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

Application of the New Mexico Oil Conservation Division for Repeal)
Of Existing Rule 50 Concerning Pits and Below Grade Tanks and)
Adoption of a New Rule Governing Pits, Below Grade Tanks, Closed)
Loop Systems and Other Alternative Methods to the Foregoing,) CASE NO. 14015
and Amending Other Rules to Make Conforming Changes Statewide.)
_____)

**CLOSING ARGUMENT OF THE NEW MEXICO CITIZENS
FOR CLEAN AIR & WATER**

Pursuant to the Commission's instructions, the New Mexico Citizens for Clean Air & Water ("NMCCAW") hereby submits its Closing Argument to the Oil Conservation Commission ("Commission") based upon evidence presented in the hearing.

I. THE OCD HAS IDENTIFIED ITS INTENT TO PROTECT THE GROUND SURFACE AND THE GROUND WATER.

The Oil Conservation Division ("OCD") has identified what this rule seeks to protect, namely the ground surface and the ground water of New Mexico. Evidence presented by OCD and others has made clear the potential synergistic adverse impacts that would be caused by thousands of waste burial units scattered across the landscape. The OCD has made clear that it expects burial of petroleum- and salts-contaminated wastes in thousands if pits and trenches if present practice is allowed to continue. OCD's witnesses presented evidence of the threat to both ground water and the future viability of the land from on-site burial of wastes. The testimony and exhibits presented by NMCCAW's witness, Dr. Donald Neeper, substantiate this assessment.

Whether one considers the "value" of a property to be its commercial economic value, or its aesthetic and recreational value, or its value to wildlife and natural species, the property is devalued if it contains multiple units of buried wastes, most of which may be toxic to man, plants, animals, or subsurface biota. Such a devaluation is, in effect, an indirect subsidy to the petroleum industry. Although the surface above a burial unit might be readily revegetated with salt-tolerant species, the proper goal should be to restore the site nearly to its original condition if possible, and the restored condition of the site should be as self-sustaining as the original condition. Therefore, the intent of the OCD to prevent on-site burial of drilling and workover wastes, and the intent to require improved assurance of integrity of below-grade tanks, is proper and commendable, and fully consistent with the Oil and Gas Act, NMSA 1978, § 70-2-1, *et seq.*

II. WASTES SHOULD NOT BE ALLOWED TO RELEASE POLLUTION TO REGULATORY LIMITS OR TO INHIBIT LAND USE.

Testimony of Dr. Stephens and of Dr. Thomas implies that one industry, and even one operator alone, should be allowed to pollute the ground water or the ground to the limit of the standard or to the threshold of harm. NMCCAW contends that this philosophy is contrary to the public interest and contrary to the intent and language of the Oil and Gas Act, NMSA 1978, § 70-2-12.B(21) (1989); NMSA 1978, §§ 70-2-11, 70-2-12.B, 70-2-6.

In a regulatory sense, air, land, or water is not considered to be "polluted" unless the concentration of some contaminant exceeds a particular standard. For example, in New Mexico the drinking water standard for chloride is 250 mg/L. This does not imply that water containing 249 mg/L is perfectly clean while water with 251 mg/L is deadly. Rather, it implies a threshold of 250 mg/L, above which a responsible party should begin remediation.

As outlined in Section VIII below, there is no significant disagreement among the technical measurements and predictions of chloride transport presented by Mr. Hansen of OCD,

Dr. Neeper of NMCCAW, Dr. Stephens of the Industry Committee, and Dr. Buchanan of the Industry Committee. However, Dr. Stephens' testimony implies that it should be permissible for a single pit to contaminate all groundwater passing under that pit to the limit of the standard, ignoring the effects of neighboring pits and any other man-caused releases to that water. The philosophy offered by Dr. Buchanan is similar: In his view, so long as contaminants from a pit do not reach closer than one foot beneath ground surface while the bulk of contamination remains at greater depths, an abandoned pit should be allowed as a legacy limiting future activities on that land. Under cross-examination, Dr. Thomas expressed his opinion that regulation should limit on-site disposal of only materials with known risks.

