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DATE: October 20, 2008

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THROUGH: Dennis Miller, REAC Program Manager

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SUBJECT: TRIP REPORT – GROUNDWATER AND SOIL SAMPLING, VESTAL CHLORINATED HYDROCARBON SOURCE ASSESSMENT/REMEDY SITE, VESTAL, NEW YORK
WORK ASSIGNMENT # 0-198

PURPOSE

The purpose of this investigation was to (1) install and sample groundwater monitor wells at selected locations throughout the Vestal Chlorinated Hydrocarbon Source Assessment/Remedy Site, and (2) refine the extent of soil contamination near the northeastern corner of the site building. Work was carried out by staff of the Response Engineering and Analytical Contract (REAC) in consultation with the Environmental Protection Agency Environmental Response Team (EPA/ERT).

BACKGROUND

The Vestal Hydrocarbon site is located at 200 Stage Road in the Town of Vestal, New York (NY). The site consists of a large one-story building, with an area covering approximately 60,000 square feet, an adjacent parking lot and surrounding open space (Figure 1). The building was last used for circuit board manufacturing but operations were abandoned in May 2002. During 2007, the site building was reoccupied and is now used for recycling of computer and other electronic equipment.

Because of volatile organic compound (VOC) contamination found in a nearby public water supply well, a number of investigations were conducted to characterize the site and delineate the extent of VOC contamination in soil and groundwater. Remedial studies were completed in 1988 and again in 1992 by Ebasco Services, Inc.™ (Ebasco) under the direction of the U.S. Army Corps of Engineers, (USACE) contractors to the EPA. In 2001, pre-remediation soil samples were collected by Sevenson Environmental Services (Sevenson) to determine design parameters for a soil vapor extraction (SVE) system, which was completed in 2003. Following the construction and start-up of the SVE system in the same year, a limited number of soil samples were collected by other contractors in February, September and October of 2005 to evaluate the performance of the system. Analytical results indicated that VOC concentrations in soils still remained high within areas of the site, even though the yield rate of the SVE system decreased during its operation. The SVE system, although in place, is presently not operating but recovered more than 2,000 pounds of VOCs while in operation.

Previous work by Sevenson and their team members had also included soil borings indicating that the site is immediately underlain by silts and silty sands to approximately 20 feet below ground surface (bgs). This upper fine-grained unit rests on coarse sandy gravels that extend to at least 50 feet bgs beneath the site as determined during the present ERT/REAC investigation. The silts are probably recent alluvial deposits of

the Susquehanna River but the origin of the underlying gravels is uncertain and may in part be older glacial deposits. Reported water levels of approximately 16 to 20 feet bgs are compatible with those measured in the present investigation and may represent the piezometric surface of the semi-confined gravels that underly the surficial fine-grained sediments.

In May 2006, REAC personnel collected soil gas samples beneath the building floor and on the south side of the building's exterior. The results indicated that potential VOC sources were present beneath the sub-slab and in at least one area beneath the parking lot. The soil gas sampling was followed in August and September 2006 by soil sampling to depths of approximately 20 to 30 feet bgs using the ERT/REAC Geoprobe™. Continuous cores were collected at 56 locations outside of the building and at six locations inside the building with locations initially based on the results of the soil-gas sampling. Six temporary groundwater monitor wells to depths of approximately 30 feet bgs were also installed and sampled. The results indicated that soils in two areas underlying the parking lot on the south side of the building and beneath at least one area inside the building were contaminated with VOCs exceeding both the Record of Decision (ROD) and the State of New York remedial goals for selected compounds (Lockheed Martin 2007a). In April 2007, REAC personnel conducted an indoor air survey using the Trace Atmospheric Gas Analyzer (TAGA) and installed and sampled 42 sub-slab soil gas wells throughout the site building (Lockheed Martin 2007b). The results further confirmed a probable sub-slab source of VOCs centered beneath the production facility in the southwestern portion of the site building.

