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September 3, 1997 Sent also by Fax

James Harris
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RE: Comments on the June 16, 1997 Report on Soil Gas Characterization and Vapor Extraction System Pilot Testing, Sparton Technology, Inc., Coors Road Facility

Dear Jim:

The New Mexico Environment Department (NMED) and the U.S. Environmental Protection Agency (EPA) have reviewed the document dated June 16, 1997 and titled "Report on Soil Gas Characterization and Vapor Extraction System Pilot Testing" (hereinafter the "Report") from Sparton Technology, Inc. (Sparton) regarding the Coors Road facility in Albuquerque, NM. Both NMED and EPA's comments are incorporated in this letter.

In the Report, Sparton reaches a number of conclusions the most critical of which are:

1) "Soil gas constituents are primarily TCE and TCA" (Page 1);

2) "Soil gas presence is apparently related to the previous on-site solvent sump" (Page 1);

3) "Elevated (> 10 ppmv) soil gas concentrations occur on-site in the immediate area of the solvent sump" (Page 1);

4) "Soil vapor extraction is feasible" (Page 1);

5) "Vapor recovery wells have a useable influence radius of 200 feet" (Page 1);

6) "The actual deep soil gas results indicated that, with the possible exception of TCA in the pond/sump area, soil gas is not a source of constituents to the groundwater" (Page 8);

7) "...more than 96% destruction of VOC occurred in the internal combustion engine and/or exhaust converter" (Page 21);

8) "The pilot test and associated sampling and analysis indicate that an SVE system could initially recover 90 to 100 pounds of VOC per day" (Page 21); and

9) "The pilot test has also demonstrated the ability of extraction from VR-1 to effectively remove VOC from the entire area showing elevated soil gas concentration" (Page 21).

Based upon a technical review, the following responds to the above referenced claims, addresses the deficiencies of the Report and requires additional information Sparton must submit by way of a plan or amendments to its Report, before a SVE design can be considered.

CLAIM 1: "Soil gas constituents are primarily TCE and TCA"

While TCE and TCA are present in soil vapor, other volatile organic compounds (VOC) must be considered in the design of any remediation system. Sparton must submit a plan that addresses how other volatile organic compounds ("VOC") will be considered and addressed in Sparton's design of its SVE system.

CLAIM 2: "Soil gas presence is apparently related to the previous on-site solvent sump"

Data on shallow soil gas were collected during three sampling events in 1984, 1987 and 1991. These studies indicated three different areas with high concentrations of contamination in shallow soil gas: in the vicinity of the solvent sump, in the vicinity of MW-9 and in the vicinity of MW-4 (MW-4 is now plugged. This well was located in the southeast corner of the building at the Sparton site). It is unknown whether contamination detected near MW-9 and MW-4 resulted from sources other than the solvent sump or resulted from the lateral spreading of contaminated soil vapor from the sump area.

Specifically, the Report (Page 8) mentions that the highest

concentrations of TCE and TCA found in the 1984 soil gas survey were in the sump area (720 ug/l TCE). However, what the Report does not mention is that the same survey found a concentration of 675 ug/l TCE in the vicinity of MW-9 approximately 500 feet southwest of the solvent sump and 560 ug/l TCE in the vicinity of MW-4.

The deep soil gas investigation reviewed in the Report is limited in coverage addressing only vapor contamination in the vicinity of the solvent sump. In the Report Sparton claims the solvent sump area as the source of soil gas contamination but does not address or investigate the relevance of the presence of high soil gas concentrations in other areas of the site. The limited spacial coverage of the 1996/1997 data contributes to the idea of the solvent sump as the one point source for soil contamination. Without additional investigation in the other areas demonstrating elevated shallow soil gas contamination, it can not be determined whether or not the solvent sump area is the only area of concern. As such, NMED will require that Sparton propose a plan of investigation for determining whether there exists contaminant concentrations of concern at depth in soil vapor in the vicinity of MW-4 and MW-9.

CLAIM 3: "Elevated (> 10 ppmv) soil gas concentrations occur on-site in the immediate area of the solvent sump"

Specifically, Sparton claims on Page 16, through the use of a regression analysis and extrapolation of data from the VR wells, that the 10 ppmv line lies at a radial distance from the solvent sump of approximately 200 feet (though it is mentioned that this value has not been field verified). However, this technique ignores the fact that when vapor samples were collected from existing monitor wells in 1996, MW-18, which is located more than 300 feet from the sump, had a TCE concentration of 38 ppmv (It also ignores all the information given in COMMENT 2 above). Either there is an alternate source for this vapor contamination, or TCE in soil vapor greater than 10 ppmv extends more than 300 feet from the sump area and not the 200 feet claimed by Sparton. Sparton, in Figure 10 of the Report, proposes four additional sampling locations each at a distance of 200 feet from the sump. No additional sampling locations at a

distance greater than 200 feet are proposed. NMED will require that Sparton propose a plan for deep soil vapor sampling in the vicinity of MW-18 during the next phase of soil vapor investigation proposed by Sparton. In addition, within the context of the plan, NMED will require the four proposed 200 foot sampling locations to be more uniformly distributed around the 200 foot distance contour to the extent possible and at least one of the four bore holes completed as a soil vapor monitor well.

