NMOGA

Exhibit - G

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

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 AND SUMPS, AND OTHER ALTERNATIVE METHODS RELATED TO THE FOREGOING MATTERS, STATEWIDE.

and

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

CASE NO. 14784
and
CASE NO. 14785
(consolidated)
Order No. R-13506-D

ORDER OF THE COMMISSION AND STATEMENT OF REASONS FOR AMENDING NMAC TITLE 19, CHAPTER 15, PART 17

THIS MATTER comes before the Oil Conservation Commission ("Commission") on the Application ("NMOGA Application") of the New Mexico Oil And Gas Association ("NMOGA") for Amendment of Certain Provisions of Title 19, Chapter 15 of the New Mexico Administrative Code Concerning Pits, Closed-Loop Systems, Below Grade Tanks and Sumps, and Other Alternative Methods Related to the Foregoing Matters, Statewide, assigned Case No. 14784, and on the Application ("Application Filed By IPANM") of the Independent Petroleum Association of New Mexico ("IPANM") for the Amendment of Certain Provisions of Title 19, Chapter 15 of the New Mexico Administrative Code Concerning Pits, Closed-Loop Systems, Below Grade Tanks and Sumps, and Amending Other Special Rules Related to the Foregoing Matters, Statewide, assigned Case No. 14785. Together, the NMOGA Application and the Application Filed By IPANM may be referred to herein as the "Filed Applications." The Filed Applications seek to amend NMAC Title 19, Chapter 15, Part 17, as promulgated in June, 2008 and amended in July, 2009 (the 2008 regulation, as amended in 2009, may

water, public health and environmental protection. The question placed before the Commission by the filing of the Applications is whether individual features of this system may be altered, while retaining the efficacy of the system, as a whole, to provide reasonable protection of fresh water, and protection of public health and the environment. The Commission finds that some, though not all, of the requested alterations of the Pit Rule may be made, while continuing to accomplish the Commission's statutory charge. Those alterations are reflected in the Pit Rule that is Attachment A to this Order. This is so for several reasons.

M. A majority of the Commission finds that testing for the constituents set forth in Table I and Table II in Section 19.15.17.13 of Attachment A, provides reasonable protection of fresh water, and protects public health and the environment. The evidence before the Commission is that samples were taken from over 30 pits in the primary oil and gas producing regions of the State. The sampling program, designed by a recognized expert in toxicology, as well as by OCD, was such that it commonly would be relied upon by an expert in the area of waste assessment, toxicology or risk assessment. The samples were analyzed in accordance with recognized EPA methodology and monitored by a quality assurance auditor, and the results of the toxicologist's sampling and the OCD sampling were consistent. The constituent levels from those samples were compared to published regulatory criteria. Based on that sampling, analysis and comparison, of the constituents found in the pits only those reflected in Tables I and II were sufficiently high as to warrant monitoring. Benzene was included in the tables in an abundance of caution, even though the level reflected by the analyses may have been artificially elevated. The Commission further finds that, while the Applicants proposed to state chloride levels in Table II in mg/l, it is more consistent with the measures of the other constituent levels in the Tables and more easily understood to state those chloride levels in mg/kg, particularly as they relate to vegetation. In order to convert evidence given the Commission in mg/l, for instance in Mr. Mullins' models, one may approximate a mg/l measure by multiplying the mg/l by twenty to arrive at a statement in mg/kg. Moreover, in order to arrive at a measurement of waste chlorides in mg/kg, the Commission finds that it is preferable for operators to use EPA Method 300.0, instead of the proposed combination of EPA Method SW-846 Method 1312, for extraction, and EPA Method 300.0, for analysis,

N. While chloride is not toxic, it is a valuable marker for other contaminates because it is more soluble and will travel ahead of other constituents. Modeling presented to the Commission of the transport of chlorides through the vadose zone from pit leachate with a chloride concentration of approximately 100,000 mg/l showed that it would take thousands of years for chloride to reach a receptor that is located 100 feet horizontally and 100 feet vertically from the bottom of the pit. The same model showed that, assuming leachate at 1,000 mg/l, it would take close to 1,000 years for chloride to reach a receptor that is 100 feet horizontally and 25 feet vertically from the bottom of the pit, and 700 years, if at all, to reach a receptor that is located 25 feet directly under the bottom of the pit. Moreover, the maximum concentrations of chloride that reached the receptors were de minimus. The fact that the models were two dimensional, as opposed to three dimensional, means that the

