RECORD OF DECISION

AUTOMATIC SWITCH COMPANY STATE SUPERFUND SITE

Aiken County, South Carolina

SCD075937409

Prepared by

South Carolina Department Of Health And Environmental Control

Bureau of Land and Waste Management

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RECORD OF DECISION
AUTOMATIC SWITCH COMPANY SITE

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Part I THE DECLARATION

1.0 Site Name and Location

The Automatic Switch Company (ASCO) Manufacturing Facility is located in Aiken, South Carolina (Aiken County) in an area along Columbia Highway/US Route 1. The physical address of the facility is 1561 Columbia Highway. The ASCO Site (Site) includes a portion of the ASCO facility property and areas of affected groundwater extending to the east and southeast of the ASCO facility property.

2.0 Statement of Basis and Purpose

This Decision Document presents the Selected Remedy for the ASCO Site. This remedy was chosen by the South Carolina Department of Health and Environmental Control (SC DHEC and/or the Department) in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and to the extent practicable the National Contingency Plan (NCP). The decision is based on the Administrative Record for the Site.

3.0 Assessment of the Site

The response action selected in this Record of Decision (ROD) is necessary to protect the public health and welfare or the environment from actual or threatened releases of hazardous substances into the environment.

4.0 Description of the Selected Remedy

The Department has identified a combination of alternatives to address both the soil and groundwater contaminated with tetrachloroethene (PCE) and other volatile organic compounds (VOCs).

- The selected soil component of the remedy consists of the installation of a Soil Vapor Extraction (SVE) system in the former PCE storage area.

- The selected groundwater component of the remedy involves the installation of a groundwater extraction and treatment system to pump and treat the entire plume of contaminated groundwater both on the ASCO property and downgradient of the facility. Extracted groundwater will be piped to the treatment equipment (air stripper) that will be contained within a dedicated building on the ASCO property. After treatment, the water will be piped to the discharge manhole located immediately east of the ASCO property along Columbia Highway/U.S. Route 1. Water entering this storm water drainage system flows to the north before eventually discharging into Shaw Creek. Periodic monitoring of the extraction wells, monitoring wells, and selected private wells will be implemented to determine the effectiveness of the groundwater remedy.

5.0 Statutory Determinations

The selected remedy attains the mandates of CERCLA 121, and to the extent practicable, the NCP.

This remedy is protective of human health and the environment, complies with Federal and State requirements that are applicable or relevant and appropriate to the remedial action, is cost-effective, and utilizes permanent solutions.

The selected remedy also satisfies the statutory preference for treatment as a principal element of the remedy; permanently and significantly reducing the toxicity, mobility, and volume of hazardous substances, pollutants, or contaminants.

Because the remedy will result in hazardous substances, pollutants, or contaminants remaining on-site above levels that allow for unlimited use and unrestricted exposure, a statutory review will be conducted within five years after initiation of the remedial action to ensure the remedy is, or will be, protective of human health and the environment.

6.0 Authorizing Signature

This ROD documents SCDHEC's selected remedy for contaminated soil and groundwater at the Automatic Switch Company State Superfund Site.

Daphne G. Neel, Chief
Bureau of Land and Waste Management
South Carolina Department of Health and Environmental Control

7/31/09
Date

PART II - THE DECISION SUMMARY

1.0 Site Name, Location, and Description

The Automatic Switch Company (ASCO) Manufacturing Facility is located in Aiken, South Carolina in an area along Columbia Highway/US Route 1 (Figure 1). The Site includes a portion of the ASCO property and areas of affected groundwater extending to the east and southeast (hydrologically downgradient) of the ASCO property. The ASCO facility itself (Figure 2) sits on sixty-nine acres and consists of a single-story building that covers approximately 160,000 square feet.

Other features of the facility include a hazardous waste storage building on the northwestern portion of the property and a wastewater treatment building located on the southern portion of the property. A man-made retention pond for storm water and non-contact cooling water is located on the southwestern portion of the property. ASCO operates an industrial water supply well that is pumped on-demand. The well is 360 feet deep and is located near the southwestern corner of the building.

The ASCO property is located in a mixed industrial, commercial and residential area. The property is bordered to the north by an automobile cleaning and repair shop; to the south by Kaolin Road and residences; to the east by Columbia Highway (US Route 1), fairground, school bus parking and repair facility, meeting hall, and commercial/storage businesses; and to the west by undeveloped land and the W.R. Grace facility.

2.0 Site History and Enforcement Activities

2.1 Site History

Therm-O-Disc, Inc. (TOD) constructed the facility in 1974 for the manufacturing of bi-metal thermostats for various commercial appliances and products. The basic raw material used in the manufacturing process consisted of processed metal composed primarily of nickel, chromium, and iron. The metal shipped to the facility was cut into discs, cleaned with tetrachloroethene (PCE), and placed in heated silicon oil baths for testing purposes. After testing, the discs were cleaned with another chlorinated solvent, 1,1,1-trichloroethane (1,1,1-TCA), and used in product assembly.

ASCO began operating at the facility in April 1988, and currently manufactures solenoid valves and pressure switches for a variety of industrial applications. Secondary operations include rebuilding actuators and manufacturing core assemblies, saw base assemblies, plug nuts, and other small machinery components for other ASCO facilities.

2.2 Previous Investigations

During the April 1987 removal of nine underground storage tanks from the 1,1,1-TCA and PCE storage areas, it was noted that one of the tanks appeared to have a small hole.

Water samples collected from this excavation indicated the presence of volatile organic compounds (VOCs), specifically 1,1,1-TCA and PCE.

Since closure of these tanks, the property owner has conducted several investigations to evaluate the environmental conditions at the property. The majority of these investigations have focused on gathering data on soil quality in the former tank area, and evaluating groundwater quality on and off the ASCO property. During one investigation, approximately 370 cubic yards of soil and debris were removed from the PCE tank area. At the time, the extent of the excavation was limited by the proximity to the building and foundation.

In January 2001, chlorinated VOCs were detected in samples from a nearby residential water supply well. Following a request from the Department to determine whether the ASCO property might be the source of the VOCs, Emerson Electric Company (Emerson), parent company of both Therm-O-Disc, Inc. and ASCO, conducted an assessment. Results from this assessment indicated PCE was detected in the onsite monitoring wells and 1,1,1-TCA and 1,1-Dichloroethene (1,1-DCE) were detected in the offsite residential water supply well.

2.3 Recent Activities

In January 2003, Emerson entered into Voluntary Cleanup Contract 02-5455-RP with the Department for the performance of a Remedial Investigation/Feasibility Study. Field activities for the Remedial Investigation (RI) began in October 2003, with an initial soil and groundwater assessment of numerous areas of concern on the ASCO property. Beyond the ASCO property, monitoring wells were installed and sampled. Private wells were also sampled during this assessment.

After reviewing the data from this initial investigation, it was determined that additional field activities be conducted in order to adequately delineate both the horizontal and vertical extent of groundwater contamination. To complete this task, additional monitoring wells were installed in May 2005. Data from the sampling of these new wells, and additional private wells, was evaluated with previous site-specific information. A summary of these findings was presented in a Remedial Investigation Report (December 2004) and Remedial Investigation Report Addendum (November 2005).

Information from these reports was used to develop a Focused Feasibility Study (October 2006), which identified and evaluated potential remedial technologies that have been demonstrated to be effective in addressing the VOCs at the Site.

3.0 Community Participation

Public participation activities prior to the issuance of this ROD included several community meetings, distribution of fact sheets to local residents, maintenance of a website including site-specific information, and the publication of notices in the local newspaper. All reports and documents that formed the basis for the selection of the

response action are contained in the Administrative Record. The Administrative Record is available for review at the Aiken County Public Library and at the Department's Bureau of Land and Waste Management office in Columbia, South Carolina. The notice of the availability of these documents was published in The Aiken Standard on May 17 and 19, 2009.

On May 19, 2009, a public meeting was held at the River of Life Church. Representatives of the Department presented the results of the Remedial Investigation, explained the remedial alternatives evaluated in the Focused Feasibility Study, and presented the Department's preferred alternative (the Proposed Plan). This meeting initiated the official public comment period, which concluded on June 20, 2009. Public comments and the Department's responses are included in the Responsiveness Summary.

4.0 Scope and Role of Response Action

This action will be the final cleanup action for the Site. The remedial action objectives will prevent exposure to contaminated media through the treatment of soil and groundwater at the Site.

5.0 Site Characteristics

5.1 Overview of Site Characteristics

The ASCO facility is located on the west side of Columbia Highway/US Route 1, approximately one mile north of the city of Aiken. Nearby land use is primarily residential or commercial.

The highest PCE concentrations were detected in soils beneath the building, within the former PCE storage and degreaser area. A plume of groundwater contaminated with PCE and its degradation products begins below the former PCE storage and degreaser area and extends southeast toward residential properties.

5.2 Geology/Hydrogeology

The Site is located in the Atlantic Coastal Plain physiographic province. The shallow unconsolidated deposits consist of a surficial silty sand to sand layer that extends to approximately 8 to 10 feet below ground surface (bgs). To the southeast of the ASCO property, the surficial sand unit is absent. Underlying the surficial sand unit is a sand, silt, and clay (sandy/silty clay to clayey sand) unit ranging in thickness from approximately 15 to 30 feet bgs. Samples collected from the background soil borings indicated the hydraulic conductivity of this unit averaged 3.3x10-4 cm/sec and porosity averaged 30.8 percent.

Beneath the clayey deposits is a very thick unit that consists primarily of sand and clayey sand deposits. This sand unit extends to a depth of approximately 225 to 230 feet bgs at the site. Relatively thin (less than 10 feet) layers of clayey silt and silty clay sediments

are interbedded within the sand deposits. An approximately 25 to 30- foot thick layer of white clay was identified within this thick sandy deposit. The uppermost clay layer is about 15 feet thick and the deeper layer is about 35 feet thick. These clay and sand layers together are approximately 70 to 80 feet thick. Figure 3 depicts a portion of the Site's geology.

The depth to groundwater is variable over time, ranging from 139 to 147 feet bgs. During investigations conducted between 1988 and 1993, a small perched groundwater zone was identified in the surficial sand deposits in the grassy area near the southeastern corner of the building. Beneath the saturated sand and clayey sand deposits are clay-rich sediments that act as an aquitard. An aquitard is a formation that retards but does not prevent the flow of water to or from an adjacent aquifer. Aquitards do not readily yield water to wells or springs, but store ground water. The approximate thickness of the saturated zone beneath the site and surrounding area to the east is between 45 to 76 feet across the site.

Historic water level data collected from former and existing monitoring wells on the ASCO property indicated a generally east-northeast groundwater flow direction. However, data collected during the RI indicated the general direction of groundwater flow is to the east-southeast and east-northeast across the site (Figure 4).

5.3 Nature and Extent of Contamination

Based on the RI results, the chemicals of concern (COCs) are PCE, 1,1,1-TCA, and their associated breakdown products, particularly Trichloroethene (TCE), 1,1-DCE, and the 1,2-Dichloroethene (1,2-DCE) isomers. The environmental media affected at the site include subsurface soils and groundwater. Sampling of sediments in the facility's retention pond indicates it has not been affected by the VOC contamination. In addition, the data indicate contaminated groundwater does not discharge to any surface water bodies downgradient of the site.

5.3.1 Soil Contamination

The only area of affected soil warranting remediation is located on the ASCO property. Shallow soils with residual amounts of PCE and associated degradation products are present in the vicinity of the former PCE storage and degreaser area (Figure 5). The highest PCE concentrations were detected in soils beneath the main building. Based on the field screening and analytical data, the PCE-affected soil in this area appears to extend through the surficial sand and sand and clay units to a depth of approximately 40 feet below ground surface.

The FFS estimated a volume of 3,060 cubic yards of affected soil exceeding the generic soil screening level (SSL) for PCE.

5.3.2 Groundwater Contamination

The groundwater beneath the southwestern portion of the manufacturing building contains VOCs above Maximum Contaminant Levels (MCLs). The highest concentrations of VOCs (up to 580 ug/l PCE; 1,500 ug/l 1,1,1-TCA; 1,200 ug/l 1,1-DCE) are found just below the water table in the upper portion of the aquifer (147-150 feet bgs) directly downgradient of the former PCE storage and degreaser area. Concentrations of contaminants generally decrease with depth and are less than 1 ug/l below approximately 180 feet bgs.

As the groundwater migrates off the ASCO property, the concentrations of contaminants generally decrease but remain above MCLs. Isoconcentration maps constructed for PCE (Figure 6), 1,1-DCE (Figure 7), and 1,1,1-TCA (Figure 8) delineate the horizontal extent of these contaminants in groundwater. Contaminants have been detected at concentrations above MCLs at a distance of approximately 2,000 feet downgradient of the ASCO property.

The northern and southern extents of groundwater contamination are defined by samples collected from profiling locations; however, none of the groundwater samples collected from these locations contained constituents of concern above MCLs. Groundwater sampling data indicate concentrations of PCE and 1,1-DCE are found at increasing depths to the east, or downgradient, of the ASCO property. The concentrations of PCE tend to exhibit a uniform decrease along the downgradient flow path. Concentrations of 1,1-DCE appear to generally increase with depth and are found at a greater distance from the site than PCE.

The FFS estimated the volume of affected groundwater (groundwater containing levels of contaminants in excess of the applicable MCLs) on the ASCO property to be 5,000,000 cubic feet, covering an area of 600,000 square feet; whereas the volume of affected groundwater located downgradient of the ASCO property is approximately 17,000,000 cubic feet.

5.4 Contaminant Fate and Transport

Chemicals of concern have been detected in both groundwater and soil samples at the site. The highest PCE concentrations in soil samples are from the vicinity of the former PCE storage and degreaser area. Soil sampling and a soil vapor survey in the former 1,1,1-TCA tank and degreaser area do not indicate a current source of contamination.

The following are potential routes of contaminant migration from the former PCE storage and degreaser area: 1) soil to air; 2) soil to groundwater; 3) soil vapor to soil; 4) groundwater to soil; and 5) groundwater to potable water. The relative importance of the transport pathways depends on the physical and chemical properties of the compounds and the physical characteristics of the area. Initial transport of contaminants from the former PCE storage and degreaser area would have been via diffusive transport in the vapor phase and flow of liquid downward through the soil pores.

The contaminants appear to have spread laterally within relatively permeable sand zones within the surficial unit, with limited vertical movement. Further transport occurs through mass partitioning between the vapor, soil moisture, and solid particulate phases. The dominant factor in the migration of contaminants in the unconfined sand aquifer beneath the site is advection, the process where the bulk motion of flowing groundwater transports the solutes.

While on the ASCO property, the dissolved plume of PCE, 1,1-DCE, and 1,1,1-TCA has remained primarily within the upper portion of the aquifer. As the groundwater flows off the property, the distribution of the contaminants becomes slightly more elongated and the center of mass gradually descends to the lower portion of the aquifer. This downward movement of the contaminant mass is believed to be in response to vertical advective flow paths resulting primarily from local groundwater recharge in the area. There is no evidence of dense non-aqueous phase liquid at the site. Based on the sampling results, the principal route of migration is through infiltration of soil moisture to the saturated zone, and then through the flow of groundwater.

6.0 Current and Potential Future Site and Resource Uses

Current land use of the ASCO property is commercial/industrial, whereas areas adjacent to the facility are zoned for industrial, commercial, and residential usage. The reasonably anticipated future land use would remain the same.

Although potable water used at the ASCO facility and the majority of occupied properties downgradient of the ASCO property is obtained from the municipal water system, there are no currently identified restrictions on the use of groundwater at these properties. At least 12 properties located in the vicinity of the Site currently have private groundwater wells.

As appropriate, ASCO may place a restrictive covenant or similar enforceable limitation on the use of groundwater within the property limits of the ASCO facility. The restriction would be recorded in the county land use records for the property. The remediation goals for groundwater will be periodically reviewed and revised to account for changing circumstances, site conditions, and land and groundwater uses.

7.0 Summary of Site Risks

There is no risk of direct contact with VOC contaminated soils. The area of affected soil lies at a depth greater than four feet bgs or beneath the building slab in the former PCE storage area. Clean-up goals for soils were selected to be protective of the soil to groundwater migration pathway.

The area adjacent to the Site is zoned for industrial, commercial, and residential usage. The affected aquifer is a potential underground drinking water source. The primary exposure route would be contact or ingestion of affected groundwater containing

contamination. Although public water is available in this area, there are several properties in the vicinity of the Site with private wells.

It is the Department's current judgment that the response action selected in this ROD is necessary to protect public health or the environment from actual or threatened releases of hazardous substances into the environment from the ASCO Site.

8.0 Remedial Action Objectives

Remedial action objectives (RAOs) are developed in order to set goals for protecting human health and the environment. The RAOs for the ASCO Site are to: 1) eliminate or mitigate potential organic vapors above acceptable concentrations from entering buildings; 2) prevent the migration of contaminants of concern from soil to the groundwater; 3) prevent human consumption of contaminated groundwater that exceeds federal and state MCLs; 4) restore the aquifer to drinking water standards within a reasonable time frame; 5) prevent further migration of impacted groundwater (above drinking water standards) beyond the ASCO property boundary; and 6) monitor groundwater quality in the affected portion of the aquifer to determine whether the plume area is stable, increasing, or decreasing.

9.0 Remedial Alternatives

Based on information collected during the previous investigations, a Focused Feasibility Study (FFS) was conducted to identify, develop, and evaluate cleanup options and remedial alternatives. The FFS process used the information on the nature and extent of contamination and associated potential human health risks developed during the remedial investigation and associated studies to develop and evaluate potential remedial alternatives and their overall protection of human health and the environment. Both soils and groundwater were considered in the FFS analysis. Each remedial alternative evaluated by the Department is listed below.

- Soil Alternative S-1: No Action
- Soil Alternative S-2: Institutional and Engineering Controls
- Soil Alternative S-3: Soil Vapor Extraction

- Groundwater Alternative GW-1: No Action
- Groundwater Alternative GW-2: Monitoring
- Groundwater Alternative GW-3: Groundwater Extraction and Treatment
- Groundwater Alternative GW-4: Permeable Reactive Barrier Wall

9.1 Description of Soil Remedial Alternatives

9.1.1 Alternative S-1: No Action

The regulations governing the Superfund program require the Department consider a No Action alternative. The No Action alternative serves as a baseline against which the

other remedial alternatives can be compared. Under this alternative, there would be no action taken to prevent exposure to the soil contamination. No institutional controls or active remediation would be implemented under this alternative.

There would be no capital or operation and maintenance (O&M) costs associated with this alternative.

9.1.2 Alternative S-2: Institutional and Engineering Controls

Institutional and engineering controls are a means of access restriction that provide both legal and physical barriers to restrict access to the affected areas. An example of an institutional control is a deed restriction, which limits specific activities on all or a portion of the property. Examples of engineering controls currently in use on the ASCO property are perimeter fencing, concrete flooring, and asphalt paving.

Although public access to the ASCO property is controlled, institutional and engineering controls do not reduce the volume, toxicity, or mobility of contamination. Therefore, institutional and engineering controls generally have a medium degree of effectiveness, unless used in concert with other technologies.

The net present value of this alternative is estimated at $30,000.

9.1.3 Alternative S-3: Soil Vapor Extraction

Soil vapor extraction (SVE) technology targets volatile contaminants (which readily evaporate, such as PCE) present in unsaturated soils. SVE works by inducing a vacuum on the affected soils, causing the contaminated vapors to be "pulled" to the surface where they are treated.

As part of the FFS, Emerson performed an SVE pilot study at the facility in October 2004. The pilot test results indicate SVE is an effective technology and will remove contaminants of concern from the subsurface soils. Based on the favorable pilot test results, the effectiveness of SVE as a soil remediation technology is considered high. Overall, SVE is well suited for implementation in the former PCE storage area. The close location of the building slab and paved areas outside the building will enhance the airflow patterns and extend the effective radius of influence. The implementability of SVE is considered high.

The net present value of this alternative is estimated at $500,000.

