BLACK & VEATCH

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Sparton Technology
Coors Road Facility

B&V Project 26602.0100
B&V File B
September 18, 1996

Ms. Ana Marie Ortiz
Assistant General Counsel
State of New Mexico Environment Department
1190 St. Francis Drive
P.O. Box 26110
Santa Fe, NM 87502

Re: Corrective Action Proposals
Sparton Technology, Inc.
Coors Road Facility

Dear Ms. Ortiz:

On behalf of Sparton Technology, we are submitting the enclosed proposals for three corrective actions. These proposals cover:

1. Plume leading edge containment;

2. Vapor extraction system pilot testing; and

3. Expansion of Interim Measures.

We are also attaching copies of pertinent backup information for the submitted proposals. This backup information includes:

1. Updated corrective action recommendations (Black & Veatch letter of July 10, 1996);

2. Vapor extraction system pilot testing outline (Black & Veatch letter of August 12, 1996);

3. Calculations of hydraulic influence for groundwater containment wells (Black & Veatch letter of August 22, 1996);

Sparton Technology
Ms. Ana Marie Ortiz

B&V Project 26602.0100
September 18, 1996

These proposals are being submitted in response to your letter of September 12, 1996, and our continuing discussion and correspondence with NMED staff. Copies of these proposals are being sent by facsimile to expedite your review. Actual proposal documents and backup information are being transmitted by overnight mail.

If you have any questions or need further information, please call. Further note that as of September 14, 1996, our area code changed from 214 to 972.

Sincerely,

BLACK & VEATCH

Pierce L. Chandler, Jr.
Project Manager

bk
enclosures

cc: Mr. R. Jan Appel, Sparton Technology, Inc.
Mr. Jim Harris, Thompson and Knight
Mr. Gary Richardson, Metric Corporation

PROPOSAL

Plume Leading Edge Containment Well
Coors Road Facility
Sparton Technology, Inc.
Albuquerque, New Mexico

Prepared for:

Sparton Technology, Inc.
Rio Rancho, New Mexico

Prepared by:

Black & Veatch
Dallas, Texas

in Association With

Metric Corporation
Albuquerque, New Mexico

September 17, 1996

Objectives

The objectives for installation and operation of the plume leading edge containment well are:

1. To intercept or capture the leading edge of the contaminant plume to prevent further down-gradient migration.

2. To recover contaminated groundwater, treat and dispose to reduce the quantity of contamination.

3. To demonstrate/document the performance of the containment well in achieving the first two objectives.

4. To provide (through pump testing) confirmation of aquifer characteristics.

Definition of Plume Leading Edge

In the RCRA Facility Investigation (RFI) Report submitted to USEPA on May 21, 1992, and subsequently approved on July 1, 1992, the horizontal and vertical limits of the plume were defined by sampling and analysis through June 1991 using both on- and off-site groundwater monitoring wells. In particular, the leading edge of the plume was defined by a number of non-detect groundwater monitoring wells outside the perimeter of the plume.

Subsequent to the RFI completion, plume movement continued beyond the existing groundwater monitoring system. However, based on historic movement, groundwater gradient, and relatively constant geologic conditions, the limits of the leading edge of the plume were estimated in the May 1996 Corrective Measure Study (CMS) Report approved by USEPA on June 24, 1996. To further define the limits of the plume, five additional groundwater monitoring wells (MW-65 through MW-69) were installed around and outside the predicted limits of the plume. Well locations were chosen to provide additional definition of the horizontal and vertical extent of the leading (down-gradient) edge of the plume through non-detection. These and other non-detect wells around the leading edge provide good definition of the plume. The new well installations and subsequent sampling and analysis of these and other existing monitoring wells confirm

that the plume limits shown in the CMS Report are reasonable and that the CMS conclusions about direction and rate of movement are also reasonable.

Based on the currently defined plume limits and characteristics, a single well located along Buckeye, some 500 feet north of Arrowhead (see Figure 1) is proposed for plume leading edge containment. (This is the same location shown in the July 10 B&V proposal.) Calculations of predicted well containment performance based on various methodologies and examples of field demonstrations of radius of influence were previously furnished to NMED in the B&V letter of August 22, 1996. These calculations show that a single well is capable of containing the leading edge of the plume.

Available Groundwater Monitoring Network

The attached Table 1 is a summary of monitoring points available to verify the performance (containment function) of a groundwater recovery well installed to contain the leading edge of the plume.

With respect to the attached summary (see Table 1), there are 21 groundwater monitoring wells (including 7 clusters) within 1,500 feet of the proposed recovery well (see Figure 1). These wells include 12 in the upper flow zone (UFZ), three in the upper lower flow zone (ULFZ), five in the lower lower flow zone (LLFZ), and one in the third flow zone (TFZ). There are four down-gradient, three cross-gradient, and 14 up-gradient wells.

