

(1) The use of multi-well fluid management pits will result in the efficient use of water for hydraulic fracturing for they will (i) result in more efficient storage of water thereby reducing the need for freshwater supplies (Lane at 233), (ii) result in increased reuse of produced water instead of fresh water (Lane at 238), and will enable operators to use water more than once thereby reducing the total water requirements for fracturing operations (Lane at 287);

(2) The use of multi-well fluid management pits will improve air quality by reducing truck traffic, and related air emissions for all fracturing related equipment used at a well pad (Lane at 244, 317, 567);

(3) The use of a single staging pad at the site of a multi-well fluid management pit for all fracturing related equipment used at a well pad, including pumping equipment, tanks, trucks, will result in safer drilling and completion operations than having this equipment at each separate well pad (Lane at 237-238; *See*, NMOGA Exhibit 7: Schematic of a multi-well fluid management pit);

(4) Multi-well fluid management pits cover approximately 2 acres (Lane at 279) and their use will result in a less surface disturbance and a smaller footprint than the use of many one well temporary drilling pits (Lane at 239); and

(5) The use of multi-well fluid management pits will result in efficient well stimulation by eliminating the required use of frac tanks or temporary storage tanks. Lane at 233.

(h) NMOGA's proposed definition for a "multi-well fluid management pit" is:

> K. "Multi-well fluid management pit" means a pit used for storage, treatment and recycling of stimulation fluids and flow-back water during the drilling and completion of multiple wells. Multi-well fluid management pits are not governed under the Surface Waste Management Rule 19.15.36 NMAC and may not be used for the disposal of drilling or completion waste. Multi-well fluid management pits may be located either onsite or offsite of a well drilling location and may remain in use until all wells identified in the permit are completed. Any fresh water containment structure, such as a pond, pit or other impoundment, is not included in this definition.

(i) NMOGA's proposed definition of "multi-well fluid management pit" clearly defines this term and should be **adopted.**

34. NMOGA proposes the addition of a new definition for **"life-form ratio"** which provides:

(a) "Life-form ratio" is the relative percentage of plants native to the region in each of the following classifications: shrubs, forbs and grasses.

(b) To assure that the plants defined by this term include native plants, it was agreed at the hearing to amend the language originally proposed by adding the words "native to the region." Buchanan at 943.

(c) The definition of "life-form ratio," as amended at the hearing, provides a useable definition of the plants to be used in reclamation of pit sites, provides reasonable assurance the plants used will be native to the region, and the proposed amendment should be **adopted.**

35. NMOGA proposes amendment of the definition of **"permanent pit"** to remove from the scope of this rule any pit governed under the Division's Surface Waste Management Rule 19.15.36 NMAC. This amendment will clarify the rule, avoid confusion, and should be **adopted.**

36. NMOGA proposes the addition of a new definition for **"playa lake"** which provides:

(a) "Playa lake" means a dry, barren area in the lowest part of an undrained natural desert basin underlain by clay, silt, or sand and commonly soluble salts.

(b) The proposed definition provides an accurate definition of a playa lake and should be **adopted.** Arthur at 539.

37. NMOGA proposes amendment of the definition of **"significant watercourse"**

(a) to clarify that a "significant watercourse" must have a defined bed and bank. Gantner at 61-62, Arthur at 539.

(b) The proposed revision to the definition of "significant watercourse" provides additional clarity for both operators and the Division and should be **adopted.**

38. NMOGA proposes amendment of the definition of **"sump"** to provide:

(a) P. "Sump" means a subgrade impermeable vessel that is partially buried into ground, is in contact with the ground surface, or is a collection devise incorporated within a secondary containment system, with a capacity less than or equal to 500 gallons, which remains predominantly empty, serves as a drain or receptacle for de minimis releases on an intermittent basis and is not used to store, treat, dispose of or evaporate products or wastes. Buckets, pails, drip pans or similar vessels that are not in contact with the ground surface are not sumps.

(b) Since a sump may not be used for permanent storage of liquids, this definition does not conflict with the definition of below grade tank.

(c) This definition provides needed clarification for operators and the Division, clearly identifies what is included within the definition and what is excluded there from, and should be **adopted.** Fanning at 337-339.

39. NMOGA proposes amendment of the definition of **"temporary pit"** because:

(a) The proposed revisions are needed to clarify that the temporary pit (i) does not have to be located on the well location (Gantner at 54), (ii) can be used for cuttings from more than one well (Gantner at 134), and (iii) it is not subject to Rule 17 if it contains only fresh water. Gantner at 55.

(b) In response to questions from Commissioner Bailey about the fluids that actually will be in the temporary pits, NMOGA proposed further modification of this definition to provide that the pit was not subject to the pit rule if it contained fresh water "so long as it does not include or contain produced water." Fanning at 342-343.

(c) As amended at the hearing, the proposed definition of "temporary pit" is as follows:

> "Temporary pit" means a pit, including a drilling or workover pit, which is constructed with the intent that the pit will hold liquids and will be closed in less than one year. Temporary pits may be used for one or more wells and located either onsite or offsite of a well drilling location. Any freshwater well containment structure, such as a pond, pit or other impoundment, is not a temporary pit so long as it does not include or contain produced water.

(d) The revised definition of "temporary pit," as proposed by NMOGA and modified at the hearing, provides operators with additional flexibility in locating and using temporary pits, clarifies which freshwater well containment structures are not subject to Rule 17 because of their contents, and should be **adopted.**

40. NMOGA proposes the addition of a new definition for **"unconfined ground water"** as the corresponding counterpart of the definition of "confined ground water" reviewed in Finding 25 which should be **adopted.** Arthur at 534.

41. NMOGA proposes a new definition for **"visible"** which provides that the term "visible," when used with respect to oil on the surface of a pit, means any sheen that occupies thirty percent or more of the total pit liquid surface area. Proposed 19.15.17.1 S NMAC

(a) The current definition requires the removal of any amount of oil from the surface even de minimis amounts which do not pose a problem to wildlife or livestock. Gantner at 78.

(b) The intent of the proposed amendment is to establish a reasonable standard for the removal of hydrocarbons from a pit by the operator. Gantner at 78.

(c) The proposed definition establishes a reasonable standard that can be used by operators and enforced by the Division and should be **adopted.**

19.15.17.8 NMAC: PERMIT AND REGISTRATION REQUIRED

42. Rule 17 requires operators obtain a division-issued permit prior to the construction and use of pits, below-grade tanks, closed-loop systems or other proposed alternative methods. 19.15.17.8 A and B NMAC.

43. The applications for pit approvals required by Rule 17 are long and contain much unnecessary paper work that only recites information publically available to all interested persons. Mullins at 1334.

44. The evidence showed that the Division has been unable to process all applications and that there are thousands of below-grade tank permit applications pending processing. Powell at 1841.

45. To correct this situation and to eliminate this administrative backlog, NMOGA proposes the registration of a below-grade tank instead of requiring a permit and also recommends that the operator be authorized to file a single registration for all-below grade tanks. Hasely at 164, 167; Proposed 19.15.17.8 C NMAC.

46. Pursuant to NMOGA's proposed modifications, the operator must still file the information required on Form C-144 to show that the below-grade tank conforms with appropriate engineering principles and meets all Division siting and design requirements and includes a hydrologic report. Fanning at 341: Hasely at 166.

47. Replacing the current individual pit permitting requirements with the requirements for registration of below-grade tanks will provide sufficient information to the Division to enable it to monitor and regulate these tanks. E Martin at 1904.

48. NMOGA also recommends that no permit or registration be required for closed-loop systems and sumps because the permitting of these closed-loop systems and sumps is unnecessary and only delays the installation of these facilities. Fanning at 340-341; NMOGA Exhibit 9-2; Proposed 19.15.17.8 D NMAC.

49. NMOGA's recommended revisions to the permitting provisions of Rule 17 to authorize the registration of below grade tanks and to eliminate the permitting requirements for closed-loop systems will reduce the current administrative backlog in processing applications, will relieve operators of current burdensome filing requirements, and will provide the Division

with the information it needs to carry out its administrative responsibilities with regard to these below-grade tanks, closed-loop systems, and sumps and should be **adopted**.

19.15.17.9 NMAC: PERMIT APPLICATION AND REGISTRATION

Closed-loop systems:

50. NMOGA proposes the deletion of closed-loop systems from the permit application section of Rule 17 and, instead, proposes that these systems be required to be constructed and operated in compliance with appropriate engineering principles and practices and follow applicable manufactures' requirements or equivalent thereto. Fanning at 340; E Martin at 1884; Proposed 19.15.17.9.A NMAC.

51. Under the proposed modifications, operators are required to notify the Division district office of the construction and use of a closed-loop system on Division Form C-101, C-103, or the appropriate Bureau of Land Management form (Proposed 19.15.17.9.A NMAC) which will provide the division with the information it needs to monitor these systems. Fanning at 340-341; E Martin at 1882, 1904.

52. NMOGA's proposed amendment eliminates unnecessary burdens on operators and the Division while still providing the Division the necessary information to monitor these systems and should be **approved.**

Temporary pits:

53. When an operator prepares an application for a temporary drilling pit as required by Rule 17, they encounter situations where site-specific ground water data are not available. Fanning at 344.

54. To facilitate and simplify the temporary drilling pit permitting process, NMOGA proposes that when closure plans are filed with applications for temporary pits, operators be allowed, "in the absence of site-specific ground water data, ... to provide a reasonable determination of probable ground water depth using data generated by models, cathodic well lithology, published information or other tools as approved by the appropriate division district office." Fanning at 344-345; Proposed 19.15.17.9 B (2) NMAC.

