File Sparton

State of New Mexico
ENVIRONMENT DEPARTMENT
Hazardous & Radioactive Materials Bureau
2044 Galisteo
P.O. Box 26110
Santa Fe, New Mexico 87502
(505) 827-1557
Fax (505) 827-1544

GARY E. JOHNSON
GOVERNOR

MARK E. WEIDLER
SECRETARY

EDGAR T. THORNTON, III
DEPUTY SECRETARY

December 8, 1995

David Clarke
9856 Coors Road NW
Albuquerque, NM 87114

Dear Mr. Clarke:

In response to your request of this date, I am enclosing a copy of the **Statement of Basis** in which the U.S. Environmental Protection Agency discusses the contamination and remedial alternatives related to the Sparton Technology, Inc. Coors Road facility in Albuquerque.

As we discussed on the telephone, the known contamination in the groundwater is migrating approximately to the northwest from the Sparton facility. Because you are located north of Las Calabacillas Arroyo and east of Coors Road, your water well should not be impacted by the contamination resulting from Sparton's activities.

If I can be of any further assistance, please do not hesitate to call me at (505) 827-1560.

Sincerely,

Ronald A. Kern

Ronald A. Kern, Manager
RCRA Technical Compliance Program

Enclosure

cc: FILE

Enclosure not Found

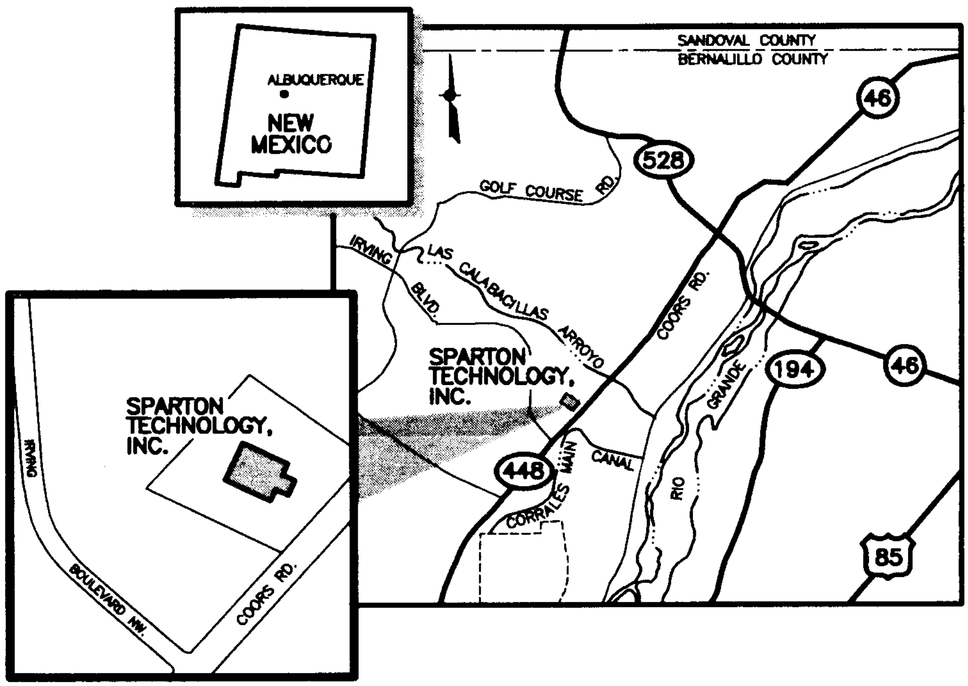
FINAL (8/8/95)
RAK Copy

STATEMENT OF BASIS
RCRA CORRECTIVE ACTION

SPARTON TECHNOLOGY, INC.
COORS ROAD FACILITY
ALBUQUERQUE, NEW MEXICO

THE PURPOSE OF THIS STATEMENT OF BASIS IS TO:

- Identify the proposed remedy for addressing contamination at the site and explain the reasons for the preference;
- Describe the other remedial options considered in detail in the Corrective Measures Study;
- Solicit public review and comment on all the alternatives and information contained in the Administrative Record;
- Provide information on how the public can be involved in the remedy selection process; and
- Provide history and background about the facility and surrounding site.



EPA ANNOUNCES STATEMENT OF BASIS

In this Statement of Basis, the U.S. Environmental Protection Agency (EPA) describes the proposed remedy for addressing the contamination problems at the Sparton Technology Coors Road facility located in Albuquerque, New Mexico. In addition, the Statement of Basis includes summaries of other alternatives evaluated for this facility and the rationale for EPA's preference. This document is issued by EPA, the lead agency for site activities. EPA, in consultation with the State of New Mexico, will select a final remedy for the Sparton Technology facility only after the public comment period has ended and the information submitted during this time is reviewed and considered in the decision-making process.

EPA is issuing this Statement of Basis as part of its public participation responsibilities under the **Resource Conservation and Recovery Act (RCRA)**. Words appearing in **boldface** are defined in the glossary at the end of this Statement of Basis. The Statement of Basis summarizes information that can be found in greater detail in the **Administrative Record**. A discussion of the nature and extent of contamination at the Sparton Technology Facility and surrounding area are presented in the **RCRA Facility Investigation (RFI) Report**. Ground water sampling data collected after the RFI and updating the extent of contamination are also included in the Administrative Record. The development and evaluation of remedial alternatives to address the contamination is presented in the **Corrective Measures Study (CMS) Report**. The site investigation and the development of the remedial alternatives were conducted by Sparton Technology and provided to EPA for review and approval.

COMMUNITY PARTICIPATION

EPA encourages the public to review the Administrative Record in order to gain a more comprehensive understanding of the RCRA activities that have been conducted at the Facility. The Administrative Record is available for review at the following locations:

Taylor Ranch Branch Library
5700 Bogart St., NW
Albuquerque, New Mexico
(505) 897-8816
Wed, Fri & Sat - 9:00 a.m. to 5:30 p.m.
Tue & Thur - 12:30 p.m. to 9:00 p.m.

New Mexico Environment Department
2044-A Galisteo
Santa Fe, New Mexico
Temporary Number: (505) 827-2855
Monday - Friday 8:00 a.m. to 4:00 p.m.

U.S. EPA Region 6 Library
12th Floor
1445 Ross Avenue
Dallas, Texas 75202-2733
(214) 665-6427
Monday - Friday, 7:30 a.m. - 5:00 p.m.

EPA welcomes public comment on all of the remedial alternatives described and on any additional options not previously identified and/or studied. Public input on all potential alternatives, and on the information that supports the alternatives, is an important contribution to the remedy selection process. EPA may modify the proposed remedy or select another remedy based on new and/or substantive information presented to EPA through public comments. Therefore, the public is encouraged to review and comment on all alternatives.

The public comment period for the Statement of Basis begins August 10, 1995, and ends on September 25, 1995. During the public comment period, written comments must be postmarked by September 25, 1995, and submitted to:

U.S. Environmental Protection Agency
Hazardous Waste Enforcement Branch
Technical Section (6EN-HX)
Attention: Vincent Malott
1445 Ross Avenue
Dallas, Texas 75202-2733

EPA will also hold a public meeting beginning at 7 p.m., September 12, 1995, to inform the community about the proposed remedy and obtain their comments. The public meeting will be held at the following location:

Cibola High School
1510 Ellison Dr.
Albuquerque, New Mexico
(505) 897-0110

EPA will address all comments received during the public comment period in the Final Decision and Response to Comments document (RTC). The RTC will explain EPA's rationale for the remedy selected to address contamination problems at the Sparton site. The preferred remedy in the Statement of Basis is a preliminary determination and should another option be selected as the remedy, based upon public comment, new information, or a reevaluation of existing information, any significant differences from this Statement of Basis will be explained in the RTC. The RTC will be incorporated into the Administrative Record and made available to the public in the information repositories.

The final remedy selected by EPA will be implemented either through a Corrective Measure Implementation (CMI) Administrative Order on Consent, a CMI Unilateral Administrative Order, a civil judicial enforcement action under Section 3008(h) of RCRA, or a Post-Closure permit issued jointly by the New Mexico Environment Department (NMED) and EPA.

FACILITY BACKGROUND

A. Site Description

The Sparton Technology, Inc., Coors Road Plant (Facility), at 9621 Coors Road, NW, consists of a 64,000-square-foot building on a 12-acre parcel of land on the northwest side of Albuquerque, New Mexico. The Facility is located on the edge of a **terrace** approximately 60 feet above the adjacent Rio Grande floodplain and approximately 0.5 mile west of the Rio Grande. The Corrales Main Canal, a man-made hydraulic structure used for irrigation, is approximately 200 feet southeast of the Facility and contains flowing water eight months out of the year. The Calabacillas Arroyo is located about 1,000 feet north of the site. West of Irving Boulevard, the elevation rises some 250 feet from the terrace to form the surrounding hills.

