REPORT ON THE INSTALLATION OF ON-SITE MONITORING WELLS MW-72 AND MW-73

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Environmental & Water-Resource Consultants

April 2, 1999

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Prepared For:

SPARTON TECHNOLOGY, INC.
Coors Road Facility
Albuquerque, New Mexico

Prepared By:

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1.0 INTRODUCTION

A groundwater investigation was recently conducted by Sparton Technology, Inc. (Sparton) at their Coors Road Facility in Albuquerque, New Mexico. The investigation consisted of the installation of two monitoring wells, the collection and analysis of samples from these wells, and surveying to determine the location coordinates and measuring point elevation of the wells. The monitoring wells were installed along the northwest boundary of the Sparton property; the first well (MW-72) was installed near the midpoint between existing monitoring wells MW-15 and MW-42/43; the second well (MW-73) was installed near the location of the former temporary well TW-1/2 which was installed, sampled, and plugged in February 1998. The locations of these new monitoring wells, and of other existing wells on the Sparton property and its immediate vicinity, are shown in Figure 1. Monitoring well MW-72 was installed to meet the terms of the "Work Plan for the Installation of a Source Containment System"[1] (Source Containment Plan); its purpose is to provide the means for determining whether any source areas may exist outside the capture zone of the source containment well that will be installed downgradient of the facility. The installation of MW-73 was a voluntary action by Sparton to provide a permanent sampling point at the location and depth interval where a relatively high concentration of trichloroethylene (TCE) was previously detected in temporary well TW-1. The purpose of this report is to describe the installation of these wells, present the results of their sampling and analysis, and discuss the actions that will be taken by Sparton based on these results.

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[1] S. S. Papadopulos & Associates, Inc., 1999, *Work Plan for the Installation of a Source Containment System*: prepared for Sparton Technology, Inc., Coors Road Facility, Albuquerque, New Mexico, February 18.

2.0 WELL INSTALLATION

The wells were installed, between February 25 and March 2, 1999, by drilling 7.5-inch holes with a 3.75-inch inside diameter hollow-stem auger. The hole for well MW-72 was drilled to a total depth of 110 feet and that for MW-73 to a total depth of 104 feet.

During the drilling of MW-72, split-spoon samples were obtained at 5-foot intervals to a depth of 79 feet. Drill cuttings were not recovered, and split-spoon samples were not obtained, between the depths of 79 and 109 feet while drilling through saturated sand; in this interval the hole was logged by watching the cross bar on the hex rod of the auger. The "clayey, finer material layer" discussed in the Source Containment Plan was encountered at a depth of 109 feet, corresponding to an elevation of about 4,945 feet above mean sea level (MSL). A split-spoon sample of the clayey material was obtained from a depth of 109.5 to 110 feet to confirm its presence. In well MW-43 and MW-70, between which MW-72 is located, this clayey layer was encountered at elevations of 4,955 and 4,928 feet, respectively; thus, the elevation at which it was encountered in well MW-72 is consistent with these neighboring wells. A preliminary sample log of well MW-72 is presented in Appendix A. Split-spoon samples were analyzed in the laboratory for grain size and other properties, and will also be microscopically evaluated. A final sample log will be submitted after the microscopic evaluations have been completed.

Drill cutting samples were evaluated at 5-foot intervals during the drilling of well MW-73 to a depth of 83 feet. As in the case of MW-72, drill cuttings were not recovered while drilling through saturated sand between 83 feet and the total depth of 104 feet; in this interval the hole was logged by watching the cross bar on the hex rod of the auger. A sample log of the well is included in Appendix A.

The wells were completed by installing a screen and casing assembly, sand pack around the screen, and 5 percent bentonite-cement slurry above the sand pack. The screen and casing assembly consisted of 2-inch FJT Schedule 40 PVC well screen (with 0.010-inch slots) and casing. The screen installed in well MW-72 was 10 feet long and extended across the depth interval of 99 to 109 feet; in well MW-73, the screen was 5 feet long and extended between 97 and 102 feet. The screen and casing assembly was lowered into the hole through the hollow stem of the auger. Sand was added through the annular space between the hollow stem and the casing while pulling the auger out; as the auger was being pulled out the sand aquifer material caved around the screen forming a natural sand pack around the lower part of the screen. An artificial sand pack, consisting of 10-20 sand, was added to the top of the caved material to 5 feet above the screen in MW-72, and 3 feet above the screen in MW-73. The bentonite-cement slurry was placed from the top of the sand pack to the land surface using a 3/4-inch tremie pipe installed in the annular space between the hollow stem and the casing; the augers were pulled out as the bentonite-cement slurry was being placed. A 6-inch diameter, 5-foot long locking, steel wellhead was pushed around the casing, about 2.5 feet into the bentonite-cement slurry, and the wells were completed by installing a 4-inch thick, 3 feet by 3 feet concrete slab around the steel wellhead. Schematic construction diagrams of the wells are presented in Appendix B.