NMCCAW contends that one industry, or one operator, or one pit should not be allowed to restrict other uses or the future evolution of the water and land. It is the responsibility of this Commission to exercise its authority to protect the environment for the use and enjoyment of the entire public – not just one interested party – in perpetuity.

III. ON-SITE DISPOSAL OF WASTES ^S ~~IS~~ NOT WARRANTED.

Continued on-site burial of harmful drilling and workover wastes is not warranted. The major contrary arguments are the expense of waste hauling and disposal, the potential extra expense of closed-loop systems when such would be required by the local topography or depth to ground water, and the impacts of truck traffic. As stated in Section IV below, these arguments have not been developed with credible methodology, nor were they presented within the contexts of the predicted effects.

Most of the cost arguments have not been compared with data on the usual drilling costs. The requirements for closed-loop systems have not been presented in the context of the relatively small fraction of reservoir areas from which pits would be prohibited. Prohibition of pits may

indeed increase drilling costs in those particular areas, but testimony has not established a credible reason why this industry should not be responsible for proper disposition of its wastes.

IV. ALLEGED IMPACTS OF THE PROPOSED RULE ARE NOT SUPPORTED BY CREDIBLE EVIDENCE.

Testimony from the industry has not provided a credible, consistent evaluation of alleged adverse impacts of the proposed rule. Testimony from the industry and from the public has forecast impacts of the proposed rule to be as large as a 30% reduction of drilling, severe economic hardship of a region, thousands of tons of annual greenhouse gas emissions, traffic, dust, road wear, and even a reduction of meals on wheels. However, the alleged impacts and their magnitude have not been established on the basis of an unimpeachable methodology. Many estimates are alarming guesses at best, sometimes propagated from one witness to the next. The Daniel B. Stephens and Associates report of 10/24/07 (Industry Committee Exh. 10) illustrates that a *rational* methodology can be applied to the question of impacts. However, a *reliable* methodology must also use realistic input parameters, evaluate a range of cases, evaluate the combined consequences of the impacts, and compare each impact with the context in which it occurs. For example, if drilling is reduced, then the consequent reduction in traffic should be factored into other impacts. Money spent for waste hauling should be credited to the local economy. Traffic should be evaluated in the context of existing traffic, and changes in drilling activity should be seen in the context of previous changes. Many of the industry's allegations of impact appear to presume use of closed-loop systems without evaluation of whether such systems are actually required. Costs reported for dig-and-haul disposal do not always identify whether only the wastes are hauled, or whether the hauled volume includes added soil, or whether wet material might be hauled on a bed of dry soil. Water re-use, the advantages or

disadvantages of a cooperative landfill in which each partner has its own cell, and other potential adaptations under the rule were not considered in industry's projection of adverse impacts.

V. THIS RULE CANNOT BE BASED MAINLY UPON RISK.

Testimony of Dr. Thomas suggested that regulatory rules should prohibit only those situations for which risks have been evaluated, including risks of chemical toxicity according to each individual chemical species. This suggested approach is both unworkable and inappropriate for regulation of on-site disposal.

Risk-based regulation would be unworkable because it would require toxicity and pathway data that are costly to gather by industry and costly to evaluate by regulators. Compliance would be more burdensome for small operators than large operators. Climate and demographic data would be unavailable for situations in the 100-year future. Although established screening levels for individual chemicals are based on risk, those levels are often based upon an assumed scenario of a single, local unintentional spill, not a region-wide intentional deposition of waste materials.

Risk-based regulation would be inappropriate because, as brought out in cross-examination of Dr. Thomas, a true risk-based regulation would in principle allow disposal of anything at any location, so long as direct harm has not been shown. Such a scenario is contrary to common sense. Most environmental regulations express not only a limitation of risk, but also a value judgment--often weighing a projected harm against non-quantifiable values such as a pleasant environment or future uses of ground water. Guidelines and screening levels for particular chemical indicators can be specified numerically based on risk, but the broad consideration of how an industry or a society manages its wastes, and the trade-off in consequent

costs, is a social decision, not a comparison of numbers. For example, we would not want to live in a landscape of trash, even if that trash were chemically inert.