9.2 Description of Groundwater Remedial Alternatives

9.2.1 Alternative GW-1: No Action

As stated previously, the Department is required to consider a No Action alternative, as it serves as a baseline against which the other remedial alternatives are compared. No

active remediation or routine groundwater monitoring would be implemented under this alternative. Existing groundwater contamination would not be addressed through any means other than naturally occurring attenuation processes. There would be no restrictions on groundwater use at the facility and protections against potential contamination migrating to adjacent residences would not be provided.

No cost would be associated with this alternative.

9.2.2 Alternative GW-2: Groundwater Monitoring

Groundwater monitoring is commonly used alone or in conjunction with other remedial technologies in order to evaluate the effectiveness of a remedial design. When used alone, groundwater monitoring does not directly reduce the mobility, volume, or toxicity of contamination; therefore, the effectiveness when used alone is considered low. In some situations, a groundwater monitoring plan alone is effective if the contaminants do not present an unacceptable risk to human health. The effectiveness is considered high when monitoring is used in conjunction with other remedial technologies. The implementability of groundwater monitoring is high. The FFS did not evaluate groundwater monitoring as a stand-alone technology, but carried it forward for detailed analysis as a supplement for active remedial technologies.

The net present value of this alternative is estimated at $340,000.

9.2.3 Alternative GW-3: Groundwater Extraction and Treatment

Groundwater extraction and treatment is effective as a groundwater containment and contaminant removal technology. Groundwater extraction and treatment can create a hydraulic barrier that eliminates migration of contaminants in groundwater beyond the barrier. Extraction points can also be placed in areas of the highest contaminant concentrations to increase the efficiency at which contaminant mass is removed from groundwater.

Groundwater extraction via recovery wells is an applicable technology for the site. Emerson performed a pumping test at the facility to determine the effectiveness of the technology and to provide design parameters for a full-scale system. Extracted groundwater can be treated through a variety of methods, the effectiveness of which are dependent upon the type of contaminants and their concentrations. The contaminant concentrations present at the eastern (downgradient) ASCO property line may require the use of air stripping as the primary treatment technology and possibly granular activated carbon as secondary treatment. The specific types of treatment would be determined in the remedial design phase. Groundwater extraction and treatment is relatively effective due to the removal of contamination from affected groundwater and the ability to control continued contaminant migration. This alternative is easily implemented due to the conventional equipment and materials required to construct and favorable results of the pumping test.

The net present value to implement this alternative, both on and downgradient of the ASCO property is estimated at $4,700,000.

9.2.4 Alternative GW-4: Permeable Reactive Barrier Wall

Permeable reactive barrier walls (PRBs) are water permeable walls that are installed across the flow path of a plume of affected groundwater, allowing contaminated groundwater to be treated as it moves through the wall. Typically, zero-valent iron is used to promote degradation by reductive dechlorination of VOCs. PRBs have been shown to be successful in treating plumes with concentrations of VOCs similar to that at the ASCO Site. The conventional method of installing PRBs is by excavating a trench and backfilling it with the treatment medium. Conventional installation methods may reach a depth of 60 to 80 feet; however, the FFS evaluated a deep injection technique that could be expected to reach greater depths.

A PRB located at the eastern (downgradient) ASCO property boundary would require an installed depth of at least 180 feet below ground surface, significantly deeper than any previously installed. Even greater depths would be required at locations downgradient from the ASCO property.

The net present value of this alternative is estimated at $12,600,000. This cost includes addressing groundwater contamination both on and downgradient of the ASCO property.

10.0 Comparative Analysis of Alternatives

The NCP requires the Department use specific criteria to evaluate the different remediation alternatives individually and against each other in order to select a remedy. Two of these criteria, overall protection of human health and the environment and compliance with State and Federal regulations, are threshold criteria. If an alternative does not meet these two criteria, it cannot be considered as the Site remedy. Five of the criteria are balancing criteria: long-term effectiveness and permanence; reduction of toxicity, mobility, or volume of contaminants through treatment; short-term effectiveness; implementability; and cost. These criteria are used to weigh the strengths and weaknesses of the alternatives. Community response to the preferred alternative and the other considered alternatives is a modifying criterion that was carefully considered by the Department prior to the final remedy selection.

The following section of the ROD profiles the relative performance of each alternative against the criteria, noting how it compares to the other options under consideration.

10.1 Overall Protection of Human Health and the Environment

When evaluating alternatives in terms of overall protection of human health and the environment, consideration is given to the degree to which site-related risks are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

The No Action Alternatives (S-1 and GW-1) offer the least protection of human health and the environment, providing no active remediation of the soil and groundwater contamination, no groundwater use restrictions to limit potential future exposures to impacted groundwater, and no long-term monitoring to evaluate potential naturally occurring VOC attenuation mechanisms.

Although Alternative S-2 is protective of human health by eliminating the potential risk to the direct contact of contaminated soils, it is not protective of the environment. Institutional and engineering controls do not prevent the contaminated soil from potentially leaching to the groundwater. Alternative S-3 is protective of both human health and the environment because the contaminants would be removed from the soil by the soil vapor extraction system.

For the remaining groundwater alternatives, Alternative GW-2 is the least protective of human health and the environment. Although there are currently no known exposures to contaminants above MCLs, the groundwater would still be contaminated, and monitoring alone would only track the contaminant migration. Alternatives GW-3 and GW-4 provide protection through their active remediation of VOCs within the groundwater, with each alternative eventually reducing the contaminants to reach the groundwater remediation goal. However, Alternative GW-3 provides the greatest overall protection of human health and the environment through its use of groundwater pump and treat technology to best achieve the cleanup goals and reduce contaminant migration within the shortest overall remedial time frame.

10.2 Compliance with State and Federal Regulations

Each alternative is evaluated with respect to its ability to comply with applicable state and federal statutes, regulations, and other requirements that regulate the Site and the actions in the alternative. These regulations are known as applicable or relevant and appropriate requirements (ARARs). ARARs are generally placed into one of three categories: chemical-specific, location-specific, and action-specific. Chemical-specific ARARs regulate the levels of chemicals at a site. They are generally a level that must be met for a site to be considered remediated and are specific to a media (soil, groundwater). Location-specific ARARs regulate contaminant levels or activities in specific locations, such as flood plains. Action-specific ARARs regulate remedial activities, not a specific contaminant.

For the soil remedial alternatives, Alternatives S-2 and S-3 are expected to attain risk-based criteria through institutional and engineering controls and/or soil vapor extraction. However, Alternative S-2 would not prevent the potential migration of the contaminants in soil to groundwater; whereas Alternative S-3 has the greatest potential to attain the remediation goal because it actively treats all targeted soils.

For the groundwater alternatives, Alternative GW-3 is expected to be the most effective method for reaching the remediation goals (MCLs), based on the groundwater extraction

and treatment approach. This remedy will contain the elevated VOC concentration areas of the plume and remove the contaminants from the treated groundwater.

In terms of potential ability to meet the chemical-specific cleanup goal for the Site, Alternative GW-4 involves the installation of a PRB that when successfully installed is able to treat contaminated groundwater; however, this technology will not treat groundwater that is located downgradient of the barrier wall.

When used alone, Alternative GW-2 will not comply with the state and federal regulations for all parts of the Site because it only consists of the monitoring of groundwater.

10.3 Long-term Effectiveness and Permanence

This factor considers the ability of an alternative to maintain protection of human health and the environment over time.

The long-term effectiveness of Alternative S-2 is considered moderate. Although institutional and engineering controls (deed restrictions, perimeter fencing, asphalt paving, etc.) would prevent direct contact exposure, they would not prevent migration through the soil-to-groundwater pathway. Continued monitoring would also be required to ensure long-term protection. For Alternative S-3, the long-term effectiveness is high, as there will be no potential risk to human health or the environment after the contaminated soils are treated.

Alternative GW-3 would be the most successful in its long-term attainment of cleanup goals compared to Alternatives GW-2 and GW-4 due to its ability to control the migration of the contaminated plume through extraction and treatment of the groundwater. Alternatives GW-2 and GW-4 both provide less long-term effectiveness. For Alternative GW-4 there is potential for degradation of the barrier and breakthrough to occur that would require significant maintenance and reinstallation.

Alternative GW-1 provides the least long-term effectiveness because it does not provide active remediation of the VOCs Additionally, no long-term protection is provided against potential exposures due to existing VOC impacts to the groundwater or potential future migration of VOCs beyond the ASCO property.

10.4 Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment

This factor evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.

Neither Alternative S-1 nor S-2 provides reduction in the toxicity, mobility, or volume of VOCs in the soils and groundwater. Only SVE (Alternative S-3) achieves reduction of toxicity, mobility, and volume by actively extracting VOCs from the soil.

For the active groundwater remedial alternatives, both Alternatives GW-3 and GW-4 are expected to provide a reduction in the toxicity, mobility and volume of the VOCs either through extraction and treatment of groundwater or in-situ reductive dechlorination. When Alternative GW-2 is used without other remedial technologies, it does not reduce the toxicity, mobility, and volume of VOCs in the groundwater.

Alternative GW-1 also provides no reduction in the toxicity, mobility or volume of VOCs within the groundwater other than that which occurs through natural attenuation processes.

10.5 Short-Term Effectiveness

The short-term effectiveness evaluation considers the length of time needed to implement an alternative and the risks the alternative poses to workers, residents, and the environment during implementation.

For the soil remedial alternatives, although there is no short-term risk presented by Alternatives S-1 and S-2, neither is effective in protecting the soil-to-groundwater pathway. And although Alternative S-3 may present a short-term risk to workers during the construction of the treatment system, the time frame for remediation is only 3-5 years.

For the groundwater remedial alternatives, Alternative GW-1 presents a great short-term risk due to the non-existence of remedial activities associated with it. This would pose a risk to not only on-site workers, but also the surrounding community and environment because there would be no restrictions on groundwater use at the Site and no protections against potential contamination migrating to adjacent residences. Alternative GW-2 also poses a short-term risk to workers who collect samples to monitor the migration of the plume and the toxicity of the contaminants. The short-term risks for Alternatives GW-3 and GW-4 are related to the construction of the treatment system. However, one difference between the two is that Alternative GW-4 requires significantly more time than Alternative GW-3 to remediate the contaminated groundwater.

10.6 Implementability

The analysis of implementation considers the technical and administrative feasibility of implementing the alternative, as well as the relative availability of required materials and services needed to construct or operate the remedy.

Alternative S-2 is easily implemented through access controls and use restrictions to limit future exposures to impacted soils. For Alternative S-3, a field pilot study was performed to establish the technical feasibility as well as to obtain information necessary to design and configure the system. The pilot test results indicated that SVE is an effective technology and will remove the contaminants from the subsurface soils. Alternative S-3 would be simple to design and operate and well suited for implementation for use in the former PCE storage tank area. SVE is actually enhanced when implemented beneath the

building due to the low permeability that is provided by the building slab. The required goods and services required for Alternative S-3 are readily available.

Alternative GW-2 is easily implemented due to the existing monitoring wells and because ASCO owns the property where a majority of field work will occur. For Alternative GW-3, the implementability is considered high due to the availability of conventional equipment and materials required to construct the extraction/treatment system. A pumping test was also performed to determine the effectiveness of the technology and to provide design parameters for a full-scale system. Results from this test were favorable. For groundwater contamination located on the ASCO property, groundwater extraction/treatment can be easily implemented along the property boundary with the installation of extraction wells. The upgradient facility acreage also provides an excellent area in which to locate the treatment equipment. For contamination beyond the ASCO property, the implementability of Alternative GW-3 is slightly lower because the extracted groundwater would need to be piped back to the ASCO property for treatment. The intrusiveness of this alternative would depend on the number and location of extraction wells and piping.

Alternative GW-4 would be the most complicated alternative to implement, requiring excavation to install the barrier at a depth of at least 180 feet below ground surface, significantly deeper than any previously installed. Even greater depths would be required at locations downgradient from the ASCO property (specifically, the intersection of May Royal Drive and Rodgers Road). Conventional techniques, such as trenching, cannot be used for installation, which adds to the difficulty of installation of the PRB wall.

10.7 Cost

The cost analysis evaluated capital costs and annual operation and maintenance (O&M). The net present value of an alternative is the sum of initial capital costs and the discounted value of O&M costs over the lifespan of the remedy.

For the soil remedial alternatives, Alternative S-1 ($0.00) involves no remedial activities and, therefore, is the least costly alternative. Alternative S-2 has a net present value of $30,000. Alternative S-3 is significantly more expensive, with a net present value of approximately $500,000.

For the groundwater alternatives, Alternative GW-1 ($0.00) involves no remedial activities and, therefore, is the least costly alternative. Assuming monitoring of the entire plume for thirty years (from quarterly to annually), the net present value of Alternative GW-2 is $340,000. Of the active groundwater remedial alternatives to address contamination within the ASCO property boundary, the lower cost alternative is Alternative GW-3, followed by Alternative GW-4, with net present values of $3.1M and $8M respectively. In order to address contamination beyond the ASCO property, the net present value of Alternative GW-3 ($1.6M) is less than Alternative GW-4 ($4.6M).

10.8 Community Acceptance

This criterion considers whether the local community agrees with the Department's preferred alternative. Comments received on the Proposed Plan are important indicators of community acceptance.

The Department presented its Proposed Plan at the May 19, 2009 public meeting. During this meeting, the Department addressed all questions from the local community and received oral comments. During the public comment period, no written comments were received that opposed the Department's preferred remedy. Public response to the Department's preferred alternative was favorable. The public comment period ended June 20, 2009.

The Responsiveness Summary (Appendix A) includes a summary of community comments, as well as an additional written comment received by the Department.

11.0 Selected Remedy

The Department has selected a combination of alternatives to address both the soil and groundwater contamination at the Site. The final cleanup remedy will consist of a soil vapor extraction system to address affected soil, and a groundwater extraction and treatment system to pump and treat contaminated groundwater.

11.1 Description of Soil Component of Selected Remedy

The soil remedy, Alternative S-3, consists of the installation of an SVE system in the former PCE storage area. Based on pilot test results, SVE is well suited for implementation in this area.

It is anticipated that eight SVE wells will treat the affected area. Initially, the surficial clayey-to-silty sand layer will be addressed by the SVE technology. After the shallow sand layer is remediated to achieve remediation goals, the underlying sandy clay unit will be addressed. This phased approach will be executed so the greatest mass of contaminants in the shallow sand layer is removed before inducing air flow into and through the underlying sandy clay unit. This minimizes the risk of downward contamination transport due to the application of a vacuum underlying sandy clay unit while the higher concentrations of COCs exist in the upper sand layer. More specific details and specifications of the SVE system will be determined during the design process.

Alternative S-3 was selected over other alternatives because it is expected to achieve substantial and long-term risk reduction and prevent further migration of contaminants from soil to groundwater. An estimated $500,000 will be required to implement this treatment technology.

11.2 Description of Groundwater Component of Selected Remedy

The groundwater remedy, Alternative GW-3, involves the installation of a groundwater extraction and treatment system.

To address groundwater contamination on the ASCO property, three extraction wells will be located along the eastern (downgradient) property line in order to minimize the migration of VOCs above MCLs off the ASCO property and to remove VOCs from treated groundwater. For remediation of contamination located beyond the ASCO property, four extraction wells will be located within the areas of highest VOC concentrations and along the downgradient edge of the plume where MCLs are exceeded.

The extracted water from the wells will be piped to the ASCO property for treatment and discharge. The treatment system will include an equalization tank, air stripper, and liquid-phase carbon and will be contained within a dedicated building on the ASCO property. After treatment, the water will be piped to the discharge manhole located immediately east of the ASCO property along Columbia Highway/U.S. Route 1. Water entering this storm water drainage system flows to the north before eventually discharging into Shaw Creek.

Periodic monitoring of the extraction wells, monitoring wells, and selected private wells will be implemented to determine the effectiveness of the groundwater remedy and to monitor natural attenuation processes. More specific details and specifications of the system will be determined in the design process. In the event a private drinking water well exceeds an MCL for any VOC, the monitoring plan will provide for an alternative water supply for the property. The groundwater-monitoring program will also be determined during the remedial design process. An estimated $4.7M will be required to implement this treatment technology.

11.3 Expected Outcome of the Selected Remedy

The purpose of this response action is to prevent the migration of contaminants from soil to groundwater and control risks posed by direct contact with groundwater.

The soil component of the selected remedy will reduce the concentration of soil contaminants to levels that are protective of groundwater at drinking water standards. These target levels, or Remediation Goals (RGs), are based on EPA Region 9 Soil Screening Levels (SSLs).

The groundwater component of the selected remedy will restore the aquifer to drinking water standards. The RGs for groundwater contaminants are based on the Maximum Contaminant Levels (MCLs) established under the Safe Drinking Water Act.

Table 11-1 summarizes the cleanup levels for the soil and groundwater COCs.

Table 11-1
Automatic Switch Company Site
Cleanup Levels for Chemicals of Concern

Media: Soil **Site Area:** Former PCE storage and degreaser area		**Media:** Groundwater **Site Area:** Contaminated Groundwater Plume	
Chemical of Concern	**Cleanup Level**	**Chemical of Concern**	**Cleanup Level**
PCE	0.06 mg/kg	PCE	5 ug/L
TCE	0.06 mg/kg	1,1-DCE	7 ug/L
Cis-1,2-DCE	0.4 mg/kg	1,1,1-TCA	200 ug/L
1,1-DCE	0.06 mg/kg		
Notes mg/kg = milligrams per kilogram (ppm) Cleanup levels are the EPA Region 9 SSLs		Notes ug/L = micrograms per Liter (ppb) Cleanup levels are the MCLs	

The selected remedy is expected to prevent exposure to contaminated soil and groundwater from the Site. Environmental exposure is limited to the contaminants in the groundwater since affected soils are either subsurface or beneath the building. Currently, there is no human exposure to contaminated groundwater exceeding safe drinking water standards. During remediation, the groundwater will continue to be monitored to ensure MCLs are not exceeded and that the contaminant plume is not migrating to areas where new receptors could be affected. The time to reach cleanup levels for the COCs is currently unknown.

12.0 Statutory Determinations

Based on information currently available, the Department believes the selected remedy meets the mandatory threshold criteria required by the NCP, and provides the best balance of trade-offs among the other alternatives. The Department expects the selected remedy to satisfy the following statutory requirements: 1) be protective of human health and the environment; 2) comply with applicable or relevant and appropriate requirements; 3) be cost-effective; 4) utilize permanent solutions to the maximum extent practicable; and 5) satisfy the preference for treatment as a principle element of the remedy.

PART III - RESPONSIVENESS SUMMARY

The Department's Proposed Plan for Site Remediation was mailed to local residents and other interested parties on May 7, 2009 and a public meeting was held May 19, 2009. At this meeting, representatives of the Department presented the results of the Remedial Investigation, explained the remedial alternatives evaluated in the Focused Feasibility Study, presented the Department's preferred alternative, and received comments from the public.

This meeting initiated the official public comment period for interested parties to comment on the RI/FFS results and the Department's Proposed Plan. No requests for an extension of the comment period were received, and therefore, the comment period ended on June 20, 2009.

