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HURST ENGINEERING SERVICES

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April 23, 2001

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Secretary Attn: Mr. R. Jan Appel
Sparton Technology, Inc.
2400 E. Ganson St.
Jackson, Michigan 49202

Dear Parties:

Re: Consent Decree; Albuquerque v. Sparton Technology, Inc.
Work Plan for Testing and Replacing Monitoring Well MW-71

Enclosed is a copy of the Work Plan for Testing and Replacing Monitoring Well MW-71. It is provided in response to your request dated April 5th, 2001 (Confirmation of Resolution of Notice of Dispute for Comment 11of January 2, 2001, EPA/NMED Response Letter), which was received on April 9th.

SPARTON TECHNOLOGY, INC.
COORS ROAD PLANT REMEDIAL PROGRAM
WORK PLAN FOR TESTING AND REPLACING
MONITORING WELL MW-71

Prepared by:

S. S. Papadopulos & Associates, Inc. and Metric Corporation

BACKGROUND

Monitoring well MW-71 is one of two Deep Flow Zone (DFZ) wells that are sampled quarterly by Sparton Technology, Inc. (Sparton) under the terms of the Consent Decree concerning the remedial program associated with Sparton's former Coors Road Plant, in Albuquerque, New Mexico. The well was installed in July 1998 near the MW-60/61 cluster where high concentrations of contaminants had been detected in the Upper Lower Flow Zone (ULFZ). The purpose of installing MW-71 was to determine the vertical extent of contamination in this area, and thus provide data for the design of the off-site containment well. These data were obtained during the installation of the well, and the well was then completed as a 4-inch monitoring well in the DFZ, below a clay layer that was encountered at an elevation of about 4800 ft. This clay layer, referred to as "the 4800-foot clay unit", was previously encountered in well MW-67, and also in the containment well CW-1, and observation wells OB-1, and OB-2 which were installed later.

The water-quality history of well MW-71 is discussed in the 1999 Annual Report on the Sparton remedial program[1]. Briefly, when installed, the well was essentially free of contaminants; however, soon after, significant concentrations of TCE were detected in the well. This led to investigations that indicated the presence of a leak of contaminated water from the shallower zones of the aquifer through a breach in the 4-inch well casing. The well was purged until relatively clean, and recompleted by placing a 2-inch PVC liner and screen assembly within the 4-

[1]S. S. Papadopulos & Associates, Inc., 2001, *Sparton Technology, Inc., Coors Road Plant Remedial Program, 1999 Annual Report*, report prepared for Sparton Technology, Inc. in association with Metric Corporation and Pierce L. Chandler, Jr., Original Issue June 1, 2000; Modified Issue February 9, 2001.

inch PVC well. A sand-pack was placed between the 2-inch and 4-inch screens, and the remaining annular space was filled with bentonite cement to land surface. A subsequent packer test indicated that there was no leakage through the 2-inch liner. Samples collected after the recompletion of the well, however, continued to contain contaminant at increasing concentrations that approached 200 ppb of TCE by November 2000. It is apparent that leakage of contaminated groundwater from shallower zones is continuing either through a leak in the annular space between the 2-inch liner and the 4-inch casing, or through a leak in the outer annular space between the drilled hole and the 4-inch casing.

In their review of the original issue of the 1999 Annual Report, the United States Environmental Protection Agency (USEPA) and the New Mexico Environment Department (NMED) expressed concern on the water-quality conditions at MW-71. To prevent the continuing leakage through the well, Sparton proposed to plug and abandon the well. The agencies agreed to the abandonment of the well but requested that it be replaced by another DFZ well at the same or at a nearby location.

Sparton has agreed to install a replacement well. However, in discussions held between representatives of Sparton and the agencies, it became apparent that the agencies are concerned about the potential presence of contaminants in the DFZ from sources other than leakage through MW-71. To address this concern, and to determine whether the replacement well could be installed within the same hole or whether a different location needs to be considered, Sparton is proposing to conduct a purging test and a deviation survey in MW-71.

