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September 4, 2009

DCN: NMED-2009-020

Mr. David Cobrain
Hazardous Waste Bureau
2905 Rodeo Park Dr. E/Bldg 1
Santa Fe, NM 87505

RE: Draft Technical Review Comments on the *Final RCRA Facility Investigation Report, Inactive McGregor Range Open Detonation Area, Fort Bliss, New Mexico* (December 2008)

Dear Mr. Cobrain:

This letter serves as a deliverable and contains a discussion of the technical review of the human health and ecological risk assessments in the *Final RCRA Facility Investigation Report, Inactive McGregor Range Open Detonation Area, Fort Bliss, New Mexico* (December 2008). While there were several issues noted with these assessments as discussed in the following paragraphs, none of the issues are deemed significant enough to warrant revisions to the report.

General

An overriding concern with unrestricted release of Solid Waste Management Unit (SWMU) 20 is the possibility of materials potentially posing an explosive hazard (MPPEH) being unearthed over time through the natural weathering/erosion processes. While soil meets residential risk levels, it is suggested that land use controls be placed on the site requiring annual or biennial inspections of the site for possible MPPEH.

Chromium data were evaluated against screening levels for trivalent chromium. If laboratory data are not available to indicate the speciation of chromium (tri- or hexavalent chromium, or total chromium), screening data for hexavalent chromium should be applied. This comment applies to both human health and ecological screening evaluations. For this review, data were compared to current screening levels for total chromium and hexavalent chromium, and site concentrations were below both screening levels.

Human Health Risk Assessment

There is some concern that dioxin/furans were only analyzed during the Phase I investigations. However, given that metals and polychlorinated biphenyls (PCBs) were detected at relatively low concentrations and it would be expected that the magnitude of dioxin/furan concentrations would mimic those for metals and PCBs, additional sampling for dioxins/furans does not appear warranted.

Total petroleum hydrocarbon (TPH) concentrations were between 11 and 47.9 milligrams per kilogram (mg/kg). The report (page 4-6) indicated that an evaluation of these levels could not be conducted as a screening level is not provided in the New Mexico Environment Department's (NMED) Soil Screening Guidance (2006). For this review, the TPH levels were compared against the screening criteria provided in the *New Mexico Environment Department TPH Screening Guidelines* (October 2006). The reported TPH levels were below all screening levels. Additional analysis of TPH detected in SWMU 20 soil is not deemed warranted.

The site investigation was conducted over four phases, resulting in several different evaluations of data and screening levels. Rather than compare each set of data to the screening levels current at the time of the initial evaluation, data were compared to the current NMED Soil Screening Levels (July 2009). All of the reported concentrations are below present day data screening levels.

Comparison against generic screening levels is appropriate when the pathways used to derive the screening levels are consistent with the sites complete exposure pathways. The screening levels do not incorporate pathways such as ingestion of homegrown produce. Given the soil pH, the arid nature of the site, and the presence of shallow caliche layers, it is anticipated that extensive soil amendment would be required in order for a home garden to be productive. Therefore, additional evaluation of this pathway is not needed to support the determination that soil meets the criteria for unrestricted release.

Arsenic is the primary driver for risk at SWMU 20. When background is subtracted from the cumulative risk, the resulting risk ratio is below the target level of one. Reviewing the arsenic data, it appears that arsenic may be more representative of background. Overall, the conclusion that there is no adverse risk based on site concentrations is supported by the analyses.

Ecological Risk Assessment

The ecological screening levels applied in the risk assessment are based on 2003 data. A review of current toxicity reference values was conducted and SWMU 20 data were compared to more updated data. No changes in the conclusion of the risk assessment resulted from use of more recent data.

Several constituents were eliminated from the ecological risk assessment based on frequency of detection. Given the site history, there is reasonable evidence to suggest that these constituents could have been present due to site activities and as such, should have been retained for evaluation in the risk assessment. However, the omitted results were compared to screening levels, and the detections are insignificant compared to the screening data. Inclusion of these infrequently detected constituents would not have changed the overall conclusions of the risk assessment, and therefore a formal comment is not being drafted.

A soil interval of zero to two feet below ground surface (ft bgs) was applied for the exposure interval for the ecological risk assessment. This interval is considered appropriate for the

evaluation of soil contaminant exposures for surface-foraging and shallow-burrowing wildlife (finch and white-footed mouse). However, gray fox are known to burrow and have den chambers up to ten ft bgs. For the fox, a soil interval of zero to ten ft bgs would have been more appropriate. SWMU 20 has been used primarily for testing and open detonation activities, and inorganics, which are relatively immobile in soil, are the primary constituents of potential ecological concern, significant soil contamination at depth is most likely minimal. Therefore, evaluation of exposures to gray fox from soils up to ten ft bgs would not likely change the results of the risk assessment.

Aluminum was carried forward as a constituent of ecological concern. Aluminum is soluble and biologically available only in acidic soil (pH < 5.5) and inactive in circumneutral to alkaline (pH 5.5 - 8.0) conditions. Above a pH of 8.0, the solubility of aluminum increases, although the bioavailability is uncertain. Given that SWMU 20 may have soil pH in a range rendering aluminum non-bioavailable (pH between 7.24 and 8.95, page 4-7), the inclusion of aluminum is considered conservative. As aluminum did not drive any of the ecological risks, inclusion of aluminum is acceptable.

The overall conclusion of the ecological risk assessment is that resulting risks for all three receptors were below the target hazard level. This conclusion is not supported by the data. In reviewing the screening level ecological risk assessment provided in Appendix 3 (Table 6.2), barium was a driver for the white-footed mouse and the resulting hazard quotient (HQ) for barium was slightly over the target level of one (1.44). In reviewing comments previously generated on the *Site-Specific Background Values McGregor Range Camp Area*, Fort Bliss, New Mexico (October 2008), there was some concern noted with the data for barium in soil horizon A. The background data appeared to be much lower than anticipated and it was suggested that the facility review the quality assurance report from the laboratory to ensure data integrity. As the barium concentrations are not significantly high, are below corresponding human health risk levels, and the resulting HQ is only slightly above the target level, there does not appear to be concern that potential exposure to the levels of barium in soil would result in undue ecological risk.

If you or any of your staff have questions, please contact me at (801) 451-2864 or via email at paigewalton@msn.com.

Thank you,

Paige Walton
AQS Senior Scientist and Project Lead

cc: Neelam Dhawan, NMED (electronic)
Joel Workman, AQS (electronic)