After completion, the wells were developed by surging with an air-injector pump until the pumped water was clear. About 70 gallons of water were removed from each well during this process.

The wells were surveyed on March 29, 1999 by Surv-Tek, Inc. of Albuquerque, New Mexico. The location coordinates and elevations of the wells determined from this survey are as follows:

Well	Northing, feet	Easting, feet	Elevation, feet above MSL	Description
MW-72	1,524,630.73	377,079.68	5,056.25 5,055.37 5,053.99	Top of 6" wellhead Top of 2" PVC casing Top of concrete slab
MW-73	1,524,346.08	376,821.45	5,045.07 5,044.67 5,042.83	Top of 6" wellhead Top of 2" PVC casing Top of concrete slab

3.0 GROUNDWATER SAMPLING AND ANALYSIS

Groundwater samples were collected from the two new monitoring wells on March 5, 1999 following the standard procedures outlined in the draft Ground Water Monitoring Program Plan (Monitoring Plan) of the Sparton Site (Revised Draft, November 18, 1998). The samples were delivered to Pinnacle Laboratories Inc. of Albuquerque, New Mexico on the same day, and were analyzed for volatile organic compounds (VOCs) by USEPA Method 8260. The complete laboratory reports on the results of the analyses and related documents are presented in Appendix C. The results are summarized below:

Volatile Organic Compound (VOC)	Detection Limit, µg/L	Concentration in Well MW-72, µg/L	Concentration in Well MW-73, µg/L
Benzene	1.0	1.3	2.7
Chlorobenzene	1.0	<1.0	1.0
Chloroform	1.0	5.9	8.4
1,1,-Dichloroethane	1.0	4.3	12
1,1,-Dichloroethene	1.0	220 (Dil. 10)	520 (Dil. 20)
1,1,1,2-Tetrachloroethane	1.0	<1.0	1.1
Tetrachloroethene	1.0	15	15
1,1,1-Trichloroethane	1.0	99	240 (Dil. 20)
1,1,2-Trichloroethane	1.0	1.3	5.2
Trichloroethene	1.0	1800 (Dil. 10)	4000 (Dil. 20)
1,1,2,1,2,2-Trichlorotrifluoroethane	1.0	10	20

4.0 DISTRIBUTION OF TCE CONCENTRATIONS

The results of the analysis of samples from the new monitoring wells were combined with the results of the November-December, 1998 sampling of existing monitoring and recovery wells and the September 1998 sampling of the off-site containment and observation wells to revise the distribution of TCE concentrations at the site. The revised horizontal distribution of TCE at the Sparton property and vicinity is shown in Figure 2. The method used in developing this isoconcentration map is that described in Section 3.3 of the "Work Plan for the Off-Site Containment System"[2]; however, to show a continuity between the concentrations detected in the source areas at the center of the property and those detected along the northwest property boundary, data from upper flow zone wells MW-21 and MW-27 (see Figure 1 for well locations) were not included in the process. The November-December, 1998 TCE concentrations in these two wells were 7.5 and 380 µg/L, respectively, indicating that the primary migration pathway from the source areas is the lower flow zone.

The revised vertical distribution of TCE along the northwest (downgradient) boundary of the Sparton property is shown in Figure 3. Note that data from the February 1998 sampling of temporary well TW-2 were included in the development of this cross-sectional distribution of TCE.

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[2] S. S. Papadopulos & Associates, Inc., 1999, *Work Plan for the Off-Site Containment System*: prepared for Sparton Technology, Inc., Coors Road Facility, Albuquerque, New Mexico, February 18.