In November and December 2007, additional soil sampling was completed at 46 locations on the outside of the site building and at seven locations inside the building using the ERT/REAC Geoprobe™. The results indicated that the configuration of the two main areas of soil contamination on the southern side of the site building remained nearly the same as determined in the 2006 investigation. Also, the perimeters of the contaminated areas, as defined by the ROD remedial goals for 1,1,1-trichloroethane (1,1,1-TCA) and trichloroethylene (TCE), appeared to be relatively sharp, rather than diffuse. However one exception occurred near the southwest portion of the building where levels of 1,1,1-TCA and TCE exceeded site clean-up goals in soil samples from two closely spaced borings (SB-079, SB-080). An additional area of contamination where concentrations of 1,1,1-TCA and TCE exceeded clean-up goals was also found just off the northeast corner of the site building. A more precise delineation of this area was one of the goals of the present investigation.

METHODS

Monitor Well Installation

From May 20 to June 11, 2008, four groundwater monitor well clusters (ERT-1 through ERT-4) consisting of three wells in each cluster were installed by a drilling subcontractor under the direction of REAC personnel. The target screen depths of the individual wells in each cluster were approximately 15 to 20, 25 to 30 and 45 to 50 feet bgs. These depths were selected to sample groundwater (1) near the base of the fine-grained upper unit, (2) near the top of the underlying gravels, and (3) deeper into the gravel unit and were designated in the well identification number by "S"(shallow), "I"(intermediate) and "D" (deep), respectively. Each monitor well cluster (Figure 1) coincided with the approximate location of the highest concentration of 1,1,1-TCA within a plume of contaminated soil as determined by previous investigations.

Electrical heating is among the suite of methods being considered for remediation and therefore all of the shallow and intermediate wells were constructed with 2-inch diameter stainless steel screens and black iron riser pipe to withstand the high temperatures that would be generated. Polyvinyl chloride (PVC) screens were used for the deep wells because the target depths are expected to be below the zone of elevated temperatures; however, black iron was used as riser pipe.

All wells were constructed using hollow-stem augers methods. To prevent cross-contamination from the shallow silts during construction of the intermediate and deep wells, an 8-inch diameter hole was first augered to the base of the silt. The augers were then filled with a cement/bentonite mix and a 6-inch diameter steel casing was installed as the augers were retracted. Once the augers were removed, the remaining annular space outside the casing was grouted and the grout allowed to cure for at least 24 hours

before work on the hole proceeded. Four-inch diameter augers were then used to complete the hole to the target depth with subsequent installation of #10 slot screen, riser pipe, a #00 silica sand pack extending approximately two feet above the top of the screen and a bentonite seal approximately two to three feet thick. The remaining annular space was filled with a cement/bentonite grout to just below land surface. No surface casing was needed for the shallow wells and they were installed directly through 4-inch diameter augers. All wells were completed as flush mount installations with concrete pads and locking caps. Drilling equipment was decontaminated between each well at a designated decontamination area. Monitor well construction information and water level data are provided in Table 1. Well construction diagrams can be found in Appendix A.

Following installation, all wells were developed for a minimum of one hour using small battery powered submersible pumps and dedicated tubing. Purge water, other waste water and drill cuttings were stored on site in 55-gallon drums.

On July 20, 2008, the ERT/REAC Geoprobe was mobilized to the site to install one or more groundwater monitor wells inside the site building. The site is now an active facility and therefore it was necessary to work during weekend evenings to minimize potential health and safety problems and avoid disruption to the facility's production. To likewise prevent cross contamination from the shallow silts to deeper units, 3-1/4- inch diameter outside rods were initially to be driven to the base of the silt and 2-1/8-inch diameter rods were to be advanced inside the outer rods to the target depth. However, because of coarse gravel and cobbles underlying the building's concrete floor, the outer rods could only be advanced to approximately three feet below the floor level. It was possible to advance the inner rods to near the base of the silt unit and to set a pre-packed screen with riser pipe in the silt. However, because of excessive wear on the drill rods advancing through the coarse-grained fill, the bottom rods parted on retrieval, covering the screen. Subsequent efforts to recover the rods were unsuccessful. The hole has therefore abandoned by grouting with bentonite and cementing the concrete floor plug in place. Based on this and previous experience, no further efforts were made to install wells inside the building during this mobilization.

Monitor Well Sampling

The exterior monitor well clusters were sampled on July 21, 2008 using peristaltic pumps and dedicated tubing for each well. Water levels were measured in each well before and during sampling to determine drawdown. Pumping rates were adjusted for minimum drawdown wherever possible; however, in some cases it was not possible to prevent excessive drawdown and still obtain sufficient water for analysis. Monitor Well ERT-4S was dry and could not be sampled. Three volumes of water were generally purged after which samples were collected into 40-milliliter (mL) vials for analysis of VOCs. Samples were submitted in coolers with ice packs under chain-of-custody procedures to the ERT/REAC Laboratory in Edison, New Jersey (NJ). All purge water was collected and stored in 55-gallon drums on site for later removal.