The available monitoring network includes all wells that currently define the limits of the leading edge of the plume. The network includes all non-detect monitoring wells outside the plume and detection wells inside the plume. This combination of wells was used to define the plume and is, therefore, capable of showing successful containment performance by demonstrating inward flow (toward the recovery well) across the entire leading edge of the plume. Conversely, the existing groundwater monitoring network is also capable of detecting any deficiency of the proposed recovery well relative to containing the entire leading edge of the plume. Containment performance can be monitored thorough continuing water level observations and water quality sampling and analyses in the groundwater monitoring well network.

Groundwater Containment/Recovery Well Design

Our recommendations on groundwater recovery are similar to those in the CMS Report. The recovery well should be screened at least into the upper 30 to 35 feet of the saturated zone. Screen depth should be adjusted downward, as necessary, based on pilot hole logging to ensure screen placement into a transmissive zone. Due to the geologic anisotropy, the plume depth is very shallow (<100 ft) whereas the width (≈1,500 ft), and length (≈3,000 ft) are large. Thus, a well screened to approximately 50 percent of the plume thickness should be effective. Further, the bulk of the contamination occurs in the top of the aquifer. As a consequence, very deep well penetrations (greater screen length) are undesirable due to the potential for contaminant migration from the upper flow zone (UFZ) to the lower lower flow zone (LLFZ). For similar reasons, a pumping rate of 50 to 100 gpm (drawdown in the range of 6 to 10 feet) is also desirable. All available information indicates that this pumping rate should be more than adequate to achieve containment of the plume. The design intent is to provide sufficient drawdown to achieve containment yet avoid pulling shallow contamination deeper into the aquifer. A second design intent is to minimize the amount of "clean" water recovered by the well.

Produced water from the recovery well would be treated to meet discharge permit requirements for both air and water effluents. Treatment is proposed at the well head. This proposal assumes that treated water can be economically disposed by either discharge to the Rio Grande River by NPDES permit or through some other economic alternative such as discharge to a sanitary sewer.

Containment Demonstration

Demonstration of containment will be established by conducting a series of pumping tests during the initial startup of the groundwater recovery well. The first pump test would be a two to three day test (with a temporary pump) used to determine the required size (pumping rate) for the production pump. Time-drawdown data would be obtained from a constant-rate test at approximately 100 gpm to evaluate produced drawdown and impact to the closer monitoring wells. The resulting time-drawdown and distance-drawdown data would be analyzed to verify the design pumping rate needed to produce approximately 10 feet of drawdown in the recovery well. The data would also be used to project the edge or limit of the recovery well influence relative to plume capture/containment. The temporary pump test would also be used to establish produced water quality by sampling

and laboratory analysis on a daily frequency. Flow rate, total quantity, and monitor well levels will be recorded during the pumping test.

After the production pump is installed, a long-term (approximately one month) pumping test would be conducted using the production well and the monitoring network described in Table 1. Closer monitoring wells (<750 feet horizontal distance) would be read two to four times daily for the first several days, and once daily for the rest of the first week. More distant wells would be read daily for the first week. Thereafter, all well levels would be recorded once per week for the duration of the test. This second pump test would be used to demonstrate both the performance of the recovery well/treatment system and the plume area impacted by the pumping.

Contingency

There are at least two possible scenarios that could be identified during the pumping test. The first of these is that the chosen well location may have atypical or non-representative geology such as an absence of coarser, transmissive material in the uppermost saturated zone. Such a condition has been encountered in several monitoring wells.

Pilot hole procedures and installation of a temporary pump are two ways to minimize the effect of an unexpected geologic condition. As previously noted, screen length would be extended as a first solution. In the highly unlikely event the geologic condition was vertically extensive (tens of feet), consideration would have to be given to an alternate location.

The second scenario is that the long-term pumping test of the recovery well indicates that portions of the leading edge of the plume are not being effectively intercepted. (Effective interception would be defined as demonstration of flow toward the recovery well using water level data from various monitoring wells to show an inward gradient to the recovery well, i.e., to show a cone of depression over the horizontal and vertical extent of the plume.) This scenario is also unlikely and the solution, in all probability, would be to increase the pumping rate (increase stress in the aquifer).

There is a third scenario that could appear months or years into recovery well operation. This scenario would be the appearance of contamination in a currently non-detect monitor

well outside the influence area of the recovery well. The solution could involve the installation of additional monitoring wells and subsequent characterization/evaluation.