Land use in the immediate area consists of commercial and residential developments and undeveloped tracts along the west side of Coors Road and agricultural operations to the east of Coors Road. Residential developments, such as Paradise Hills, are located primarily west of Irving Boulevard and are approximately 1/3-3/4 mile west of the Facility.

The subsurface soils across the Facility consist of sandy muds, sands, and gravel. The depth to **ground water** varies from approximately 65 feet at the Facility to approximately 200 feet in the hills to the west. The depth to ground water can vary as much as two to three feet during the year as a result of recharge from irrigated fields and the Corrales Main Canal. Ground water flow is generally to the southwest across the Facility, changing to the west-northwest between the Facility and Irving Boulevard.

Local ground water supplies both drinking water for the City of Albuquerque as well as process water for industrial purposes. New Mexico Utilities, Inc., operates the nearest downgradient municipal water supply well (well No. 2) approximately 2.6 miles northwest of the Facility. There have been no identified private water supply wells immediately downgradient from the Facility. Based on the criteria presented in the Groundwater Protection Strategy (U.S. EPA, 1984), EPA considers the **aquifer** beneath the Facility to be a Class IIA aquifer because it is a current and potential source of drinking water.

B. Facility History

Manufacturing operations began in 1961 with commercial, industrial, and military electronic components, including printed circuit boards. As of 1994, Sparton discontinued manufacturing operations at the Facility and other than routine maintenance activities, the Facility is currently inactive.

The printed circuit board manufacturing process at the Facility generated an aqueous plating waste which is classified as hazardous due to heavy metals and a low pH. Waste solvents were generated primarily from cleaning of electronic components. From 1961 to 1975, the plating wastes were stored in an in-ground concrete basin. This basin was replaced by a lined surface impoundment in 1975, termed the "West Pond" and a second lined surface impoundment in 1977 termed the "East Pond" (Figure 1). The "West" and "East" ponds remained in use until 1983 when Sparton ceased discharging to either pond and removed the remaining plating wastes. The ponds are approximately 20 feet by 30 feet in surface dimension and 5 feet deep. The impoundments were constructed of concrete block or cast-walls with a natural sand base and a 30-mil, two-ply hypalon liner.

From 1961 to 1980, waste solvents were accumulated in an on-site sump (Figure 1) and allowed to evaporate. The sump was constructed of concrete blocks and measured approximately 5 feet by 5 feet in surface dimension by 2 feet deep. Sparton ceased discharging to the sump in October 1980 by removing the remaining wastes and filling the sump with sand.

Drums of hazardous waste were stored on the ground surface prior to May 1981, when a new drum storage area was constructed for storage of all drummed hazardous waste. The new drum storage area consists of a covered concrete pad and a spill collection system.

C. Regulatory History

In response to a Consent Agreement and Final Order signed by Sparton and EPA in 1983, Sparton installed a ground water monitoring system for the RCRA regulated hazardous waste management units at the Facility (East and West ponds). Analyses of the samples collected from the ground water monitoring system revealed that hazardous waste had been released to the ground water as a result of previous and ongoing hazardous waste management practices. During the period of 1983 to 1984, Sparton installed 17 ground water **monitoring wells** at the Facility. These monitoring wells were screened predominately across the top of the aquifer. Analyses of ground water samples collected from the monitoring wells detected the significant contaminants presented in Table 1.

TABLE 1

Chemical	Concentration (ppb)
Trichloroethylene	27 - 90,900
1,1,1-Trichloroethane	14 - 54,900
Methylene Chloride	420 - 78,400
1,1-Dichloroethylene	18 - 31,600
Tetrachloroethylene	17 - 953
Toluene	5 - 4,720
Benzene	20 - 193
Chromium	22 - 32,100

Sparton ceased discharging to the ponds in 1983, and removed the remaining plating wastes from the ponds for shipment to a permitted off-site disposal facility. On June 16, 1986, NMED approved the closure plan for the "East" and "West" Ponds and Sump. The ponds and sump were certified closed by Sparton on December 18 1986, and acknowledged by NMED on May 18, 1987. Sparton removed the solvent sump and sand backfill and placed the wastes in the two remaining lined impoundments. The impoundments and sump area were capped by a 6-inch thick asphaltic base overlain by a 3-inch asphaltic concrete layer (Figure 2). The cap was sloped at 1 percent to promote drainage and reduce the potential for infiltration. The protective cap installed across the former waste management area reduces the potential for direct exposure to the contaminated material, prevents stormwater runoff from transporting contaminants away from the Facility, and reduces further downward migration of hazardous waste to the underlying ground water.

Sparton also performed a soil investigation during 1986 through 1987. Soil borings were advanced on the site to evaluate the contaminant migration within the unsaturated subsurface soils as a result of past operations at the Facility. Total metals