5.0 EFFECT ON SOURCE CONTAINMENT WELL LOCATION

To determine whether the revised TCE distribution could have an effect on decisions concerning the location of the source containment well, the predicted capture zone of the well was superimposed on the horizontal and vertical TCE distribution in Figures 4 and 5. As shown in these figures, the areas where the highest TCE concentrations occur on the Sparton property and along its northwest boundary are within the predicted capture zone of the source containment well. A small area with relatively high TCE concentrations near the new monitoring well MW-72 will remain outside the capture zone of the well; however, the well will sever the hydraulic connection between this area and potential source areas in the center of the property. Contaminant concentrations in the MW-72 area would, therefore, be expected to decline after the source containment well begins operating.

These observations on the relative position of the predicted capture zone and of the on-site TCE distribution indicate that, based on the currently available data, the proposed location of the source containment well is satisfactory for containing potential source areas, capturing most of the current contaminant discharge from the site, and eventually eliminating this discharge to off-site areas.

6.0 FUTURE ACTION

The Source Containment Plan specifies that if the TCE concentration in the first sample obtained from well MW-72 after its installation is higher than 1,000 µg/L, then the well will be designated as a monitoring well and sampled semi-annually for a period of five years.

Given the results of the first sampling event presented in this report, Sparton will begin monitoring well MW-72, as well as well MW-73, quarterly for water levels and semi-annually for VOCs. Dedicated bladder pumps will be installed in these wells for sampling purposes. The Monitoring Plan will be updated to include the characteristics and status of these wells (Tables 2-1 and 2-2 of the Monitoring Plan), and the frequency of water-level and water-quality monitoring (Table 3-1 of the Monitoring Plan). The data from these wells and annual evaluations of these data will be included in the site's Annual Reports.

Five years after the beginning of the source containment well operation, Sparton will evaluate the water-quality data collected from well MW-72 to determine whether they indicate the presence of sources outside the capture zone of the source containment well. A Source Containment Investigation Report will be prepared to present the results of this evaluation, and to discuss proposed modifications to the source containment system, if any, that may be required on the basis of the evaluation. Proposals pertaining to the continued sampling of MW-72, and of any other on-site monitoring wells, will also be included in this report. The report will be submitted for review and approval, in accordance with the procedures set forth in the Consent Decree.