During purging of Monitor Well ERT-2D (Figure 1), a light blue to blue-green color was noted in the discharge. An unscheduled and unpreserved sample was therefore taken in a 1-liter (L) container for analysis of Target Analyte List (TAL) metals to determine the possible presence of copper or other dissolved metals. Also, during purging of ERT-1, a strong "petroleum-like" odor was noted and a separate light-brown floating phase appeared in the purge water container. Therefore, two additional unscheduled groundwater samples from ERT-1S were collected into 8-ounce (oz) jars for oil fingerprint analysis. Visual inspection of these two samples indicated that, in addition to the floating and water phase, a dense non-aqueous phase also appeared to be present. All additional samples were returned to the ERT/REAC Laboratory for analysis.

Geoprobe Soil Sampling

On July 22, 2008, the ERT/REAC Geoprobe was used to continuously core nine additional soil borings (SB-111 through SB-119) to depths of 20 feet bgs. All borings were located near the northeast corner of the site building (Figure 1) where previous work (Lockheed Martin, 2008) indicated a possible additional area of subsurface contamination. Five-foot long cores were recovered in acetate sleeves, a lengthwise

strip of the sleeve removed, and the cores were screened for VOCs using a Toxic Vapor Analyzer (TVA)-1000 combination flame ionization detector (FID) and photo-ionization detector (PID). Cores were described (Appendix B) and soil samples were collected with stainless steel spoons at those depths showing elevated VOC screening levels, and/or at the bottom of each core. Samples were placed in 4-oz glass jars and submitted to the ERT/REAC Laboratory for VOC analysis.

Elevation Survey

REAC personnel determined the elevations of the inner casings and concrete pads for each of the groundwater monitor wells using an engineering level. The benchmark used in the survey was a point on a fire hydrant along Stage Road on the west side of the site building with an elevation of 825.04 feet above mean sea level (amsl). The total closure error was approximately 0.11 feet.

RESULTS

Groundwater Samples

VOCs and Fingerprint Analyses

Groundwater sampling results are summarized in Table 2 and the laboratory analytical reports (excluding the oil fingerprinting report) are attached as Appendix C. Samples from the three shallow wells (ERT-1S, ERT-2S, ERT-3S) exhibited the highest total VOC concentrations in each well cluster. Monitor Well ERT-4S was dry and therefore no sample was available for analyses.

The highest concentrations of VOCs were found in the sample from Monitor Well ERT-1S (Figure 1), which contained 15 compounds, all at milligrams per liter (mg/L) or parts per million (ppm) levels. The compound cis-1,2-dichloroethene (cis-1,2-DCE) was present at a concentration of 751 mg/L, followed by 1,2,4 trimethylbenzene at 140 mg/L, and TCE at 103 mg/L. The remaining compounds were generally present at one or two lower orders of magnitude (Table 2).

In addition to the dense phase observed in the field samples from ERT-1, a floating phase was also present as discussed in the *Monitor Well Sampling* section above). High concentrations of aromatic compounds, which were not found in samples from the other monitor wells, were verified by the laboratory analytical results. The oil fingerprint analysis (Appendix D) indicates that the floating layer is a mixture of two or three products, possibly lubricating oils, and could not be matched to any known products.

High VOC concentrations were also found in the samples from shallow monitor wells ERT-2S and ERT-3S but these samples contained much fewer detected analytes than the sample from ERT-1S (Table 2). TCE was found in ERT-3S at a concentration of 0.726 mg/L but TCE was not found in the ERT-2S sample. Both tetrachloroethene (PCE) and chloroethane were also present in the sample from ERT-3S in relatively low concentrations but neither analyte was found in the sample from ERT-2S. The compound 1,1,1-TCA was present at a concentration of 232 mg/L in ERT-3S but at only 15 mg/L in ERT-2S. However, samples from both ERT-2S and ERT-3S contained 1,1-DCA at concentrations of 0.065 mg/L (estimated) and approximately 2.7 mg/L respectively, but 1,1-DCA was not found in ERT-1S.