Testimony from industry suggested that thousands of burial units, potentially creating thousands of individual future releases, would be inherently more safe than a single large landfill, even if the single unit were better constructed and in a preferred geology. This suggestion presumes that the thousands of burial units would have the same probability of future disturbance as the single landfill. There is, however, no testimony to support the presumption that future disturbance, whether natural or man-caused, of distributed unmarked units is less likely than an equivalent disturbance of a single closed landfill.

VI. THE DEFINITION OF WATERCOURSE NEED NOT BE REVISED.

One industry witness testified that the definition of watercourse may be interpreted as including such small rivulets as to make it difficult to find a pit location that satisfies the required 200 foot setback from a watercourse. In that situation, the rule would force him to use a closed-loop system. The definition of a watercourse in 19.15.1.7 W(8) NMAC is:

Watercourse shall mean a river, creek, arroyo, canyon, draw or wash or other channel having definite banks and bed with visible evidence of the occasional flow of water.

Clearly, the definition of a watercourse, requiring definite banks and a bed, would be interpreted to exclude the rivulets that occur with ordinary rainstorms. A new definition of "watercourse" is neither needed nor appropriate, since having two different definitions of "watercourse" in state regulations would only be confusing.

VII. CONCERNS REGARDING BELOW-GRADE TANKS CAN BE RESOLVED.

Several industry witnesses expressed concern that the definition of below-grade tanks was not as suggested by the Task Force, and, more importantly, that the combination of definition and rule would require major revisions to existing equipment. NMCCAW understands

this concern. However, the concern with the definition of below-grade tanks could be resolved by a clarification of wording in the proposed rule, rather than a change of definition.

The best historical evidence that NMCCAW can find suggests that the Task Force did not actually define "below-grade tanks," but intended that OCD define the term to be consistent with the recommended wording of the Task Force regarding leak detection. That recommended wording was only slightly modified when it became the proposed 19.15.17.11 I(1) NMAC, which is:

(1) The below-grade tank's side walls, where the tank's bottom is below-grade, shall be open for visual inspection for leaks. The below-grade tank's bottom shall be equipped with an underlying mechanism to divert leaked liquid to a location that can be visually inspected. A below-grade tank not meeting these conditions shall be in a vault or have a double wall that will contain any leaked liquids.

As implied by the last sentence of I(1), any tank with a bottom below grade that has an underlying leak diverter would logically not require a vault or double wall. However literal interpretation of the rest of the proposed 19.15.17.11 I NMAC would require that conditions specified by I(1), I(2), and I(6) must all be applied to that same tank. That is, a below-grade tank would need an underlying diverter to visually reveal a leak from the bottom (condition 1), while also requiring secondary containment (condition 2) and a double wall or geomembrane envelope (condition 6), even though I(1) implies that only a tank without a diverter must have a double wall. NMCCAW believes that the wording of 19.15.17.11 I NMAC is unclear. We suggest that the wording of this section should be clarified so that the rule will correspond with the what we believe was the intent of the Task Force as it addressed tanks at upstream facilities.

VIII. TESTIMONIES REGARDING CHLORIDE TRANSPORT ARE NOT IN TECHNICAL CONFLICT.

The results of the several modeling calculations and measurements of subsurface chloride transport presented in the hearing are not in conflict, although the conclusions drawn by the

individual authors may not agree in detail. Using different weather-related moisture inputs, the calculations of Dr. Neeper and of Mr. Hansen showed that chlorides from an unlined pit reach ground water at the 100-ft depth at approximately 100 and 140 years, respectively, in sandy soils. Their calculations show chlorides reaching ground water at a 50-ft depth in approximately 40 years (depending on the properties of the pit) and in less than 80 years, respectively. Given the difference in details of soils and moisture, these results are in qualitative agreement.

The modeling of Dr. Stephens predicted the expected concentration in a well-mixed aquifer receiving a steady infiltration from a pit of assumed chloride content, which is a different problem with different assumptions and therefore is not in technical conflict with the other modeling.