FIGURES

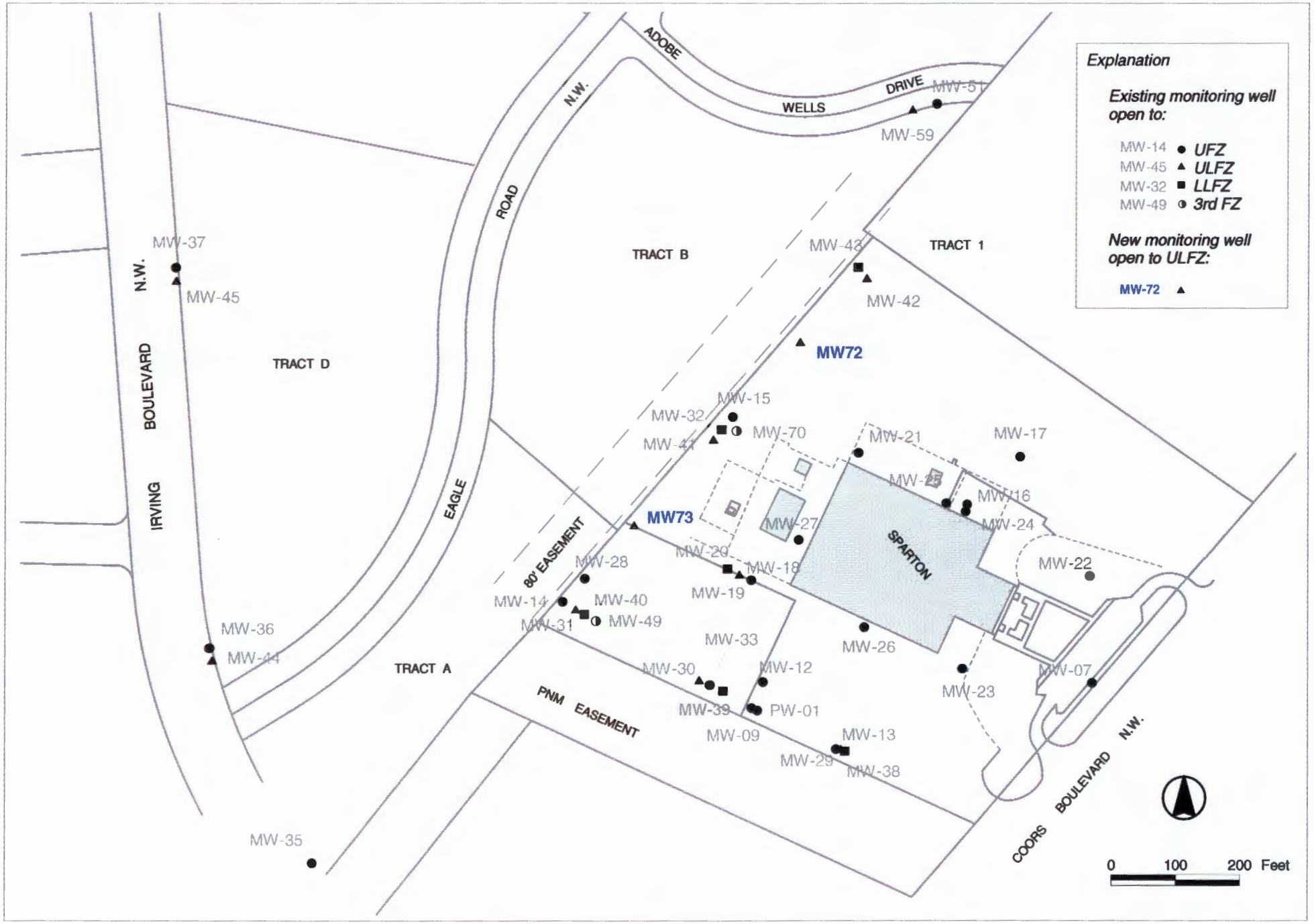

Figure 1 Location of Monitoring Wells at the Sparton Property and Vicinity

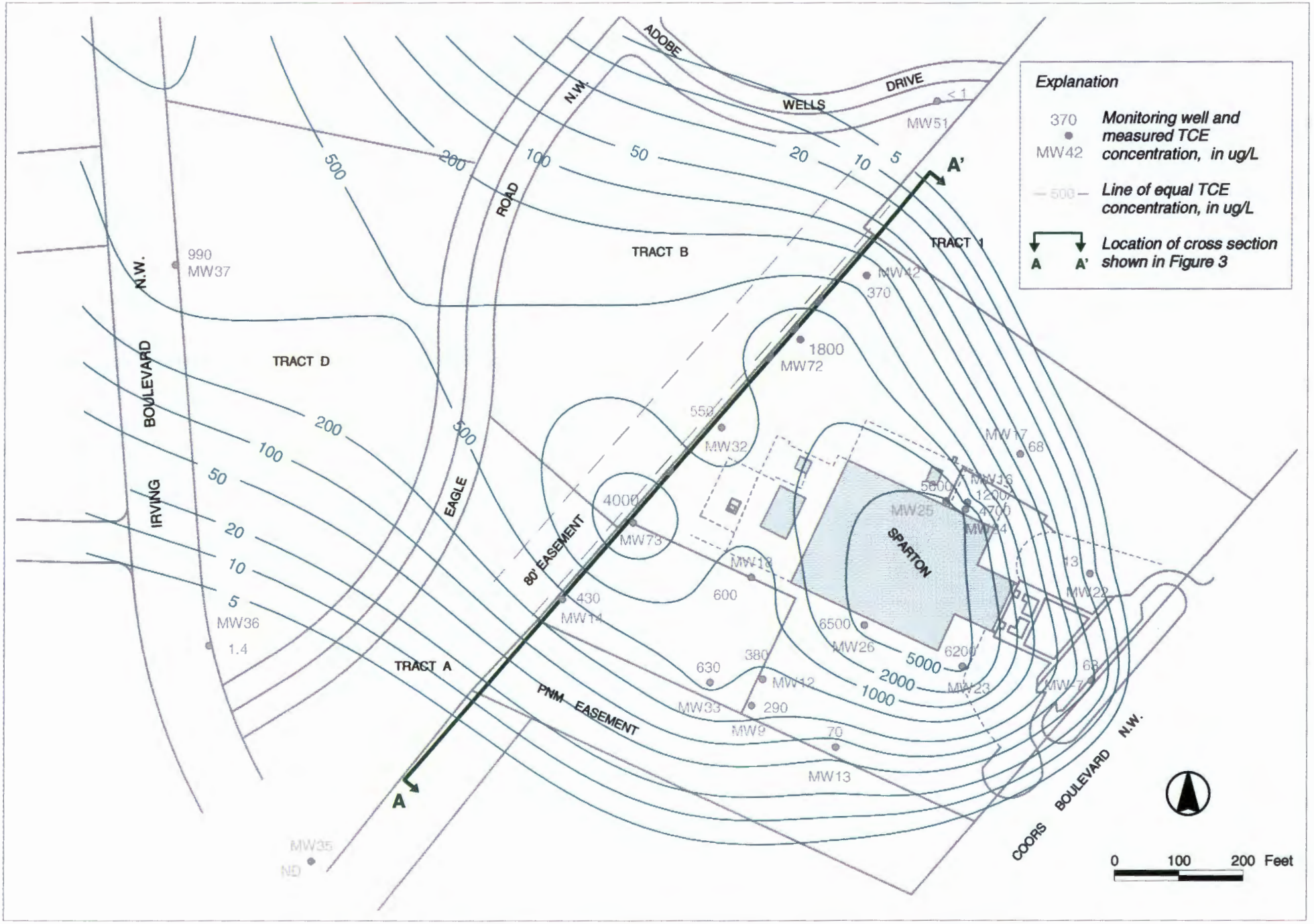