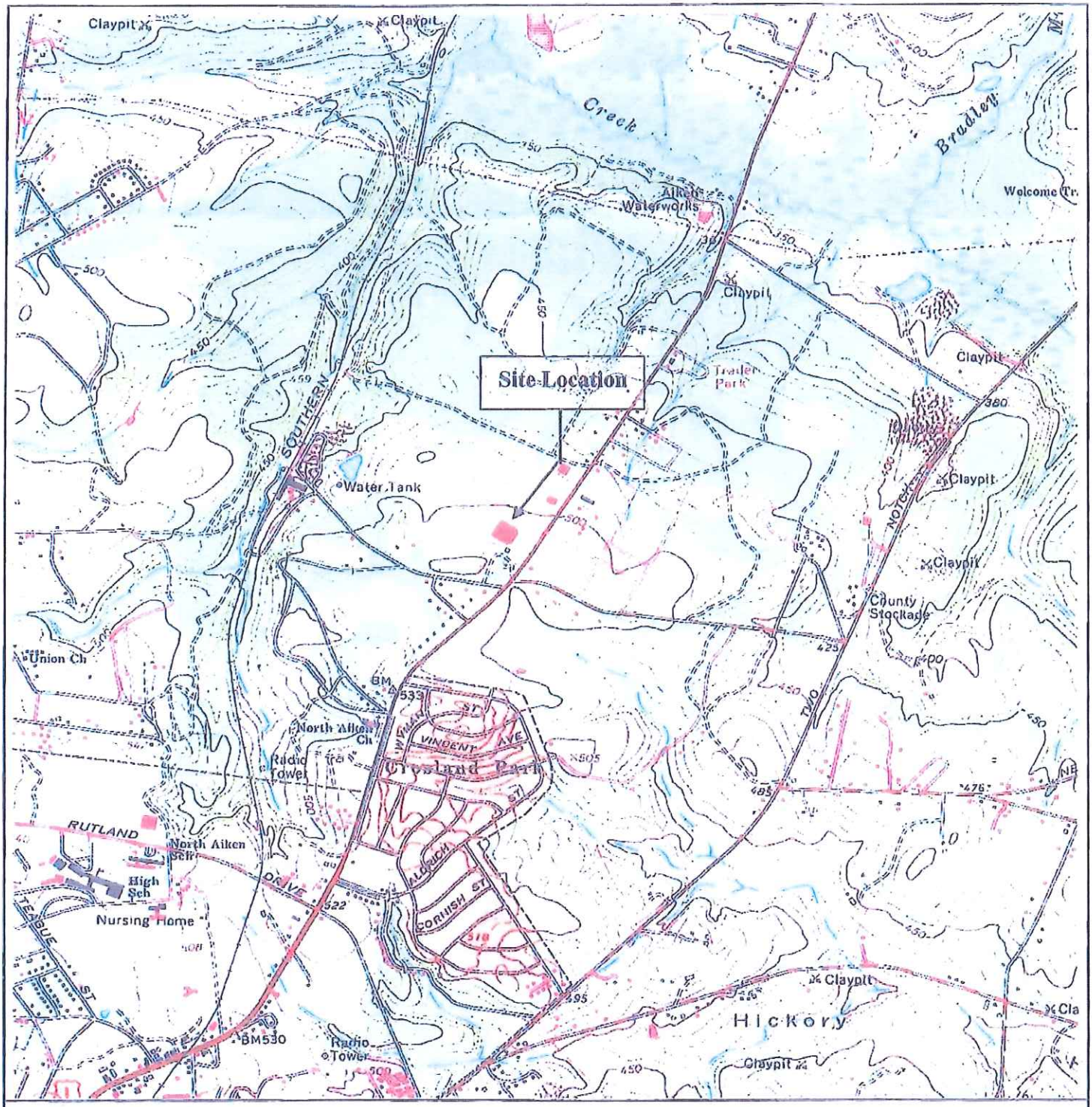
Based upon oral comments at the public meeting, public response to the Department's preferred alternative was favorable.

During the remainder of the public comment period, one written comment was received. Although this comment was in support of the Department's selected remedy, it was requested that the Department consider additional issues. One issue was the continuation of groundwater remediation "until the levels of contaminants are well below the MCLs established for drinking water purposes". It should be noted that the Department has no authority to require remediation below the MCLs. The remaining issues stated in the comment letter were related to details and specifications of the groundwater extraction and treatment system and will be addressed during the remedial design process.

The remainder of the Responsiveness Summary is included in Appendix A, and consists of the following:

- The Department's Proposed Plan;
- A transcript of the Proposed Plan Public Meeting which includes oral questions/comments from the public and the Department's responses; and
- A copy of the written comment received during the public comment period.

FIGURES



WSP
ENVIRONMENTAL STRATEGIES
11911 FREEDOM DRIVE, SUITE 900
RESTON, VIRGINIA 20190
703-709-6500

[redacted]