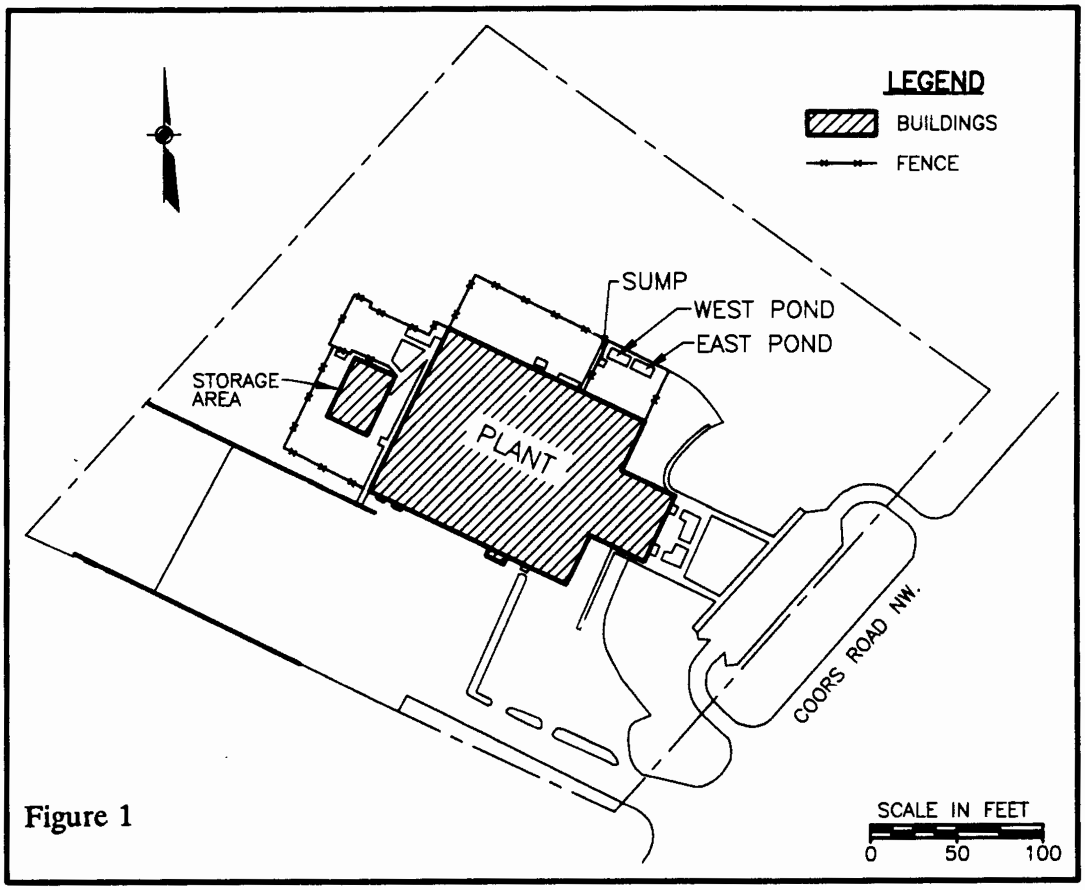


Figure 1

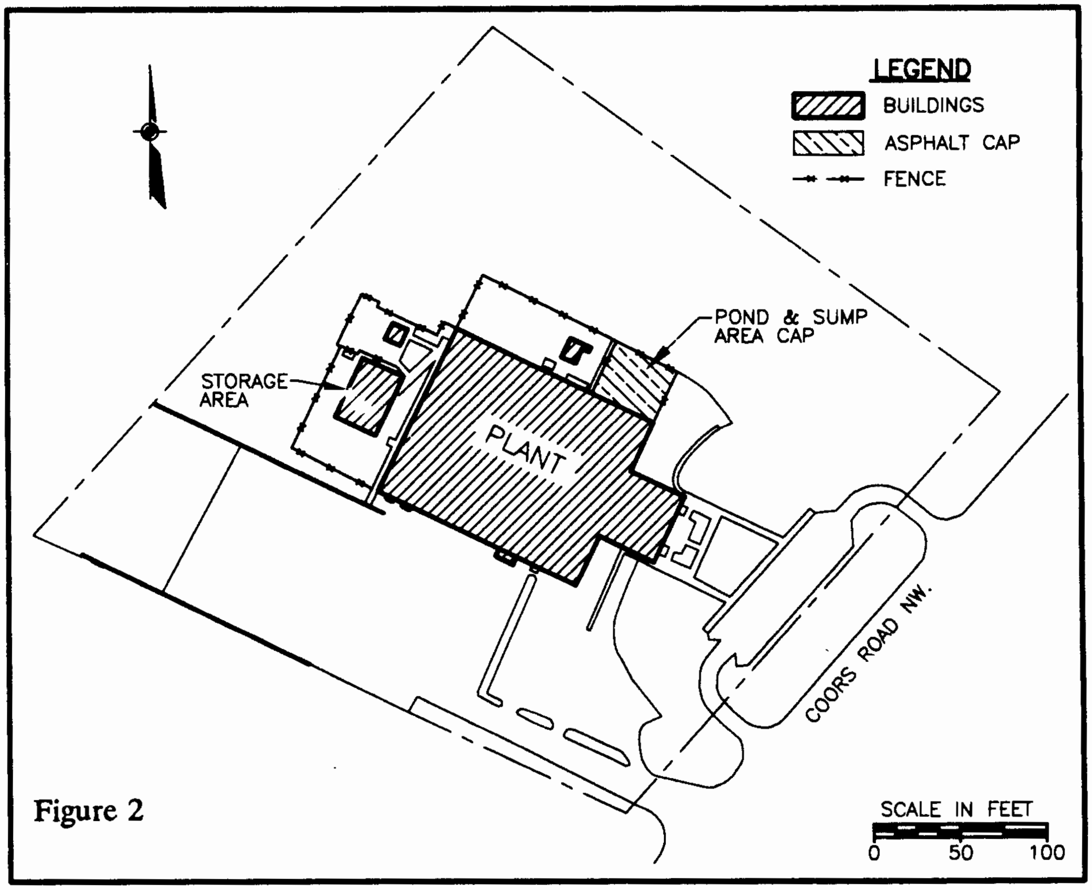


Figure 2

analyses indicated that chromium was the primary **inorganic** contaminant exceeding 3000 **ppm** underneath the former pond and sump area. The chromium concentration decreases to approximately 20 ppm outside of the waste management area but is still above the background levels (2-3 ppm). Field screening was conducted for the **organic** contaminants indicating the presence of volatile chemicals throughout the soil profile. Additional investigations included surface soil gas surveys conducted in 1984 and 1987. Trichloroethylene and trichloroethane were detected in the soil gas across the Facility and the general area of the ground water contamination.

On October 1, 1988, the EPA and Sparton Technology, Inc. (Sparton) entered into an Administrative Order on Consent (Order), Docket No. VI-004(h)-87-H, pursuant to Section 3008(h) of the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. § 6921. The Order specified the legal and technical requirements for Sparton to follow in performing corrective action at the Facility.

FACILITY INVESTIGATION

Under the terms of the Order, Sparton is required to complete the following three actions: 1) install an on-site recovery system for the contaminated ground water; 2) conduct a RFI to determine the nature and extent of contamination resulting from past facility operations; and 3) perform a CMS to evaluate the various clean-up alternatives. Sparton performed the requirements of the Order with oversight by EPA personnel and contractor support.

A. Interim Measures

Based on the available sampling data, Sparton was required under the RCRA § 3008(h) Order to install and operate a ground water recovery well network in the upper 10 feet of the aquifer as an interim measure. The recovery system became operational in 1988 to address the known ground water contamination and consists of eight on-site recovery wells at the facility. Figure 3 illustrates the location and approximate radius of influence for the individual recovery wells in the network.

The recovery well network removes approximately 1300 gallons per day of contaminated ground water. The annual ground water withdrawal rate is regulated under the New Mexico State Engineer's office permit No. RG-50161 (expiration date is December 31, 1999). Ground water pumped from the recovery wells is discharged to a collection piping system which transports the water to a collection tank. The collection piping system consists of discharge lines encased in secondary piping to provide leak detection and containment. The produced ground water is collected in a 550-gallon fiberglass-coated steel tank. The double wall tank has a leak detection system with a visual and audible alarm in the control building.

Water from the collection tank is then transported to the top of a 20 gallon per minute (gpm) packed tower air stripper. The air stripper operates by allowing the water to slowly flow downward across plastic balls while forcing air upward through the column to remove volatile organic compounds from the water. Approximately 3.2 million gallons of water have been recovered and treated in the air stripper. The demonstrated efficiency of the system is 99 percent for the contaminant indicators of trichloroethylene, 1,1,1-trichloroethane, methylene chloride, and 1,1-dichloroethylene. Contaminant concentrations in the treated water are in the range of 1 ppb for each contaminant. The volatile organic contaminants which are removed from the ground water in the air stripper are released to the atmosphere. The emissions are permitted by the City of Albuquerque Environmental Health Department (Air Quality Permit Number 187). The average daily air emission from the air stripper is 0.02 pounds which is below the maximum allowable of 9.1 pounds per day in the permit.

Treated water from the air stripper is discharged to a 15,000-gallon fiberglass-coated steel tank for storage. The double wall tank has a leak

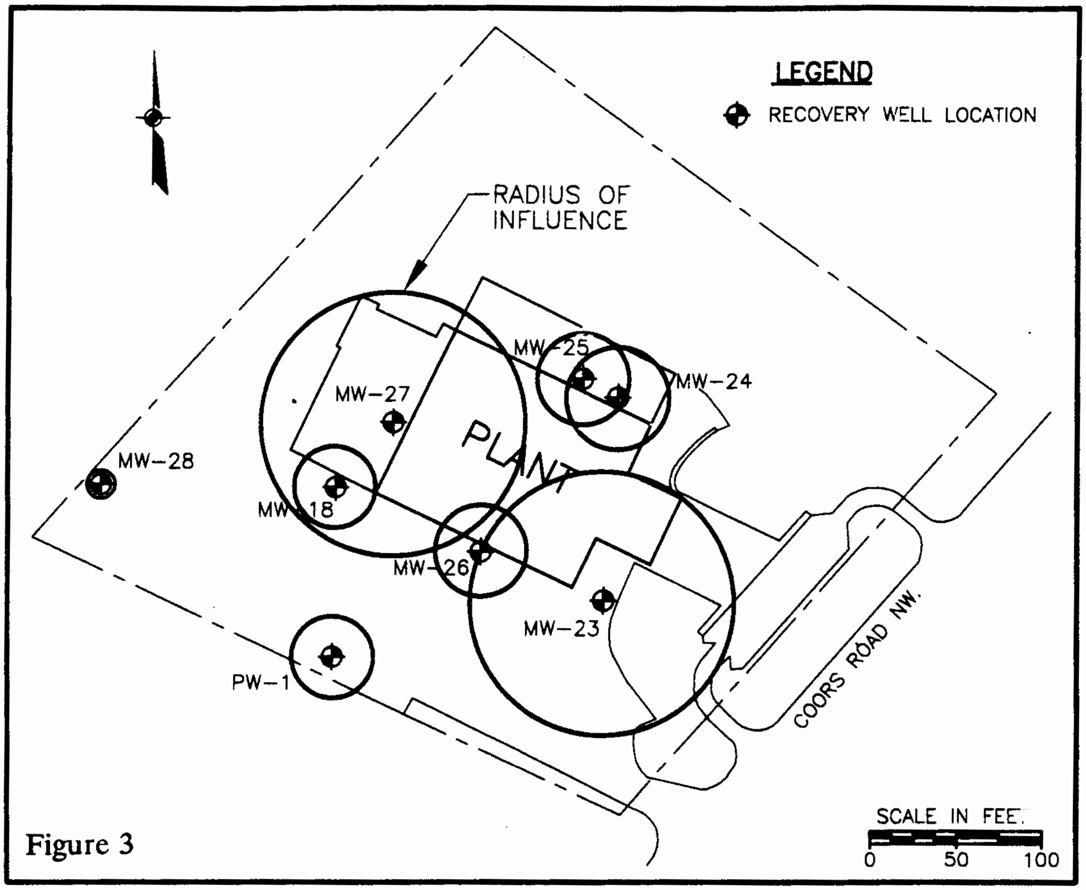


Figure 3

detection system with a visual and audible alarm in the control building. During previous plant operations, treated water from the storage tank was used in the main plant building as cooling and flushing water and eventually discharged into the sewer system. Since facility operations have been discontinued, the treated water is utilized in the sanitary system prior to discharge into the sewer system.

B. RCRA Facility Investigation

Under the RCRA § 3008(h) Order, Sparton performed an RFI to determine the nature and extent of releases to the ground water associated with past operations at the Facility. The samples were analyzed for organic and inorganic parameters, using EPA approved methods. A total of 65 monitoring wells have been installed in the aquifer to monitor the concentration and migration of hazardous waste in the ground water. Of these monitor wells, 10 have been plugged and abandoned because of design flaws and 8 were converted to recovery wells. Of the remaining 47 wells, 24 are located on-site and 23 have been installed off-site to a distance of approximately 1/2 mile west-northwest of the Facility. The wells are sited to monitor discrete intervals of the aquifer from 0-10 feet (upper flow zone), 30-40 feet (upper-lower flow zone), 50-60 feet (lower-lower flow zone), and 70-80 feet (third flow zone) below the top of the water table.