55. NMOGA also proposes that operator be authorized to utilize, with approval of the appropriate Division district office, standardized plans for pit construction, pit closure, and other plans which will remain approved until a subsequent plan is either required by the appropriate division district office or is submitted by the operator and approved by the appropriate Division district office. Fanning at 345.

56. NMOGA's proposed amendment to the permit application requirements for temporary pits simplifies and streamlines the permitting process, eliminates redundant filings that burden both operators and the Division, and should be **approved.**

Below-grade tanks:

57. NMOGA proposes simplifying the provisions of Rule 17 governing the registration of below grade tanks by deleting the detailed description of data to be submitted under Rule 17 and, instead, requiring the registration include operating and maintenance procedures, a closure plan and a hydrogeologic report that demonstrates compliance with the Rule 17 siting criteria. The NMOGA proposed modification also requires the operator use appropriate engineering principles and practices and follow applicable manufactures' requirements. Hasely at 166

58. NMOGA's proposed amendments to the permitting requirements for below-grade tanks streamline the filing process and should be **approved.**

Multi-well fluid management pits:

59. NMOGA's permitting recommendation requires the operator to use Division Form C-144 to make application for a multi-well fluid management pit permit. Lane at 247. On this form, the operator identifies the location of the pit and all associated wells in the pit's development plan. Lane at 24; Proposed 19.15.17.9.A NMAC. The development plan is submitted to the appropriate Division district office for approval. Lane at 326, 248.

60. To be consistent with other proposed modifications to Rule 17 that address multi-well fluid management pits, NMOGA also proposes the closure plan for a multi-well fluid management pit be required to describe the "proposed procedures and protocols for the removal of all unused stimulation liquids and the disposition of liner material and other pit contents." Proposed 19.15.17.9.C (1) NMAC.

61. NMOGA's proposed permitting requirements for multi-well fluid management pits require the Division district office approve the development plan for the pit as part of the permitting process and otherwise requires information and establishes the procedure for review of site specific conditions at the site of the pit, and should be **approved.**

Closure plans:

62. To eliminate a requirement that is often unnecessary and imposes an extra burden on operators, NMOGA recommends that the closure plans submitted with an application or registration pursuant to Rule 17 no longer be required to contain other closure methods if the initial plan is not approved. Fanning at 346.

63. NMOGA also proposes that closure plans be filed with the appropriate Division district office instead of the Environmental Bureau of the Division's Santa Fe office. Fanning at 347.

64. The proposed modification to the permitting rules governing closure plans eliminate unnecessary burdens on operators and provide the Division with additional information required to register and permit these facilities and should be **approved**.

19.15.17.10 NMAC: SITING REQUIREMENTS

65. The purpose of the siting requirements in Rule 17 is to require that temporary drilling pits be located where they do not pose an unreasonable regulatory or operational risk to fresh water, human health and the environment. *See,* Mullins at 1389 – 1390.

66. Risk is the probability of an adverse effect occurring and is what should determine if regulation is warranted. Thomas at 448

Current siting rules are not based on science:

67. Although siting criteria was discussed in 2007 by the Division's Pit Rule Task Force, these discussions were limited to permanent pits, temporary pits and emergency pits and the Task Force was unable to reach a consensus on any of the set backs contained in Rule 17 Jones at Tr. 905, Case 14015.

68. The current siting set backs are based on the recommendations of the Division's staff and their determination that these set backs would provide adequate space around the pit for operating equipment and would allow space to control run-on, run-off and erosion. Gantner at 118; Jones at 910- 911, Case 14015. No evidence was presented of any effort to determine if the set backs were excessive or could impair or prevent the development of oil and gas resources. *See*, Findings 63 and 65, Case 14015, Order No. R-12939.

69. To provide scientific support for the set back requirements of Rule 17, in 2007 and 2009 the Division modeled the vertical movement of fluid below a pit. Although the Division used the two-dimensional Environmental Protection Agency's Multimed model, it only used the dimension that enabled the model to show vertical migration of fluids and did not model the lateral movement of fluids in the reservoir – even though the Multimed model is fully capable of doing so. (Mullins at 1352) Therefore, essential relevant modeling evidence needed to establish the risk, or lack thereof, of the Rule 17 siting set back criteria was never developed or made available to the Commission. Mullins at 1348 and 1365.

70. The current siting requirements in Rule 17 are not science based nor were they the result of a consensus of the 2007 Division Pit Rule Task Force.

Siting requirements for temporary drilling pits:

Problems with the current rules:

71. The current siting provisions of Rule 17 are too restrictive for they deny operators the flexibility needed to develop oil and gas resources, particularly in Northwest New Mexico, where operators must balance drilling locations against significant amounts of infrastructure, including numerous existing well pads, pipeline corridors, and public land resources, and archeological resources. Mullins 1388.

72. The siting provisions of Rule 17 unnecessarily increase the costs to operators of developing oil and gas resources in New Mexico because, wherever the rules require the use of a closed-loop system and require the operator to haul the well cuttings to the third party disposal site, instead of disposing them on site, where they do not pose a threat to fresh water, human health and the environment. Gantner at 559-60.

73. Where the siting requirements for temporary pits require the operators to haul the well cuttings to the third party disposal site instead of disposing on site, even where they pose no risk to fresh water, human health and safety, livestock or the environment, (Gantner at 90) the costs of drilling is increased by approximately $100,000 to $150,000 per well location. Gantner at 65; NMOGA Exhibit 3-9; Testimony of Campbell at 1786-1790.

One size does not fit all:

74. The siting criteria in Rule 17 treats all temporary drilling pits the same regardless of whether they contain water-based drilling muds or brine-typed drilling muds. Gantner at 53.

75. In 2006 and 2007, the Division and the industry conducted separate sampling programs of pit contents in Northwest and Southeast New Mexico. The results of these programs demonstrated that the different types of production and the production practices utilized in each region caused the pits in each region to contain different types of fluids and different chemical compositions. Thomas at 453; NMOGA Exhibits 11-5 and 11-6.

76. Most of the drilling in Northwest New Mexico is done with fresh water-based drilling fluids and the average chloride concentration discovered by the Division and industry in preparation for the 2007 hearing, was 3900mg/L (Mullins at 1135). The highest concentration discovered was 5290 mg/L. Mullins at 1404.

77. In Southeast New Mexico, much of the drilling is with hydrocarbon-based drilling fluids and the 2007 Division and industry sampling discovered much higher chloride concentrations. Dr. Neeper testified these chloride concentrations in Southeast New Mexico averaged 126,000 mg/L with a high chloride concentration of 420,000 mg/L. Neeper at 1135.

The NMOGA proposal:

15000 mg/liter chlorides:

78. NMOGA proposes the amendment of Rule 17 to provide for risk-based siting requirements for temporary drilling pits that distinguish between pits that contain hydrocarbon-based, brine-type drilling fluids and those that hold water-based drilling fluids. Gantner at 55.

79. To address water-based drilling fluids, and the reduced risk these fluids pose to groundwater, human health, safety, livestock and the environment, NMOGA recommends more flexible siting requirements for pits that contain "low chloride fluids" which are defined as "fluids that contain less than 15,000 mg/liter of chlorides determined by analysis or process knowledge." Gantner at 56; NMOGA Exhibit 1, page 2; Proposed 19.15.17.7.I NMAC.

80. The recommend 15,000 mg/liter threshold for determining "low chloride fluids" is low enough to honor the distinctions between the chloride concentrations encountered in water-based drilling fluids and hydrocarbon-based, brine-type, drilling fluids but is high enough to accommodate current drilling practices, particularly the use of potassium chloride (KCl) and water for well control. Gantner at 57; Mullins at 1403.

81. When the 15,000 mg/liter threshold for chloride fluids is compared to other states, though each has its own methods and procedures for using its standards, there is support for use of this threshold. In Colorado, for example, 15,000mg/L chlorides is used as the chloride level below which pits may be used without first obtaining a permit from the Colorado Oil and Gas Commission. Gantner at 56-57; Arthur at 549.

82. The recommendation of NMOGA that 15,000 mg/liter is an appropriate chloride limit for the purpose of differentiating the standards for temporary drilling pits that contain "low chloride fluids" should be **adopted.**

Reduced set backs for siting temporary drilling pits for "low chloride fluids":

83. NMOGA's proposed amendment reduces the siting distance to groundwater for temporary drilling pits that contain low chloride fluids from 50 feet to 25 feet and reduces the horizontal set backs for temporary drilling pits from a watercourse, water well or wetland to 100 feet from the previous set back of 300 feet. NMOGA also recommends a reduced siting distance from water wells and wetlands for temporary drilling pits that contain low chloride drilling fluids to 300 feet from the prior 500 feet. Gantner at 58-59; NMOGA Exhibit 3-6.

84. The proposed modifications to the siting requirements of Rule 17 would prevent temporary drilling pits from be located where groundwater is closer than 25 feet from the bottom of the pit and, since a average pit depth is approximately 20 feet, the pit could not be located where ground water is closer than 45 feet from the surface. Mullins at 1623-1624.

85. Because of the lower risk that results from the use of low chloride fluids, the reduction in distance to groundwater is appropriate. Arthur at 549.

86. When the proposed set backs are considered with the concentration levels set out in Tables I and II, there would be ample time to respond to any release at a temporary drilling pit to assure that fresh water, human health and safety, livestock and the environment are fully protected. Arthur at 550-552.

Modeling:

87. To determine if the recommended siting requirements were reasonably protective of fresh water, and protective of human health and safety, livestock and the environment, Mr. Mullins modeled contaminant disbursement in the vadose zone. He used the HELP Model which considers precipitation and the evaporative zone effects to establish infiltration rates. These infiltration rates were then put into the two dimensional Environmental Protection Agency

model called Multimed (Mullins at 1352) which modeled the vertical and horizontal movement of fluids through the vadose zone. It calculated the concentration of the constituent and how fast it will move to 100 feet vertical depth and then 100 feet laterally in the vadose zone to a receptor. Mullins 1361, 1373.