Site Location
Automatic Switch Company (ASCO)
Aiken, South Carolina

Figure 1 ASCO Site Location

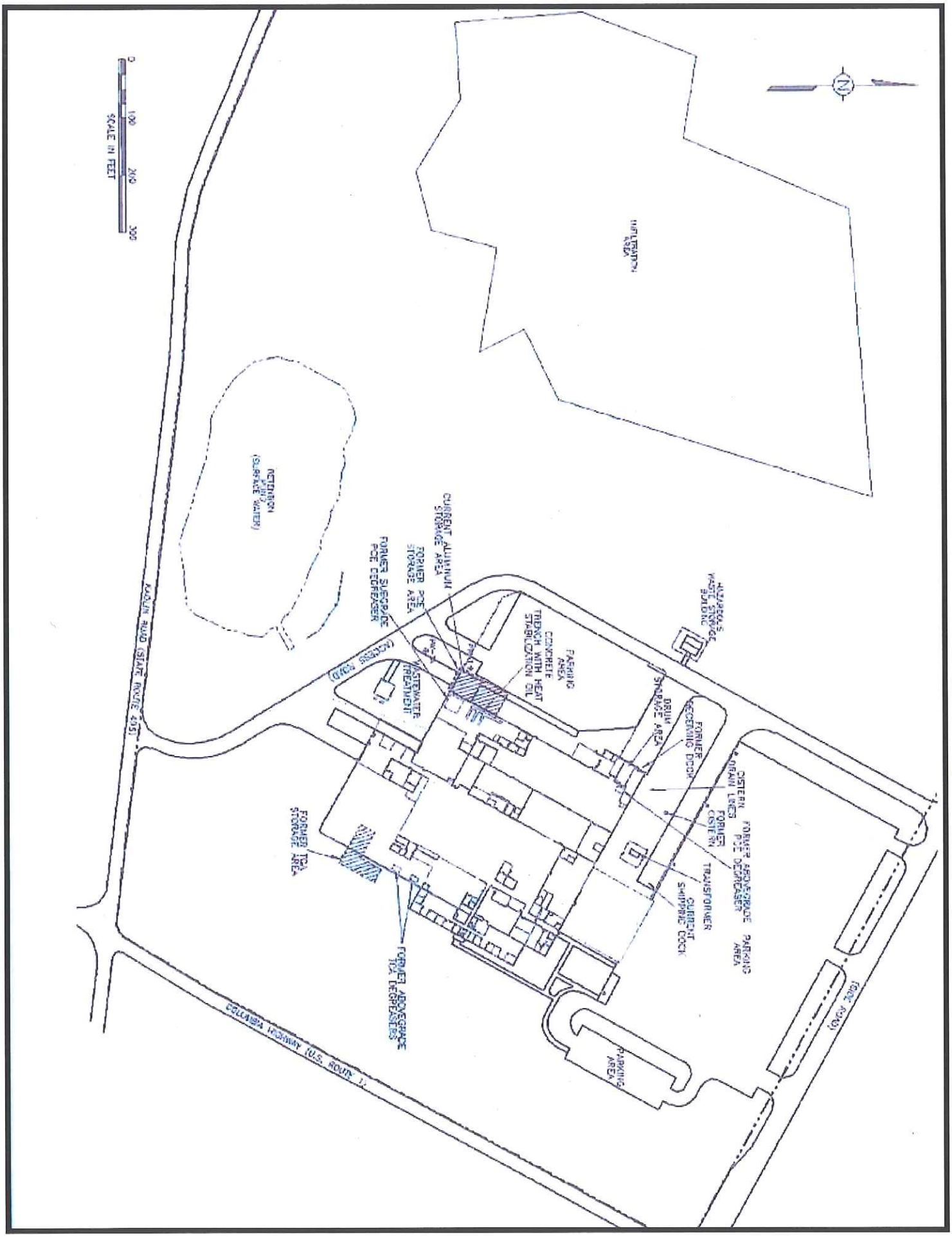


Figure 2 Site Layout

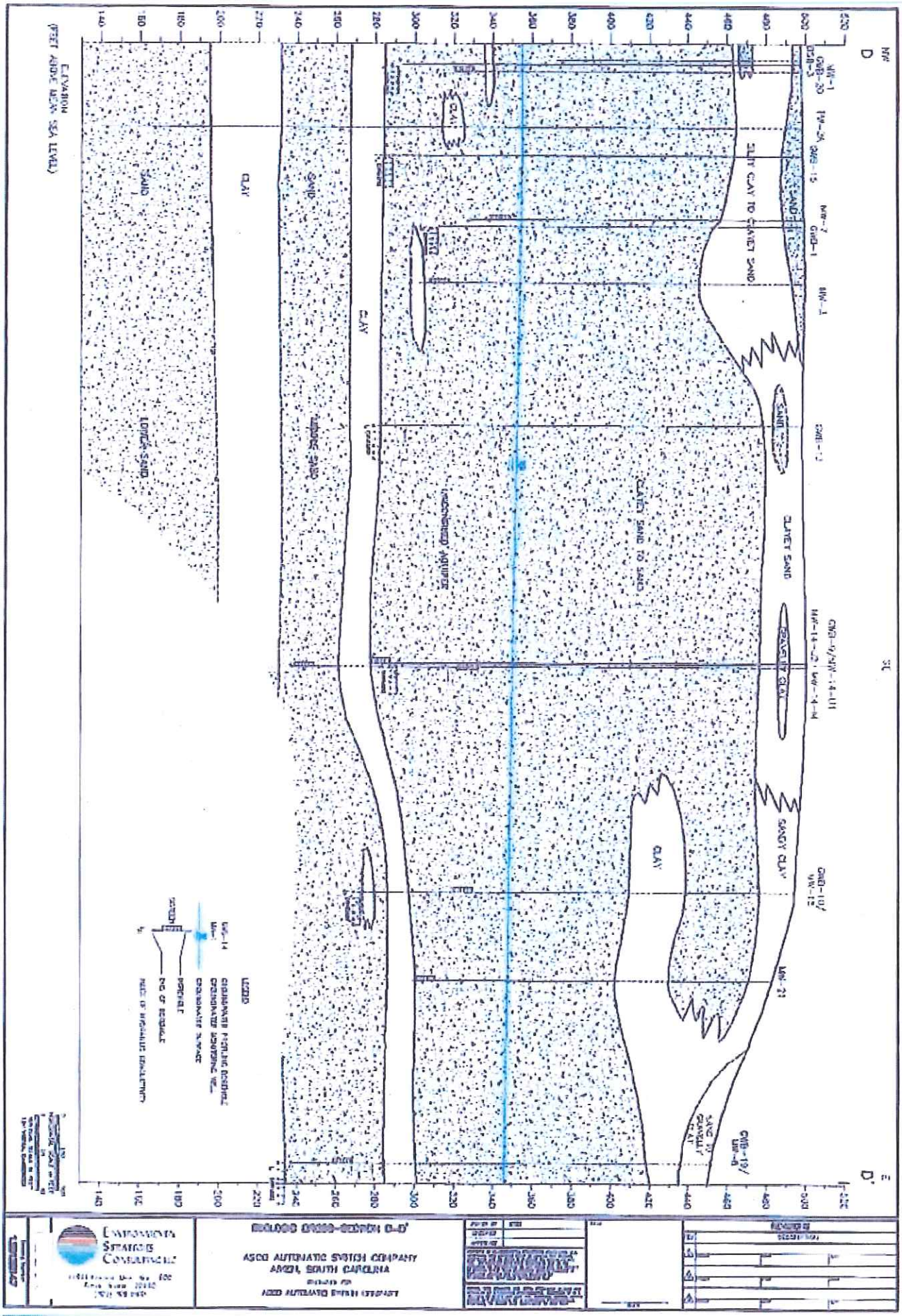


Figure 3 Site Geology

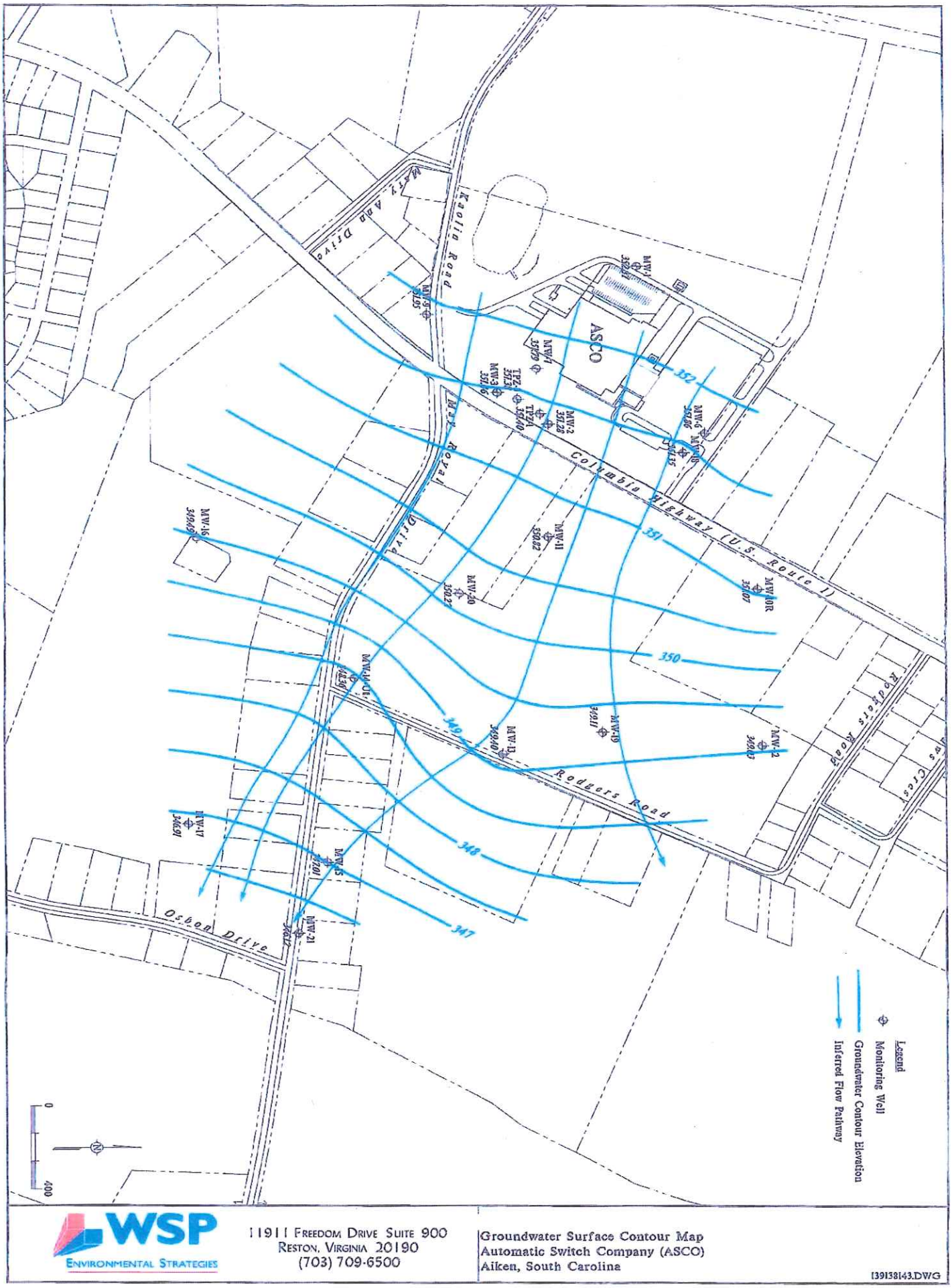


Figure 4 Groundwater flow direction

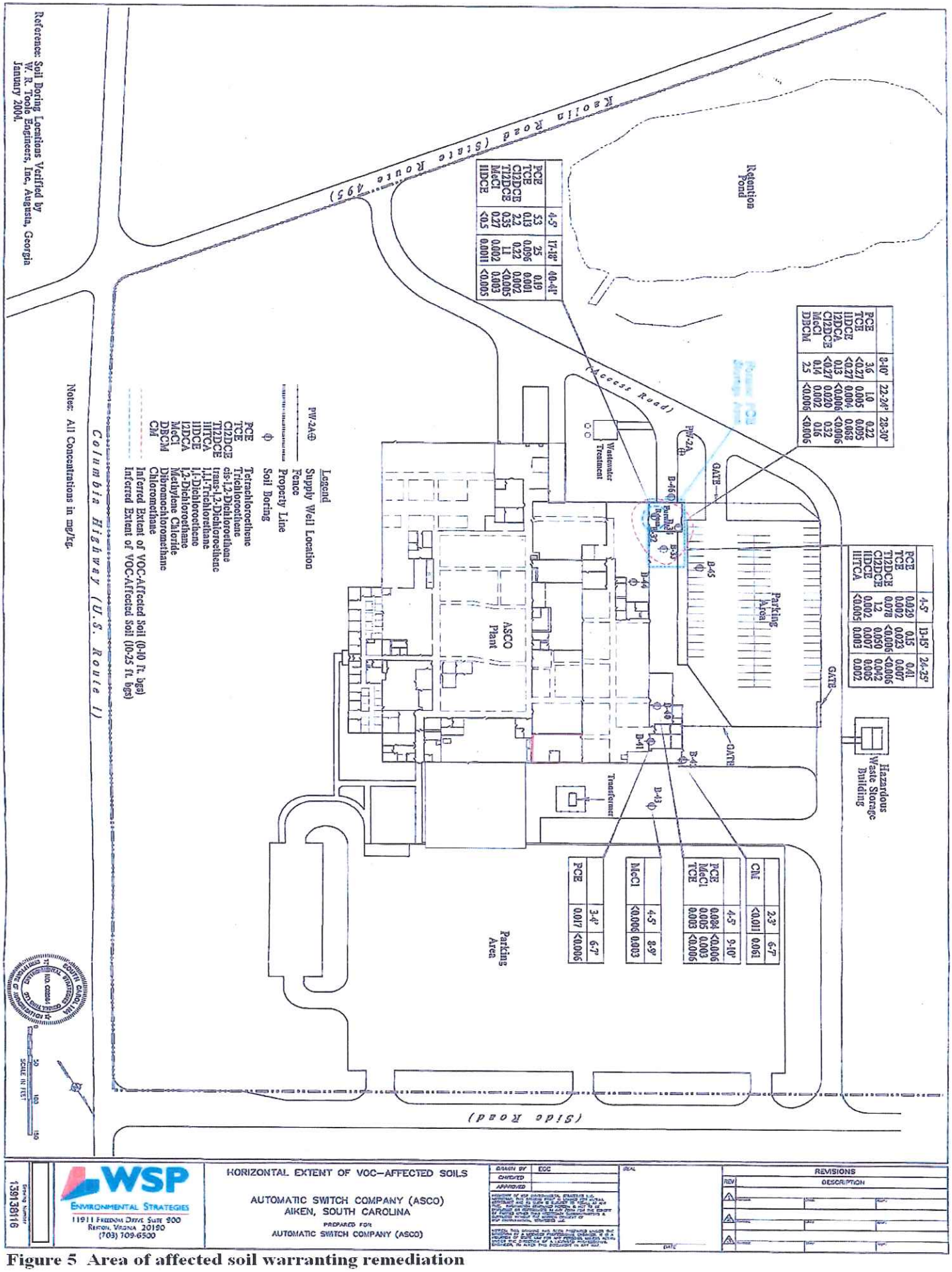


Figure 5 Area of affected soil warranting remediation

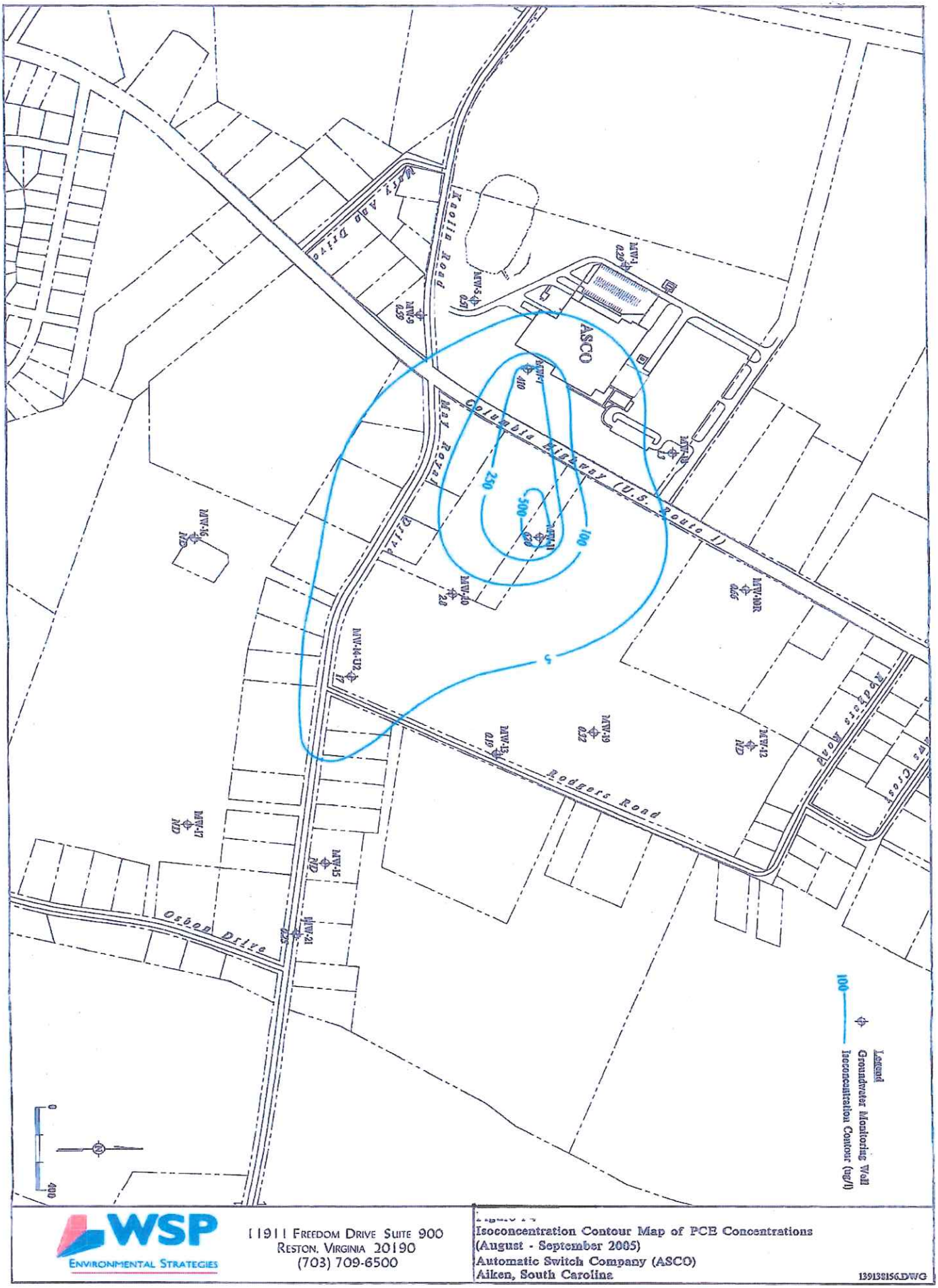


Figure 6 Isoconcentration map for PCE

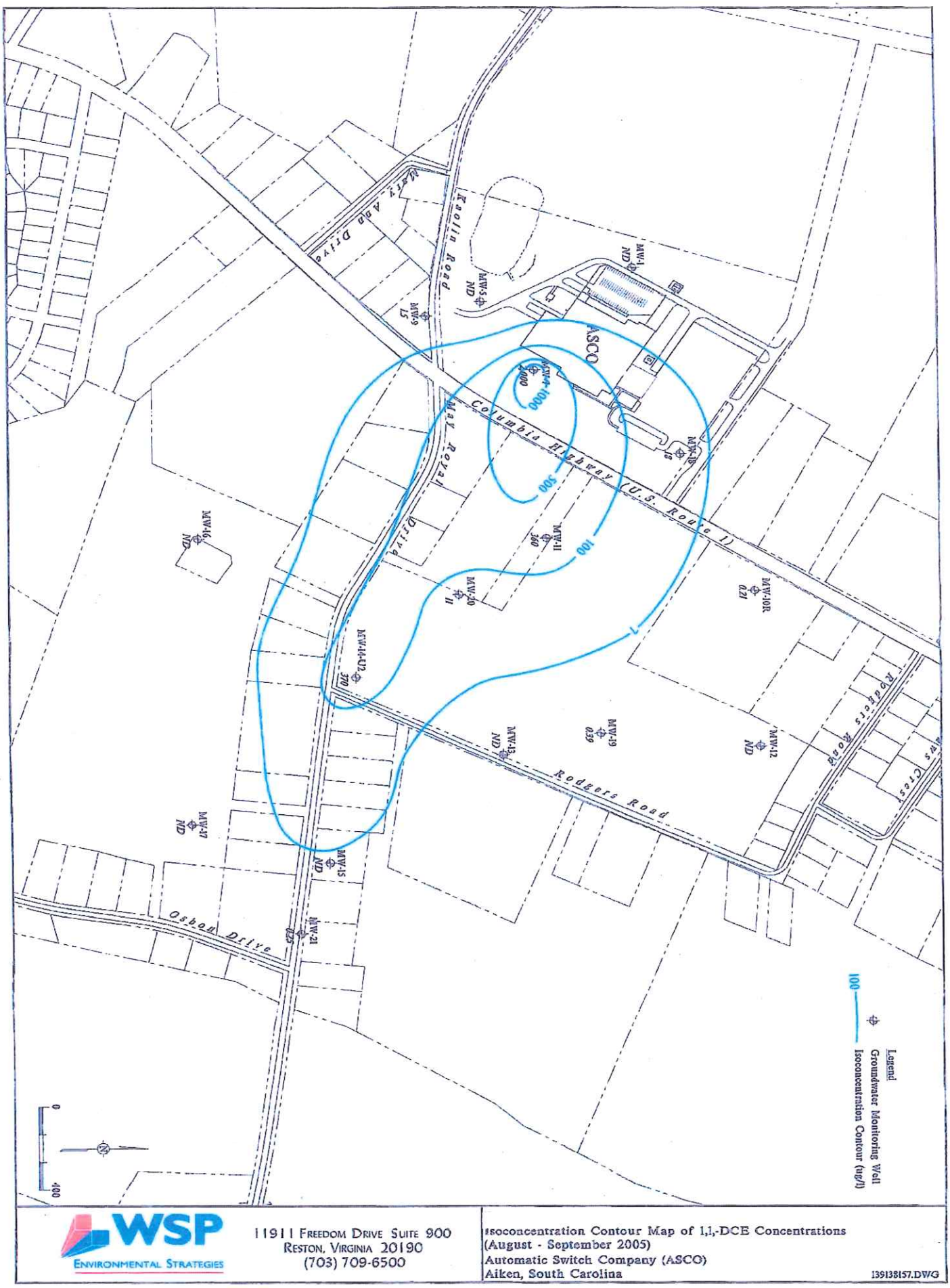


Figure 7 Isoconcentration map for 1,1-DCE

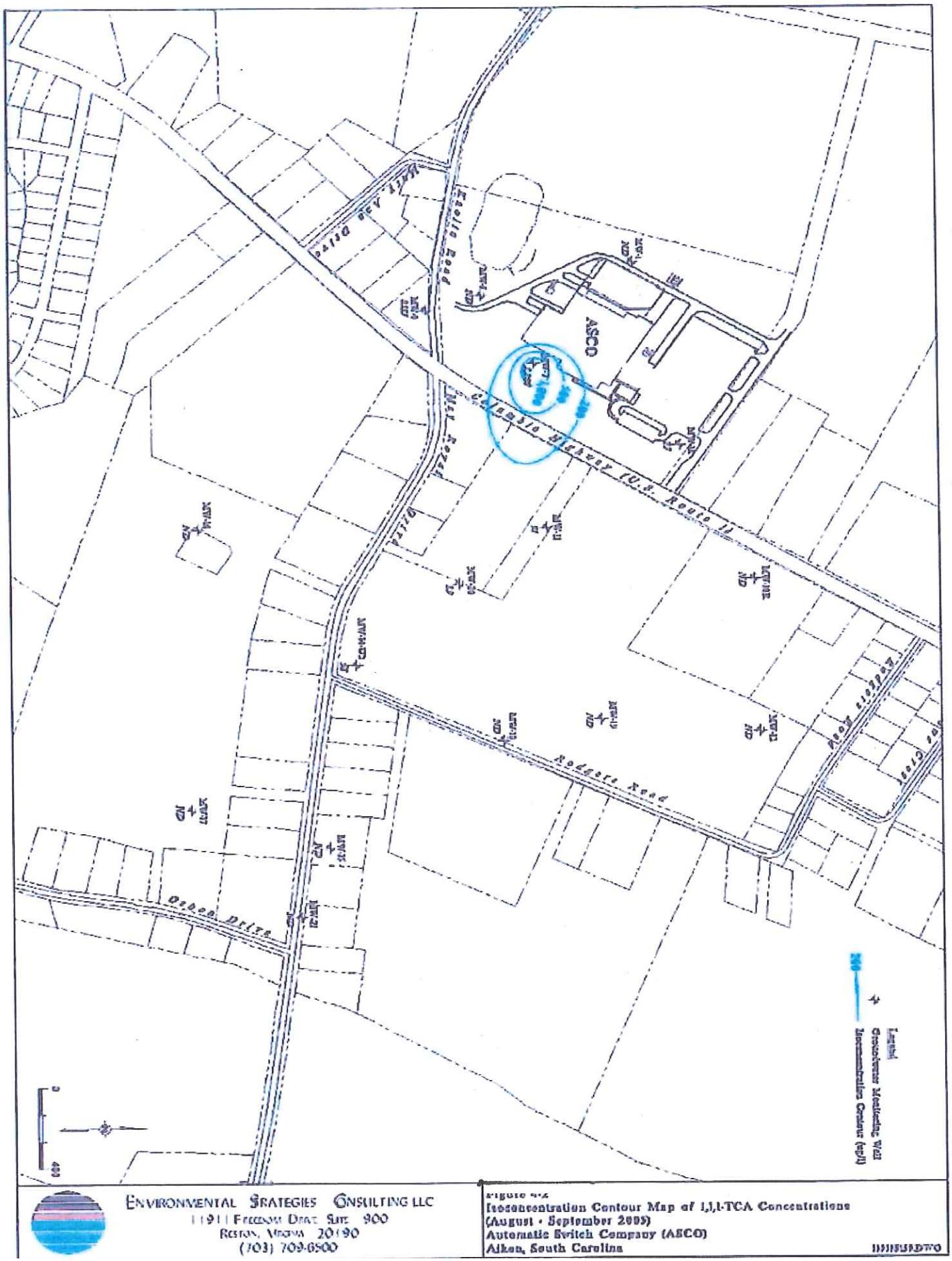


Figure 8 Isoconcentration map for 1,1,1-TCA

APPENDIX A

1. Department's Proposed Plan, May 7, 2009
2. Transcript of Public Meeting, May 19, 2009
3. Public Comment Letter, May 19, 2009

Proposed Plan

D H E C

PROMOTE PROTECT PROSPER

South Carolina Department of Health and Environmental Control

Proposed Plan for Site Remediation

Automatic Switch Company (ASCO) Site

1561 Columbia Highway, Aiken, South Carolina

May 7, 2009

ANNOUNCEMENT OF PROPOSED PLAN

The South Carolina Department of Health and Environmental Control (DHEC or the Department) recently completed an evaluation of cleanup alternatives to address contamination at the Automatic Switch Company (ASCO) Manufacturing Facility (Site). This Proposed Plan identifies the Preferred Alternative for cleaning up the contaminated soil and groundwater and provides the reasoning for this preference. In addition, this Plan includes summaries of other cleanup alternatives evaluated. These alternatives were identified based on information gathered during environmental investigations conducted by Emerson Electric Company (Emerson) pursuant to Voluntary Cleanup Contract 02-5455-RP, dated January 27, 2003, between Emerson and the Department.

The Department is presenting this Proposed Plan to inform the public of our activities and to gain your input. This Proposed Plan summarizes information that can be found in greater detail in the Focused Feasibility Study (FFS) report and other documents contained in the Administrative Record file. The Department encourages the public to review these documents to gain a comprehensive understanding of the Site and activities that have been conducted.

The Department will select a final remedy after reviewing and considering comments submitted during the 30-day public comment period. The Department may modify the Preferred Alternative or select another response action presented in this Plan based on new information or public comments. Therefore, the public is encouraged to review and comment on all the alternatives presented in this Proposed Plan.

DHEC's Preferred Cleanup Summary

Soil Cleanup: DHEC's preferred soil remedial alternative, Alternative S-3, consists of the installation of an SVE system in the former PCE storage area. The SVE system "pulls" contaminated vapors from the subsurface soils to the surface where they will be treated.

Groundwater Cleanup: DHEC's preferred groundwater remedial alternative, Alternative GW-3, involves the installation of a groundwater extraction and treatment system, which will pump and treat the entire plume of contaminated water.

The remaining pages provide additional details of the Proposed Plan.

MARK YOUR CALENDAR

❑ **PUBLIC MEETING:**

When: **Tuesday, May 19, 2009, at 6:30pm**

Where: **River of Life Church**
1411 Columbia Highway N., Aiken, SC

DHEC will hold a meeting to explain the Proposed Plan, and all of the alternatives presented in the Feasibility Study. After the Proposed Plan presentation, DHEC will respond to your questions. Also, oral and written comments will also be accepted at the meeting.

❑ **PUBLIC COMMENT PERIOD:**
May 19, 2009 through June 20, 2009

DHEC will accept written comments on the Proposed Plan during the public comment period. Submit your written comments to:

Angie Jones, Project Manager
DHEC-L&WM
2600 Bull St.
Columbia, SC 29201
jonesar@dhec.sc.gov

❑ **FOR MORE INFORMATION:**

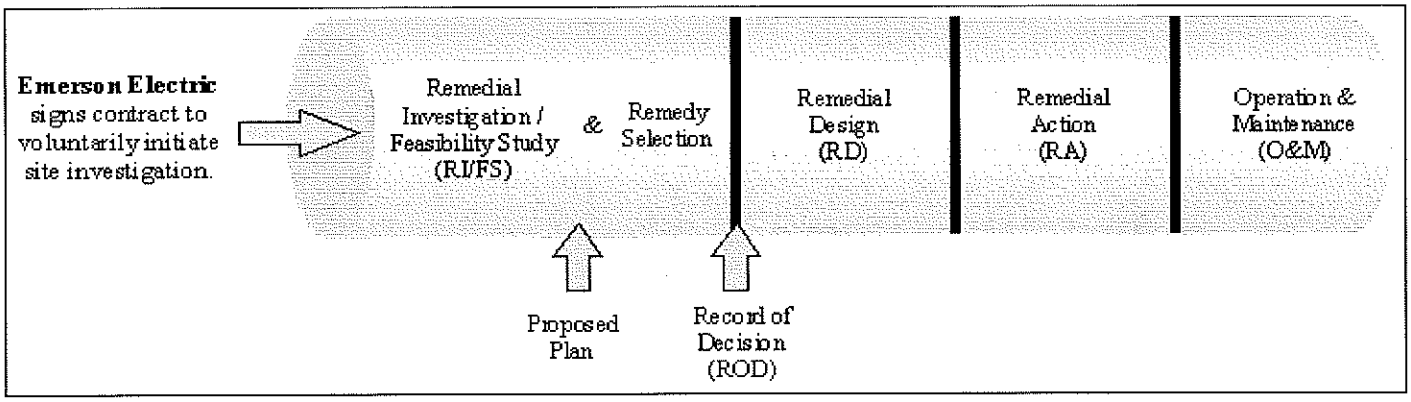
Call: Angie Jones, Project Manager, 803-896-4076
Ted Millings, DHEC's Aiken Office, 803-641-7670

See: DHEC's website at:
http://www.dhec.sc.gov/environment/lwm/public_notice.asp

View: The Administrative Record at the following locations:

- Aiken County Public Library
  314 Chesterfield Street SW, Aiken, SC
  Hours: Monday, Wednesday, & Friday: 10:00am – 6:00pm
  Tuesday & Thursday: 10:00am – 9:00pm
  Saturday: 10:00am to 4:00pm

- DHEC's Bureau of Land & Waste Management
  8911 Farrow Road - Columbia, SC
  Contact: Freedom of Information Office: (803) 898-3817
  Hours: Monday - Friday: 8:30a.m. - 5:00p.m.



SITE HISTORY

Therm-O-Disc, Inc. (TOD) constructed the facility in 1974 for the manufacturing of bi-metal thermostats for various commercial appliances and products. The basic raw material used in the manufacturing process consisted of processed metal composed primarily of nickel, chromium, and iron. The metal shipped to the facility was cut into discs, cleaned with tetrachloroethene (PCE), and placed in heated silicon oil baths for testing purposes. After testing, the discs were cleaned with another chlorinated solvent, 1,1,1-trichloroethane (1,1,1-TCA), and used in product assembly.

ASCO began operating at the facility in April 1988, and currently manufactures solenoid valves and pressure switches for a variety of industrial applications. Secondary operations include rebuilding actuators and manufacturing core assemblies, saw base assemblies, plug nuts, and other small machinery components for other ASCO facilities.

During the April 1987 removal of nine underground storage tanks from the 1,1,1-TCA and PCE storage areas, it was noted that one of the tanks appeared to have a small hole. Water samples collected from this excavation indicated the presence of volatile organic compounds (VOCs), specifically 1,1,1-TCA and PCE.

Since closure of these tanks, several investigations have been conducted to evaluate the environmental conditions at the property. The majority of these investigations have focused on gathering data on soil quality in the former tank area, and evaluating groundwater quality on and off the ASCO property. During one investigation, approximately 370 cubic yards of soil and debris were removed from the PCE tank area.

In January 2001, chlorinated VOCs were detected in samples from a nearby residential water supply well. Following a request from the Department to determine whether the ASCO property might be the source of the VOCs, Emerson conducted an assessment. Results from this assessment indicated PCE was detected in the onsite monitoring wells and 1,1,1-TCA and 1,1-Dichloroethene (1,1-DCE) were detected in the offsite residential water supply well. In January 2003, Emerson Electric Company, parent company of both Therm-O-Disc, Inc. and ASCO, entered into Voluntary Cleanup Contract 02-5455-RP for the performance of a Remedial Investigation/Feasibility Study.

SITE CHARACTERISTICS

Based on the Remedial Investigation results, the contaminants of concern (COCs) are PCE, 1,1,1-TCA, and their associated breakdown products, particularly Trichloroethene (TCE), 1,1-DCE, and the 1,2-Dichloroethene (1,2-DCE) isomers. **The environmental media affected at the site include subsurface soils and groundwater.** Sampling of sediments in the facility's retention pond indicates it has not been affected by the VOC contamination. In addition, the data indicate contaminated groundwater does not discharge to any surface water bodies downgradient of the site.

- Within the former PCE storage and degreaser area, subsurface soils beneath the main building are contaminated with PCE and associated breakdown products. Contamination extends to a depth of approximately 40 feet below ground surface.

- The groundwater beneath the southwestern portion of the manufacturing building contains PCE, 1,1,1-TCA, and 1,1-DCE above Maximum Contaminant Levels (MCLs are the drinking water standards; the maximum levels of a contaminant allowable in water). The highest concentrations are found directly downgradient of the former PCE storage and degreaser area.

- As the groundwater migrates off the ASCO property, the concentrations of contaminants generally decrease but remain above MCLs. Contaminants have been detected at concentrations above MCLs at a distance of approximately 2,000 feet downgradient of the ASCO property.

SCOPE AND ROLE OF THE ACTION

This action will be the final cleanup action for the Site. The remedial action objectives include preventing exposure to contaminated media through the treatment of soil and groundwater at the Site.

SUMMARY OF SITE RISKS

The area adjacent to the Site is zoned for industrial, commercial, and residential usage. The affected aquifer is a potential underground drinking water source. The primary exposure route would be contact or ingestion of affected groundwater containing contamination. Although public water is available in this area, there are several properties in the vicinity of the Site with private wells. It is the Department's current judgment that the Preferred Alternative identified in this Proposed Plan, or one of the other active measures considered in the Proposed Plan, is necessary to protect public health or the environment from actual or threatened releases of hazardous substances into the environment.