Analyses of samples collected from the monitoring wells have shown both organic and inorganic contaminants (Table 1). Trichloroethylene is the major ground water contaminant and has been used to define the extent of the contaminant plume. Trichloroethylene is a chlorinated organic compound which is denser than water, and if present as a **nonaqueous phase liquid (NAPL)**, would sink to the bottom of the water column. While a NAPL has not been identified in the monitoring wells, existing concentrations of trichloroethylene indicate the possible presence of a NAPL in the upper flow zone of the aquifer on-site at the Facility. Remaining NAPL in the soil and ground water may produce a zone of contaminant vapors above the water table and a plume of dissolved contaminants below the water table. Both residual and migrating NAPLs dissolve slowly, supplying potentially significant concentrations of contaminants to ground water over a long period of time.

Based on available data, the horizontal extent of the ground water contaminant plume is greatest in the upper flow zone. Contaminant concentrations are the highest on-site at the Facility, decreasing off-site to the west-northwest. As of June 1991, the contaminant plume had migrated approximately 1/2 mile west-northwest of the Facility and the boundary of the plume had shown no significant changes between 1989 and 1991. The boundary of the trichloroethylene contamination in ground water is illustrated in Figure 4 by the heavy contour line representing the <5 ppb concentration in the upper flow zone. During sampling activities in 1993, analytical results of the ground water indicated that the leading edge of the contaminant plume (<5 ppb) had moved northwest along Irving Boulevard (Figure 5). As recent as 1993, concentrations of trichloroethylene in the ground water range from a high of 13,000 ppb on-site to less than 5 ppb at a distance of approximately 1/2 mile off-site. Of the inorganic contaminants, chromium has the highest frequency of occurrence with concentrations up to 500 ppb.

While the organic contaminant concentrations have decreased with time in the on-site and certain off-site monitoring wells, other off-site monitoring wells have shown an increase in organic concentrations related to the continued migration of the contaminant plume beyond the boundary defined during the RFI. Based on available data, the contamination extends at least 60 feet below the water table. However, the existing monitoring system does not completely define the horizontal and vertical extent of the contamination.

SUMMARY OF SITE RISKS

Primary health risks are related to the contact with contaminated ground water. The human health risk from exposure to specific contaminants in drinking water are established in the **Maximum Contaminant Levels** (MCLs) under the Safe Drinking Water Act as found in 40 CFR 141.61 and 141.62. The State of New Mexico Water Quality Control Commission (WQCC) also establishes maximum allowable contaminant concentrations in ground water. These human health standards are found in Part 3-103 of the WQCC regulations (effective November 18, 1993). Table 2 lists the specific contaminants present in both the on-site and off-site contaminated ground water and the corresponding Federal MCL and State WQCC standard.

TABLE 2

Contaminant	MCL (ppb)	WQCC (ppb)
Trichloroethylene	5	100
1,1,1-Trichloroethane	200	600
Methylene Chloride	NA*	100
1,1-Dichloroethylene	7	5
Tetrachloroethylene	5	NA*
Benzene	5	10
Toluene	1000	750
Chromium (total)	100	50

* Not Available

There are no existing health risks associated with direct exposure to the on-site surface soils and former waste management area. The cap installed across the hazardous waste management area prevents direct exposure to the contaminants

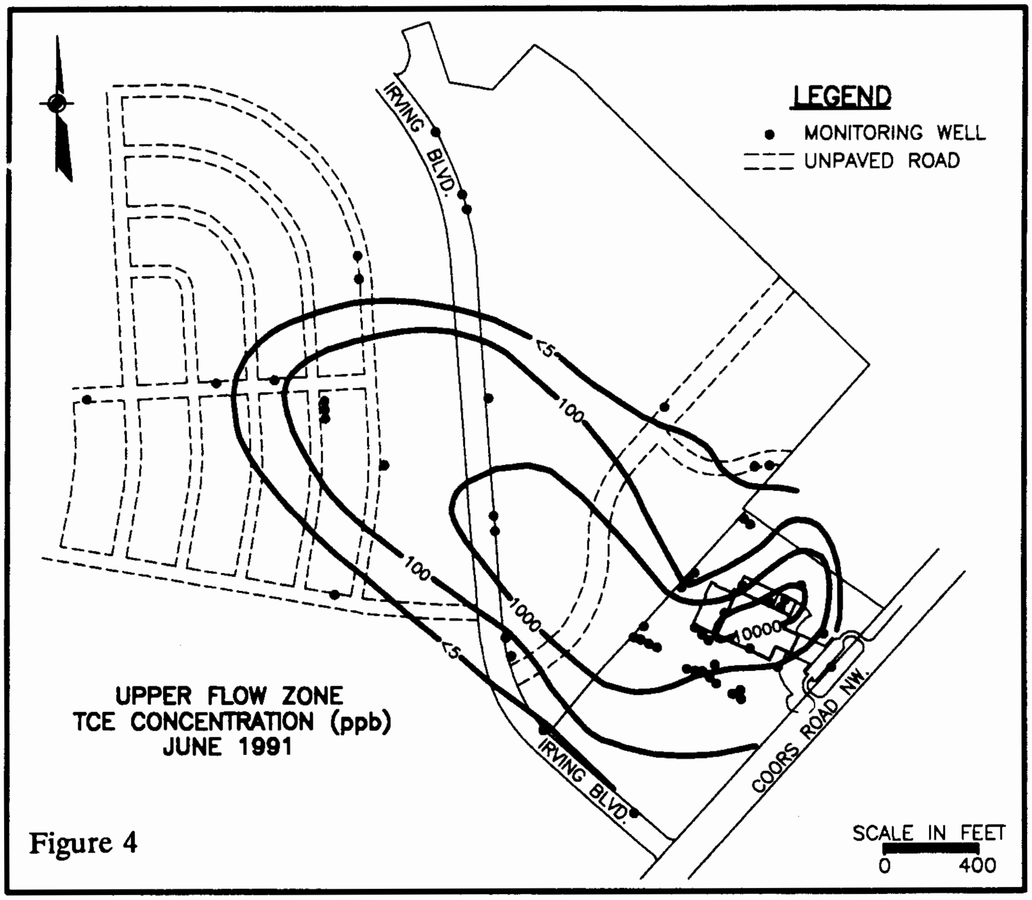


Figure 4

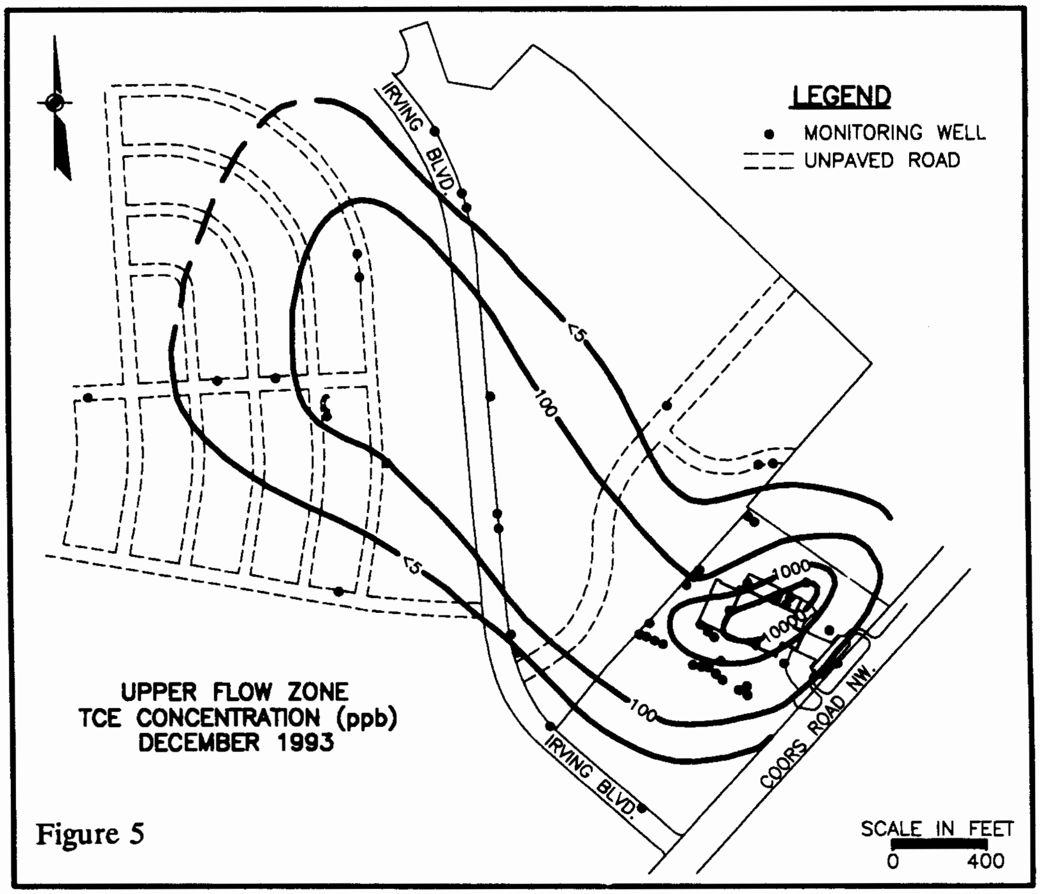


Figure 5

remaining in the surface soil around the pond and sump area at the Facility. In addition, the surface water in the surrounding area is not impacted by the existing releases of hazardous waste. The cap prevents stormwater runoff from transporting contaminants into the surrounding water bodies. In addition, ground water flow is either away from, or cross-gradient from, the surrounding water bodies.