Modeling results - 100 feet to groundwater:

88. Mr. Mullins' model results show that it would take from 3,100 to 9,200 years for a contaminant to travel from the bottom of the temporary pit to a vertical depth of 100 feet and then to a water well 100 feet away. One hundred feet of horizontal movement is the most conservative set back contained in the proposed revisions to Rule 17. Mullins 1373; IPANM Exhibit 16.

89. The model results also show that for the peak chloride concentration to travel from the bottom of the pit to a vertical depth of 100 feet and then to a receptor 100 feet away takes from 4,500 years to 12,800 years. Mullins at 1374; IPANM Exhibit 16.

90. Even after 4,500 to 12,800 years when maximum concentrations of chloride reach the receptor, the concentrations are well below the New Mexico Water Quality Control Commission drinking water standard of 250 mg/L. Mullins at 1375; IPANM Exhibit 16.

91. The modeling results provide a scientific basis for the adoption of the siting set back requirements as proposed by NMOGA and these proposed amendments to Rule 17 will prevent waste of oil and gas and protect correlative rights, while posing no reasonable risk to fresh water, human health and safety, livestock or the environment and should be **approved.**

Modeling results - 25 feet to groundwater:

92. At the hearing, Commissioner Bailey requested additional modeling, using the same input parameters Mr. Mullins had used for modeling 100 feet to ground water, to obtain additional out-put showing the time it would take for low chloride fluids to travel to groundwater at a depth of 25 feet and then to a receptor 100 feet away. Transcript at 1627-1630.

93. The additional modeling was conducted with in-put parameters which included:
   (a) Low chloride fluids;
   (b) A receptor 100 feet from the pit;
   (c) Twenty-five feet to groundwater from the bottom of the pit at approximately 20 feet (45 feet below the surface);
   (d) Waste buried in place in a taco style trench with a bottom liner but no top liner;
   (e) Some vegetation; and
   (f) Pit contents stabilized (mixing ratio of three to one ratio) to pass a paint filter test as required by the proposed modifications to Rule 17. Mullins at 2038.

94. The model results show that in Southeast New Mexico (Carlsbad):

(a) it will take 950 years for the contaminant to go through the bottom of the pit, hit groundwater at a depth of 25 feet below the pit and move 100 feet to a receptor; and

(b) it will take 1120 years for the maximum contaminant concentration of 13.3 mg/L (parts per million) to reach a receptor 100 feet from the pit at a depth of 25 feet. Mullins at 2019-2020, 2037; IPANM Exhibit 18, page 4.

95. The model results were more difficult to obtain in Northwest New Mexico (Aztec) due to low infiltration rates but show:

(a) it will take 111,367 years (or 143.7 times as long as in Carlsbad) for the maximum chloride concentration of .0006 mg/L (parts per million) to go through the bottom of the pit, hit ground water at a depth of 25 feet below the pit and move 100 feet to a receptor. Mullins at 1626, 2020-2021, 2037; IPANM Exhibit 18, page 4.

96. The maximum chloride concentrations that will reach ground water or a receptor 100 feet from the pit are de mimimis because they are well below the New Mexico Water Quality Control Commission standards for chloride concentrations in ground water that do not consider water contaminated until the chloride concentration exceeds 250 mg/L (parts per million). Mullins at 2021.

97. The modeling results are very conservative and over-estimate the potential for migration from the pit to a receptor, because they only determine straight line movement and do not consider elliptical, radial or any other sort of movement from the pit to a receptor. Mullins at 1362 -1363.

98. The modeling results also over-estimate the potential for migration from a pit to a receptor because they do not consider organic material that could degrade any contaminant or contain any biological decay coefficient for any contaminant. Mullins at 1362-1363.

99. Furthermore, the HELP Model does not recognize the upward movement of fluids in a vadose zone and as such cannot consider the natural equilibrium that is reached in a vadose zone to create a chloride bulge. Mullins at 1350; *See* Buchanan at 2379; Findings of Fact 232-233.

100. Ms. Martin testified for OGAP that, while she had done no modeling, she had looked at assumptions used by Mr. Mullins in the information he had presented (K Martin at 2190) and concluded that the assumptions used were unable to predict what actually happens in real life. K Martin at 2173.

101. Mr. Mullins responded by showing how the assumptions used in his modeling were appropriate. He cited to his prior testimony on the work of Dr. Daniel B. Stephens that showed that the infiltration rates used were reasonable and that, as shown on the HELP input pages, he had utilized an initial soil moisture in every instance within the model and therefore appropriately

accounted for precipitation and the evaporative zone depths used. Mullins at 2279-2280.

102. Ms. Martin testified that to predict what actually happens in real life there was a need to look at real life cases. K Martin at 2173 -2174.

103. NMOGA presented Dr. Bruce Buchanan to address real life cases of salt migration from pits in Southeast and Northwest New Mexico which demonstrate that, in real life, temporary drilling pits pose even less risk to fresh water, human health and the environment. *See,* Vegetation Findings 211-222, Migration of chloride through soil Findings 223-228.

104. The modeling results of the transport of chlorides through the vadose zone confirm that the proposed modifications to the siting requirements of Rule 17 can be adopted and these requirements will be reasonably protective of fresh water, and protective of human health and safety, livestock, and the environment.

105. NMOGA's proposed modifications to Rule 17 that reduce the siting requirements for temporary drilling pits will be reasonably protective of fresh water, will protect human health and safety, livestock, and the environment, and should be **approved.**

Siting requirements for below-grade tanks:

106. The current siting requirements for below-grade tanks limit the use of these tanks and, where these tanks cannot be used because of restrictions in Rule 17, increase the costs of drilling by approximately $50,000 to $75,000 per well location. Gantner at 62-64.

107. NMOGA's recommends modifications to the siting provisions for below-grade tanks to reduce the distance to groundwater from 50 feet to 10 feet and reduce the horizontal set backs to 100 feet from the previous set backs of 300 to 500 feet from a continuously flowing watercourse, or any other significant watercourse or lakebed, sinkhole or playa lake (measured from the ordinary high-watermark) or a private, domestic freshwater well or spring used for public or livestock consumption or a wetland. Gantner at 62; NMOGA Exhibit 3-8; Hasely at 170; Proposed 19.15.17.10A (4) NMAC.

108. There is significantly lower risk of exposure to any of the fluids in below-grade tanks than in temporary pits because:

(a) they are not pits but tanks that sit on top of the ground in an excavation (Hasely at 170);
(b) they are located in an excavation with exposed sides that can be inspected for leaks (Proposed 19.15.17.11 I (4) NMAC);
(c) they are fenced, signed and covered with netting or mesh (Hasely at 170); and
(d) they are inspected at regular intervals to assure the integrity of each tank. Gantner at 62-63; Hasely at 171.

109. When the setbacks for below-grade tanks are considered with the constituent levels set forth in Tables I and II, there will be adequate time to respond to any release to prevent

contamination thereby protecting fresh water, human health and safety, livestock and the environment. Arthur at 554.

110. NMOGA's proposed amendments to the below-grade tank siting requirements of Rule 17 will reduce unnecessary costs to operators, are protective of fresh water, human health and the environment, and should be **approved.**

Siting requirements for multi-well fluid management pits:

111. NMOGA recommends that multi-well fluid management pits be governed by the siting requirements for temporary drilling pits because multi-well fluid management pits are similar in use and in their fluid contents to temporary drilling pits and applying the same siting requirements (Lane at 247, 249 ;19.15.17.9.B.4 NMAC); design and construction requirements fencing and inspection (Lane at 246; 19.15.17.11 NMAC); and reclamation requirements (except for the provisions concerning in place burial which do not apply since no waste is left in the multi-well fluid management pit when it is removed and the site closed) (Lane 257; 19.15.17.13.B NMAC); will be reasonably protective of fresh water, protect human health and the environment; and should be **approved.**

Siting requirements for onsite closure:

112. NMOGA proposes modifications to provisions in Rule 17 that prohibit on site burial:

(a) where unconfined ground water is 25 feet or less (currently 50 feet) below the bottom of the buried waste;
(b) for wastes that exceed the concentration limits set forth in Proposed 19.15.17.13 NMAC governing to closure;
(c) within 100 feet (currently 300 feet) from a continuously flowing watercourse;
(d) within 300 feet (currently 500 feet) of a private, domestic freshwater well or spring used for domestic or stock watering purposes;
(e) within the incorporated municipal boundaries or within a defined municipal well head protection area, s defined in NMAC 19.15.2.7 covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended, unless the municipality specifically approves; and
(f) within 300 feet (currently 500 feet) of a wetland.

19.15.17.10 C (1) NMAC

113. NMOGA's proposed modifications further limit the 300 foot set back from a permanent residence, school, hospital, institution or church in existence at the time of initial application to structures that are occupied. Proposed 19.15.17.10.C (4) NMAC.

114. When the proposed set backs are considered with the concentration levels set out in Tables I and II, there would be ample time to respond to any release from an onsite closure to

assure that fresh water, human health and safety, livestock and the environment are fully protected. Arthur at 550-552.

115. The modeling results set forth in Findings 86 through 104 and the Reclamation Findings 207 through 230 on the migration of chloride through the vadose zone establish that the revisions to the siting requirements that define areas in which on-site closure is prohibited are reasonable and appropriate, that these recommended set backs will not pose a reasonable threat to ground water, and are protective of human health and safety, livestock and the environment and should be **adopted.**

116. NMOGA proposes the modification of 19.15.17.11.K (9) and (10) NMAC to delete the requirement that burial trenches be only located "on site" and remove the requirement for a geomembrane cover over the waste in the burial trench. These modifications reflect the input factors used in Mr. Mullins modeling (Findings of Fact 87-105), are consistent with the closure provisions of the proposed modifications to Rule 17 and should be **adopted.**

117. The Oil Conservation Division has recommended that this rule apply to wastes that are destined for disposal at Division approved off-site facilities. The use of the term "off-site' creates confusion for it is used by the Division to mean off the well pad. This narrow use of this term will restrict the ability of operators to bury wastes off of the well pad but on the acreage dedicated to the well and should not be used in the rule.