REMEDIAL ACTION OBJECTIVES

Remedial action objectives (RAOs) are developed in order to set goals for protecting human health and the environment. The goals should be as specific as possible but should not unduly limit the range of alternatives that can be developed. Accordingly, the following RAOs were developed for the Site:

- Eliminate or mitigate potential organic vapors above acceptable concentrations from entering buildings.
- Prevent the migration of contaminants of concern from soil to the groundwater.
- Prevent human consumption of contaminated groundwater that exceeds federal and state MCLs (drinking water standards).
- Restore the aquifer to drinking water standards within a reasonable time frame.
- Prevent further migration of impacted groundwater (above drinking water standards) beyond the ASCO property boundary.
- Monitor groundwater quality in the affected portion of the aquifer to determine whether the plume area is stable, increasing, or decreasing.

The proposed action will reduce the concentration of soil contaminants to levels that are protective of groundwater at drinking water levels. These target levels, or Preliminary Remediation Goals (PRGs) are based on EPA Region 9 soil screening levels (SSLs). For soils, the PRGs are:

PCE	0.06 ppm
TCE	0.06 ppm
Cis-1,2-DCE	0.4 ppm
1,1-DCE	0.06 ppm

The PRGs for groundwater contaminants are based on the MCLs established under the Safe Water Drinking Act. For groundwater, the PRGs are:

PCE	5 ug/L
1,1-DCE	7 ug/L
1,1,1-TCA	200 ug/L

SUMMARY OF REMEDIAL ALTERNATIVES

Based on information collected during the previous investigations, a Focused Feasibility Study (FFS) was conducted to identify, develop, and evaluate cleanup options and remedial alternatives. The FFS process used the information on the nature and extent of contamination and associated potential human health risks developed during the Remedial Investigation and associated studies to develop and evaluate potential remedial alternatives and their overall protection of human health and the environment. Both soils and groundwater were considered in the FFS analysis. Each remedial alternative evaluated by the Department is described briefly below. Note: A final Remedial Design will be developed prior to implementation.

SUMMARY OF REMEDIAL ALTERNATIVES

Medium	Designation	Description
SOIL	S-1	No Action.
	S-2	Legal and physical barriers; groundwater use restriction; fencing; concrete flooring.
	S-3	Soil Vapor Extraction or SVE; vacuum "pulls" contaminated vapors from the subsurface soils to the surface where they are treated.
GROUND WATER	GW-1	No Action.
	GW-2	Monitoring wells and private wells are routinely sampled in order to monitor the plume.
	GW-3	Pump and treat the entire plume.
	GW-4	Treatment occurs "in-place" as treatment material is injected into the contaminated aquifer.

Soil Alternatives

S-1: No Action

Regulations governing the Superfund program require that the "No Action" alternative be evaluated to establish a baseline for comparison of the other remedial action alternatives. Under this alternative, there would be no action taken to prevent exposure to the soil contamination. No institutional controls or active remediation would be implemented under this alternative.

No cost would be associated with this alternative.

S-2: Institutional and Engineering Controls

Institutional and engineering controls are a means of access restriction that provide both legal and physical barriers to restrict access to the affected areas. An example of an institutional control is a deed restriction, which limits specific activities on all or a portion of the property. Examples of engineering controls currently in use on the ASCO property are perimeter fencing, concrete flooring, and asphalt paving.

Although public access to the ASCO property is controlled, institutional and engineering controls do not reduce the volume, toxicity, or mobility of contamination. Therefore, institutional and engineering controls generally have a medium degree of effectiveness, unless used in concert with other technologies.

The net present value of this alternative is estimated at $30,000.

S-3: Soil Vapor Extraction

Soil vapor extraction (SVE) technology targets volatile contaminants (which readily evaporate, such as PCE) present in unsaturated soils. SVE works by inducing a vacuum on the affected soils, causing the contaminated vapors to be "pulled" to the surface where they are treated.

As part of the FFS, Emerson performed an SVE pilot study at the facility in October 2004. The pilot test results indicate SVE is an effective technology and will remove contaminants of concern from the subsurface soils. Based on the favorable pilot test results, the effectiveness of SVE as a soil remediation technology is considered high. Overall, SVE is well suited for implementation in the former PCE storage area. The close location of the building slab and paved areas outside the building will enhance the airflow patterns and extend the effective radius of influence. The implementability of SVE is considered high.

The net present value of this alternative is estimated at $500,000.

Groundwater Alternatives

GW-1: No Action

The No Action alternative is carried through the screening process, as it serves as a baseline for comparison of the other remedial action alternatives. No active remediation or routine groundwater monitoring would be implemented under this alternative. Existing groundwater contamination would not be addressed through any means other than naturally occurring attenuation processes. There would be no restrictions on groundwater use at the facility and protections against potential contamination migrating to adjacent residences would not be provided.

No cost would be associated with this alternative.

GW-2: Groundwater Monitoring

Groundwater monitoring is commonly used alone or in conjunction with other remedial technologies in order to evaluate the effectiveness of a remedial design. When used alone, groundwater monitoring does not directly reduce the mobility, volume, or toxicity of contamination; therefore, the effectiveness when used alone is considered low. In some situations, a groundwater monitoring plan alone is effective if the contaminants do not present an unacceptable risk to human health. The effectiveness is considered high when monitoring is used in conjunction with other remedial technologies. The implementability of groundwater monitoring is high. The FFS did not evaluate groundwater monitoring as a stand-alone technology, but carried it forward for detailed analysis as a supplement for active remedial technologies.

The net present value of this alternative is estimated at $340,000.

GW-3: Groundwater Extraction and Treatment

Groundwater extraction and treatment (also known as groundwater pump and treat technology) is effective as a groundwater containment and contaminant removal technology. Groundwater extraction and treatment can create a hydraulic barrier that eliminates migration of contaminants in groundwater beyond the barrier. Extraction points can also be placed in areas of the highest contaminant concentrations to increase the efficiency at which contaminant mass is removed from groundwater.

Groundwater extraction via recovery wells is an applicable technology for the site. Emerson performed a pumping test at the facility to determine the effectiveness of the technology and to provide design parameters for a full-scale system. Extracted groundwater can be treated through a variety of methods, the effectiveness of which are dependent upon the type of contaminants and their concentrations. The contaminant concentrations present at the eastern (downgradient) ASCO property line may require the use of air stripping as the primary treatment technology and possibly granular activated carbon as secondary treatment. The specific types of treatment would be

determined in the remedial design phase. Groundwater extraction and treatment is relatively effective due to the removal of contamination from affected groundwater and the ability to control continued contaminant migration. This alternative is easily implemented due to the conventional equipment and materials required to construct and favorable results of the pumping test.

The net present value to implement this alternative, both on and downgradient of the ASCO property, is estimated at $4,700,000.

GW-4: Permeable Reactive Barrier Wall

Permeable reactive barrier walls (PRBs) are water permeable walls that are installed across the flow path of a plume of affected groundwater, allowing contaminated groundwater to be treated as it moves through the wall. Typically, zero-valent iron is used to promote degradation by reductive dechlorination of VOCs. PRBs have been shown to be successful in treating plumes with concentrations of VOCs similar to that at the ASCO Site. The conventional method of installing PRBs is by excavating a trench and backfilling it with the treatment medium. Conventional installation methods may reach a depth of 60 to 80 feet; however, the FFS evaluated a deep injection technique that could be expected to reach greater depths.

A PRB located at the eastern (downgradient) ASCO property boundary would require an installed depth of at least 180 feet below ground surface, significantly deeper than any previously installed. Even greater depths would be required at locations downgradient from the ASCO property.

The net present value of this alternative is estimated at $12,600,000. This cost includes addressing groundwater contamination both on and downgradient of the ASCO property.

EVALUATION OF ALTERNATIVES

The National Contingency Plan requires the Department use specific criteria to evaluate the different remediation alternatives individually and against each other in order to select a remedy. This section of the Proposed Plan profiles the relative performance of each alternative against the criteria, noting how it compares to the other options under consideration. The criteria are discussed below:

1. Overall Protection of Human Health and the Environment

When evaluating alternatives in terms of overall protection of human health and the environment, consideration is given to the degree to which site-related risks are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

The No Action Alternatives (S-1 and GW-1) offer the least protection of human health and the environment, providing no active remediation of the soil and groundwater contamination, no groundwater use restrictions to limit potential future exposures to impacted groundwater, and no long-term monitoring to evaluate potential naturally occurring VOC attenuation mechanisms.

Although Alternative S-2 is protective of human health by eliminating the potential risk to the direct contact of contaminated soils, it is not protective of the environment. Institutional and engineering controls do not prevent the contaminated soil from potentially leaching to the groundwater. Alternative S-3 is protective of both human health and the environment because the contaminants would be removed from the soil by the soil vapor extraction system.

For the remaining groundwater alternatives, Alternative GW-2 is the least protective of human health and the environment. Although there are currently no known exposures to contaminants above MCLs, the groundwater would still be contaminated, and monitoring alone would only track the contaminant migration. Alternatives GW-3 and GW-4 provide protection through their active remediation of VOCs within the groundwater, with each alternative eventually reducing the contaminants to reach the groundwater remediation goal. However, Alternative GW-3 provides the greatest overall protection of human health and the environment through its use of groundwater pump and treat technology to best achieve the cleanup goals and reduce contaminant migration within the shortest overall remedial time frame.

2. Compliance with State and Federal Regulations

Each of the alternatives is evaluated with respect to its ability to comply with applicable state and federal regulations.

For the soil remedial alternatives, Alternatives S-2 and S-3 are expected to attain risk-based criteria through institutional and engineering controls and/or soil vapor extraction. However, Alternative S-2 would not prevent the potential migration of the contaminants in soil to groundwater; whereas Alternative S-3 has the greatest potential to attain the remediation goal because it actively treats all targeted soils.

For the groundwater alternatives, Alternative GW-3 is expected to be the most effective method for reaching the remediation goals (MCLs), based on the groundwater extraction and treatment approach. This remedy will contain the elevated VOC concentration areas of the plume and remove the contaminants from the treated groundwater.

In terms of potential ability to meet the chemical-specific cleanup goal for the Site, Alternative GW-4 involves the installation of a permeable reactive barrier wall that when successfully installed is able to treat contaminated groundwater; however, this technology will not treat groundwater that is located downgradient of the barrier wall.

When used alone, Alternative GW-2 will not comply with the state and federal regulations for all parts of the Site because it only consists of the monitoring of groundwater.

3. Long-term Effectiveness and Permanence

This factor considers the ability of an alternative to maintain protection of human health and the environment over time.

The long-term effectiveness of Alternative S-2, institutional and engineering controls (deed restrictions, perimeter fencing, asphalt paving, etc.), would prevent direct contact exposure, but would not prevent migration through the soil-to-groundwater pathway; and it would require continued monitoring to ensure long-term protection. For Alternative S-3, the long-term effectiveness is high, as there will be no potential risk to human health or the environment after the contaminated soils are treated.

Alternative GW-3 would be the most successful in its long-term attainment of cleanup goals compared to GW-2 and GW-4 due to its ability to control the migration of the contaminated plume through extraction and treatment of the groundwater. Alternatives GW-2 and GW-4 both provide less long-term effectiveness. For Alternative GW-4 there is potential for degradation of the barrier and breakthrough to occur that would require significant maintenance and reinstallation.

Alternative GW-1 provides the least long-term effectiveness because it does not provide active remediation of the VOCs Additionally, no long-term protection is provided against potential exposures due to existing VOC impacts to the groundwater or potential future migration of VOCs beyond the ASCO property.

4. Reduction of Toxicity, Mobility or Volume through Treatment

This factor evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.

Neither Alternative S-1 nor S-2 provides reduction in the toxicity, mobility, or volume of VOCs in the soils and groundwater. Only soil vapor extraction (S-3) achieves reduction of toxicity, mobility, and volume by actively extracting VOCs from the soil.

For the groundwater remedial alternatives GW-3 and GW-4, each of these active remedial alternatives is expected to provide a reduction in the toxicity, mobility and volume of the VOCs through either the extraction and treatment of groundwater or through in-situ reductive dechlorination. When Alternative GW-2 is used without other remedial technologies, it does not reduce the toxicity, mobility, and volume of VOCs in the groundwater.

Alternative GW-1 also provides no reduction in the toxicity, mobility or volume of VOCs within the groundwater other than that which occurs through natural attenuation processes.

5. Short-term Effectiveness

The short-term effectiveness evaluation considers the length of time needed to implement an alternative and the risks the alternative poses to workers, residents, and the environment during implementation.

For the soil remedial alternatives, although there is no short-term risk presented by Alternatives S-1 and S-2, neither is effective in protecting the soil-to-groundwater pathway. And although Alternative S-3 may present a short-term risk to workers during the construction of the treatment system, the time frame for remediation is only 3-5 years.

For the groundwater remedial alternatives, Alternative GW-1 presents a great short-term risk due to the non-existence of remedial activities associated with it. This would pose a risk to not only on-site workers, but also the surrounding community and environment because there would be no restrictions on groundwater use at the Site and no protections against potential contamination migrating to adjacent residences. Alternative GW-2 also poses a short-term risk to workers who collect samples to monitor the migration of the plume and the toxicity of the contaminants. The short-term risks for Alternatives GW-3 and GW-4 are related to the construction of the treatment system. However, one difference between the two is that Alternative GW-4 requires significantly more time than Alternative GW-3 to remediate the contaminated groundwater.

6. Implementability

The analysis of implementation considers the technical feasibility and administrative feasibility of implementation, as well as the availability of required materials and services.

Alternative S-2 is easily implemented through access controls and use restrictions to limit future exposures to impacted soils. For Alternative S-3, a field pilot study was performed to establish the technical feasibility as well as to obtain information necessary to design and configure the system. The pilot test results indicated that SVE is an effective technology and will remove the contaminants from the subsurface soils. Alternative S-3 would be simple to design and operate and well suited for implementation for use in the former PCE storage tank area. SVE is actually enhanced when implemented beneath the building due to the low permeability that is provided by the building slab. The required goods and services required for Alternative S-3 are readily available.

Alternative GW-2 is easily implemented due to the existing monitoring wells and because ASCO owns the property where a majority of field work will occur. For Alternative GW-3, the implementability is considered high due to the availability of conventional equipment and materials required to construct the extraction/treatment system. A pumping test was also performed to determine the effectiveness of the technology and to provide

design parameters for a full-scale system. Results from this test were favorable. For groundwater contamination located on the ASCO property, groundwater extraction/treatment can be easily implemented along the property boundary. The upgradient facility acreage also provides an excellent opportunity to return the treated water to the aquifer. For contamination beyond the ASCO property, the implementability of Alternative GW-3 is slightly lower because a treated groundwater management location is not readily available east of Highway 1, so extracted groundwater would need to be piped back to the ASCO property. The intrusiveness of this alternative would depend on the number and location of extraction wells and piping.

Alternative GW-4 would be the most complicated alternative to implement, requiring excavation to install the barrier at a depth of at least 180 feet below ground surface, significantly deeper than any previously installed. Even greater depths would be required at locations downgradient from the ASCO property (specifically, the intersection of May Royal Drive and Rodgers Road). Conventional techniques, such as trenching, cannot be used for installation, which adds to the difficulty of installation of the PRB wall.

7. Cost

The cost analysis evaluated capital costs and annual operation and maintenance (O&M). The net present value of an alternative is the sum of initial capital costs and the discounted value of O&M costs over the lifespan of the remedy.

For the soil remedial alternatives, Alternative S-1 ($0.00) involves no remedial activities and, therefore, is the least costly alternative. Alternative S-2 has a net present value of $30,000. Alternative S-3 is significantly more expensive, with a net present value of approximately $500,000.

For the groundwater alternatives, Alternative GW-1 ($0.00) involves no remedial activities and, therefore, is the least costly alternative. Assuming monitoring of the entire plume for thirty years (from quarterly to annually), the net present value of Alternative GW-2 is $340,000. Of the active groundwater remedial alternatives to address contamination within the ASCO property boundary, the lower cost alternative is Alternative GW-3, followed by Alternative GW-4, with net present values of $3.1M and $8M respectively. In order to address contamination beyond the ASCO property, the net present value of Alternative GW-3 ($1.6M) is less than Alternative GW-4 ($4.6M).

8. Community Response

Community acceptance of the preferred remedy will be evaluated after the public comment period ends. Public comments will be summarized and responses provided in the Responsiveness Summary Section of the Record of Decision document that will present the Department's final alternative selection. The Department may choose to modify the preferred alternative or select another based on public comments or new information.

SUMMARY OF THE DEPARTMENT'S PREFERRED ALTERNATIVE

The Department has identified a combination of alternatives to address both the soil and groundwater contamination at the Site.

Soil: The preferred soil remedial alternative, Alternative S-3, consists of the installation of an SVE system in the former PCE storage area.

Based on pilot test results, SVE is well suited for implementation in the PCE storage area.

The details and specifications of the SVE system will be determined during the design process. An estimated $500,000 would be required to implement this treatment technology. Alternative S-3 was selected over other alternatives because it is expected to achieve substantial and long-term risk reduction and prevent further migration of contaminants from soil to groundwater.

Groundwater: The preferred groundwater remedial alternative, Alternative GW-3, involves the installation of a groundwater extraction and treatment system.

To address groundwater contamination on the ASCO property, extraction wells would be located along the eastern (downgradient) property line in order to minimize the migration of VOCs above MCLs off the ASCO property and to remove VOCs from treated groundwater. For remediation of contamination located beyond the ASCO property, the extraction wells would be located within the areas of highest VOC concentrations and along the downgradient edge of the plume where MCLs are exceeded. The extracted water from the wells will be piped to the ASCO property for treatment and discharge. The treatment system would include an equalization tank, air stripper, and liquid-phase carbon. The treatment system will be contained within a dedicated building on the ASCO property. A number of options are available for disposal of the treated groundwater. These options include the following:

- Publicly owned treatment works;
- Land application via spray fields, tile fields, rapid infiltration basins, percolation ponds, or evaporation basins;
- National Pollutant Discharge Elimination System (permitted surface water discharge); and/or
- Underground injection

The anticipated discharge location for the treated groundwater is to the existing retention pond located on the ASCO property. Water from the pond is conveyed to the western (upgradient) portion of the ASCO property and either sprayed or land applied where it infiltrates. Upgradient infiltration of treated groundwater provides the added benefit of returning the treated water to the groundwater aquifer through seepage. The details and specifications of the system and discharge location will be determined in the design process. Periodic monitoring of the extraction wells, existing

monitoring wells, and selected private wells will be implemented to determine the effectiveness of the extraction and treatment system and to monitor natural attenuation processes. In the event a private drinking water well exceeds an MCL for any VOC, the monitoring plan would provide for an alternative water supply for the property. The groundwater-monitoring program will be determined during the remedial design process. An estimated $4.7M would be required to implement this treatment technology.

Based on information currently available, the Department believes the Preferred Alternative meets the mandatory threshold criteria (Criteria 1 and 2) and provides the best balance of trade-offs among the other alternatives. The Department expects the Preferred Remedy to satisfy the following statutory requirements: 1) be protective of human health and the environment; 2) comply with applicable or relevant and appropriate requirements; 3) be cost-effective; 4) utilize permanent solutions to the maximum extent practicable; and 5) satisfy the preference for treatment as a principle element of the remedy.

COMMUNITY PARTICIPATION

The Department will evaluate comments from the public before selecting a final alternative. A comment period has been established to allow the public an opportunity to submit written comments to the Department. The community is also invited to a public meeting where the Department will discuss the Feasibility Study results, present the preferred alternative, and accept comments on the remedial alternatives.

The dates for the public comment period, the date, location, and time of the public meeting, and the locations of the Administrative Record files, are provided on the first page of this Proposed Plan.