results are relatively conservative because the models did not take into account the diminution of chlorides as they disperse in a three dimensional plume The modeler, Mr. Mullins, used two accepted codes to construct the models; one provided the infiltration rate, or vertical drainage, of water, which, along with other data, was input into the second code, which produced the two dimensional model. Both users' manuals were provided to the Commission, as well as the engineering manual for the two dimensional code. To obtain the precipitation and other climatic values for the models, the modeler used 50 years of data from Hobbs, Maljamar, Carlsbad and Artesia, New Mexico, data from Aztec, New Mexico, and a 50-year synthetic model for the temperature and solar profile of Roswell, New Mexico, representative of the oil and gas producing regions in New Mexico. He compared the results of the code that yielded the infiltration rate to published literature on the infiltration rates for the areas modeled and found them to be reasonable. The models assumed pit construction to be as required by the Pit Rule. They also assumed solid pit contents, as is required by the Pit Rule, receiving intermittent fluid, and poor vegetation at the surface. The rest of the variables were similar to those used by OCD in earlier modeling. The modeler ran numerous sensitivity tests with respect to evaporative zone depth, precipitation, liner quality, soil conductivity, wind speed, humidity, solar radiation, and soil texture and hydraulic conductivity. The Commission also was presented with a simulation that showed a much faster rate of chloride transport, as quickly as 13 feet in 20 years. The point of the simulation, however, was to demonstrate how fast and how far it was theoretically possible for chloride to move, not an actual profile of chloride movement. The simulation was one dimensional, and the infiltration rates that were used were not compared to published New Mexico infiltration rates.

O. The Commission heard testimony from several soil physicists. With respect to downward migration of chlorides, evidence indicated that chlorides, regardless of concentration, would migrate to a particular depth, accumulate, and beyond that depth begin to taper off until the concentration resembled the native concentration in the soil. The depth of this accumulation of chlorides, the "bulge," varies depending on the flow of fluid into the soil. Most of the evidence indicated that the bulge tended to occur at 10 to 15 feet, under the climatic and soil conditions of New Mexico. Sampling taken by one of the soil physicists at New Mexico pit sites showed a salt plume as deep as 25 to 30 feet beneath the surface. The subject pits, however, were neither constructed, operated, nor closed under current Pit Rule conditions, and the Commission does not know the amount of fluid that the pits contained at burial, or whether the sites were subject to spills or other conditions that would have caused an extraordinary infiltration of fluids.

P. The Commission finds that constituents reflected in Tables I and II (other than chloride), benzene, and toluene, ethylbenzene and xylene (a compound commonly referred to as BTEX), as well as the gasoline range organics ("GRO") and diesel range organics ("DRO"), which are compounds in the total petroleum hydrocarbons ("TPH"), are light aromatics. While they are soluble and are able to travel to groundwater, they are slower than chlorides in unsaturated flow, which is why

chlorides are used as the outer boundary marker for contaminates. Moreover, the light aromatics are volatile, particularly benzene, which is highly volatile. The resident time for light aromatics is very short, and they will evaporate quickly and degrade in the soil. This is particularly true during closure and mixing. The benzene level that is reflected in Tables I and II, is lower than the levels recommended by the American Petroleum Institute, and GRO and DRO, while they could affect the odor and taste of water, are not a matter of concern with respect to toxicity. The other compounds in TPH, the oil range organics and asphaltenes, are made up of large molecules and are not sufficiently mobile to pose a concern for human health or fresh water.

Q. The Commission finds that control of potential releases of fluids from pits and below grade tanks is an important factor in providing reasonable protection of fresh water, and protection of public health and the environment. This is so, in part, because water moves very slowly in unsaturated conditions, and more quickly in saturated conditions. The risk of release, then, is greater in the operational phase, where pits contain liquids. It is necessary that a pit be constructed in an effort to reduce stress on the liner. The Commission received evidence that allowing pit slopes to be at the angle of repose would increase stress on the liner and would not guard against collapse. The Commission finds that the angle of pit slopes at ratio no less than 2 feet horizontally to 1 foot vertically will reduce liner stress. Additionally, pits that contain fluids for a relatively long period of time, permanent pits and multi-well fluid management pits, are required to have leak detection systems comprised of two liners and a drainage and removal system constructed and sloped in such a way as to achieve the earliest possible detection of a leak. While fluids are in those pits, they must be inspected weekly, including the leak detection system. Similarly, in order to minimize the risk of overflow from below grade tanks, the Commission finds that the use of an alarm is not sufficiently protective and that below grade tanks must be equipped with automatic high level shutoff controls device and manual controls. Regular inspections for leaks and to determine whether liners have been compromised are a necessary part of the Pit Rule system. In addition to the inspections required for permanent pits and multi-well fluid management pits, the Commission finds that temporary pits must be inspected daily, while the rig is on location and, thereafter, weekly, until the pit has been dewatered. The operator shall keep a log of such inspections, which shall be available to OCD on request. Moreover, response time to a release or liner damage must be short. While there was testimony that maintenance of a boom or other device on site was unnecessary, the Commission also heard testimony that not having a boom on site could cost a significant response time, and the Commission finds that maintenance of a boom or like device on site is prudent and is required. The Commission further heard testimony and finds that response time is enhanced by requiring a compromise in a liner that is above the fluid surface be repaired within 48 hours, or the operator must seek a variance from the appropriate district office. Finally, while fluid from a temporary pit should be removed promptly after cessation of operations, the Commission heard testimony that a requirement to remove fluid within 30 days has often proven not to be practicable because of weather or equipment availability. The Commission finds, then,