On Page 16 of the Report, it explains how field screening procedures will be used to select the sampling depth at each new sampling location based on concentration, i.e., the depth of highest apparent concentration based on field screening techniques would be the depth sampled for laboratory analysis. Sparton needs to submit a plan to indicate that a vapor sample will be collected and analyzed from each new sampling location (even if field screening fails to detect VOCs at any depth) and a description of how the appropriate depth for such a location will be selected if field screening techniques do not detect vapor contamination.

CLAIM 4 "Soil vapor extraction is feasible"

NMED agrees that SVE is an appropriate technology to mitigate the soil contamination of VOCs. However, an adequate design is necessary for the success of a SVE system.

CLAIM 5 "Vapor recovery wells have a useable influence radius of 200 feet"

Review of the data from the pilot test suggests that the test was conducted under inadequate conditions for this soil. An extraction well vacuum of 5 inches of water is too low as is a flow rate of 60 cubic feet per minute ("cfm"). These limits were based on the equipment used and not on the soils.

As a result of the test being conducted at such a low vacuum and flow rate, the vacuum reactions at most of the monitoring locations were quite small and in many cases undiscernible. Only the vapor monitoring probes installed 6 feet from VR-1 had changes in vacuum that significantly exceeded the changes in barometric pressure observed during the test. Monitoring points located beyond 100 feet from VR-1 showed no discernable response

to the test or changes so small that no conclusion can be drawn. Other observation wells showed a reaction which may have been the result of the applied vacuum, but the level of reaction with respect to background changes in barometric pressure was not great enough to make a conclusion. In any case, the existing data and the data evaluation in the Report are inadequate to conclude that the radius of influence is 200 feet at an air flow rate of 60 cfm.

Because of the inadequacies of the pilot test evaluated in the Report, Sparton shall be required to perform a pilot test with a vacuum and flow rate adequate to demonstrate the radius of influence and the appropriate reactions at several monitoring locations. Sparton shall submit a plan proposing to use a blower at VR-1 capable of at least 400 cfm at 60 inches of water to generate adequate data to design of an effective SVE system. As before, a step test should be performed to determine an appropriate rate for a constant rate test.

CLAIM 6 "The actual deep soil gas results indicated that, with the possible exception of TCA in the pond/sump area, soil gas is not a source of constituents to the groundwater"

Sparton's basis for this conclusion is that contaminant concentrations in soil vapor soil vapor were less than that predicted based on contaminant concentrations in ground water assuming equilibrium. First, it should be kept in mind that equilibrium conditions probably rarely exist and that determining actual soil vapor concentrations from ground water concentrations is generally not possible. Secondly, residual vadose zone contamination is most likely the primary source of soil vapor contamination which would provide a steady source of soil vapor contamination which, in turn, could provide an ongoing source of ground water contamination.

CLAIM 7 "...more than 96% destruction of VOC occurred in the internal combustion engine and/or exhaust converter"

The claim of over 90% destruction of VOC by the AcuVac internal combustion engine and catalytic converter may be correct. The problem of applying this system to this site is that the flow rate from the extraction well will be greatly limited by the AcuVac system capabilities. Much higher air flow rates are possible with conventional electric motor-driven blowers and vapor treatment units. The AcuVac unit used does not appear well matched to the vacuum and flow rates for this site. As such, the VOC destruction capability of the AcuVac system is of little consequence.

CLAIM 8 "The pilot test and associated sampling and analysis indicate that an SVE system could initially recover 90 to 100 pounds of VOC per day"

The claim that an SVE system could initially recover 90 to 100 pounds of VOC per day is correct for the AcuVac system used in the pilot test. However, a larger more appropriately sized system could initially achieve a significantly higher recovery rate. We'd like to see this considered.

CLAIM 9 "The pilot test has also demonstrated the ability of extraction from VR-1 to effectively remove VOC from the entire area showing elevated soil gas concentration"

Because NMED does not believe that either the extent of vapor contamination has been adequately characterized or that the pilot test adequately demonstrated the capabilities of VR-1 to capture soil vapor, NMED does not agree with Sparton's claim that a one-well SVE system will suffice to clean up the vadose zone of VOC contamination at the Sparton site.

NMED believes that 10 ppmv is a reasonable SVE clean-up target. EPA is performing an independent risk assessment of the 10 ppmv level. Additionally, Sparton will need to propose in its amended plan a shut-down period to confirm satisfactory SVE removal.

As previously stated, Sparton must address the deficiencies as set forth in this letter by submittal of an amended plan before NMED can approve any soil gas investigation as complete and sufficient to proceed with an SVE system design. If you have any

questions, please let us know.

Sincerely,

Ana Marie Ortiz

Ana Marie Ortiz
Assistant General Counsel

cc: Mark Weidler, Secretary
Michael Donnellan, DOJ
Gary O'Dea, City of Albuquerque
Gloria Moran, EPA
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