19.15.17.11 NMAC: DESIGN AND CONSTRUCTION SPECIFICATIONS

118. NMOGA proposes the following amendments to the general specifications of the Design and Construction Specifications of Rule 17:

(a) Amend 19.15.17.11 B NMAC to exempt closed-loop systems for the requirement to stockpile top soil prior to construction since these systems are above ground and this requirement is not appropriate; (Fanning at 347)

(b) Amend 19.15.17.11.C NMAC to exempt the closed loop systems from the signing requirements because these systems are above ground, manned during drilling operations, and the signing requirement is therefore unnecessary; (Fanning at 347-348)

(c) Amend 19.15.17.11 D NMAC to change the requirement that fencing "prevents" unauthorized access to the pit to a requirement that the fencing "deters" unauthorized access to the pits and to limit the be requirement to fence pits only when they are within 1000 feet of occupied permanent residences, schools, hospitals, institutions or churches because fencing makes no sense if it is to deter access from unoccupied residences and other buildings; (Fanning at 348) and

(d) Amend 19.15.17.11.E NMAC to add multi-well fluid management pits to the netting requirements of Rule 17. Arthur at 560.

119. NMOGA proposes the amendment of 19.15.17.11 F for temporary pits to:

(a) Eliminate the requirement for a sidewall slope of two feet of horizontal slope for each foot of vertical height (2H:1V) and replace this requirement with language that requires that operators "do not place undue stress upon the liner and are consistent with the angle of repose" because the true standard should not be an arbitrary slope set by rule but the correct angle of repose to prevent liner stress thereby enabling the operator safely operate the pit (Fanning at 349-350);

(b) Allow less than an 18 inch deep anchor trench where "encountered bedrock provides equivalent anchoring." The objective of this modification is to obtain proper anchoring of the liner and not create problems for operators and the Division with a too restrictive standard in the rule (Fanning at 350); and

(c) Limit the use of a liner when venting or flaring gas during a workover operation to situations where the groundwater "unconfined", not "confined" and therefore not at reasonable risk of any impairment by the drilling fluids.

120. Each of NMOGA's proposed modifications to the Design and Construction Specifications in Rule 17 will allow additional flexibility to operators, will enable operators to conform the construction of temporary drilling pits to the conditions of the drill site and will not pose a reasonable threat to fresh water and human health and safety, livestock, or the environment and should be **adopted.**

121. NMOGA proposes the modification of the design and construction provisions of Rule 17 to eliminate there from closed-loop systems but to retain these provisions as they apply to drying pads associated these systems. Proposed 19.15.17.11.H NMAC. This proposal is consistent with other provisions of Rule 17 related to closed-loop systems but retains provisions that protect ground water by requiring appropriate liners for drying pads and should be **adopted.**

Below-grade tanks:

122. NMOGA proposes the modification of the Design and Construction provisions of Rule 17 for below-grade tanks to permit an operator to install an alarm on a below grade tank that would notify the operator when the tank is 75% full in lieu of installing an shut-off control device. Proposed 19.15.17.11 I. (4) (a) NMAC.

123. The Division proposed further modification of this provision to require shut-off control devises and manual controls on below grade tanks (E Martin at 1885-1886; Division proposed modifications at page 18), however, during testimony the Division stated it would support a requirement for a call back alarm or a remotely monitored system as proposed by Mr. Hasely in his testimony for NMOGA. E Martin at 1886.

124. The Division's proposed requirement for require shut-off control devises and manual controls on below grade tanks will significantly increase the costs of these facilities and could cause them to be economically impractical to use (Hasely at 213), and should be **denied**.

125. The evidence showed that the installation of a call back alarm or a remotely monitored system in lieu of a shut in device will allow operators increased flexibility in responding to potential over flow and other issues at a below-grade tank, often will enable operators to deal with an issue without having to shut in the well which will tend to increase the total production from the well thereby preventing waste and, at the same time, will provide reasonable protection to fresh water, human health and safety, livestock, and the environment and should be **approved.** Hasely at 172-173.

126. NMOGA proposes the modification of the provisions in Rule 17 that address existing tanks, permitted under prior rule, the integrity of which can be demonstrated by the operator, but which do not meet provisions of the current rule to:

(a) Eliminate the current requirement that prevents the operator from transferring the wells or property on which one of these pits is located to another operator (Hasely at 177, 181; Proposed 19.15.17.11 I. (5) NMAC), and

(b) Delete the requirement that these tanks be retrofitted or closed within five years of the effective date of Rule 17. Hasely at 175; Proposed 19.15.17.11 I. (6) NMAC.

127. The required removal or retrofitting of a below-grade tank that maintains its integrity, results in unnecessary cost to the operator (Hasely at 177) without increasing protection to ground water, human health and safety, livestock and the environment and should not be required. Hasely at 188.

128. To enable operators to continue to operate below-grade tanks approved under prior rules that maintain their integrity, even if not in compliance with current rules, requires the further modification of the following provisions of Rule 17:

(a) amend 19.15.17.11.6.F by the deletion of "Except for existing below-grade tanks that do not meet the requirements of paragraphs (1) through (4) of subsection I of 19.15.17.11 NMAC; NMOGA's Second Set of Modifications to Title 19, Chapter 15, Part 17, paragraph F; and

(b) delete the language in 19.15.17.11 I (5) that provides that the below-grade tank "has the side walls open for visual inspection and." Hasely at 179-180; NMOGA's Second Set of Modifications to Title 19, Chapter 15, Part 17, paragraph A.

129. The continued use of a below grade tanks should be allowed as long as it maintains its integrity and thereby provides a reasonable level of protection to fresh water, human health and safety, livestock, and the environment, and these proposed modifications should be **approved.**

Multi-well fluid management pits:

130. The design and construction requirements proposed by NMOGA for multi-well fluid management pits are consistent with those for temporary drilling pits (17.11) except that the requirements governing the pit liners are increased and tanks. Lane at 246, 250; *See,* Proposed 19.15.17.11 J NMAC.

131. Since a multi-well fluid management pit may be used for several years, NMOGA's proposed liner design requirements for these pits provide for double containment with a leak detection system. (Lane at 246, 250) A double liner is not required under the NMOGA proposal and a compacted clay base could serve as secondary containment if approved by the Division at the time of permitting. (Arthur at 571) Although each multi-well fluid management pit is site specific (Lane at 277) and the exact site specific details will have to be approved at the time of permitting, NMOGA's proposal contains a performance-based standard that requires that a liner of 20 mill string reinforced LLDPE, or equivalent liner material, (Lane at 311) be installed in accordance with the manufacturer's specifications and meet all QAQC requirements, (Lane at 278) with an anchor trench (Lane at 236), and, to address degrading effects of solar radiation, the liner material must be resistant to ultraviolet light. Lane at 252.

132. NMOGA presented testimony that the current Rule 17 requirement for pit walls to slope at an angle of 2:1 (Lane at 236) is an arbitrary, increases the size of the pit thereby using more land than necessary, is harder to net, and requires more maintenance. Arthur at 570. To correct this, NMOGA proposes that there be no limit on the slope of the pit wall but requires the slope of the pit wall to not place undue stress upon the liner and tied to the "angle of repose" that is dictated by the soils at the site (Lane at 309-311) and that this proposal would address the issues of concern, especially the possibility of collapse of the side wall of the pit, while also giving the operator the ability to properly locate the temporary multi-well fluid management pit. Arthur at 573.

133. Ms. Martin testified for OGAP about the size and the construction of multi-well fluid management pits, particularly the need for "engineering design" to assure adequate liners and leak detection (K Martin at 2159), and agreed that there are "site-specific considerations involved with the engineering of these pits" (K Martin at 2160-2161) including the angle of repose for pit side walls. K Martin at 2163.

134. Since the development plan for a multi-well fluid management pit is approved by the appropriate Division district office (Lane at 326, 248) and since there will be site-specific conditions for each multi-well fluid management pit (*See*, Lane at 277), under NMOGA's proposed amendments, the Division district office may limit the size of the pit; limit the length of time the pit may be used; address siting issues; address the angle of the pit side wall; and

establish the requirements for the secondary liner and leak detection system unique to the proposed pit. Lane at 327.

135. Although the testimony concerning the netting of multi-well fluid management pits raised endangerment issues (Arthur at 558), NMOGA recommends that these pits be subject to the existing netting rules (Arthur at 560) and if these rules pose a risk the birds and other wildlife that the operator should seek an exception thereto. Arthur at 560.

136. NMOGA's proposed design and construction requirements for multi-well fluid management pits will provide additional flexibility to operators, without compromising protection of fresh water, will be protective of human health and safety, livestock, and the environment, and should be **approved.**

137. The Design and Construction requirements proposed by NMOGA for multi-well fluid management pits are the same as those for temporary drilling pits (19.15.17.11NMAC) except that the requirements governing the pit liners are increased (Lane at 236; Proposed 19.15.17.11 NMAC), provide flexibility to assure the site specific requirements for each multi-well fluid management pit are addressed at the time of permitting, and should be **approved**.

19.15.17.12 NMAC: OPERATIONAL REQUIREMENTS

138.. Multi-well fluid management pits should be governed by the General Specifications of the Operational Requirements of Rule 17. To clarify this, NMOGA recommends that 19.15.17.12 A NMAC should be amended to provide:

> "A. General Specifications. An operator shall maintain and operate a pit or closed-loop system, below grade tank, sump, or multi-well fluid management pit in accordance with the following requirements."