Dr. Neeper reported measurements of samples from drill cores, showing nearly equal penetration of chlorides to 30 feet total depth in unknown soils, beneath lined and unlined pits approximately 6 and 30 years after closure, respectively (NMCCAW Exh. No. 3, pg. 59). This illustrates that the chlorides are found to move downward. Neither of these two pits showed chloride at ground surface. Dr. Neeper reported modeling results in which the concentration at the top of the model (20 inches below ground surface) varied throughout each year. The concentration at the top of a model with a "loose" soil and pit never achieved appreciable concentration. Therefore, the measured surface concentration is not at variance with his modeling results.

The only remaining question may be why Dr. Neeper measured large chloride concentrations at the surface above two unvegetated pits, approximately 31 and 11 years after closure (NMCCAW Exh. No. 3, pg. 55 and verbal testimony). Penetration beneath the pits exceeded the deepest measurement, which was 15 feet. In his testimony, Dr. Buchanan asserted

that infiltration and vegetation would prevent chloride from reaching the ground surface. Furthermore, the graph offered by Mr. Wurtz during cross-examination (not placed in evidence) showed excess electrical conductivity (indicative of chloride) at approximately 10 inches below vegetated ground surface above a pit closed approximately 50 years ago. Dr. Neeper's modeling indicates that chloride may not move upward to the surface in sandy soil. His modeling of "tighter" soil shows chloride moving upward, however. Based on all of the evidence presented, a logical conclusion is that chloride is mobile under unsaturated conditions, and that it can move downward and upward, but perhaps not all the way to the surface in suitably sandy and/or vegetated soils. Thus, finding chloride at or near the surface above a pit is not in conflict with modeling that shows chloride either moving upward and downward, or moving downward only, depending upon soil and rainfall.

Thus the evidence presented by Mr. Hansen, Dr. Neeper, and Dr. Buchanan shows that chloride can move either upward or downward, and may be kept some distance beneath a vegetated surface by infiltrating rain. However, if the surface becomes unvegetated or if the surface soil becomes hydrophobic due to compaction or sodium contamination, Dr. Buchanan's answers during cross-examination and Dr. Neeper's testimony suggest that it is possible the ground surface may not recover to support plant life. Therefore, although some species will grow in salty soil, the site-specific variations of upward transport of chlorides should not be used as an excuse to justify on-site burial of saline wastes.

IX. THE RULE WILL PROVIDE INCENTIVE FOR IMPROVED METHODS

The proposed rule will provide incentive for industry to develop improved methods for waste processing and waste minimization. According to testimony, industry would prefer to continue on-site disposal. However, Dr. Neeper's testimony and OCD's testimony both indicate

that on-site disposal can generate environmental insults that become apparent long after the site is closed. So long as wastes can be abandoned on-site, there is little incentive for developing improved processes. Industry has testified that the proposed prohibition of on-site disposal will be troublesome and costly for them. Other than Dr. Neeper's brief evaluation of evaporative concentration of chlorides, there was no testimony regarding improved processes for waste processing. However, Mr. Robinson of ConocoPhillips reported development of multiple techniques he employed to minimize the cost and time of drilling. It is reasonable to conclude, therefore, that the prohibition of on-site disposal by this rule will stimulate equally imaginative developments for reducing the cost of waste disposal.

X. THERE IS NO CONTRARY EVIDENCE REGARDING EXEMPTIONS, NOTICES, AND MODIFICATIONS.

No evidence was presented contrary to the following specific suggestions made by NMCCAW:

- a) that applications for exception to the pit rule should be published in a state-wide newspaper, and published on OCD's web site;
- b) that notice of such applications should be distributed to OCD's email list of persons desiring notices;
- c) that the rule should require a hearing if requests for a hearing have technical merit, or if there is significant public interest; and
- d) that any modification that is equivalent to an exception should be subject to the procedures pertaining to exceptions.

Therefore, NMCCAW respectfully requests that the Commission adopt and incorporate each of these suggested revisions to the proposed rule.

DATED: December 10, 2007

Respectfully submitted,

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