CORRECTIVE ACTION OBJECTIVES

The primary sources of contamination at the Sparton Technology Facility were the sump and the two waste impoundments. During closure of these units, the liquid wastes were removed and a protective cap placed across the former waste management area. The cap reduced the potential for direct exposure to the residual hazardous waste present in the units and in the surrounding soils as well as providing for some reduction in the further downward migration of hazardous waste to the underlying ground water.

The corrective action objectives determined to be necessary for protection of human health and the environment are:

- Prevent further migration of the contaminant plume;
- Restore the contaminated aquifer to its beneficial use; and
- Reduce the quantity of source material (NAPL) present in the soil and ground water, to the extent practicable, to minimize further release of contaminants to the surrounding ground water.

The determination of the corrective action objectives is based on the current and expected future beneficial uses of the ground water as a source of drinking water and as a natural resource protected under Parts 1-101 and 3-103 of the WQCC regulations (effective November 18, 1993). Ground water currently supplies the sole source of drinking water for the City of Albuquerque. The New Mexico Utilities Inc., water supply well No. 2 is approximately 2 miles downgradient (northwest) of the leading edge of the contaminant plume. Within the contaminant plume, the aquifer is potentially useable as a source of drinking water. The area has been designated as crucial for ground water quality protection in the Albuquerque/Bernalillo County Ground Water Protection Policy and Action Plan.

The release of hazardous waste from this site, if not addressed by the preferred alternative or one of the other active measures considered, may present a current or potential threat to human health and the environment. The chemical-specific interim ground water clean-up goals are based on the more stringent of Federal MCLs or State water quality standards and are listed in Table 2. A risk assessment of residual ground water contamination will be conducted to determine final ground water clean-up goals.

Comparable cleanup goals for the subsurface soil are not available. Instead, cleanup goals will be selected on the ability to ensure no further contaminant migration to the ground water above the existing cleanup goals established for ground water. Further sampling of the subsurface soil and soil gas would provide additional data in determining the potential impact to ground water.

SUMMARY OF ALTERNATIVES

Information gathered during the RFI was used to develop several remedial alternatives in the CMS. In the CMS Report, Sparton Technology conducted a screening process to eliminate those remedial alternatives that may prove infeasible to implement, or that rely on technologies unlikely to perform satisfactorily or reliably. The descriptions and evaluations of the corrective measure alternatives are presented in greater detail in the CMS Report and Administrative Record for the specific media. For the Statement of Basis, individual corrective measure alternatives in the CMS Report have been combined and renumbered to present comprehensive alternatives for addressing the corrective action objectives.

The cost estimates presented for each of the following alternatives include capital costs, operation and maintenance costs, and **present worth costs**. Except for the "No Further Action" alternative, all of the alternatives being considered for the site include capital costs for additional site characterization to determine the horizontal and vertical extent of the ground water contaminant plume. Current estimates indicate that an additional 20 monitoring wells may be necessary to monitor the contaminant plume. In addition, annual operation and maintenance costs are included for quarterly sampling and analyses of monitoring wells to evaluate the design and performance of the alternatives and the contaminant plume. Current estimates indicate that 20 to 40 monitor wells may be required for quarterly sampling and analyses. The number of additional monitoring wells for installation and quarterly sampling may increase or decrease based on the site characterization and future performance of the selected remedy.

Alternative 1: No Further Action

Present Worth Cost:	$0
Capital Cost:	$0
Operation & Maintenance:	$0

Time of Implementation	
Design/Remedial Action:	0 months
Operation & Maintenance:	0 months

Description

The "No Further Action" alternative is often evaluated to establish a baseline for the comparison with other alternatives. Under this alternative, no further remedial actions are undertaken to address the existing ground water and soil contamination. In addition, operation of the existing ground water recovery and treatment system at the Facility would be discontinued. Ground water monitoring of the contaminant plume would also be discontinued. This alternative will not meet any of the corrective action objectives.

Alternative 2: On-Site Ground Water Recovery System

Present Worth Cost:	$3.14 million
Capital Cost:	$300,000
Operation & Maintenance:	$185,000/Year

Time of Implementation	
Design/Remedial Action:	0 months
Operation & Maintenance:	30 years

Description

In Alternative 2, operation of the existing on-site ground water recovery and treatment system would be continued. The existing on-site system was installed in 1988 during the Interim Measures activities to mitigate potential risks to human health and the environment. The recovery system consists of eight recovery wells which extract contaminated ground water from the upper ten feet of the aquifer at the Facility. The existing system could be enhanced by adding additional on-site recovery wells at greater depths to recover contaminants unaffected by the existing system. However, the existing or an expanded on-site system is not capable of preventing further migration of the contaminant plume or restoring the contaminated aquifer to its beneficial use. Instead, this alternative would rely on natural attenuation to reduce contaminant concentrations during continued plume migration. In addition, an annual evaluation of changes in land use/development would be implemented to determine the need for any additional corrective measures.

The existing treatment system would continue to utilize an air stripper to remove volatile organic compounds from the ground water. Operation of the air stripper unit has confirmed the effectiveness and reliability of these technologies for treating ground water contaminated with volatile organic compounds. Effluent concentrations for the volatile organic compounds of concern have consistently been below effluent limits specified in the air permit issued by the City of Albuquerque. Currently, the treated water is discharged into the Albuquerque sewer system. The existing air stripper has sufficient remaining capacity to accommodate additional flow if another recovery well is added to the system.

Alternative 3: Expanded Ground Water Recovery System

Present Worth Cost:	$6.16 million
Capital Cost:	$812,000
Operation & Maintenance:	$348,000/Year

Time of Implementation

Design/Remedial Action:	1 year
Operation & Maintenance:	30 Years

Description

In Alternative 3, additional ground water extraction wells would be added to the recovery system to prevent further migration of the contaminant plume and restore the contaminated aquifer to its beneficial use. The off-site extraction wells would probably be sited in existing public right-of-ways as are the existing off-site monitoring wells. Current estimates indicate that two to three extraction wells may be required to prevent further migration of the contaminant plume. The number of recovery wells for restoration of the contaminated aquifer would be determined during the remedial design. The number of additional recovery wells for installation and the amount of recovered ground water may increase or decrease based on the future performance of the recovery system and additional analytical data. Due to the uncertainty in predicting the time necessary for restoration of the ground water to its beneficial use, all costs were based on a thirty year operational period for comparison purposes.

The extracted ground water would have to be transported back to the Facility via underground pipes for treatment. The expanded recovery system may require the treatment and disposal of an estimated 600 gallons per minute of ground water. The expanded volume of recovered ground water could no longer be discharged into the sewer system. During the remedial design, options for disposal of the treated ground water will include reinjection back into the aquifer or reuse as irrigation water. These two options are consistent with the water management plan presented in the Albuquerque Water Resources Management Strategy - San Juan-Chama Diversion Project Options (July 1995) and the Albuquerque/ Bernalillo County Ground Water Protection Policy and Action Plan (1994).

All of the disposal options would require the potential technologies to treat the recovered ground water prior to discharge. Since the contaminants to be removed include both organic and inorganic compounds, the treatment system may require two separate treatment units. For organic compounds, the treatment unit may consist of a larger air stripper to remove volatile organic compounds and **a granular activated carbon** unit to reduce air emissions from the air stripper. For the inorganic compounds, the treatment unit may consist of a chemical precipitation unit for removal of metals from the water. Other treatment options for organic compounds include chemical and/or UV oxidation, and aerobic biological reactors. For the inorganic compounds, other available technologies include ion exchange and electrochemical methods. The sequence of technologies used for the ground water treatment train will be determined during the remedial design.