Technical Reports

- A **Remedial Investigation (RI)** identifies the potential sources of contamination; and determines what contaminants are at the site, and the extent of the contamination.
- A **Feasibility Study (FS)** considers various cleanup alternatives for the soil and groundwater.
- A **Proposed Plan (PP)** describes cleanup alternatives to address contamination.
- A **Record of Decision (ROD)** identifies the selected cleanup method.
- The **Remedial Design (RD)** is the development of specifications and drawings necessary for the construction and implementation of the ROD.

USE THIS SPACE TO WRITE YOUR COMMENTS

Your input on the Proposed Plan for the Automatic Switch Company (ASCO) Site is important. Comments provided by the public are valuable in helping DHEC select a final cleanup remedy.

You may use the space below to write your comments, then fold and mail. Comments must be postmarked by **June 20, 2009**. If you have any questions, please contact Angie Jones at 803-896-4076. You may also submit your questions and/or comments electronically to: jonesar@dhec.sc.gov.

Name _____ Telephone _____

Address _____ Email _____

City _____ State ___ Zip _____

Transcript of Public Meeting

State of South Carolina)
)
County of Aiken)
)
South Carolina Department)
of Health and)
Environmental Control) Transcript
) of
In Re:) Public Meeting
Automatic Switch Company)
(ASCO) Site)
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The within public hearing was taken before Donna K. Joy, a notary public in and for the State of South Carolina, commencing at the hour of 6:40 p.m., Tuesday, May 19, 2009, at the River of Life Church, 1411 Columbia Highway N., Aiken, South Carolina.

Reported by
Donna K. Joy

APPEARANCES

DHEC officials present: Ms. Pat Vincent
Ms. Angie Jones
Mr. Ted Millings
Mr. Michael May

Speakers from the public: Ms. Tracey Turner
Mr. George Waddell
Mr. John Fletcher
Mr. Alan Gregory
Mr. Scott Foster
Mr. Steve Clarke
Mr. Julian Earl Young
Mr. Andrae Daniels
Ms. Sheila Carter
Ms. Nancy Fletcher
Mr. Larry Morris
Ms. Cassie Barnhill

MS. VINCENT: Thank you guys for coming. We're going to just go ahead and start our public meeting. The South Carolina Department of Health and Environmental Control is very thankful that you are here today to attend the meeting. And we are here to discuss the ASCO Automatic Switch site that -- that's located at 1561 Columbia Highway, also known as Highway 1 in -- here in Aiken.

The Department is here for several purposes. First, we would like to share information with you about the site, which is located in your community. Second, we would like to provide to you an opportunity in which the Department can discuss the proposed plan for cleanup of the site. And then, finally, we want to also have an opportunity for us to respond to any of your questions or if you have some comments that you would like to share with us. We want to be able to try to respond to those, and if we can't, we'll get back with you on any type of response.

We have several DHEC representatives here today. I'll first introduce myself. My name is Pat Vincent, and I am with the State Remediation section of DHEC's Bureau of Land and Waste Management. We're located in Columbia, South Carolina.

The next important person here today is Angie Jones. She's the project manager and spokesperson for the site. And she's also with the State Remediation Section in Columbia. Ms. Jones will be presenting our presentation to you about the site in just a few minutes.

We also have some regional folks that are local in -- in your area, very familiar with what goes on here in the community. We've got Ted Millings in the back with the blue shirt. He's helping distribute some of the -- the information for us. We also have Michael May. Michael -- thank you. He is also from the regional office here too.

We are -- we are excited to be able to provide this information to you, and Ms. Jones -- before she presents her -- her presentation, I'd like to cover a few things with you.

First, you know, I mentioned the sign-in sheet earlier. We would like for you to record your name and your address. That is -- please write legibly so that I can make sure that you're on our mailing list in the future. We also want to make sure that the sign-in sheet -- let you know, excuse me, that the sign-in sheet is something that's available to the public. If you would like to have some

information redacted, please just let me know -- such as e-mail addresses or telephone numbers or that kind of thing.

Second, we have some documents that relate to the ASCO site that we've stored at the Aiken County Public Library that is what we call an "Administrative Record," and we've updated that recently with some -- the more recent information on this proposed-plan stage. The administrative record, for your information, contains documents that helped the Department in making its technical decisions at the site. The information in those documents and reports can sometimes be very technical, but, thankfully for people like me, it helps that they have summaries that kind of help you to understand what you may be trying to obtain from that report.

We also -- you can go to the library and -- and look at it. We've provided you the times that the library is open. We also have those documents available at our bureau's office in Columbia, and you can make an appointment with our Freedom of Information office. And if you would like to see those, just let me know, and we'll set that up for you.

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Third, we have a wonderful lady sitting to -- seated to my right. Ms. Joy is our court reporter. She will be recording the meeting and later will provide the Department with a transcript of the meeting. Now, a transcript is a word-for-word type of document so that it will help us to know that we've answered all your questions, and also -- we will also have mics that we will need to have to be sure we're capturing all your questions, too, along the way. So wanted to let you know that she is there to -- for that purpose.

And we will make the transcript available, once it's available to us, so that you can look at that on the Web site. And if you need our DHEC Web site, I'll be glad to provide that to you as well.

Ms. Jones is going to be discussing some background information about the site, the site investigative results -- results, some clean-up alternatives that the Department considered, and the clean-up alternative that Department thinks is the best for the site based on the information that we have available to us at this point.

You will have an opportunity to -- to provide some comments at the close of her meeting, but you're also given an opportunity to provide written

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comments to us afterwards. And you have until June 20th to provide us those written comments. That's very important to us for you to have some input on what's happening in your community.

If you have your comments written, you may leave those, also, in the back. We have a box that you can drop them in and -- so that we can get those responses to you. The proposed plan has a page on the back of it that you can record those comments on that.

And now I'm going to let Ms. Jones start with her presentation. Thank you.

MS. JONES: Hi. I want to thank everyone again for coming tonight. I know many of you have attended meetings like this in the past. This is the first one that I have been to since I've been the project manager on this site. So thank you all for coming, once again.

Let me quickly say for those of you that are new that the ASCO site is the source of some contamination, and this contamination has spread off the property and into the groundwater, and it has affected some private drinking-water wells.

My goal for tonight, as Pat said, is to present to you several options that was presented to the

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Department that we've evaluated, and we've made a decision that we think that this alternative is the best one for the site. But we want your input.

Now, in order to explain these cleanup options, I first want to give you a little background information describing briefly those events that led up to this point. Then I will discuss the options that we evaluated, and I'll present to you those. I really want you to understand these options and have a voice in the selection of the cleanup. And bear with me. Some of this does get a little technical. I will try to keep that brief. But we'll have plenty of time to answer your questions. I timed myself on this presentation. It does take about 20 to 25 minutes.

In 1974, a company known as Therm-O-Disc constructed the facility for the manufacturing of thermostats for various commercial appliances and products. Metal was shipped to the facility and cut into discs. It was then cleaned and placed into a heated oil bath for testing purposes. After testing, these discs were cleaned again and assembled into the thermostats.

Now, remember when I mentioned that the discs were cleaned? Well, they were cleaned with

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solvents. Solvents are just liquid chemicals used as degreasers. They are commonly used in manufacturing. These solvents were stored in underground tanks, just like tanks at a gas station.

In 1987, when the degreasing process at the facility was being taken out of service, the tanks were being removed. During this removal, someone noted that there was a hole in one of the tanks. Samples were collected, and they showed that the tanks had leaked some contamination of these solvents into the soil.

Here you can see a layout of the facility. This area right here -- first of all, this is -- this is No. 1, May Royal would be back over here, and the area of the tanks was back here in the back. This is a retention pond. And in your handout -- if you have one of the handouts, you can -- you can see all the other areas along the property.

Well, since the closure of these tanks in 1987, numerous investigations have been conducted at the site to evaluate the condition of the facility's property as well as those properties surrounding the facility.

I do want to note that in 1988 the property transferred from Therm-O-Disc to ASCO, which is the

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-- the site you see in front of the building right now.

In 1995 when there was some plans for expansion of the building in the area of the former tanks that had leaked, ASCO excavated approximately 370 cubic yards of soil and debris. This was taken off site to a permanent landfill.

Due to some structural concerns of adjacent buildings, the excavation was not extended at the time to underneath the building. There was some residual contamination that did remain in the soils under the building. So ASCO voluntarily expanded their investigation to further evaluate the soil contamination.

A few years later in 2001, the same contaminates that were found onsite were now found off the ASCO property. This was our first evidence that migration of the contaminates had occurred off the property.

You see right there in 2001, I state that we found PCE and TCA. These were the two solvents used at the property for the degreasers. You also see up there that I mentioned the contaminate 1,1-DCE.

Well, I didn't mention that chemical earlier as being a solvent used at the facility. This is a

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breakdown product. And what this shows is that the PCE and the TCE is -- is breaking down. These are volatile organic compounds. They readily vaporize, I guess you'd want to say, and they -- they break down as they travel and migrate through the soil and the groundwater.

So now that we have contamination off the ASCO property, wells needed to be installed to know exactly where the contamination was, how it was moving, how deep it was, how far it had traveled.

The company also began to sample some private wells. You know, we had one well that was sampled that had a hit, which told us that we needed to continue looking. That well was connected to municipal water. But we wanted to make sure that all the private wells in that area were protected.

All this work and data leads us to some additional involvement on DHEC's part. On behalf of Therm-O-Disc and ASCO and Emerson Electric Company -- Emerson Electric is the parent company to Therm-O-Disc and -- and ASCO -- Emerson entered into a contract with DHEC.

Now, this legally-binding document called for Emerson to determine the nature and extent of the contamination, tell me where the source of this

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contamination was, and it also required them to evaluate ways to clean up this contamination, both on the property and off the property.

So we have all this historical information that would lead us to believe that the old tank area that leaked that was underground was our source of the contamination. But we also wanted Emerson to evaluate all the areas on the property to make sure that there were not any other areas that could potentially cause a problem. And this list shows other areas on the site that we wanted to evaluate to make sure they were not any contributing factors to the contamination.

And this next slide is a list of all the groundwater work that was performed by Emerson. Monitoring wells, which is just like your private well -- just a well -- something to the ground that we pulled samples from -- they were installed both on the facility and off. And once again, we needed to know exactly where the contamination was: how deep it was and where it had traveled.

Emerson also conducted an inventory of private wells in the affected area. Now, these wells are sampled on a quarterly basis, and the information on these private wells is provided to DHEC and the

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property owner.

This next map -- it's kind of small -- but if you look on your handout, you can see all the different wells that were installed and all the private wells around the property. They've done a pretty extensive survey of the private wells in the area.

What we found from all this investigation is that this list of chemicals has been found in soils and groundwater at levels that exceed allowable safe levels.

Once again, the contamination from the tanks was the PCE -- now, this stands for Tetrachloroethene; it's a -- just a volatile organic compound, PCE -- and then TCA, which is 1,1,1-Trichloroethane, just another volatile compound.

Now, the breakdown products are listed below: The TCE, the 1,1- and the 1,2-DCE. Now, there are other breakdown products as the top two solvents break down, but these are the only contaminants that we found that exceed the allowable safe levels.

Now let me show you where these contaminants were found -- if you can turn to the map -- there you go -- within the former storage and degreaser

area. Once again, here's No. 1, this area back in here, the storage and degreaser area. The soils are contaminated with PCE, the solvent, and their breakdown products. Contamination extends to a depth of approximately 40 feet below the ground surface, and the highest contaminations are detected underneath the building.

So when I told you that the chemicals onsite were found at unacceptable levels, this table shows what levels are acceptable for the compounds in the soil. These levels are levels that have been determined to be protective of the groundwater. They are based on EPA levels. This means that if a contaminant, let's say PCE, the top contaminant, is in the soil at a level less than 0.06 parts per million, that this contaminant will not leach and move from the soil and contaminate the groundwater. We want to make sure that the level is low enough that it will not dissolve into the groundwater.

And speaking of groundwater, let me show you the groundwater results. From our well installation, we found that groundwater was encountered at a depth greater than 139 feet. We also know, from the placement of our wells, that the highest concentrations of the PCE, the TCA, and the

breakdown DCE are detected directly downgradient of that former tank area.

Here you can see the location of the plume. Now, when I say "plume," I want you to look at these circles right here. Once again, No. 1, here's the source area back in here, this is May Royal Drive, and these plumes are what I consider the areas of groundwater that are contaminated with the contaminants.

Let me point out that these lines --

UNKNOWN FEMALE: Excuse me, ma'am.

MS. JONES: Yes.

UNKNOWN FEMALE: We can't see those blue lines.

MS. JONES: I know. It's --

UNKNOWN FEMALE: There's no red dot or anything.

MS. JONES: Oh, you can't see the red dot? Okay.

There are two blue circles up on that map, and those show areas of contamination where we've installed wells, and we have certain levels of contaminants within those circles. So anything within those circles we know it has a certain level of contamination.

The blue lines that are more vertical are -- they indicate groundwater elevations, and this points out the direction of groundwater flow. So in

this case, groundwater is flowing predominately along May Royal Drive.

This second map is the plume of the TCA. This was also one of the other solvents onsite from the tank. And you can see that this contamination plume -- this area -- is not as extensive. So once again, look at the blue circles between the ASCO plant and No. 1.

And finally, the plume of the breakdown product DCE. You can see that the contaminants here have been detected way beyond the ASCO property. It's approximately 2,000 feet downgradient along May Royal Drive.

Now, when we were trying to define this plume in the area of contamination, once again, there are standards that we have, and they're called "maximum contaminant levels." These are the maximum levels that are allowable in the groundwater. And here's a table with those numbers.

The contaminants found in the groundwater currently exceed these cleanup levels, so we need to remediate and clean up so that the groundwater levels are below these numbers.

Once again, there are more breakdown products, other volatile organic compounds, that show up to us

when we receive data, but there are none above these allowable levels.

So all this data that was collected from the 1987 report when the tanks were removed were summarized by Emerson in a Remedial Investigation Report. This report was submitted to the Department for the Department to approve.

Emerson took all this data, and they began researching options which would clean up the contamination. These options were also presented to the Department in another report called a "Feasibility Study." These two reports are some of the reports that Pat mentioned were in the local library.

So we reviewed all these options that Emerson presented, and what we're here tonight to do is to summarize these options for you and to present the Department's preferred remedy. And this is the part where we're requesting your input.

We have three options to address the contaminated soil. Now, once again, the contaminated soil is only on the ASCO property underneath the building. Although Emerson looked at several other options, certain technologies were eliminated based on site-specific information. They

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just wouldn't work at this site based on the depth of our contaminants and the type of contaminants. So we narrowed our extensive investigation down to three. Let me describe these to you.

The first alternative is basically no action. I am required by my regulations to look at this as a baseline so that I can see how effective other alternatives may be. With this, there would be no monitoring. And right now we do have monitoring, but in this option, there would be no monitoring. We would not be able to tell if the contaminants were breaking down, if the plume was getting longer, the contamination was going deeper. No information would be gathered. No deed restrictions would be placed on the property. There would be no cost associated with this alternative.

UNKNOWN MALE: Excuse me, please.

MS. JONES: Yes, sir.

UNKNOWN MALE: Why -- why would that even be an option?

MS. JONES: I'm just required to evaluate that as a baseline. I mean, my regulations just tell me -- basically, to -- just to see that other options would work. There are some cases where it's just a formality. And maybe there are some sites where the contamination is so minimal that nothing has to be

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done, and in that case, the no action would work. But in this case, it would not.

UNKNOWN MALE: I understand.

MS. JONES: The second alternative is institutional and engineering controls. These are basically just legal and physical barriers that restricts access to those contaminated soils. It's like a deed restriction that you'd place on the property so that no one can come into contact with the soils.

Although access to the facility is controlled -- there are fences, there's concrete flooring over the contaminated soils, there's asphalt paving -- these controls would not reduce the actual volume of the contaminated soil in the ground. The cost to implement this alternative is $30,000.

The third alternative is called "Soil Vapor Extraction (SVE)." This technology works by pulling a vacuum on the affected soils, which are underneath the building, so you can easily pull the vapors. It causes the vapors to be pulled to the surface where they can be treated at the surface. It targets those contaminants which readily evaporate and break down, like our volatile organic compounds, so this would work great with these contaminants.

Emerson conducted a pilot test to see if this

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option were even feasible to work at this site, and we did have favorable results. Those results were submitted to the Department and it proved that this technology would work at the site. Cost to implement this option is $500,000.

Now here's a list of options we looked at to address the groundwater contamination. Once again, other options were researched but were eliminated because they would just not be effective at this site. We have some pretty deep levels of contamination. When I say "deep," I mean the depths of groundwater. And so some options would not be feasible here at the site.

The first alternative I'll describe to you is, once again, no action. Nothing would be done, no monitoring, no protections for contamination reaching private wells. We would not know where the contamination was moving. Once again, that's only -- merely a baseline for use as comparison.

The second alternative is groundwater monitoring -- and groundwater monitoring only. We would monitor the wells that we installed on the property. We would monitor private wells routinely to monitor the area of contamination, the plume. This would not actively reduce the contamination, it

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would merely track where the contamination was.

If we had physical properties of the soil that would help to break down these chemicals faster, this may work in some cases. But for -- for this case, it's not an active treatment. It is a supplement when you use other technology because you always want to monitor to see how effective your remediation is. Estimated cost of groundwater monitoring alone is $340,000.

The third alternative is groundwater extraction and treatment. It's also known as "pump and treat": pump it out of the ground, treat it above ground. Recovery wells would be installed in the areas of highest groundwater contamination: along the property line, down at the end of May Royal Drive at the end where we have the extent of the plume. The contaminated groundwater is pumped from the ground to the surface, and then it is treated by either granular activated carbon -- basically, a filter similar to filters that you could put on your -- your well in your kitchen, but a little more extensive -- or possibly an air stripper. I think I have an example of an air stripper next. We would continue monitoring with this option, and the estimated cost to perform this alternative is

$4.7 million. Now, this would treat groundwater on the ASCO property and off the property, all along down May Royal and anywhere that contamination extends those cleanup numbers.

This next slide is just a brief description of an air stripper. There we go. I -- I'm not sure if you can tell, but water comes in at the top and it flows down through the packing material, air is blowing up, and once again, it breaks down the contaminants, and then the air goes out of the top.

The last alternative that we looked at to evaluate the groundwater is a permeable reactive barrier. This treatment occurs in place. Nothing is pumped out of the ground and treated out of the ground; it's treated in place. Material is injected into the area where the groundwater's contaminated, and that treatment material breaks down the contaminants. One of these treatment materials is zero-valent iron. That's worked in some cases. Basically, you install a well, and you pour this material down into your well; and as the groundwater moves around that well, the groundwater contaminants break down. This would occur on the site and off the property. Estimated cost of this remedy: $12.6 million.

So when the Department evaluates cleanup options, we are required to evaluate with respect to certain criteria. And here's a list of that criteria.

What we do first is to make sure the option meets those first two criteria. It's mandatory that we protect human health and the environment and that we're compliant with state and federal regulations. We have to clean up to those levels that I told you about earlier.

Then we look to see which option provides the best balance of trade-offs with respect to the other criteria: long-term effectiveness, reduction of volume, short-term, costs -- all these other things we look at to try to evaluate the most effective remedy.

Now, community acceptance -- right there at the bottom -- of the preferred remedy will be evaluated after this meeting and after the 30-day public comment period has ended. Once again, that's why we're here tonight: to gain your input. The Department -- we can choose to modify our remedy or we can select another remedy based on your comments tonight.

So the option that DHEC is proposing to use at the site -- for the soils, we propose the soil vapor extraction. Once again, this is where the -- the vapors are -- are vacuumed and pulled up to the surface where they are treated. Once again, this provides protection to the environment, protection to human health, it reduces the contamination, it reduces the volume through active treatment. We don't just wait until the contamination breaks down; we actively treat it.

We have pilot tests, which are tests that were conducted on the site to see if the soil and the -- was conducive to these -- the system, and it was. It was well-suited for this area. This type of technology works well in other areas. It does prevent further migration of contaminants from the soil into the groundwater.

And our groundwater selection is selection No. 3, extraction and treatment. It protects human health, protects the environment. It reduces groundwater contamination through active treatment.