Figure 2 Distribution of TCE Concentrations at the Sparton Property and Vicinity

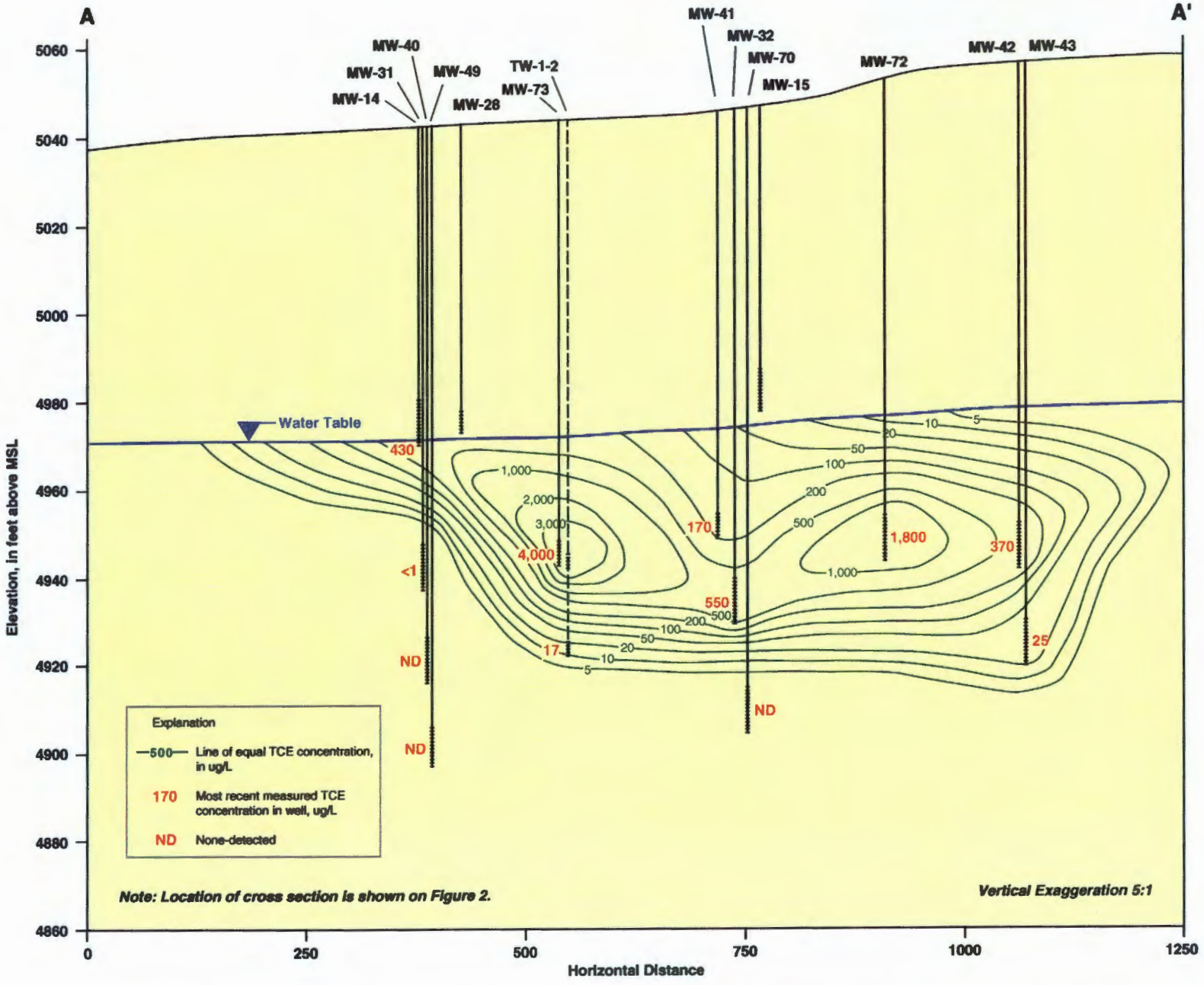

Figure 3 Vertical Distribution of TCE Concentrations