Alternative 4: Expanded Ground Water Recovery and Soil Vapor Extraction

Present Worth Cost:	$6.39 million
Capital Cost:	$962,000

Operation & Maintenance:
$376,000/Year 1-3
$348,000/Year 4-30

Time of Implementation
Design/Remedial Action: 1 year

Operation & Maintenance:
1-3 years - Soil Vapor Extraction
30 Years - Ground Water Recovery

Description

Alternative 4 includes all of the ground water recovery activities outlined in Alternative 3. In addition, soil vapor extraction (SVE) wells are installed in the soil above the water table to reduce the quantity of source material in the soil and ground water. The SVE wells create a partial vacuum in the soil producing a flow of air which vaporizes the volatile organic compounds. The air and vapor mixture is then drawn into the SVE wells and collected at the surface for treatment before venting to the atmosphere. In situ air stripping processes are generally effective in removing volatile organic compounds (e.g. trichloroethylene and trichloroethane) from the soil. The SVE system would remove volatile organic compounds as a further source of contaminants to the ground water. An added benefit of the SVE system is the potential for decreasing the time frame for meeting cleanup goals in the ground water by enhancing the volatilization of volatile organic compounds from the water table, thereby further reducing concentrations in the ground water.

Since the highest volatile organic concentrations are associated with the source material in the on-site soil and ground water, the SVE wells would be installed on-site to remove the maximum amount of contaminants. The flow of air can be enhanced with the addition of blowers which would force air into the soil in surrounding wells. Additional characterization of the soil gas profile and performance tests of the SVE system will need to be conducted to determine the optimum location and capture zone in the soil produced by the wells.

Since the SVE system does not result in the physical destruction or transformation of the contaminants, the organic vapors would have to be removed from the air by a granular activated carbon unit to prevent the transfer of contaminants to the atmosphere. The granular activated carbon would then be disposed of off-site or regenerated for future use. The SVE system does not remove inorganic compounds in the soil or ground water.

Alternative 5: Expanded Ground Water Recovery System, Air Sparging and Soil Vapor Extraction

Present Worth Cost: $6.60 million
Capital Cost: $1.06 million
Operation & Maintenance:
$416,000/Year 1-3;
$348,000/Year 4-30

Time of Implementation
Design/Remedial Action: 1 year
Operation & Maintenance:
1-3 years - Air Sparging/SVE
30 Years - Ground Water Recovery

Description

Alternative 5 includes all of the ground water recovery and soil vapor extraction activities outlined in Alternative 4. In addition, air sparging wells are installed in the aquifer to remove additional source material. In situ air stripping processes are generally effective in removing volatile organic compounds (e.g. trichloroethylene & trichloroethane) from the soil and ground water. In situ air sparging utilizes wells installed in the aquifer to inject clean air directly into the ground water. Dissolved volatile organic compounds are stripped from the ground water by the rising air bubbles around the air injection wells. As the volatile organic compounds rise upward to the overlying soil, the SVE system collects the contaminants for treatment. In addition, the SVE system removes existing soil vapor from the surrounding soil. An added benefit of the combined air sparging/SVE system is the potential for decreasing the time frame for meeting cleanup goals in the ground water by enhancing the volatilization of volatile organic compounds from the water table, thereby further reducing concentrations in the ground water. Site limitations at the Facility may involve the presence of low permeability silt/clay layers which may produce lateral spreading of the volatile organic compounds in the ground water outside of the treatment zone. Performance tests would need to be conducted to determine the radius of influence created by the air injection wells in the aquifer.

Since the air stripping technologies do not result in the physical destruction or transformation of the contaminants, the organic vapors would have to be removed from the air by a granular activated carbon unit to prevent the transfer of contaminants to the atmosphere. The granular activated carbon would then be disposed of off-site or regenerated for future use. The air stripping technologies are not useful in removing inorganic compounds in the soil or ground water.

Alternative 6: Expanded Ground Water Recovery and Soil Flushing

Present Worth Cost:	$7.10 million
Capital Cost:	$1.31 million
Operation & Maintenance:	
$508,000/Year 1-3	
$348,000/Year 4-30	

Time of Implementation
Design/Remedial Action: 1 year
Operation & Maintenance:
1-3 years - Soil Flushing
30 Years - Ground Water Recovery

Description

Alternative 6 includes all of the ground water recovery activities outlined in Alternative 3. In addition, soil flushing is used to remove source material (both organic and inorganic contaminants) from the soil overlying the ground water. The process uses a flushing agent such as a solvent or surfactant solution to promote or enhance the mobility of the contaminants in the soil. The flushing process transports the contaminants downward to the ground water for recovery in extraction wells and the contaminants are then pumped to the surface for treatment. The flushing agent can be applied to the soil by use of sprinkler system. Site limitations involve the presence of low permeability silt/clay layers in the soil above and within the water table which may produce lateral spreading of the flushing agent outside of the treatment zone. Performance tests would need to be conducted to determine the effectiveness of the technology under site conditions.

Alternative 7: In Situ Bioremediation

Present Worth Cost:	$15.63 million
Capital Cost:	$2.80 million
Operation & Maintenance:	$835,000/Year

Time of Implementation	
Design/Remedial Action:	1 year
Operation & Maintenance:	30 Years

Description

Alternative 7 includes all of the activities outlined in Alternative 2. In addition, in situ bioremediation is utilized to completely or partially decompose organic compounds, such as trichloroethylene and trichlorethane, by bacteria in the subsurface. The decomposition process can occur under either anaerobic (absence of dissolved oxygen) or aerobic (presence of dissolved oxygen) conditions. Contaminants such as trichloroethylene and trichlorethane are more likely to decompose to non-hazardous compounds in anaerobic conditions. However, there is no data to suggest that this condition currently exists in the ground water or soil impacted by the contaminants. In order to enhance the bioremediation process under aerobic conditions, additional oxygen and nutrients would have to be injected into the ground water and soil. The high contaminant concentrations on-site would probably restrict the initial application of bioremediation to less contaminated off-site areas. The on-site concentrations would have to be further reduced prior to application by continued operation of the on-site ground water recovery system.

Benefits of in-situ bioremediation are the absence of above-ground treatment units and the associated by-products produced from treatment of recovered ground water and organic vapor requiring off-site disposal. Limitations include the potential inability to produce a non-toxic degradation product due to incomplete biodegradation and sensitivity to toxins and changing environmental conditions resulting in limited bioremediation. The efficiency of the bioremediation process is also limited by the ability to deliver a uniform application of nutrients and oxygen to the bacteria in the ground water. Performance tests would need to be conducted to determine the effectiveness of the technology under site conditions.

EVALUATION OF ALTERNATIVES AND THE PROPOSED REMEDY

The preferred alternative for addressing the ground water and soil contamination from the Sparton facility is Alternative 4. EPA's proposed remedy consists of:

- Expanded ground water recovery system.
- Soil vapor extraction system and additional characterization of the soil gas profile.
- Installation of additional ground water monitoring wells and quarterly sampling of selected ground water monitoring wells for site characterization and performance monitoring.

In recommending Alternative 4, the performance of all of the alternatives was evaluated against the criteria outlined in the Guidance on RCRA Corrective Action Decision Documents, Office of Solid Waste and Emergency Response (OSWER) Directive 9902.6 (Please see Figure 6 which discusses the criteria in more detail). Based on information currently available, EPA believes the proposed Alternative 4 provides the best balance of trade-offs among the other Alternatives with respect to the evaluation criteria. The proposed Alternative 4 satisfies the following criteria:

- Be protective of human health and the environment;
- Control the sources of releases so as to reduce or eliminate, to the maximum extent practicable, further releases that may pose a threat to human health and the environment;
- Attain the media cleanup standards;
- Comply with applicable standards for management of wastes.

In the CMS Report, Sparton Technology has recommended Alternative 2 as the proposed remedy for addressing contamination originating from the Facility. Sparton's proposed remedy consists of:

- Continued operation of the existing on-site ground water recovery system.
- Natural attenuation of the off-site ground water contaminant plume.
- Quarterly sampling of selected ground water monitoring wells for performance monitoring.

The following discussion profiles the performance of EPA's proposed remedy against the four general standards for corrective measures and the five remedy decision factors discussed in Figure 6, noting how the proposed alternative compares to the other options under consideration, including Sparton's proposed remedy.

1. **Overall Protection of Human Health and the Environment**

Alternative 1, "No Further Action", will not be considered further as a remedial alternative because suspension of the existing ground water recovery and treatment would result in no further remediation of contaminated ground water and thus would not be protective of human health and the environment. Each of the remaining alternatives provide some protection to human

FIGURE 6

SELECTING A REMEDY

The U.S. EPA uses nine criteria, or standards, to evaluate alternatives for addressing a hazardous waste site. In addition, there are two modifying criteria EPA considers in making its final remedy selection. The remedy proposed in the Statement of Basis is one that best meets the applicable standards for the remedies and decision factors.