139.. This amendment to Rule 17 will avoid ambiguity and should be **approved.**

Temporary pits:

Response to a liner compromise or penetration:

140. NMOGA proposes modifications to the operational requirements for temporary pits of subsection 19.15.17.12 B (1) NMAC to clarify that operators can discharge solids into these tanks as well as fluids generated or used during drilling, completion or workover processes. Fanning at 354.

141. NMOGA proposes modifications to the operational requirements for temporary pits of Rule 17 (19.15.17.12 A (4) and (5) NMAC) that govern situations where liners are compromised or penetrated to:

(a) Require that the operator initiate repair of the damage to the liner or liner replacement within 48 hours of discovery or seek a variance to the requirements of this rule;

(b) Conforms the notice requirements in this rule to the Division's general Release Notification Rules contained in 19.15.29 NMAC that require immediate verbal notice and timely written notice to the Division of a major release, and written notice of minor releases as they are defined in the general rules NMOGA Exhibit 9-7; and

(c) Delete closed-loop systems, sumps, and below grade tanks from this section of Rule17 to make it consistent with other proposed NMOGA modifications.

Fanning at 351-352; NMOGA Exhibit 9-6

142. The proposed modifications to sections 19.15.17.12 A (4) and (5) NMAC clarify obligations of operators when a liner is compromised or penetrated, provide consistency between various sections of the rules of the Division, will tend to protect fresh water, human health and the environment and should be **adopted.**

Absorbent boom:

143. NMOGA also recommends the deletion of the requirement in 19.15.17.12 A (8) NMAC that requires operators to install and maintain on site an oil absorbent boom or other device to contain and remove oil from a pit's surface because there are various methods that can be employed to remove oil from the surface of a temporary pit or water impoundment and prescribing what is required in the rule may limit use of the most desirable technology, and thus keeping this equipment on site is therefore unnecessary. Fanning at 353-354: Arthur at 579.

144. The requirement of Rule 17 to maintain on site an absorbent boom or other devise to contain and remove oil from a pit's surface imposes an unnecessary burden on operators and does not increase the protection of fresh water, human health or the environment and NMOGA's recommendation to remove this requirement from the rule should be **adopted.**

Steel tanks:

145. NMOGA recommends the removal of the requirement for the use of steel tanks where hydrocarbon drilling fluids are used. The proposed amendments recognize that solids and completion fluids will get into the temporary pits but they will have a short term residency in these pits and, because the pit contents at closure must be sampled and, if they do not meet the standards set out in this rule, those materials must be removed and disposed of at a Division-approved site. Fanning at 354-355; NMOGA Slide 9-8.

146. NMOGA's proposed amendments to Rule 17 that remove the requirement for the use steel tanks for hydrocarbon-based drilling fluids, would eliminate unnecessary and costly

regulatory requirements, will not create risk to human health and safety, livestock, or the environment, and should be **approved.** Fanning at 354-355.

Freeboard

147. NMOGA recommends the addition of the phrase "under normal operating circumstances" to the provisions that requires operators to maintain at least two feet of freeboard for temporary pits. The purpose of this addition is to recognize that there may be circumstances when it is not possible to comply with this requirement due to unanticipated pressure "kicks" during drilling. Fanning at 355-356; Exhibit A p. 23: Arthur at 583.

Inspections:

148. NMOGA proposes the amendment of Rule 17 to provide monthly inspections of temporary pits instead of weekly inspections and to abolish the requirement that operators file inspection logs with the Division at the time of pit closure. Fanning at 356 -358.

149. The proposed amendment, does not change the duty of the operator to properly manage the pit and maintain an inspection log which can be made available at the request of the Division. Fanning at 358. The proposal only eliminates the requirement to file the log and makes the rule more consistent with actual drilling conditions when operators, due to weather and other conditions, are prevented from conducting weekly temporary pit inspections. Fanning at 357-358.

150. The proposed amendment eliminates an unnecessary filing requirement, is more realistic for those times when, due to weather and other conditions, operators are prevented from doing weekly inspections, will reduce the number of needed variances, and will still provide reasonable protection of fresh water, human health and safety, livestock and the environment and should be **approved**. *See*, Fanning at 357.

Free liquids in pit:

151. NMOGA presented testimony that operators experience problems getting the needed equipment to a well to remove the free liquids from a temporary drilling pit within 30 days. Fanning at 358-359. To address this situation and provide additional flexibility to operators, thereby reducing the need for variances, NMOGA proposes to amend Rule 17 to expand the time during which free liquids can remain in a temporary drilling pit from 30 days to 60 days. Fanning at 358-359.

152. This amendment provides additional flexibility to operators, eliminates the need for variances when operators cannot get to a pit site within 30 days, is protective of ground water, human health and safety, livestock and the environment (Fanning 359), and should be **approved.**

Below-grade tanks:

153. NMOGA proposes the modification of 19.15.17.12 D (2) to delete the term "visible" from the requirement to remove oil from the fluid surface of a below grade tank and require that the oil must be removed only when there is a "measurable" layer as defined by these rules. The Division did not know if a 30% sheen on a two-acre pit would only require 3/1000 gallon of hydrocarbon (Powell at 1844-1845) but agreed that if it caused no threat, it should not be something the agency should require. Powell at 1845.

154. The Division proposed, and NMOGA agreed, that the words "and damage" be added to subsection 19.15.17.12 D (3) NMAC which requires that operators inspect below-grade tanks for damage as well as leakage. Hasely at 189.

155. NMOGA proposed to modify the current requirement in 19.15.17.12 (3) NMAC for monthly inspections of below-grade tanks to also require the operator document the integrity of each tank at least annually. Hasely at 218.

156. NMOGA's proposed revision to Rule 17 to require inspections and maintenance instead of an integrity demonstration will encourage prompt repair of below-grade tanks and provide a better way to assure that these tanks are being operated and maintained in accordance with the requirements of this rule. Arthur at 585.

157. NMOGA seeks to modify the inspection provisions of the below-grade tank as proposed by NMOGA in 19.15.17.12 (3) NMAC to delete the word "test" from this section because it is misleading for it suggests there is a test, not an inspection, that must be conducted on the well to establish its integrity. Hasely at 190.

158. To clarify that operators are required to repair or remove any tank that does not demonstrate integrity, NMOGA proposes the addition of the language "repair the damage or close" to subparagraph 19.15.17.12.D (5) NMAC; and

159. NMOGA also seeks the deletion of the language "and install a below-grade tank" from 19.15.17.12 (5) NMAC to be certain the language of the rule does not prevent an operator from being allowed to repair a tank that fails to establish integrity. Hasely at 191.

160. Each of the changes proposed by NMOGA in Findings of Fact 153, 154, 155, 156, 157, 158 and 159 clarify the provisions of Rule 17, eliminate unnecessary burdens on operators, do not pose a risk to fresh water, human health and safety, livestock and the environment, and should be **adopted.**

161. NMOGA proposes to modify the provisions of 19.15.17.12 (6) NMAC concerning the inspection of the area beneath the below grade tank during a retrofit to provide that the tank shall be closed if wet or discolored soils exceeds any of the standards set forth in Table I of 19.15.17.13 NMAC. The Division recommends that the standards for these tanks not be tied to the standards of Table I but, instead, that if the operator discovers wet or discolored soils, the operator shall implement remediation under 19.15.30 NMAC.

162. The Division's proposed modification would require remediation every time wet or discolored soil is discovered, not only when there is a release that could pose a risk the fresh water, human health or the environment. The NMOGA proposed modification established a risk based standard that will not cause corrective actions where there is no risk that warrants such action and will, at the same time, afford reasonable protection of fresh water, human health and the environment, and should be **adopted**.

Multi-well fluid management pits:

163. NMOGA's proposed operational requirements for multi-well fluid management pits provide:

(a) that there shall be no substance in these pits except stimulation fluids, produced water used for stimulation and drilling and flowback from multiple wells (Lane at 254);

(b) for inspections, including monitoring of the leak detection system, weekly while fluids are in pit and then monthly until the pit closed and the operator is required to maintain a log of the inspections (Lane at 254); and

(c) for no sampling under the liner if no leak detected in the leak detection system. (Lane 256); Arthur at 586.

164. The Division proposed that 19.15.17.13 A (3) NMAC of the NMOGA proposal be amended to provide that "The operator of a multi-well fluid management pit is not required to sample under the liner system if leaks are not detected by the leak detection system during the use of the pit and no visual evidence is present at the time the liner is removed." The Division also recommended that "In all other circumstances, the operator shall test the soils beneath a pit." NMOGA agreed to the Division's revisions and NMOGA's proposed operational requirements as revised by the Division should be **approved.** *See*, Lane at 256.

19.15.17.13 NMAC: CLOSURE AND CITE RECLAMATION REQUIREMENTS

Closure and reclamation problems with Rule 17:

165. The closure provisions of Rule 17 are repetitive and difficult to understand. Gantner at 69.

166. The siting requirements in Rule 17 prohibit the burial of wastes on site, regardless of how clean the waste may be, and requires that this waste be hauled to a division-approved third-party disposal facility at often a great distance that can increase the drilling costs between $100,000 to $150,000 per well location. Gantner 65, 90; NMOGA Exhibit No. 3-9 This increases the cost of drilling, cause fewer wells to be drilled without any increase in environmental protection, and therefore tends to reduce the total quantity of crude petroleum oil

or natural gas ultimately recovered from oil and gas pools in New Mexico. Gantner at 66, 91; Campbell at 1786-90.