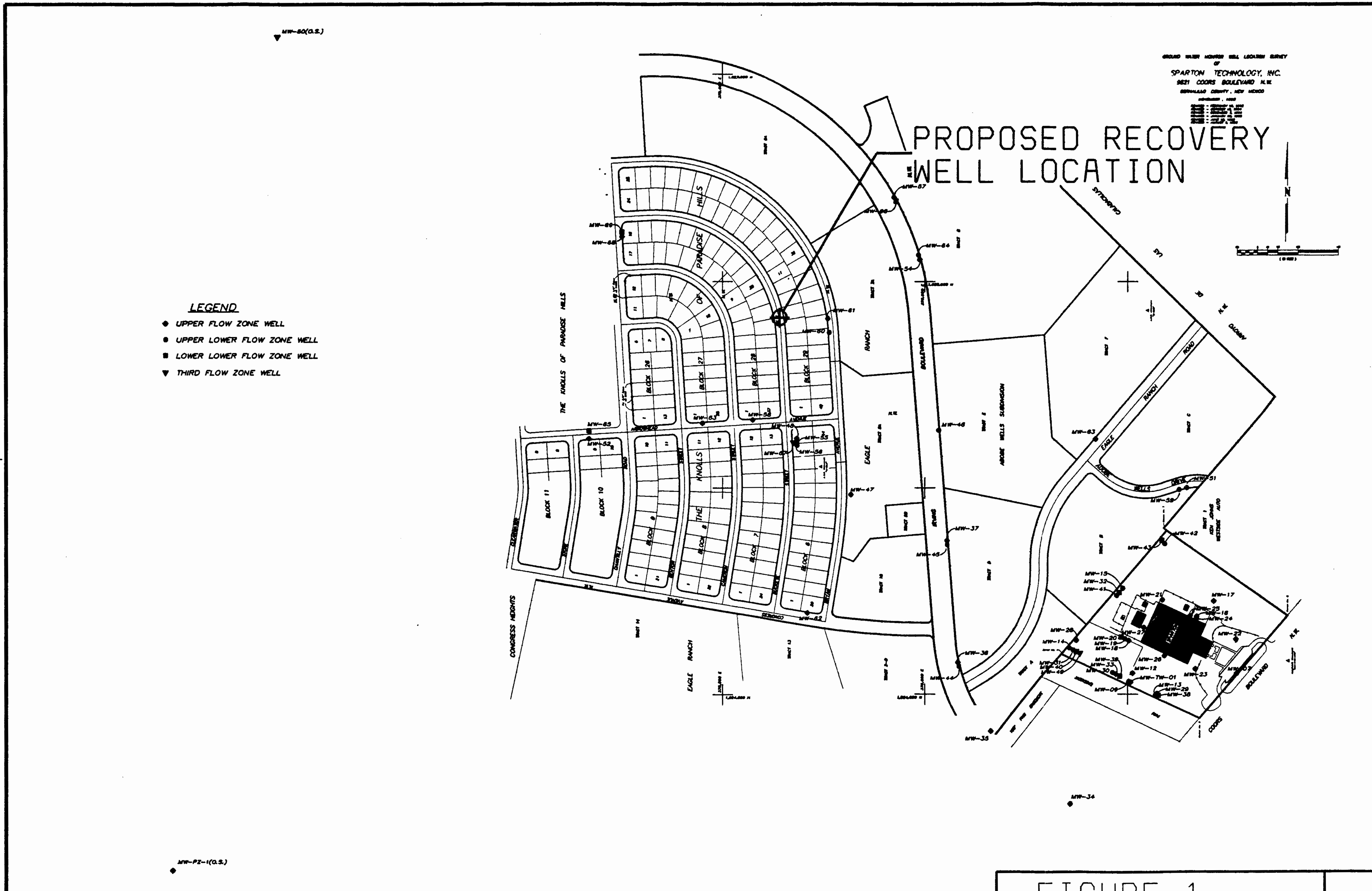
Schedule

The schedule for implementing the plume leading edge containment is a dual concurrent track. The first track is the process of obtaining the necessary permits for installing and operating the containment well system. The permits include air quality, well installation, groundwater rights, variance from zoning, public right-of-way use, and discharge (including NPDES). This first track would begin immediately upon authorization to proceed and is considered the critical path. Schedule estimates for this track are at least six months.

The second track is the actual installation and testing of the containment well system. The second track also presumes that track one will be successfully completed. Elements (and schedule estimates) for this second track are as follows:

1. Select and purchase property for the wellhead (four to six weeks).
2. Review permits status.
3. Drill and install recovery well (two months).
4. Review permits status.
5. Construct building/shelter for treatment unit (four months).
6. Acquire and install treatment equipment and discharge pipeline (one month).
7. Verify completion of permits.
8. Conduct temporary pump test and install production pump (one month).
9. Conduct production pump test (one month).
10. Evaluate and report installation and test data (two months).

Based on the above estimates, it will take at least eight months to actually begin pumping water with the permit process being the critical impact on the schedule.



DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP	DESIGNED DETAILED CHECKED APPROVED DATE	Black & Veatch Dallas, Texas	PROJECT NO. 26602

FIGURE 1

RECOVERY WELL AND MONITORING NETWORK

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