FOUR GENERAL STANDARDS FOR REMEDY SELECTION

OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT	ATTAIN MEDIA CLEANUP STANDARDS	CONTROL THE SOURCES OF RELEASES	COMPLY WITH STANDARDS FOR MANAGEMENT OF WASTES
• How alternatives provide human health and environmental protection	• Ability of alternatives to achieve the media cleanup standards. Media cleanup standards are the Federal and State statutory and regulatory requirements that a selected remedy must meet.	• How alternatives reduce or eliminate to the maximum extent possible further releases	• How alternatives assure that management of wastes during corrective measures is conducted in a protective manner

FIVE SELECTION CRITERIA FOR REMEDY SELECTION

LONG-TERM RELIABILITY AND EFFECTIVENESS	REDUCTION OF TOXICITY, MOBILITY, OR VOLUME OF WASTES	SHORT-TERM EFFECTIVENESS	IMPLEMENTABILITY	COST
• Magnitude of residual risk • Adequacy and reliability of controls	• Treatment process used and materials treated • Amount of hazardous materials destroyed or treated • Degree of expected reductions in toxicity, mobility, or volume • Degree to which treatment is irreversible • Type and quantity of residuals remaining after treatment	• Protection of community during remedial actions • Protection of workers during remedial actions • Environmental impacts • Time until remedial action objectives are achieved	• Ability to construct and operate the technology • Reliability of the technology • Ease of undertaking additional corrective measures, if necessary • Ability to monitor effectiveness of remedy • Coordination with other agencies • Availability of off-site treatment, storage, and disposal services and specialists • Availability of prospective technologies	• Capital costs • Operating and maintenance costs • Present worth cost

MODIFYING CRITERIA

STATE ACCEPTANCE	COMMUNITY ACCEPTANCE
• The State has an opportunity to review the CMS Report and the Statement of Basis and offer comments to EPA. The State may agree with, oppose, or have no comment on the EPA preferred alternative	• During the public comment period, interested persons or organizations may comment on the alternatives. EPA considers these comments in making its final remedy selection. The comments are addressed in the Final Decision and Response to Comments document.

health and the environment by reducing or controlling the risk of exposure to the contaminants.

2. **Attainment of Media Cleanup Standards**

Alternatives 2 through 6 would each provide for extraction and treatment of hazardous waste in achieving the media cleanup standards. Alternative 2 would continue to recover only contaminants from the upper part of the aquifer at the Facility and would rely on natural attenuation to meet the media cleanup standards for the remaining on-site and off-site contaminant plume. Alternative 3 has the potential to meet the media cleanup standards for ground water through long-term operation. However, source material would remain in the soil and ground water providing a long-term source of additional contamination to the surrounding ground water. Alternatives 4 through 6 would each reduce the quantity of source material available for migration to the surrounding ground water and assist in restoration of the ground water to its beneficial use. Alternative 7 would attain the media cleanup standards through in-situ treatment of the contaminated soil and ground water.

3. **Controlling the Sources of Releases**

Alternatives 4 through 6 would provide the most effective source control by including additional technologies along with ground water extraction for removal and treatment of the source material in the on-site soil and ground water. Alternatives 2, 3, and 7 would each rely solely on ground water extraction for source control.

4. **Compliance with Waste Management Standards**

Alternatives 2 through 7 would comply with all applicable waste management standards. Recovered ground water would be treated through an air stripper to remove the volatile organic contaminants. Air emissions from the air stripper and soil vapor extraction system would be treated through a granular activated carbon unit to remove volatile organic contaminants prior to discharge to the atmosphere. Additional treatment of the recovered ground water may be necessary to remove metals prior to discharge. The granular activated carbon and any chemical precipitate generated from the treatment process would be disposed or treated off-site at a permitted facility. The treatment train will be designed to attain the chemical-specific discharge requirements for the treated ground water and air emissions.

5. **Long-Term Reliability and Effectiveness**

Alternative 2 would recover contaminants from the upper flow zone of the aquifer at the Facility but would be unable to reduce the long-term risk of further exposure to the off-site contaminant plume. Alternative 3 would provide a reduction in long-term risk by reducing concentrations throughout the contaminant plume. However, contaminants would remain in the soil and provide a long-term source of additional contamination to the ground water. Alternatives 4 through 6 would remove a long-term source of contaminants to the surrounding ground water and reduce the long-term risk of exposure to the contaminant plume in the ground water.

6. **Reduction of Toxicity, Mobility, or Volume of Wastes**

Alternatives 2 through 6 would remove the contaminants from the ground water and/or soil thus reducing their toxicity, mobility, and volume. Alternative 2 would achieve the least reduction by addressing only the on-site contaminated ground water. Since existing technologies cannot ensure a 100% removal efficiency rate, there may be some concentration of contaminants remaining above the media cleanup standards for Alternatives 2 through 7. In addition, the proposed treatment processes in Alternatives 2 through 6 do not result in the permanent destruction of the contaminants but instead rely on the transfer of contaminants to a permanent off-site disposal site. Alternative 7 would involve biological processes that have the potential to permanently reduce or destroy the organic contaminants, thus achieving the maximum reduction in toxicity, mobility, and volume through treatment.

7. **Short-Term Effectiveness**

Alternatives 2 through 7 would have a minimal impact on the community, workers, and the environment during the remedial action. After implementation of Alternatives 3 through 6, a potential threat does exist to the community from inadvertent destruction or vandalism of the off-site pipeline and wellheads resulting in a release of contaminated ground water at the surface. While this possibility will be accounted for in the design and engineering of the off-site structures, the potential threat will remain during the operational period of the preferred remedy.

8. **Implementability**

Alternatives 2 through 4 utilize existing technology with no exceptional technical obstacles to prevent implementation, operation, performance monitoring and future modifications to the system design. For Alternatives 3 through 7, obstacles exist in the form of permits and/or administrative approvals required for installation of off-site structures in public easements, the discharge of recovered vapors to the atmosphere, the pumping of additional ground water from the aquifer, and the possibility for reinjection of ground water back into the aquifer. An additional obstacle is the requirement for an off-site facility for the regeneration or disposal of the granular activated carbon. Alternatives 5 through 7 would also require the performance of additional testing with varying degrees of uncertainty regarding actual implementation. The success of Alternative 7 is uncertain due to the limited success in aerobic degradation of the organic contaminants.

9. **Cost**

Due to the uncertainty in predicting the time necessary for restoration of the ground water to its beneficial use, all costs were based on a thirty year operational period for comparison purposes. The preferred alternative utilizing multiple technologies is the most cost-effective approach for addressing the contaminants present in both ground water and soil (Present worth cost: $6.39 million). The corrective measure alternative recommended by Sparton is the least expensive alternative (Present worth cost: $3.14 million).

10. **State Acceptance**

The State of New Mexico, through the New Mexico Environment Department and the Office of the Natural Resources Trustee, and the City of Albuquerque, through the Environmental Health Department and the Public Works Department have been provided the opportunity to review and comment on a draft of the Statement of Basis. Their support for the preferred alternative will be evaluated during the public comment period.

11. **Community Acceptance**

Comments from the community will be an important consideration in the final evaluation of remedial alternatives. All comments received during the 45-day public comment period and at the public meeting scheduled for September 12, 1995, will be addressed in the Final Decision and Response to Comments document.

SUMMARY OF PREFERRED ALTERNATIVE

A. Preferred Remedy

The ultimate goal for the proposed remedy is to restore the aquifer to its beneficial use. At this site, the aquifer is potentially useable as a source of drinking water and is currently used outside of the contaminant plume for this purpose. The chemical-specific interim ground water clean-up goals for the proposed remedy are specified in Table 2 and are based on the more stringent of Federal MCLs established under the Safe Drinking Water Act or the standards set by the State of New Mexico under the NMWQCC regulations.

The proposed remedy will be implemented in two phases. In phase one, remedial measures to address the ground water contamination include:

- Further characterization of the ground water contamination to define the horizontal and vertical extent of the contaminant plume. It is currently estimated that up to 20 additional monitoring wells may be needed to monitor the contaminant plume.

- Installation of a sufficient number of ground water extraction wells to prevent further migration of the contaminant plume. It is currently estimated that two to three extractions wells may be required for phase one. The location and number of extraction wells will be determined during the remedial design phase. After construction of the phase one extraction system is completed, the extraction system will be carefully monitored on a regular basis and its performance evaluated. Further refinement of the extraction system may be necessary during the monitoring phase to prevent further migration of the contaminant plume.

- Installation of a soil vapor extraction system to enhance the removal of volatile organic contaminants from the soil and ground water to levels which would allow attainment of the chemical-specific interim ground water cleanup goals. Further characterization of the vapor phase organic contaminants in the soil above the water table may be necessary to evaluate the design and performance of the soil vapor extraction system. Remediation goals for the subsurface soil and soil gas will be determined following additional characterization and performance testing of the soil vapor extraction system.

- Implementation of quarterly sampling and analyses of selected monitoring wells to evaluate the design and monitor the performance of the proposed remedy.