167. To correct these problems, NMOGA proposes to eliminate the requirement that all waste in defined areas be taken to Division-approved disposal facilities and to clarify and simplify the rule by replacing the repetitive and cumbersome closure standards with two risk-based closure options linked to the potential contaminant concentrations in temporary drilling pits. The recommended standards are set out in two tables: one for closure where the pit contents have been removed, and the other where pit contents, after complying with standards set by the amendment, can be buried on-site in a pit or burial trench. *See,* NMOGA Exhibit 1, page 41.

Closure where pit contents have been removed:

168. The NMOGA recommended closure procedures where the pit contents are removed and disposed in a Division-approved disposal facility require the operator to remove the pit wastes and the liner and test the soils beneath the temporary pit by taking a five point composite sample and analyzing it for the constituents in Table I. If the results exceed the standards in Table I, the Division may require additional delineation and the operator must receive Division approval before proceeding to complete closure. If the results do not exceed any of the standards set out in Table I, the operator may backfill the pit, pad, or excavation with non-waste containing earthen material. Gantner at 70-71; NMOGA Exhibit 3-12.

Closure where pit contents are buried on site:

169. Where wastes are buried in existing temporary pits or in a division-approved trench, the NMOGA recommended closure procedures require that prior to closure the operator:

(a) obtain approval of the closure plan submitted to the Division with the permit application (19.17.15.9 B and C NMAC, Proposed 19.15.17.13 B (1) NMAC);

(b) comply with the siting criteria and the closure requirements of this rule (Proposed 19.15.17.9 B (2) NMAC); and

(c) remove all free liquids and dispose of such liquids at a Division approved facility. Proposed 19.15.17.13 B (2) NMAC.

170. Prior to transferring waste to a temporary pit or burial trench, the waste contents shall be stabilized or solidified to a bearing capacity sufficient to support the pit or trench final cover (not mixing the contents with soil at a ratio of greater than 3:1) and shall pass the paint filter liquids test (EPA SW-846, Method 9095). Proposed 19.15.17.13 B (4) NMAC.

171. The operator shall collect a minimum of a five-point composite sample of the contents to demonstrate that the stabilized waste does not exceed the criteria in Table II or a division approved alternative concentration limit. Proposed 19.15.17.13 B (5) NMAC.

172. If the contents do not exceed the constituent concentrations in Table II the operator can proceed to dispose of the wastes in an existing temporary pit or construct a burial trench for disposal of these wastes in accordance with the requirements of this rule. Proposed 19.15.17.13 B (6) NMAC.

173. After completing waste stabilization, the operator shall cover the pit or trench with non-waste containing material and construct a soil cover in accordance as prescribed in paragraph 2 of 19.15.17.13 NMAC. Proposed 19.15.17.13 B (7) NMAC.

174. If the contents after mixing exceed the limits in Table II, then closure must proceed by removal to a disposal site. Proposed 19.15.17.13 B (8) NMAC.

175. NMCCA&W testified about its concern of increased risk of contamination that could result from many small sites instead of large centralized disposal sites encouraged by the current rules.

176. Dr. Thomas' evidence that onsite direct exposure risks are de minimis with onsite pit closures and that, from a toxicology point of view, small onsite pit closures with small toxicant mass, presents less risk to water than do large landfill where a large mass of toxicant is found. NMOGA Exhibit 11-17.

Tables I and II:

177. The Table I closure standards where the temporary pit has been removed and tested are based on the depth to groundwater from the bottom of the temporary pit or below grade tank. If these standards are met, the operator may backfill the pit, pad, or excavation with non-waste containing earthen material. The Table I recommended standards are:

Chlorides:
Where groundwater is less than 50 feet: 5,000 mg/kg
Where groundwater is 50-100 feet: 10,000 mg/kg
Where groundwater is more than 100 feet: 20,000 mg/kg

TPH (GRO+DRO):
Where groundwater is less than 50 feet: 100 mg/kg
Where groundwater is 50-100 feet 1,000 mg/kg
More than 100 feet – 5,000 mg/kg

BETEX:
50 mg/kg – All depths

Benzene:
10 mg/kg – All depths
19.15.17.13 NMAC; NMOGA Exhibit 1, page 41.

178. The Table II closure standards for the on-site burial of wastes are based on the depth from the bottom of the temporary pit or division-approved trench to groundwater and permit burial where (i) the waste has been tested and meets the standards of Table II, (ii) the contents have been stabilized or solidified to a bearing capacity sufficient to support the pit or trench final cover, and (iii) have passed the paint filter liquids test (EPA SW-846, Method 9095) The recommended standards are:

Chlorides:
Where groundwater is 25 feet to 50 feet: 2,500 mg/L
Where groundwater is more than 50 feet: 5,000 mg/L

TPH (GRO+DRO):
Where groundwater is 25 feet to 50 feet: 100 mg/kg
Where groundwater is more than 50 feet: 1,000 mg/kg

BETEX:
50 mg/kg – All depths

Benzene:
10 mg/kg – All depths
19.15.17.13 NMAC; NMOGA Exhibit 1, page 41.

179. NMOGA presented the testimony of Dr. Thomas, an expert in toxicology, who testified that he had worked with industry in the selection of total petroleum hydrocarbon (TPH GRO & DRO), chloride and benzene as the chemicals that should be monitored to assure they were not released from a pit and allowed to migrated in sufficient concentration into ground water. Thomas at 461.

180. Tables I and II reflect Dr. Thomas' recommendations and his conclusions that the toxicology risks posed by the proposed NMOGA revision to Rule 17 are small and, if the proposed modifications are adopted, will remain reasonably protective of fresh water, and protect human health and safety, livestock and the environment. Thomas at 470-471, 746.

181. Dr. Thomas testified that it is appropriate to monitor only these three chemicals to assess potential risk from temporary drilling pits. Thomas at 463-464.

182. The chemicals included in Tables I and II pose no risk to public health or the environment, if the temporary drilling pits are managed and closed as required by these rules. Thomas at 468, Mullins at 1378; NMOGA Exhibit 11-11.

183. The concentrations set out in Tables I and II replace the Water Quality Control Commission 3101 list of constituents for which operators test under current Rule 17. This amendment will correct the current rule that applies the 3103 standards for testing water to the soil contents in pit waste. The proposed modifications replace this inappropriate list of

constituents with the Table I and II standards which are protective of fresh water, human health and safety, livestock and the environment. Arthur at 597-598.

184. The provisions in the rule for fencing, siting and closure also reduce the chance for exposure to any chemicals and thereby further reduce the risk posed the use of temporary drilling pits. Thomas at 473.

185. Mr. Dan Arthur, NMOGA's expert petroleum and environmental engineer, also testified that the levels of concentration authorized by the proposed NMOGA amendments to Rule 17 are consistent with the requirements in other producing states. *See,* Arthur at 689.

Chlorides:

186. Contrary to the concerns expressed by NMCCA&W about the risks posed by the chloride limitation in Tables I and II, the evidence established that chloride is not a contaminant, not toxic in most concentrations, and not harmful to native plants as demonstrated in NMOGA's reclamation findings. Thomas at 462; Buchanan at 222; Findings of Fact 212-235.

187. Because of its high mobility, the transport of chlorides through the vadose zone provides a good indicator of the movement of material through soil and, although other chemicals will not move as quickly as the chloride, it can be used to determine the boundary of potential impact if there is a release. Thomas at 462, 484, Mullins at 1376.

188. Mr. Mullins modeling results confirm that the contaminant concentrations authorized in Tables I and II are safe and can be adopted without putting at risk fresh water, human health and safety, livestock, or the environment.

TPH (GRO/DRO), Benzene and BTEX:

189. Mr. Mullins presented the Soil & Ground Water Research Bulletin No. 9 from the Groundwater Protection Council that contains information on other constituents represented in Tables I and II. This report addresses non-aqueous phase liquid mobility limits in soil, or hydrocarbon mobility, and provides information on TPH (GRO/DRO), Benzene and BTEX. Mullins at 1377-1378; IPANM Exhibit 13.

190. The Ground Water Protection Council data identifies the saturation levels at which these hydrocarbons become mobile (Mullins at 1377) and shows that the highest concentrations recommended by NMOGA and IPANM in Tables I and Table II are dramatically below the levels at which the Ground Water Protection Council has determined these constituents to be of regulatory concern. Mullins at 1379-1381.

191. At the request of the Commission Chair, Mr. Mullins modeled the time required for the vertical flow of the maximum chloride concentration from the bottom of the temporary pit to groundwater at a depth of 25 feet vertical depth immediately below the pit and to a receptor 100 feet away from the pit. Tr. at 1628. This modeling and its results are reviewed in Findings 91 through 95 and they show:

(a) that in Southeast New Mexico (Carlsbad), it will take 950 years for the contaminant to go through the bottom of the pit, hit groundwater at a depth of 25 feet below the pit and move 100 feet to a receptor; and that will take 1120 years for the maximum contaminant concentration of 13.3 mg/L (parts per million) to reach a receptor 100 feet from the pit at a depth of 25 feet (Mullins at 2019-2020, 2037; IPANM Exhibit 18, page 4), and

(b) that it will take 111,367 years for the maximum chloride concentration of .0006 mg/L (parts per million) to go through the bottom of the pit, hit ground water at a depth of 25 feet below the pit and move 100 feet to a receptor. Mullins at 1626, 2020-2021, 2037; IPANM Exhibit 18, page 4.

192. The maximum chloride concentrations that will reach ground water or a receptor 100 feet from the pit are de mimimis because they are well below the New Mexico Water Quality Control Commission standards for chloride concentrations in ground water that do not consider water contaminated until the chloride concentration exceeds 250 mg/L (parts per million). Mullins at 2021.