Extraction wells will be installed along the property line on the ASCO property before you get to No. 1. They would also be installed in areas of highest concentrations off the property and along the downgradient edge along May Royal Drive.

The extracted water would then be pumped back to the ASCO property, where it's treated on the ASCO property. There'll be a tank. There'll be some type of an -- either an air stripper that I mentioned earlier or some carbon that would treat the groundwater.

Then once the groundwater's been treated, we have certain disposal options. We have a retention pond onsite. We have the POTW. But what we're looking at is probably surface water discharge. And there are permits required for this.

The Department and Emerson early on established certain goals for this site, and it's the Department's position that this preferred cleanup option that I just mentioned to you meets these goals. We want to prevent any more contaminants from migrating from the soil to the groundwater. We want to prevent the groundwater from flowing even farther and contaminating more wells. We want to prevent anyone from coming into contact with the groundwater and drinking the groundwater that exceeds those safe levels. And then we want to restore the groundwater to those drinking water standards so that anyone else that may install a well in that area is able to do so safely. We want

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to make sure this is done in a reasonable time frame.

So to tell you where we are with the paperwork process, the first arrow says "Proposed Plan." That's what I am proposing to you: this plan to clean up the contamination. So after 30 days, after I evaluate your comments, we select a remedy. That remedy selection will be drafted and a document will be prepared called a "Record of Decision." This document states what Emerson will do to clean up the site.

Then those next categories along that pipeline: Remedial Design is the phase where Emerson tells me specifically how this system will be constructed -- the piping, the materials needed. And a lot of this legwork has already been done. Emerson's been very proactive about looking ahead in anticipation of DHEC's approval.

So as Pat mentioned earlier, tonight kicks off this public comment period for 30 days. Once again, there's Administrative Record at the library. And I think I've listed my phone number and my e-mail and our mailing address.

So if you can, flip to that last slide real quick. In a nutshell, to summarize it and put this

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very simply: Tanks were filled with solvents. Unfortunately, these tanks leaked. The soil became contaminated. The contaminated soil led to contaminated groundwater. A lot of data was collected: Where is the contamination? How bad is it? How far is it? How deep is it? This data was used to evaluate options for cleanup. So we're here tonight to decide which option is best to clean up the site.

MS. VINCENT: Okay. Now we've come to our time for discussion on the proposed plan. Again, we -- this is a portion that will also be recorded, so we need to have the microphones. I will come to you so that you will not have to get up here and stand up in front of people. But I'll also be holding two speakers. The court reporter has also asked me to -- to hold a speaker for them to make sure they're able to pick up what you're saying.

When I come to you with your -- to get your question, I'd like for you to tell -- state your name before you present your question or -- or a comment that you might have. That will help us also.

And we mentioned the Administrative Record is available. That's at the library. You may ask why

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do we put the documents at the library? That is so it is available to you. We want to make sure it's at a location that's close. We want to make sure that it's a location that's open at night, because we recognize many people work, as we do.

So who has the first question or comment? Please state your name.

MS. TURNER: Tracey Turner. Was there any testing -- soil testing or water contamination testing done outside of the -- the circles or the "plumes" that you call it?

MS. JONES: Groundwater contamination -- I mean, groundwater sampling, yes. The soils are localized only to those areas onsite. Those are the only soil samples that we collected were onsite, where we knew we had a source area.

Now, the groundwater was collected offsite. I can probably show you another map over here that shows all the wells that are, you know, off the property: all along Osbon, all along May Royal. Those are private wells, but we also have some monitoring wells there that -- that Emerson installed on these people's property for sampling.

MS. TURNER: So you actually did the testing downgradient but not necessarily to the northeast of the

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property?

MS. JONES: I'd say most of it was east.

MS. TURNER: Okay.

MS. JONES: East of where those tanks were removed from. East of --

MS. TURNER: But not north.

MS. JONES: No.

MS. TURNER: Okay. So --

MS. JONES: Well, now --

MS. TURNER: -- there's --

MS. JONES: Well, there are some wells in that area, but we would not -- we did not find any contamination there. I'm sorry. There are some wells, I guess, on the other side of -- of the -- the fairgrounds and --

UNKNOWN FEMALE: -- Rodgers Road.

MS. JONES: Ma'am?

UNKNOWN FEMALE: Rodgers Road.

MS. JONES: Rodgers Road. There are some wells along Rodgers Road -- I mean, in that area.

MS. TURNER: Okay. So there's really no telling if there's any contamination on the adjacent property to ASCO to the north unless testing is completed.

MS. JONES: We feel like we've asked Emerson to install enough wells that we have a good boundary. You

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know, we have -- we have wells that are impacted and then we step out a little farther in all directions to find, you know, has it reached this location? And if those -- if those wells come back with contaminants in it, then we go a little bit farther in all directions until you hit clean.

So -- so we do feel that we have looked far enough to the north and then far enough to the east, all around that property, to know where those contaminations have -- have migrated. And I can show you on the map afterwards where these wells are located and that they came back with no detections.

MS. TURNER: Okay.

MS. VINCENT: We do have some large maps sitting over here in the -- in the front row of the chairs. These maps were -- are some that were used in our presentation. It'll possibly help you in seeing things a little clearer, recognizing that the maps aren't that clear on the screen that -- at that distance. But if you would like to talk with anyone directly about the map, we'll be glad to do that as well.

MR. WADDELL: I'm George Waddell. I live on Osbon Drive, and this plume is within 100 or so feet of my well now, and I use that for drinking water. When they

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start this cleanup, do they expect it to immediately stop the spread of the plume any farther? And how soon will they start the cleanup?

MS. JONES: To answer the first part of your question, how soon will you -- how soon will the remedy -- will you start to see some effects of that remedy? And I would say -- you said, "instantly." I -- I don't know if instantly would be the word, but very, very soon. I mean, within a matter of -- you know, you turn on the system, you start pumping, you conduct some tests, you pull your samples, and you should definitely see results immediately.

MR. WADDELL: Do -- do you know how many feet a month or -- or quarterly or what this -- this is moving?

MS. JONES: How fast it's moving?

MR. WADDELL: Yeah. I -- I'm real concerned because --

MS. JONES: Yeah.

MR. WADDELL: -- I use this for drinking water, and it's within probably 150 feet of my well now.

MS. JONES: Okay. And your well is not one with -- wells that we currently sample?

MR. WADDELL: Oh, yeah. You've --

MS. JONES: Oh --

MR. WADDELL: You've --

MS. JONES: -- so --

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MR. WADDELL: -- sampled --

MS. JONES: -- it is.

MR. WADDELL: -- it. It's still okay.

MS. JONES: Right.

MR. WADDELL: But it's getting close.

MS. JONES: Okay. And that's -- first of all, let me say that's why Emerson has really been pushing DHEC to -- to have this meeting and to put this out there: to go ahead and let Emerson start pumping, to start cleaning, to start some type of cleanup.

I -- I do have a report that talks about how -- the -- the grading of the groundwater, how fast it's moving. That number's escaping me right now, but I can look it up and tell you. It -- I don't want to throw out a number. Let me look it up, and I can tell you how fast that is. But we -- we look at it, like, per year -- how many feet per year it may move. But it's good that your well is being sampled, because it's being sampled quarterly --

MR. WADDELL: Yes.

MS. JONES: -- and so we'll be able to see those detections. And once they start increasing, then you know that the contamination getting -- is getting closer to you.

MR. WADDELL: Yeah.

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MS. JONES: The second part of your question, you asked when would this start. Once again, in 30 days I can draft a document that states this is the cleanup that the community and DHEC wants to operate at the site. That DHEC -- I mean, that -- that report, as soon as it goes out, Emerson can start implementing. But there would be no lag. I do know that Emerson has already done a lot of legwork looking into required permits and looking into specs for the system, so I think they'd be very eager to start as soon as possible.

MR. FLETCHER: I actually have several questions.

MS. VINCENT: State your name, please.

MR. FLETCHER: My name is John and Nancy Fletcher at 623 May Royal. We're at the end of the road.

MS. JONES: Okay.

MR. FLETCHER: And our water is contaminated and has not been before. But this is our only source of drinking water. This is what we bathe in, this is what we drink, this is what we feed our animals, coffee, and everything. I guess first of all, the -- should we -- or can we drink the water or not? And if --

MS. FLETCHER: No one --

MR. FLETCHER: -- if we --

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MS. FLETCHER: -- has ever answered that --
MR. FLETCHER: Nobody --
MS. FLETCHER: -- question --
MR. FLETCHER: Nobody --
MS. FLETCHER: -- for us.
MR. FLETCHER: -- can answer that question.
MS. JONES: Uh-huh.
MR. FLETCHER: And if we can't or we shouldn't -- all we've seen on the internet -- and which we've looked up on our own -- is that short-term it might not be so bad, but long-term it can. Well, what is short-term, what is long-term?
MS. JONES: Uh-huh.
MR. FLETCHER: Should we not drink it at all? Stop right now because you're saying it's no good?
MS. JONES: Uh-huh.
MR. FLETCHER: This is all we have. And if so, how -- who's going to pay for our drinking water? Do we have to buy it from the store? What do we do?
MS. JONES: Okay. Let me -- since you have several questions, let me just answer that one first.
MR. FLETCHER: Sure.
MS. JONES: I am not a risk assessor. But, I mean, I've read the material, and I know how when you talk about short-term risks versus long-term risks.

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These numbers that I put up for those maximum contaminate levels, which protect the groundwater that you drink, those are based over a long period of time. We're talking 20/30 years. And it's also based -- I mean, there are certain parameters that would -- would apply. Elderly people may be more susceptible to it; young children may be more susceptible. But these numbers are protective of the -- of the most susceptible person.
MR. FLETCHER: Okay. I understand, but I don't know whether that makes me feel any better or --
MS. JONES: Okay.
MR. FLETCHER: -- not, but . . .
MS. JONES: I will tell you -- it's hard for me to answer that. Should you drink the water or should you not? That -- that --
MR. FLETCHER: Well --
MS. JONES: -- level is --
MR. FLETCHER: -- nobody has said "boil the water," anything. We can't get any information about this chemical, what -- what we should do about --
MS. JONES: Uh-huh.
MR. FLETCHER: -- you know, the facts of it right now, because this is all we have to drink.
MS. JONES: Okay. Since that level -- since DHEC does

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not want that level of contamination in your water -- we don't want you drinking that level -- then -- then my stance will be that -- that you need to have an alternate source of water.
MR. FLETCHER: Right. Okay.
MS. JONES: Now, in the interim -- I mean, it's a -- I guess it's a public -- I mean, a personal choice as to whether you feel you're being harmed by drinking that water for a few days, a few weeks --
MR. FLETCHER: Don't know. I don't know.
MS. JONES: Right.
MR. FLETCHER: And y'all don't, either. So that's what scares me.
MS. JONES: Okay. I know I didn't answer that very well. Like I said --
MR. FLETCHER: No, you --
MS. JONES: -- I'm not --
MR. FLETCHER: -- you're doing fine.
MS. JONES: Okay. I'm not a risk person. But those -- those levels are a long-term exposure levels -- years and years and years.
MR. FLETCHER: Can I continue?
MS. JONES: Yes.
MR. FLETCHER: If we are to, say, go with city water, are we going to have a water bill from now on? We don't

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have a water bill now. Our water was fine.
MS. JONES: Uh-huh.
MR. FLETCHER: Well, now it's contaminated. Okay, say you'll -- say we're put on city water. What about our monthly bill? We don't want a monthly bill. We never had one before.
MS. JONES: I think that question can be resolved with Emerson's involvement.
MR. FLETCHER: Okay.
MS. JONES: I think we can answer that.
MR. FLETCHER: Okay. Also, can -- if our well is not fit to drink, is it -- is it good for, say, filling up a pool, watering the garding -- garden, using -- or -- or giving to our animals? Is -- well, I guess if we can't drink it, the animals probably shouldn't, either. But we're just trying to get some answers to -- to some of those questions --
MS. JONES: Uh-huh.
MR. FLETCHER: -- also.
MS. JONES: What I can tell you about these volatile compounds: Several of the options we present talk about pumping and, you know, basically, disturbing the water. It breaks down these contaminants. So a lot of people that -- that -- that use wells that are slightly contaminated, which I believe, you

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know, could be the case here --
MR. FLETCHER: Right.
MS. JONES: -- when they're irrigating, say, their garden, you're really breaking up that contamination.
MR. FLETCHER: Okay.
MS. JONES: Now, I -- I would have to look at the exact level of what's in your well and how it was being dispersed, but that's a most-likely scenario.
MR. FLETCHER: And I think you mentioned that, also, a filtering of the well water?
MS. JONES: Yes.
MR. FLETCHER: Would that affect our gallons per minute, like, say, at our shower head or our -- if that was to happen instead of being put on city water, would that affect how much water pressure we have from our well as of -- as it is now?
MS. JONES: I don't believe so. We -- we -- we would --
MR. FLETCHER: Okay.
MS. JONES: -- take certain tests, and we would make sure that the -- the unit that was placed on your well would adequately -- you know, it was fit for your well.
MR. FLETCHER: Right.
MS. JONES: That it would handle the -- the load.

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MR. FLETCHER: (To Ms. Fletcher) Anything else you want to say?
MS. FLETCHER: No.
MR. FLETCHER: Well, I guess that's all I can say right now.
MS. JONES: Okay.
MR. FLETCHER: Thank you.
MS. VINCENT: And Ms. Jones can get back with you on some of those questions, too, after we've spoken with Emerson personnel.
Please state your name, sir.
MR. GREGORY: Alan Gregory with the Western Carolina State Fair. What would be the time frame and how big a unit is this piece that's going to set up and pump all that stuff? Is it a truck or a big tank? We don't want it around during fair time's what I'm getting at.
MS. JONES: Oh, we would definitely work around the constraints of -- of -- of the fair. Once again, there are a lot of considerations that go into -- to place when we think about where these pumping wells are located. You know, if we have contamination on the Jaycee's -- on that property as well as down May Royal, I know those residents don't want a lot of noise and a lot of big buildings on their property

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that are disturbing them. So all that's taken into account. So efforts will be taken to minimize any disturbances on the property of the fairgrounds.
MR. GREGORY: You'll have to drill other wells? You'll have to drill more wells to do the stripping, correct?
MS. JONES: Potentially, yes, sir.
MR. GREGORY: The -- the other one's just monitoring it, of course.
MS. JONES: Correct.
MR. GREGORY: So I know when I was at the Savannah River site, they sprayed some of it up in the air and got rid of some of the Trichloroethenes --
MS. JONES: Uh-huh.
MR. GREGORY: -- and some of the stuff like that. But you're going to collect everything, in other words.
MS. JONES: Right. It will be pumped -- say, if it's on the fairgrounds --
MR. GREGORY: Uh-huh.
MS. JONES: -- it'll be -- the wells will be installed there and be pumped from the fairgrounds back to ASCO.
MR. GREGORY: So you'd have to pipe everything back --
MS. JONES: Yes.
MR. GREGORY: -- over there?

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MS. JONES: Yes. We want everything to be on the ASCO property.
MS. VINCENT: Any other questions?
MS. JONES: You did see that the cost was 4.7 million. That -- that's part of that cost.
MR. FOSTER: Have you done any study on the volume that you want to process on a daily or weekly basis of water coming from the ground and going back after being processed? What is the volume -- what is the capacity that is the ultimate volume you'd --
MS. JONES: For --
MR. FOSTER: -- like to --
MS. JONES: -- our --
MR. FOSTER: -- see --
MS. JONES: -- system --
MR. FOSTER: -- have processed?
MS. JONES: -- that we would like to see?
MR. FOSTER: Right.
MS. JONES: Steve, I want to pick your brain. You just told me this number earlier.
MR. CLARKE: Our -- our initial projections are about --
MS. VINCENT: Hang on just a minute --
MR. CLARKE: -- 200 --
MS. VINCENT: -- Steve.
MR. CLARKE: -- gallons per (talkover).

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MS. VINCENT: Hold on just --
MS. JONES: Okay. About 200 gallons per minute.
MR. FOSTER: Per minute. Okay.
MS. VINCENT: Was that -- was that it?
MR. YOUNG: Now, you was asking the question --
MR. FOSTER: So it'd just be --
MR. YOUNG: -- how fast --
MR. FOSTER: -- the loop in --
MR. YOUNG: -- the water --
MR. FOSTER: -- in other words.
MR. YOUNG: -- is moving. I can tell you something on that.
MR. FOSTER: Uh, oh. Excuse me.
MS. JONES: Okay. His question was asking me how -- when we're pumping this water and we're treating it --
MR. YOUNG: Yeah, I know.
MS. JONES: -- how much are we going to --
MR. YOUNG: Yeah.
MS. JONES: -- do. And that was about 200 gallons --
MR. YOUNG: I'll ask --
MS. JONES: -- per minute.
MR. YOUNG: -- her and let you tell you about that question, though. But --
MS. JONES: The earlier --

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MR. YOUNG: -- my --
MS. JONES: -- question --
MR. YOUNG: -- she wanted --
MS. JONES: -- about how fast --
MR. YOUNG: -- me to tell you --
MS. JONES: -- the groundwater --
MR. YOUNG: -- you want me to tell you that my wells, one of them is 200 foot deep and one of them is 200 and -- about 280 feet deep. I got 35 things of contamination on it. That's -- so way over eight. And my deepest well is starting to show it now. So on the last sampling, it is getting into the deep well.
MS. JONES: It's dropping. Okay.
MR. YOUNG: It's dropping. So you was asking how it was moving. But it's moving very slow, but it's in the deep well now.
MS. JONES: Yes. I do believe it is very slowly and I --
MR. YOUNG: Yeah.
MS. JONES: -- I don't want --
MR. YOUNG: But it's --
MS. JONES: -- to throw out --
MR. YOUNG: It's not the --
MS. JONES: -- a number that's incorrect.

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MR. YOUNG: -- I can still drink a little water out the deep well, but I still don't drink it.
MS. JONES: Okay.
MR. YOUNG: I haven't drank it in a year and two.
MS. VINCENT: Sir, could you state your name as well.
MR. YOUNG: (To Mrs. Young) What did he say?
MS. YOUNG: Tell them your name.
MR. YOUNG: Julian Earl Young.
MS. VINCENT: Thank you.
MR. YOUNG: I'm on the one that got the contaminated well.
MS. JONES: Mr. Young, right. Right.
MS. VINCENT: Any other questions?
MR. FLETCHER: I'd just also like to ask how, you know -- if we decide to sell our house later, how this might affect our property values.
MS. JONES: Uh-huh.
MR. FLETCHER: If we have to explain to somebody, "Well, we had to have our well capped off because it's contaminated. Well, it wasn't before, but it is now." Is that going to -- is that -- can that hurt us, or, you know, what can happen with that?
MS. JONES: We have this question a lot from communities that some people are about to put the for-sale sign up in their yard.

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What I can tell you is that if you eliminate that pathway from the groundwater to your body, either by tapping on to the city water or putting that filter on your well, you've eliminated any risk. So it's just like you were living in a site where the groundwater is not contaminated. There is no pathway for the contamination to reach your body. So in that respect, your property is not damaged. I do understand there may be something underneath the ground 150/180 foot deep, yes. But now, I can tell you, long-term, you know, in a few years, once the system starts pumping, hopefully that plume will -- will move away from your property.
MR. FLETCHER: Well, we were kind of hoping that, but when we went to our first meeting, which has been, I don't know, a few years ago or when all this began, we were not affected by it. And we were on a different aquifer when all this started. And my -- one -- my first questions when all this began was: Is it going to affect us down the road?
No, everything's going to be fine.
Well, no, it's not fine. We are affected --
MS. JONES: Uh-huh.
MR. FLETCHER: -- all the way down in our aquifer. Just like Mr. Earl's talking about. He's got one so --

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so deep and one at 280. Our's is 190. We're all affected. And we're wondering how far it's going to go, and what's going to happen from here.
MS. JONES: Uh-huh.
MR. FLETCHER: Very concerned.
MS. JONES: And we do appreciate your concerns. We've heard that from numerous property owners that -- that are probably more and some are less concerned as you. It's -- the sooner we get out there, the better. I mean, the sooner we start pumping, the sooner you will see better groundwater. These things do take time. I do know that it took a long time for the contamination to reach you --
MR. FLETCHER: And we understand that.
MS. JONES: -- and it took a lot of time to investigate. And, you know, hopefully it won't take as long to remediate it, but these things do take a while to occur. We're trying our best to -- to get out there and -- and make it better.
MR. FLETCHER: Well, DHEC's been great, because, you know, you have tested everything. And we wouldn't be here if it wouldn't have been for your information. We're very thankful for that. Just worried --
MS. JONES: Okay.