along the Northwestern Property Boundary

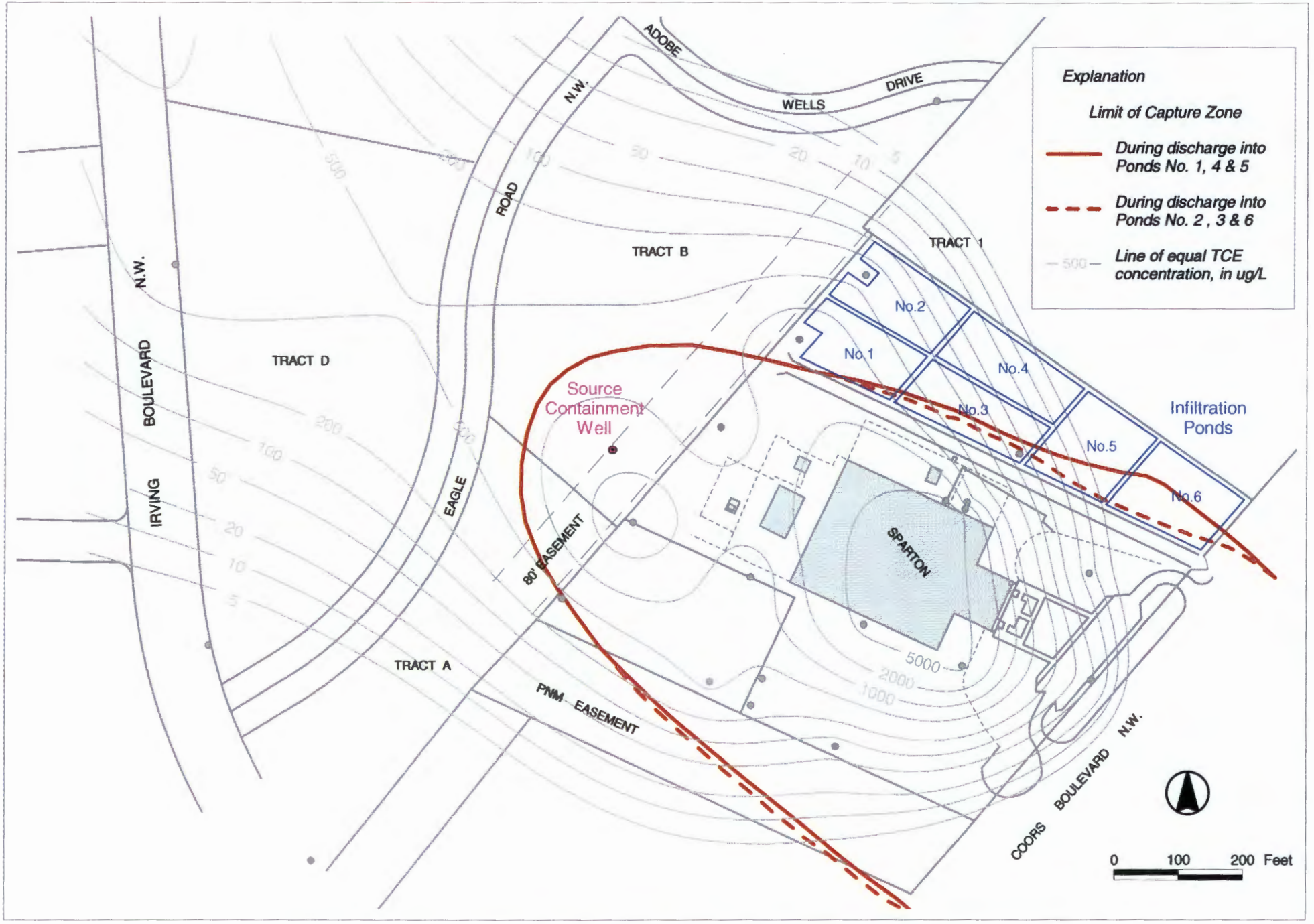

Figure 4 Areal Limit of the Predicted Capture Zone of the Proposed Source Containment Well