193. The constituent concentrations authorized by Tables I and II of the proposed amendments to Rule 17 (i) are consistent with the requirements of other producing states, (ii) are below the concentration limits recommended and approved by the Ground Water Protection Council, (iii) will not migrate down to the ground water due to the existence of naturally occurring salt profiles or chloride bulges in the formation, (iv) if they migrate to ground water, the maximum concentrations of these constituents will not reach the fresh water for hundreds or thousands of years, (v) if they reach fresh water, the potential contaminants will be at concentration levels that are far below New Mexico Water Quality Control Commission standards, (vi) the constituent concentrations are reasonably protective of fresh water, (vii) pose no risk to human health and safety, livestock, and the environment and (viii) should be **approved.**

194. The on site burial of pit contents in pits and burial trenches approved under this rule, will be reasonably protective of fresh water, pose no risk to human health and safety, livestock, and the environment, and should be **approved**

Miscellaneous closure modifications:

195. NMOGA proposes the deletion of the requirement in 19.15.17.13 J NMAC to provide notice to the surface owner of the closure of a temporary pit. a permanent pit, a below grade tank or where the operator has approval for onsite closure since the surface owner has no standing to object to these activities once approved by the Division.

196. The proposed amendments to the closure provisions of Rule 17 provide that the operator shall report the exact location of the on-site burial on form C-105 filed with the Division.

197. The Division seeks modification of the Closure Notice provisions by including a new subsection (19.15.17.13 D NMAC) that, among other things, requires the operator have the pit surveyed by a licensed surveyor and file a deed notice identifying the exact location of the in-place disposal with the county clerk in the county where the in-place disposal occurs. Powell at 1837.

198: The evidence established that the recording of a deed notice as requested by the Division is not allowed on federal lands (Powell at 1846-1847) and that the adoption of the Division's recommendation for a survey and deed notice filed in the county records will increase burdens on operators, will result in inconsistent notice provisions for state, fee and federal lands and should be **denied**.

Timing requirements for closure:

199. The proposed amendments to the closure requirements of Rule 17 require the closure of temporary drilling pits within six months of the date the operator releases the drilling or workover rig and require that this date be noted on Division C-105 or C-103. 19.15.17.13 E (5) NMAC provides:

> An operator shall close any other permitted temporary pit within six months from the date the operator releases the drilling or workover rig. The operator shall note the date of the drilling or workover rig's release on form C-105 or C-103 filed with the division upon the well's or work-over's completion. The appropriate division district office may grant an extension not to exceed three months. Fanning at 360; NMOGA Exhibit A, page 37.

200. The provisions in the succeeding paragraphs addressing the closure timing for drying pads used with closed-loop systems (19.15.17.13 E (6) NMAC) and for multi-well fluid management pits (19.15.17.13 E (8) NMAC) also contain the six month limitation on closure and authorize an extension by the Division district office of up to three months. Fanning at 361.

201. These subparagraphs of 19.15.17.13 E NMAC often do not allow sufficient time for operators to close a temporary drilling pit where access to the pit is restricted by events and impediments beyond the control of the operator like wildlife stipulations and weather conditions. Fanning at 362.

202. NMOGA proposes that each of these provisions (19.15.17.13 E (5), (6) and (8) NMAC) be amended by deleting the three month limitation on any extension that may be granted by the district office and, in lieu of this language, provide that "the appropriate division district office may grant a variance to this six month closure limitation pursuant to 19.15.17.15." Fanning at 363.

203. The NMOGA recommended revisions to the closure time frames set in 19.15.17.13.E (5), (6) and (8) NMAC permit the operators and the division to work together to address the site-specific situations that relate to closure date, and should be **approved**.

Below-grade tanks:

204. NMOGA proposes to modify the closure provisions for below-grade tanks (19.15.17.13.E (7) NMAC; NMOGA Exhibit A, pages 36-37) from 60 days to six months of the date of the cessation of its use because, due to equipment availability, it is difficult to meet the 60 day time limit. Hasely at 194-196.

205. Extending the time period for closure of a below-grade tank to six months after its cessation of use, will remove an often unreasonable requirement on operators, will make the closure time consistent with closure time for temporary pits and will not pose a threat to fresh water, human health and safety, livestock, or the environment, and should be **approved.**

Multi-well fluid management pits:

206. All multi-well fluid management pits are to be located at a centralized facility and are to be part of an overall development project, approved by the Division's district office, which identifies all wells that will use the pit for fracture stimulation. (Lane at 231)

207. Pursuant to NMOGA's proposed rules, a multi-well fluid management pit remains for the life of the development project and is removed when the last well is completed or at another date set by the permit. Lane at 231.

208. NMOGA's proposal provides for pit closure within six months of the date drilling and stimulation operations cease for all wells identified in the Division-approved development plan. Lane at 257.

209. The proposal requires that a multi-well fluid management pit shall be closed in accordance with the division-approved closure plan that will provide for (i) the removal of all fluids that remain for off-site recycling or disposal (Lane at 248, 255) (ii) the removal and disposal, or transfer for recycling off-site, of the liner, and (iii) the reclamation of the site. Lane at 232.

210. The application of NMOGA for amendment of Rule 17 to authorize multi-well fluid management pits as revised by these findings, should be **approved.**

211. NMOGA's proposed closure amendments to Rule 17 that authorize closure after the pit contents are removed and tested and also authorize the burial on site of wastes on site in pits or burial trenches under the conditions of the proposed rule, clarify the closure provisions of Rule 17, will facilitate compliance and enforcement of the rule, will avoid unnecessary procedures and related costs that tend to reduce drilling and the total quantity of oil and gas recovered from the oil and gas pools in New Mexico, thereby preventing waste and protecting correlative rights as these are defined by the Oil and Gas Act, will be protective of fresh water, human health and safety, livestock, and the environment, and should be **approved.**

Reclamation findings:

212. The proposed reclamation requirements in Rule 17 provide for pit sites be contoured and reclaimed "as early and nearly as practicable to their original condition or final land use and shall be maintained to control dust and minimize erosion to the extent practicable." 19.15.17.13.F (3)(a) NMAC; NMOGA Exhibit 1, Attachment A; page 39.

213. Reclamation is "considered complete when all ground disturbing activities at the site have been completed, and the disturbed areas have been either built on, compacted, covered or paved, or otherwise stabilized in such a way as to minimize erosion to the extent practicable.." or a uniform vegetative cover has been established that reflects a life-form ratio of plus or minus fifty percent (50%) of pre-disturbance levels...". Proposed 19.15.17.13.F (3)(c) NMAC; NMOGA Exhibit No. 1, Attachment A, page 39.

214. NMCCA&W questioned whether reclamation should be considered complete where only paving or compaction requirements were met. Neeper at 1206-1207. Dr. Buchanan explained that these provisions have been included in the rule to permit a land owner and operator to agree to an alternative use for a disturbed area instead of being required to revegitate the sit. Buchanan at 911, 2398.

215. Since closure plan must be approved by the Division and since this provision recognizes that alternative uses of a pit site may be preferred by the land owner, the provision as proposed by NMOGA should be **approved.**

RE-VEGETATION:

216. NMCCA&W opposed the proposed amendments to the on-site burial of pit contents and testified that the soil cover design requirements for in-place or trench burial would result in soil damage and prevent successful, sustainable site re-vegetation because the chlorides in the pit contents would migrate up to the surface thereby damaging the soil and preventing plant growth. Neeper at 1178.

217. The results of studies on salt migration by nationally recognized soil scientists that demonstrate that, while salts migrate up, the upward migration is limited to approximately one foot and then stops. Buchanan at 2309-2312; NMOGA Exhibit 17-14.

218. Dr. Buchanan presented New Mexico data from actual field studies of soils located in Southeast New Mexico conducted by Dr. Neeper (NMCCA&W Exhibit 5 pp. 34, 35 and 39; Testimony of Buchanan at 2339-2340) and in Northwest New Mexico that he had conducted (NMOGA Exhibit 17-19; Testimony of Buchanan at 2335) which confirm that in both areas of New Mexico, salts will migrate up but about one foot to at most two feet and then stop. Buchanan at 2341-2342.

219. The soil cover design amendments proposed by NMOGA require:

(a) where pit contents are removed or remediated to the Division's satisfaction, the background thickness of topsoil or one foot of suitable

material to establish vegetation, whichever is greater (Proposed 19.15.17.13 F.(2)(a) NMAC); and

(b) where pit contents are buried in-place or placed in a burial trench, a minimum of four feet of non-waste containing earthen material which shall include either the background thickness of topsoil or one foot of suitable material to establish vegetation at the site, whichever is greater. 19.15.17.13 F(2)(b) NMAC.

NMOGA Exhibit 1, page 39.

220. Dr. Buchanan testified that with the 3 feet of cover and one foot of topsoil required by the proposed amendments, (19.15.17.13 F (2) (b) NMAC) the upward migration of salts from buried pit contents at the concentrations permitted under the proposed amendments, would not render soils unsuitable for re-vegetation (Buchanan at 2312), pose a risk to plants, or interfere with successful and sustainable reclamation and re-vegetation of these pit sites. Buchanan at 2344-2346, 2351-2352.

221. NMCCA&W also opposed on-site burial of pit contents and testified that the soil cover design requirements for in-place or trench burial would result in soil damage and prevent successful, sustainable site re-vegetation because:

(a) salt is damaging to plants where the electrical conductivity of saturated paste exceeds 4 (EC/4);
(b) the sodium absorption ratio exceeds 15 (SAR 15); and
(c) conditions exceed the plant wilting point.

NMCCA&W Exhibit 5, page 22; testimony of Dr. Neeper at 1141-1148.