The target compound 1,1,1-TCA was found in significant amounts in all intermediate ("I") depth groundwater samples, except for the sample from ERT-1I. The highest concentration detected was 4.3 mg/L in the sample from ERT-3I. The ERT-1I sample did not contain 1,1,1-TCA but contained 1.75 mg/L of cis-1,2-DCE and 0.874 mg/L of TCE. TCE was not detected in the other intermediate depth samples.

All deep ("D") groundwater samples contained 1,1,1-TCA with concentrations ranging between 0.003 mg/L (estimated) in ERT-1D to 8.33 mg/L in the duplicate sample from ERT-2D. Excluding the sample from ERT-1D, the compound 1,1-DCA was also found in all deep well

samples at concentrations ranging from 0.073 mg/L in ERT-3D to 0.690 mg/L in the ERT-2D duplicate sample. TCE was not detected in any of the deep groundwater samples.

Metals Analysis

The groundwater sample from Monitor Well ERT-2D showed no unusual concentrations of metals. Natural soil mineralogy is the probable source of the detected inorganic analytes (Appendix C). Suspect metals copper and/or cobalt were not detected. According to the 1990 ROD for the Vestal Water Supply Well No. 1-1, elevated concentrations of copper, lead, and mercury had previously been detected in other groundwater monitor wells installed in the area.

Soil Samples

Soil analytical results are summarized in Table 3. High concentrations of VOCs were detected in all borings but at highly variable depths and number of compounds. The highest concentrations were detected in boring SB-111 which is probably nearest to the source. The major target compound, 1,1,1-TCA, was detected only in boring SB-111 (Figure 2) at 17 feet bgs at approximately 7.2 milligrams per kilogram (mg/kg) and was absent in the remaining 37 soil samples. TCE was present in SB-111 at 17 and 19.5 feet bgs at concentrations of 244 and 23 mg/kg, respectively (Figure 3) and in borings SB-112, SB-118, and SB-119 but at one to two lower orders of magnitude. Figures 2 and 3 also indicate the perimeter of the ROD remedial goals of 0.170 ppm (1,1,1-TCA) and 0.140 ppm (TCE) respectively. Concentrations of TCE above the remedial goals appear to extend offsite to the north and beyond boring SB-118 to the east (Figure 3). The extent of contamination east of boring SB-118 is unknown because the area is a wetland and was not accessible for sampling during this mobilization. A temporary spoils pile from on-site construction prevented advancement of additional borings to the north although wetlands also are present just north of the spoils pile.

The compound cis-1,2-DCE was found at mg/kg levels in borings SB-111 and SB-114 and in lesser amounts in borings SB-115 and SB-116, confirming the high concentrations found in adjacent boring SB-096, completed during the November/December 2007 investigation (Lockheed Martin, 2008). High concentrations of cis-1,2-DCE appear to be confined throughout the site to a very small area just off the northeastern corner of the site building.

Also apparently confined to the northeast corner of the building are high concentrations of aromatic compounds (Table 3) that were detected in borings SB-111, SB-114, SB-115 and SB-116 (Figure 1) at mg/kg levels. Concentrations of tens of mg/kg of a variety of aromatics were common with concentrations as high as 107 mg/kg of 1,2,4-trimethylbenzene detected in boring SB-116 at 9.5 feet bgs. Low mg/kg concentrations were also detected in boring SB-113. The higher concentrations are compatible with the presence of floating product observed in the samples from Monitor Well ERT-1S and the analytical results of the groundwater sample from that well (Table 2). In general, concentrations appeared to peak at mid-range depths or at approximately 10 to 13 feet bgs, near the top of the piezometric surface in the silt.

Only estimated small amounts of aromatics at micrograms per kilogram (µg/kg) or parts per billion (ppb) levels were found at 20 feet bgs, and only in borings SB-113, SB-115 and SB-116. Aromatic compounds were not detected in the August/September 2006 sampling event (Lockheed Martin, 2007), which included the southern side of the building. These compounds were not expected and therefore soil samples were only analyzed for target VOCs in the November/December 2007 investigation. The Ebasco (1990) investigation also included several borings on the north side of the building but little or no aromatics were found in soil samples from these borings.