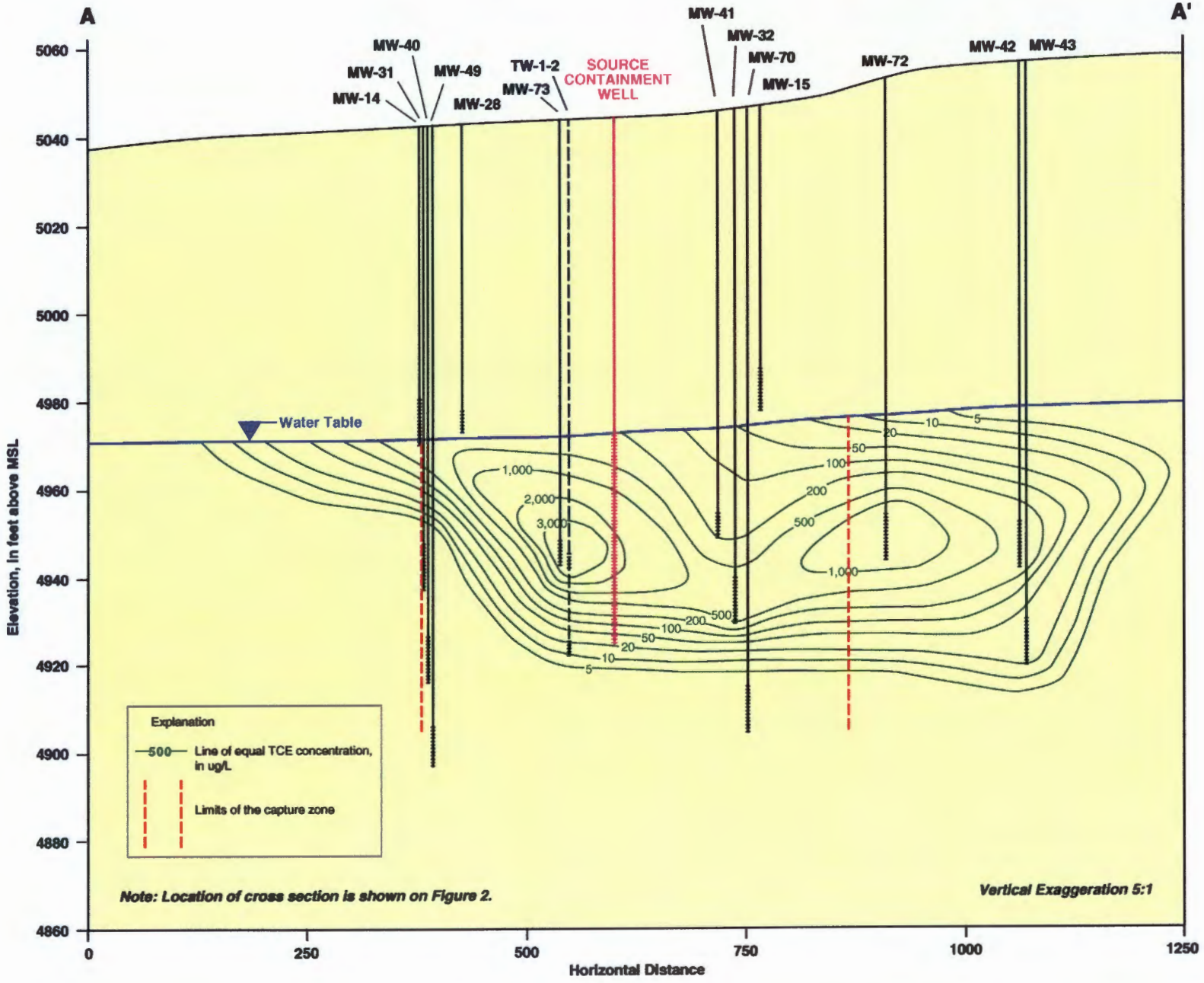

Figure 5 Vertical Limit of the Predicted Capture Zone of the Proposed Source Containment Well