222. Dr. Buchanan responded to NMCCA&W's concerns about the impact of on-site disposal on the electrical conductivity of the soils. He showed, contrary to the evidence of NMCCA&W, that in dry soils an electrical conductivity of 4 (EC/4) would not damage native plants, that native plants have adapted to these dry conditions and that many can be successfully grown in soils with an EC/10 and, in some cases, in excess of an EC/20. Buchanan at 2313-2315, NMCCA&W Exhibit 5, page 21.

223. Dr. Buchanan responded to NMCCA&W's concerns about the impact of on-site disposal on the sodium absorption ratio (SAR) of soils. Buchanan at 2315-2317. He testified that current soil science no longer subscribes to the belief that an SAR in excess of 15 is toxic and or that at this concentration it would be damaging to soil or would impact the permeability of the soil thereby restricting or preventing plant growth. Buchanan at 2318-2319.

224. Dr. Buchanan presented the results of a widely accepted study in the field of soil science that demonstrated why it is now understood that SAR and EC are interrelated and that native plants can successfully and sustainably grow in soils with SAR's much higher than reported by Dr. Neeper. NMOGA Exhibit 17-49; Buchanan at 2317-2319.

225. In response to NMCCA&W's concerns about the impact of on-site disposal on the wilting point of plants in different types of soils, Dr. Buchanan presented the soil water

characteristics of three types of soil (sandy soil, loam and clay) which demonstrated that plants can survive in soils that are far below the wilting point. Buchanan at 2321-2325. He also noted that these very dry conditions are found in approximately 50% of the soils in New Mexico where native plants survive. Buchanan at 2329; NMOGA Exhibit 17-52.

226. The Commission questioned whether the proposed revisions to the rule would require that re-vegetation be with native plants. As noted in Finding 34, NMOGA has recommended the amendment of the term "life-form ratio" to include "plants native to the region." *See,* Buchanan at 2388.

227. The evidence establishes that the contents of temporary drilling pits can be buried on site or in a trench in accordance with Rule 17, as NMOGA proposes, and that with the recommended soil cover design of three feet of cover plus one foot of top soil, the site can be successfully reclaimed and that a vegetative cover can be established and sustained with an appropriate life-form ratio of plants native to the region. Buchanan at 2345. NMOGA's proposed reclamation modifications should be **adopted.**

Migration of chloride in soils:

228. Dr. Buchanan also presented evidence on the downward migration of salts based on his field work in New Mexico (Buchanan at 2309-2312; NMOGA Exhibit 17-14;) and the field studies conducted by Dr. Neeper. Buchanan at 2339-2342; NMCCA&W Exhibit 5 pp. 34, 35 and 39.

229. This evidence demonstrates that, in arid soils like New Mexico, when the soils get to air-dry conditions, there is no longer liquid water in the soil (Buchanan at 2327-2329) - only a vapor phase. Buchanan at 2330. The salts precipitate out and stop moving in the soil, they accumulate, remain there and a chloride profile or salt bulge is created in the ground beyond which the salts do not migrate further. Buchanan at 2330, 2342.

230. Dr. Buchanan's Slide 17-14 compared a salt bulge below a 40 year old unlined pit with the natural salt profile some distance from the pit and the characteristics of these profiles show that the salt bulge occurs naturally in the real world and that if salt migrates from an on site burial pit or trench, it will migrate to the depth of the bulge, the concentration of the salt at this depth will increase, but it will not move to ground water. Buchanan at 2390; NMOGA Exhibit 17-14. The same salt profiles are apparent in the studies presented by Dr. Neeper. NMCCA&W Exhibit 5 pp. 34, 35 and 39.

231. Dr. Buchanan's study demonstrated that these salt accumulations are a result of climate, chemistry and soil texture. Buchanan at 2338. In the ground evaporation drives the salt up (Buchanan at 2340) and precipitation or water flux drives the salt down resulting in an equilibrium where the salts remains. (Buchanan at 2340, 2342-2344). Thereafter as additional salts migrate down, they do not move deeper into the ground, the concentration in the bulge just increases. Buchanan at 2342.

232. When asked why his information differed from the modeling results presented by Mr. Mullins, Dr. Buchanan pointed out that the salt bulge was created by the climate, the chemistry of the soil, and the soil texture. (Buchanan at 2338) The model used by Mr. Mullins did not consider the chemistry of the salts - the creation of the bulge. *See*, Mullins at 1434. It only modeled the downward movement of the chloride instead of what actually occurs in the soil and this accounts for the difference between the model and the real world. Buchanan at 2379; Arthur at 598.

233. When the results of Dr. Buchanan's work is compared with the modeling of Mr. Mullins, it is clear that if no bulge was formed, the proposed amendments would pose no risk. When you add to that the real world formation of the chloride bulge, it is clear that NMOGA's proposed amendments to Rule 17 are even more protective, do not pose a risk to fresh water, human health and safety, livestock, or the environment, and should be **adopted.**

234. The evidence establishes that the onsite burial of pit contents as proposed by NMOGA and under the standards recommended by NMOGA will provide reasonable protection of fresh water, and is protective of human health and safety, livestock and the environment and should be approved.

235. Buchanan testified that while there are guidelines that are useful to those engaged in soil reclamation, the advancements being made in reclamation make the adoption of prescriptive regulation unwise (Buchanan at 2399) and the NMOGA proposal, with the flexibility it provides, should be **adopted.**

19.15.17.14 NMAC: EMERGENCY ACTIONS

236. NMOGA recommends no amendments to the Emergency Actions portion of Rule 17. Fanning at 364.

19.15.17.15 NMAC: EXCEPTIONS AND VARIANCES

237. Although Rule 17 contains provisions for general exceptions to its requirements, the testimony demonstrated that in the four years that it has been in effect, exceptions have been very time consuming and difficult to obtain. Lane at 259-260.

238. NMOGA proposes that the exception provisions of Rule 17 be amended to authorize operators to (i) apply to the Environmental Bureau in the Division's Santa Fe Office for exceptions to the permanent pit requirements provisions of Rule 17 and (ii) provide notice to the surface owner. The Division sends email notice of the filing to those persons who have filed written requests with the division to be notified of the filing of such applications. Proposed 19.15.17.15.C.2 NMAC. Under this provision, exceptions for permanent pits are obtained form the same division office that has responsibility for permitting them. E Martin at 1892.

239. Under NMOGA's proposal, an operator would be authorized to (i) apply to the appropriate Division district office for a variance to any provision of Rule 17, except to the permanent pit requirements of the rule, and (ii) provide notice to the surface owner of the

application. Fanning at 364; Proposed 19.15.17.15 B. 1 NMAC; NMOGA Exhibit 9-11. Under this provision, variances are obtained form the Division office that has the most site specific information available to it. E Martin at 1901.

240. To obtain an exception or variance, the NMOGA proposal requires the operator demonstrate to the Division that the requested exception or variance provides equal or better protection to fresh water, public health and safety, livestock and the environment and, upon proper showing, the district grants the variance and the environmental bureau grants the exception in 60 days. Fanning at 365; Proposed 19.15.17.15 B (2) and C (3) NMAC.

241. If the Division's district office or the Environmental Bureau deny the application or fail to act within 60 days, under NMOGA's proposed revisions, the operator may file with the Division Clerk an application for hearing. The application shall contain a proof of notice to the surface owner, a statement explaining in detail the reason for the variance or exception, a statement explaining why applicant believes the variance will protect fresh water, public health and safety, livestock and the environment. The hearing is set by the Division Clerk as soon as possible. Fanning at 365; Proposed 19.15.17.15.B and C NMAC.

242. The Division has proposed identical provisions governing exceptions and variances which should be adopted. Fanning at 365.

243. NMOGA's proposed revisions for the establishment of new requirements for exceptions and variances to the provisions of Rule 17, will provide a reasonable process for obtaining exceptions and variance and should reduce the time delays and other administrative obstacles to obtaining exceptions and variances and should be **approved.**

19.15.17.16 NMAC: PERMIT APPROVALS, CONDITIONS, DENIALS, REVOCATIONS SUSPENSIONS, MODIFICATIONS OR TRANSFERS

244. The testimony raised concerns about the delays in processing applications by the Division and the problems this creates for operators. Lane at 259-260; Fanning at 368.

245. To address these concerns and to establish procedure for the processing of applications, NMOGA recommends that Rule 17 be amended to include a "rule of completeness" that provides that within 10 days of receipt of an application, the appropriate district office will rule the application to be administratively complete or provide written notice of deficiencies to the applicant. If notice is not provided within ten working days, the application will be deemed complete. Deficiencies corrected by the operator shall be considered administratively complete. Fanning at 367; Proposed 19.15.17.16.B NMAC.

246. NMOGA also recommends that if the Division does not act upon an administratively complete application in 30 days, it will be deemed approved. Fanning at 367; Proposed 19.15.15.16.A NMAC

247. The Division proposed to modify the NMOGA proposal to provide for 30 days to determine if an application was complete and to provide if the agency does not act on an

application within 30 days it is deemed denied and the applicant may then seek a hearing. Fanning at 368.

248. NMOGA's proposed amendments to the permit approval provisions of 19.15.17.16 will avoid unreasonable delays in the processing of applications, will provide operators with reasonable notice of deficiencies, if any, in applications filed with the division, establish reasonable standards and requirements for both operators and the division and should be **approved.**

Respectfully submitted,

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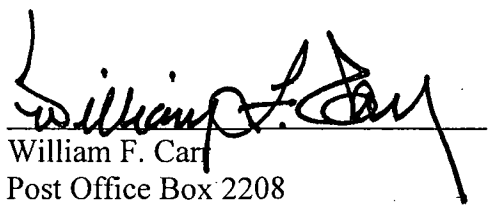

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CERTIFICATE OF SERVICE

I certify that on September 17, 2012, I served a copy of NMOGA's proposed Findings of Fact to the following by U.S. Mail, postage prepaid or by Hand Delivery:

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