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MR. FLETCHER: -- and concerned.
MS. JONES: Okay. (To Ms. Vincent) He's done.
MS. VINCENT: I'll let you answer that question if you want to.
MS. JONES: He -- he was just making a statement. They were --
MS. VINCENT: Okay.
MS. JONES: -- concerned.
MS. VINCENT: Got a question back here.
MR. DANIELS: My name is Andrae Daniels. I'm at 552 May Royal Drive. This is probably my first meeting. I've been here for a couple of years. I don't think I was here when all this came up. I probably should be talking to the gentleman right there.
I noticed when I -- when I bought my house, I was told that -- about the contamination and so on and so forth but that everything had been switched over to city water. And haven't had any problems since then. It's been about $50 a month. I guess you was asking about a water bill? It's been about $50 a month. I mean, am -- I'm assuming everybody here is -- is on well water?
MS. VINCENT: No.
MS. JONES: There -- there's a mixture.
MR. DANIELS: There's --

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MS. JONES: There are --
MR. DANIELS: -- a mixture? Okay.
MS. JONES: Water lines are out there, but some people would prefer to use their private wells.
MR. DANIELS: Okay. Okay. I mean, I -- I just didn't know. Like I say, I was new to the area.
MS. JONES: Uh-huh.
MR. DANIELS: This whole situation here is kind of new to me. When it was put to me as far as what happened, I just -- I didn't figure it was a big deal, so to speak.
MS. JONES: I think probably -- not for you, because your water -- you're getting your water from the city.
MR. DANIELS: Yeah.
MS. JONES: Right.
MR. DANIELS: Okay.
MS. VINCENT: That it?
Any other questions?
State your name, please.
MS. CARTER: My name is Sheila Carter. I have a swimming pool in my back yard.
MS. JONES: Uh-huh.
MS. CARTER: I have children that get in that pool. You're saying that we shouldn't drink the well water, which I have. My pool is filled with the

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well water. So is it endangering these children that swim in my pool? I mean, I got a lot of kids that come over.
MS. JONES: Right. Can you tell me your address again? I didn't --
MS. CARTER: I -- 71 Rodgers Road.
MS. JONES: You're at 71 along --
MS. CARTER: Right.
MS. JONES: -- Rodgers.
MS. CARTER: I'm at the end of the road.
MS. VINCENT: North?
MS. JONES: And you've been receiving your data.
MS. CARTER: Oh, yeah.
MS. JONES: And I don't think you've had any exceedances --
MS. CARTER: No.
MS. JONES: -- in your well, have you? Then -- then --
MS. CARTER: Well, it's -- it's changed. I mean, the -- the -- the levels have changed several times.
MS. JONES: Right.
MS. CARTER: Because I've got a friend that's a chemist, and --
MS. JONES: Uh-huh.
MS. CARTER: -- I kind of ask him all the time, you know.

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MS. JONES: Uh-huh.
MS. CARTER: But I haven't heard this not drinking the well water until now. And I'm --
MS. JONES: Well, let me clarify it.
MS. CARTER: Okay.
MS. JONES: Your well water is below the standard that we consider safe.
MS. CARTER: Okay.
MS. JONES: There was a slide that I put up, PCE --
MS. CARTER: Okay.
MS. JONES: -- 5. If your water -- the data that --
MS. CARTER: Mine's --
MS. JONES: -- you received --
MS. CARTER: -- point -- it's 0.8. It's --
MS. JONES: 0.8.
MS. CARTER: -- it's what I got, yeah. The -- the 15th, the letter I got from Emerson.
MS. JONES: Okay. So you see, that -- and I want to make sure my units are correct, but that's well below that --
MS. CARTER: Okay.
MS. JONES: -- 5 parts per million.
MS. CARTER: So it's -- you're saying that it -- it's not a danger to children or anything like that.
MS. JONES: Correct.

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MS. CARTER: Okay.
MS. JONES: But certain other people, their limits are above --
MS. CARTER: Yeah.
MS. JONES: -- those safe numbers.
MR. DANIELS: All right. Once again, my name's Andrae Daniels, May Royal Drive. I just had a question about whether there is any effect to the employees at ASCO.
MS. JONES: To my knowledge, no, there have not been any impacts. Once again, these tanks were below ground when they leaked, and all the remediation when they dug it up and disposed of it was handled, you know, with safety precautions.
MR. FLETCHER: Did she say she lived at Rodgers Road?
MS. CARTER: Yes.
MR. FLETCHER: Rodgers Road? Well, we're right at the next road over. You're at .08?
MS. CARTER: Uh-huh.
MR. FLETCHER: Our's is 7.2.
MS. JONES: It could depend on how deep your well is, like --
MR. FLETCHER: 190 feet.
MS. CARTER: Mine's 220.
MR. FLETCHER: We're --

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MS. JONES: Similar.
MR. FLETCHER: We're at 190.
MS. FLETCHER: I have a question. Hi, my name is Nancy Fletcher, and it's -- I live at 63 May Royal Drive. We just got that number, like, you know, three weeks ago. But my question is -- and I understand what it is DHEC is recommending as far as getting the water cleaned up.
But I was wondering if one of my options for my -- you know, my own personal property could be if we do get -- if we do elect to connect to city water, will they still do -- and if this goes forward, then our well will continue to be tested as far as --
MS. JONES: I --
MS. FLETCHER: -- far as --
MS. JONES: I do believe --
MS. FLETCHER: -- what --
MS. JONES: -- so. I --
MS. FLETCHER: -- the --
MS. JONES: -- think --
MS. FLETCHER: -- contaminate --
MS. JONES: -- your well --
MS. FLETCHER: -- levels --
MS. JONES: -- will be --
MS. FLETCHER: -- might be?

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MS. JONES: It's located in an area that we want to -- we want to see those levels decreasing, so your well would be --
MS. FLETCHER: Right.
MS. JONES: -- very valuable when we are monitoring.
MS. FLETCHER: Okay. Well -- and so, really, you don't really want us to top off our well to close it; is that correct?
MS. JONES: That's -- that's an option. It's a personal choice.
MS. FLETCHER: Okay. Well, I mean, is it even possible -- and I don't know anything about city water, getting connected to it. This is my first house I purchased. And, you know, everything else was an apartment, so I just dealt with, you know, whatever water was there.
MS. JONES: Uh-huh.
MS. FLETCHER: But is it -- is it even possible to connect onto city water for just drinking and like, out of my, say, my refrigerator water, my sink water, and then still use well water for, like, my outside spigots, my --
MR. FLETCHER: -- or showering or --
MS. FLETCHER: -- or showering, or, you know, something that does not involve consuming the water --

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MS. JONES: Right.
MS. FLETCHER: -- in any form, as -- like I say, the kitchen sink, the -- I mean, you know, the refrigerator. Is that even possible? I don't know.
MS. JONES: I'm going to defer to my expert over here --
MS. FLETCHER: Okay.
MS. JONES: -- who can answer that question.
MS. VINCENT: Who happened to be helping us set up the meeting and part of our sound-system crew.
State your name, please.
MR. MORRIS: I'm Larry. I have it a little bit hot for y'all. I'm wearing two hats tonight. I'm running your sound. But I'm Larry Morris. I'm the director of public works for the city.
MS. FLETCHER: Okay.
MR. MORRIS: And the water system is under me.
MS. FLETCHER: Uh-huh.
MR. MORRIS: To answer your question, no, it is not possible to connect your house up just strictly for drinking water. Your pipes in your house are all interconnected. Think of it like a spiderweb. So once you connect up the house, then the water will go all the way through it.
MS. FLETCHER: Okay.
MR. MORRIS: And that would be one thing: If you

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connected to the city water, you would have to disconnect your well. And again, it's a personal choice whether or not you would cap that well, but certainly, it would be very valuable to Emerson and to DHEC to be able to still use that well to test and make certain that what they're doing is an appropriate treatment.
MR. FLETCHER: So it would be, actually, like a test well --
MR. MORRIS: It would be --
MR. FLETCHER: -- so to speak.
MR. MORRIS: -- more like a test well --
MR. FLETCHER: So it --
MR. MORRIS: -- than --
MR. FLETCHER: -- would be --
MR. MORRIS: -- anything else --
MR. FLETCHER: -- valuable.
MR. MORRIS: -- at that --
MR. FLETCHER: Yeah.
MR. MORRIS: -- point.
MR. FLETCHER: Right?
MR. MORRIS: It'd be very valuable to them.
MS. JONES: Would she be able to use that well for irrigation?
MR. MORRIS: The materials that are being found in the

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water, if you use it for irrigation, once the water is sprayed up in the air, those materials are going to -- for lack of a better term or not, and I --
MS. CARTER: -- dissipate.
MR. MORRIS: They volatilize.
MS. CARTER: Fall apart.
MR. MORRIS: Okay. They're -- they're going to go --
MS. CARTER: Break down.
MR. MORRIS: -- into the air; they're not really going to hurt you.
MS. CARTER: Uh-huh.
MR. MORRIS: Now, there are some other by-products in there that we won't get into a whole lot because they're not in levels that are going to hurt you. For irrigation, yes. For car washing, you could.
But the -- the main thing you want to -- to remember is that once the water is sprayed up into the air -- as you saw, that's one of the preferred treatments, is an air-type stripping unit that will help strip the -- the materials out of it, and then it goes harmlessly into the air.
So irrigation, probably not a problem. You certainly don't want to pay me to throw water on the ground to keep your grass green. That'd be one thing.

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MS. FLETCHER: Well, so that's what -- what -- that was my question, though. I mean, if we get hooked onto city water, then we will no longer use the well water for anything.
MR. MORRIS: You could use it for irrigation because your --
MS. FLETCHER: Where would it come from? Out of the outside spigots --
MR. MORRIS: Well --
MS. FLETCHER: -- or --
MR. MORRIS: -- the -- it all depends on what type of irrigation system you have.
MS. FLETCHER: All right.
MR. MORRIS: If you have an -- an inground irrigation system with -- with pipes with the pop-off --
MS. FLETCHER: Uh-huh.
MR. MORRIS: -- heads --
MS. FLETCHER: I see. Okay.
MR. MORRIS: -- then, where that connects to your -- your current water pipe, you would --
MS. FLETCHER: Uh-huh.
MR. MORRIS: -- disconnect it and then connect it to your well, because that water pipe would then be connected to the city.
MS. FLETCHER: Okay.

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MR. MORRIS: So you just interrupt the spiderweb at that point.
MS. FLETCHER: Okay. Okay.
MR. MORRIS: And again, that -- that's a very simple thing to do --
MS. FLETCHER: Uh-huh.
MR. MORRIS: -- when it's done that way.
MS. FLETCHER: Okay.
MS. CARTER: What is -- what is the average cost to tap onto city water?
MR. MORRIS: I knew that question would come up.
MS. CARTER: Well, . . .
MR. MORRIS: You're looking right now -- you're looking right now at $1,050 for the tap and meter. There is a $750 impact fee. So right at -- let's say right at $1800 to tap on.
The other thing, though, that -- that is a requirement that was set by the city back in about 1992 -- so it's been in place many years -- is that we require anyone that is in the county that taps on to have to sign an annexation agreement. Now, what that says is: If you become contiguous, you will agree to annex.
What our council has done in many cases is not exercise that. A good for-instance is the South

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Meadows Subdivision. When Whiskey Road was annexed all the way down to Talatha Church Road for different reasons, South Meadows has these agreements in place. South Meadows has not been annexed.
MS. CARTER: "Annexed" -- you mean city taxes and all.
UNKNOWN FEMALE: That's right.
MS. CARTER: That's --
MR. MORRIS: Correct.
MS. CARTER: -- what you're saying.
MR. MORRIS: You would become a member of the city.
UNKNOWN MALE: They're not going to isolate and pick out a place to do that. I mean, that wouldn't make any sense.
MR. FLETCHER: What about people that aren't in the city limits?
MR. MORRIS: The --
MS. CARTER: They would put us in --
MR. MORRIS: -- you'd have to be contiguous to the city before the annexation --
MS. VINCENT: Explain what --
MR. MORRIS: -- agreement --
MS. VINCENT: -- contiguous --
MR. MORRIS: -- would even --
MS. VINCENT: -- is too.

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MR. MORRIS: -- kick in.
Contiguous means immediately adjacent to the city limits -- touching. Now, you can be across the road. The road right-of-way -- if you're across the road right-of-way, we still consider that touching then. That's -- that's part of the state law that it can -- it can jump a roadway.
But we could not, for -- for instance, if your property was not in the city and your neighbor's property -- and I realize you don't live to get next to each other -- but your neighbor's property wasn't and he wanted to annex and you were between him and the city limits, he could not annex because he was -- he was not touching; he's not contiguous.
MS. VINCENT: Any other questions?
MR. FOSTER: One of the alternatives to the air stripper is a carbon filtration system.
MS. JONES: Correct.
MR. FOSTER: And it would seem to me that if I had -- if I had limited contamination, just adding a simple carbon filtration system on an individual basis might render that cleaned below standards for a much more minimal cost than tying up to city water.
MS. JONES: And that option has been presented as an alternative, either public water or the carbon unit.

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MR. FOSTER: -- carbon unit.
MS. JONES: Yes.
MR. FOSTER: Because rather than the carbon unit being the central unit cleaning up the whole site, it could be used on an individual basis, I would assume, if you can find a carbon-based unit.
MS. JONES: Oh, yes. We -- we've looked into individual units at the individual properties.
MS. VINCENT: Any other questions? Will you state your name, please.
MS. BARNHILL: My name is Cassie, and I also live on Rodgers Road. And when we just got our letter in the mail, we have the two chemicals. We have the DCE and the PCE.
MS. JONES: Uh-huh.
MS. BARNHILL: And I understand both of them right now are below the level, but combined -- I found on the internet where combined with a toxicity that they can still pose the same threat as just one by itself.
MS. JONES: Uh-huh.
MS. BARNHILL: So is that going to be a concern for us now that we're -- combined, we are at the -- the highest level?
MS. JONES: I don't know how to answer that question.

Someone else posed that question to me earlier this week and I'm trying to research that and find out. All I know is that I am required -- I look at the contaminates individually, so I look at that PCE has to be under 5. That's all that my part of DHEC does. But looking at it from a risk standpoint and the toxicity, that's the part I'm researching. And I haven't gotten an answer yet, but I am looking into that.

MS. VINCENT: Any other questions?

Well, I know we have given you handouts of the presentation today. We have provided you the proposed plan that is a little technical but might help you to understand some things. If you have some questions later, please feel free to call Ms. Jones. Her information is on some of the information provided to you.

And again, submit those comments to us by June 20. If you have already recorded your comments, I have a box out in the back of the -- the sanctuary in which you can leave those comments with us. And you can still submit additional comments if you think of some others.

We thank you for coming out today. And we're going to go ahead and close our public meeting. If

you would like to talk with anybody directly afterwards, that is fine. We have the maps, again, if you want to review those.

We thank you for coming out. Thanks.

(Whereupon, at 7:43 p.m., the meeting of the above-entitled matter was concluded.)

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Public Comment Letter

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May 19, 2009

TO: **South Carolina Department of Health & Environmental Control**
Attention: Angie Jones, Project Manager

RE: **Announcement of Proposed Plan, Automatic Switch Company (ASCO) Site**
1561 Columbia Highway, Aiken, South Carolina

Dear Ms. Jones:

We represent the owners of 17 residences on May Royal Drive and Osbon Drive. Most of these properties lie within the contamination plumes previously identified.

We are in receipt of your notice for the Public Meeting, and the Announcement of Proposed Plan for Site Remediation. We appreciate that DHEC has recommended a meaningful cleanup by Emerson Electric Company. We appreciate and support DHEC's stated preference for soil cleanup to include the installation of a soil vapor extraction system on site at the ASCO facility. In particular we appreciate and support DHEC's stated preference for groundwater cleanup to include the installation of a groundwater extraction and treatment system which will pump and treat the entire plume of contaminated water.

We believe that the soil vapor extraction system on site at ASCO, and the groundwater extraction and treatment system, to pump and treat the entire plume of contaminated water, are both reasonable and necessary.

Previously, the DCE plume map indicated that the distal end of the plume stopped just to the west of Osbon Drive. We have more recently learned that the DCE plume may be extended now beyond Osbon Drive, so we would request that the groundwater extraction and treatment system be extended a bit further, to the end of the plume. Apparently, the DCE movement is extending in an easterly direction, and perhaps widening as well.

Another request is that the Department require Emerson, during installation of the groundwater extraction and treatment system, to utilize technologies which will minimize the impact on residents of May Royal Drive, and which minimize noise. Appropriate sound barriers and protections should be utilized to minimize such impacts. Also, to the fullest extent possible, any

access to extraction wells should be kept flush with ground level, and minimized to the extent feasible. All visual impacts on this residential neighborhood should be minimized as well.

Further, we request that the Department consider the likelihood of a perched water table lying underneath the building and perhaps at or near the southern end of the building. Some attention to that perched water table, perhaps to be included within a groundwater extraction and treatment system, would be appropriate. We note that, as pointed out by DHEC hydrologists at various times over the years, PCE has been found in soils in the area where the TCA tanks were removed (southeast corner of the building), and DCE (likely a breakdown of the TCA) has been found in soils in the area of the former PCE tanks (southwest corner of the building). We believe that a likely explanation for this is the movement of this perched watertable. Further, the reports from Emerson's consultants thus far have not identified the source and location of TCA in the soil. Also, there has been a lack of study of contaminated soils deeper down, particularly at levels below 13 feet below ground surface, down to the aquifer which is approximately 135 feet below ground surface near the plant building. We request that the Department consider attention to the perched water table and the likely presence of solvents in the deeper soils on site. Additionally, we note that there are enormous levels of these hazardous constituents underneath the concrete floor of the plant building. We would request that any soil vapor extraction system include access to the soil underneath the concrete floor of the building.

We also ask that you again review our letter to the Department dated June 19, 2008, consisting of eleven pages, in which we discussed in more detail our concerns about the contamination on site and in the plume, and the extended history of this site, dating back to 1987, now twenty-two years ago. Our review of this case has convinced us that Emerson and its subsidiaries, TOD and ASCO, and the various consultants utilized over the years, did not fully provide complete information to the Department regarding the history of releases at this site. We also note that the Department on two occasions in the past issued Conditional No Further Action letters based upon information provided by consultants for the facility.

Also, in our letter of June 19, 2008, we noted testimony from various representatives and consultants of Emerson, stating that they anticipated that remediation would occur, and that such would be down to the drinking water MCL's. One of Emerson's experts, Dr. Charles Anderws, testified that after construction of a pump and treat system, consisting of pipes and multiple extraction wells, from the facility to nearly the far eastern end of the DCE plume, that ten years of aggressive pump and treat, utilizing such a system, would bring the contamination levels down to the drinking water MCL's. He stated that his calculations for such a pump and treat system would involve ten years of aggressive pumping, twenty-four hours a day, seven days a week. Whatever the anticipated timetable may be, we do request that the pump and treat system continue until the levels of contaminants are well below the MCL's established for drinking water purposes.

If you would like us to furnish another copy of our letter of June 19, 2008, which provides further details regarding the above, please let us know and we will be happy to do so.

Again, we appreciate the Department's response, and we appreciate DHEC's recommendations regarding the soil vapor extraction system and the installation of a groundwater extraction and treatment system to pump and treat the entire plume of contaminated water. We also respectfully request that the Department consider the additional issues and requests stated above

Thank you for your consideration.

With best regards, I am

Yours very truly,

Gary W. Poliakoff
Poliakoff & Associates, P.A.

GWP/cb