The purpose of this Workplan is to provide a brief description of the purging test, discuss how the results of the test and of the deviation survey will be used, and how the replacement well will be installed.

PURGING TEST

Well MW-71 will be purged by pumping the well for a period of at least 8 hours per day, using the air-lift method. At the end of each pumping period, bailer samples will be collected from the well after first removing at least five casing volumes of water using a bailer. The

samples will be analyzed to determine the concentration of volatile organic compounds, particularly TCE, 1,1-DCE, and 1,1,1-TCA, by EPA Method 8260, and of dissolved chromium by EPA Method 6010. The purged water will be hauled, in a water truck, to the off-site containment system treatment facility. The above outlined purging and sampling will be continued for 10 days.

It is anticipated that the data collected from this testing procedure will confirm that the increasing contaminant concentrations observed in MW-71 are the result of leakage down the well bore (decreasing concentrations that stabilize at a low level) and not due to horizontal migration in the DFZ beneath the 4800-foot clay from upgradient sources (increasing concentrations or concentrations that remain at the levels recently observed). It is also anticipated that the data will provide information on the mass rate at which contaminants are currently leaking to the DFZ through MW-71.

DEVIATION SURVEY

A deviation survey of MW-71 will be conducted to determine wether the well is straight and vertical. Regardless of the results of the deviation survey, the well will be plugged as discussed below. If the deviation survey indicates that the well is straight and vertical, after plugging the well will be overdrilled and a replacement monitoring well will be installed within the overdrilled hole. If on the other hand, the well is not straight and vertical so that it can be safely overdrilled, or if overdrilling is not successful, the well will be abandoned. A replacement well will be drilled in the vicinity of monitoring well MW-46.

INSTALLATION OF REPLACEMENT WELL

If the replacement well is to be installed at the same location as MW-71, the well will be overdrilled to 10 feet below the current total depth as a 12-inch or larger diameter hole. All casing, screen, bentonite-cement grout, and aquifer material will be removed from the hole. An 8-inch diameter casing with centralizers at regular intervals will be installed in the hole and cemented in place by injecting 5 % bentonite-cement grout through the casing and up to the surface through the annulus. After the grout has set, 7-7/8-inch hole will be drilled through the 8-inch casing to an additional depth of 6 to 7 feet. A 4-inch diameter casing with a 5-foot screen

will be lowered in to the hole, and the well will be completed with sand-pack against the screen and bentonite-cement grout between the 4-inch and 8-inch casing. The well will be developed using standard development procedures.

If the replacement well is to be located near MW-46, a 12-inch hole will be drilled to the top, or about 1 foot into, the 4800-foot clay. The procedures discussed above will be used to complete the hole as a double cased well with a 5-foot screen below the 4800-foot clay.

PLUGGING OF MW-71

Well MW-71 will be plugged by perforating the 2-inch PVC casing, the bentonite-cement annulus between the 2-inch and 4-inch casing, the 4-inch PVC casing, and the bentonite-cement annulus between the 4-inch casing and the 7-7/8-inch hole using 1-11/16-inch Link Jet charges with 4 shots per foot at 90 phasing. Four 10-foot intervals will be perforated. These intervals will be centered at approximately 200, 250, 300, and 344 feet below ground level. The 344-foot interval straddles the 4800-foot clay. Following perforation, the well and annulus will be pressure grouted to 150 psi with 5% bentonite cement.

ABANDONMENT MW-71

As discussed above, well MW-71 will be plugged regardless of the results of the deviation survey. Therefore, if the well is not straight and vertical and needs to be abandoned, no further action, except clean-up of the well site, will be necessary. If on the other hand, the well needs to be abandoned because overdrilling was not successful, it will be abandoned by grouting the overdrilled hole with 5% bentonite cement.