In phase two, remedial actions will include:

- Installation of additional extraction wells as necessary to restore the aquifer for use as a source of drinking water, in addition to controlling further plume migration. Restoration is defined as attainment of the chemical-specific interim ground water cleanup goals in the aquifer, over the entire contaminant plume. Cleanup levels for each ground water contaminant are specified in Table 2. Implementation of phase 2 will be expedited in order to meet the anticipated future demand on the aquifer as a water supply.

B. Treatment and Disposal of Contaminants

Treatment of the extracted ground water will utilize an air stripper to remove volatile organic contaminants. Treatment of the air emissions from the air stripper and soil vapor extraction system will utilize a carbon adsorption system to remove vapor phase organic contaminants prior to release into the atmosphere.

Additional treatment of the recovered ground water may be necessary to remove metals and any additional organic contaminants prior to disposal or reuse of the treated ground water. Any additional technologies and sequence of technologies used for the ground water treatment train will be determined during the remedial design. The treatment train shall be designed to:

- Attain the chemical-specific discharge requirements; and

- Easily modified to treat increased flow from an expanded extraction system.

During the remedial design, options for disposal of the treated ground water will include reinjection back into the aquifer or reuse as irrigation water. These two options are consistent with the water management plan presented in the Albuquerque Water Resources Management

Strategy - San Juan-Chama Diversion Project Options (July 1995) and the Albuquerque/ Bernalillo County Ground Water Protection Policy and Action Plan (1994).

C. Duration of Proposed Remedy

The ability to achieve the ground water cleanup goals throughout the entire ground water contaminant plume cannot be realized within a few years. While implementation of the soil vapor extraction system will decrease the time for meeting cleanup goals, it is likely that many years of ground water pumping and treatment will be required in order to determine if ground water cleanup goals can be achieved. Because of the high contaminant concentrations and the possible presence of NAPL in the ground water, as well as the process of chemical and physical desorption of contaminants in both the ground water and soil which lies below the Facility, there are several possibilities in achieving the cleanup goals at all points of compliance.

One possibility exists that the ground water contaminants may show a rapid initial drop in concentration and then level out to relatively constant, or slowly declining, concentrations. This relatively constant concentration would be regardless of the soil vapor extraction that is implemented or the length of time ground water pumping and treatment is implemented. The equilibrium or steady-state concentration of these organic and inorganic contaminants in the ground water may be greater than the corresponding cleanup goals.

Performance of the proposed remedy will be carefully monitored on a regular basis and adjusted as warranted by the collected data. Refinement of the proposed remedy may be required, if EPA determines that such measures will be necessary in order to restore the aquifer in a reasonable timeframe, or to significantly reduce the timeframe or long-term cost of attaining this objective. Post-construction refinements to the proposed remedy may include any or all of the following:

- adjusting the pumping rate in some or all of the ground water extraction wells;
- installing additional extraction wells to facilitate or accelerate cleanup of the contaminant plume;
- initiating a pulsed pumping schedule in some or all of the ground water extraction wells to eliminate flow stagnation areas, or otherwise facilitate recovery of contaminants from the aquifer;
- implementing air sparging in the aquifer where possible NAPL contaminants remain relatively unaffected by ground water extraction or soil vapor extraction;
- discontinuing pumping at individual extraction wells where cleanup goals have been attained; monitoring of the aquifer would be continued to ensure that media cleanup goals are maintained; and
- installing additional ground water monitoring wells to monitor changes in the ground water contaminant plume;
- refining the treatment and disposal components of the preferred remedy.

It is possible that performance evaluations of the preferred remedy, or subsequent refinements to the remedy, will indicate that restoration of the contaminated aquifer to its beneficial use is technically impracticable from an engineering perspective. If such a determination is made by EPA, the ultimate remediation goal and/or the preferred remedy may be reevaluated.

SPARTON TECHNOLOGY FACILITY - PUBLIC COMMENT PERIOD

The 45-day public comment period for the Sparton Technology Facility will begin on **August 10, 1995,** and end on **September 25, 1995**. Your written comments must be postmarked by **September 25, 1995**. EPA would like your comments on the Statement of Basis and the Administrative Record file for the Sparton Technology Facility. Please write your comments below, then fold, tape, stamp, and mail this form. EPA will address all comments received during the public comment period in the Final Decision and Response to Comments. If you would like to receive a copy of the Response to Comments, please include your full name and address on the return address form.

SPARTON TECHNOLOGY
RCRA CORRECTIVE ACTION SITE
PUBLIC COMMENT PERIOD

The public comment period for the Sparton Technology Facility begins August 10, 1995.
Your comments must be post marked by September 25, 1995.

Name ______________________

Address ____________________

City _______________________

State ____________Zip______

U.S. EPA
Compliance and Enforcement Division
Hazardous Waste Enforcement Branch
Technical Section (6EN-HX)
Att: Vincent Malott
1445 Ross Avenue
Dallas, TX 75202-2733

GLOSSARY OF TERMS

Administrative Record - A collection of documents that form the basis for the remedy selection.

Aquifer - A layer of permeable rock, sand, or gravel below the ground's surface that can supply usable quantities of ground water to wells and springs. An aquifer can be a source of drinking water.

Corrective Measures Study - An evaluation of the alternatives for cleanup of sites contaminated with hazardous waste.

Granular Activated Carbon - Carbon used to treat ground water that is usually crushed to produce a large surface-to-volume ratio that exposes a large number of carbon atoms for adsorption of hazardous constituents.

Ground Water - Water found beneath the Earth's surface that fills pores between soil, sand, and gravel particles to the point of saturation. When it occurs in a sufficient quantity, ground water can be used as a water supply.

Inorganic - Chemical substances of mineral origin, not of basically carbon structure.

Maximum Contaminant Level - Maximum permissible level of a contaminant in water which is delivered to any user of a public water system.

Monitoring Wells - Special wells drilled at specific locations on or off a site where ground water can be sampled at selected depths and studied to determine such things as the direction in which ground water flows and the types and amounts of contaminants present.

Nonaqueous phase liquid (NAPL) - The term NAPL refers to the undissolved liquid phase of a chemical, such as trichloroethylene (TCE), and not to the aqueous phase dissolved in water. Virtually all NAPLs are organic compounds that are immiscible (resistant to mixing) with water. The distinct interface resulting from the water-NAPL contact does allow some NAPL to dissolve, with the degree of aqueous solubility varying dramatically among NAPL compounds. As NAPL moves through the soil and aquifer, a portion becomes trapped and a portion may continue to migrate. The "free-phase NAPL" is the migrating portion, which can flow into a well. "Residual NAPL" is that portion trapped in the soil or aquifer and no longer migrates as a separate phase. Both residual and free-phase NAPLs are sources of vapors and dissolved contaminants.

Organics - Compounds which contain carbon. For example, trichloroethylene is an organic compound.

Parts Per Million (ppm)/Parts Per Billion (ppb) - Units of measure used to express concentrations of contaminants. 1 ppm is equal to 1,000 ppb and 1 ppb is equal to 0.001 ppm. Also, 1 ppm is equal to 1 mg/kg or 1 mg/l; 1 ppb is equal to 1 ug/kg or 1 ug/l. As an example, 1 ounce of trichloroethylene in 1 million ounces of water is 1 ppm.

Present Worth Costs - The amount of money necessary to secure the promise of future payment at an assumed interest rate. For example the total cost of purchasing a car after the car loan has been paid off is the net present worth of the car.

Resource Conservation and Recovery Act (RCRA) - This law authorizes the federal government to respond directly to releases of hazardous waste which may be a threat, or potential threat, to public health and the environment. EPA is responsible for implementing Section 3008(h) of RCRA in the State of New Mexico.

RCRA Facility Investigation (RFI) - An investigation to determine the nature and extent of contamination at a facility.

Terrace - A relatively flat ground surface bounded by steep slopes.

Water Table - The upper surface of ground water in an aquifer. The water table marks the boundary between the unsaturated soil and the saturated aquifer.

FOR MORE INFORMATION	SPARTON TECHNOLOGY RCRA CORRECTIVE ACTION SITE PUBLIC MEETING
For more information about the public involvement process, or if you have questions about site activities at the Sparton Technology Facility, please contact: **Mr. Vincent Malott** Project Manager U.S. EPA (6EN-HX) 1445 Ross Avenue Dallas, Texas 75202-2733 (214) 665-8313 **Mr. Ron Kern** New Mexico Environment Department Hazardous & Radioactive Materials Bureau P.O. Box 26110 Santa Fe, New Mexico 87502 Temporary Number: (505) 827-2855 All media inquiries should be directed to Mary Wilson, EPA Region 6 Media Relations, at (214) 665-6439	Oral and written comments will be accepted at a public meeting to be held: Tuesday, September 12, 1995 at 7:00 PM in the Cibola High School 1510 Ellison Drive Albuquerque, New Mexico

U.S. Environmental Protection Agency
Hazardous Waste Enforcement Branch
Technical Section (6EN-HX)
1445 Ross Avenue
Dallas, TX 75202-2733