Water-Level Elevations

Water-level elevations were calculated from the elevations determined for each of the monitor wells (Table 1). For well clusters ERT-1 and ERT-4, downward vertical gradients are apparent from the "shallow" to the "deep" zones. Note that the water-level measurement in ERT-1S is uncorrected for the effect of a probable floating phase. Levels in monitor well cluster ERT-2 are nearly the same, although the data

suggest a slight downward gradient from the "shallow" to the "intermediate" zone. The shallow well in the ERT-4 cluster was dry, but levels for the "intermediate" and the "deep" zone likewise indicate a downward vertical gradient.

REAC considers the number of monitor points in this investigation insufficient to accurately determine groundwater flow directions. However preliminary interpretations of the data suggest a northwesterly flow direction for both the intermediate and deep zones within the confines of the site. Conversely flow in the shallow zone appears to be to the south or southwest based only on three points (ERT-1, - 2, - 3).

CONCLUSIONS

During this investigation, concentrations of 1,1,1-TCA and TCE in soils were found to exceed ROD remedial goals in an area extending off the northeast corner of the site building. The lateral extent of concentrations of 1,1,1-TCA that exceed the ROD remedial goal (0.170 ppm) is fairly well constrained by borings and appears to be limited to an area relatively close to the building (Figure 2). However, soils with TCE concentrations exceeding the remedial goal (0.140 ppm) appear to extend beyond the area of investigation as indicated on Figure 3. High concentrations of aromatic compounds are centered around shallow soils in the Monitor Well ERT-1 cluster and soil borings ERT-11, - 14, - 15, and - 16 (Figure 1) and do not appear to extend offsite. Remedial goals for these latter compounds are not specified by the ROD. In addition to the water phase, visual observation of groundwater samples indicates the presence of both a floating product and a dense non-aqueous phase liquid in the upper 20 feet of soil, centered around the same borings. Because of the presence of petroleum compounds, VOCs in the northeastern portion of the site appear to have originated from a source different from that of the two areas in front of the building (Figures 2 and3). Anecdotal evidence suggests that the area in question may have been owned or used by parties other than the present Principle Responsible Party (PRP).

In general, VOC concentrations in groundwater decrease by orders of magnitude with depth (Table 2). However, significant 1,1,1-TCA concentrations extend at least 50 feet beneath the site as indicated by the sampling results from monitor wells ERT-2D (8.3 mg/L), ERT-3I (4.3 mg/L) and ERT-4D (1.5 mg/L). Water-level elevations, for the individual well clusters (Table 1), except possibly for the ERT-2 cluster, suggest that isolation of each zone was achieved during well construction and therefore, VOC concentrations are probably representative of the screened zone. The location of the monitor wells in the most heavily contaminated soil areas, apparent downward vertical gradients and the high VOC concentrations suggest that the fine-grained surficial soils are the probable source of the contamination to the underlying gravel unit.

REFERENCES

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TABLE 1
WELL CONSTRUCTION AND WATER LEVEL DATA
VESTAL CHLORINATED HYDROCARBON SOURCE ASSESSMENT/REMEDY SITE
VESTAL, NEW YORK

Well No.	Screen Depth Feet bgs	Depth of Outer Casing - Feet bgs	Elevation -TIC Feet - amsl	Water Level Feet - TIC*	Water Level Elevation Feet amsl
ERT-1S	15 - 20	NA	824.41	12.62	811.79
ERT-1I	25 - 30	0 - 23.5	823.06	14.50	808.56
ERT-1D	45 - 50	0 - 23.5	822.91	14.80	808.11
ERT-2S	12 - 17	NA	824.38	15.12	809.26
ERT-2I	25 - 30	0 - 20	824.24	15.00	809.24
ERT-2D	45 - 50	0 - 20	824.13	14.89	809.24
ERT-3S	11.5 - 16.5	NA	824.41	13.95	810.46
ERT-3I	25 - 30	0 - 20	824.35	15.15	809.20
ERT-3D	45 - 50	0 - 20	824.32	15.81	808.51
ERT-4S	9 - 14	NA	823.55	dry	dry
ERT-4I	25 - 30	0 - 17	823.60	15.20	808.40
ERT-4D	45 - 50	0 - 17	823.73	16.06	807.67

amsl = above mean sea level
bgs = below ground surface
TIC = top of inner casing
NA = not applicable
* July 21, 2008

TABLE 2
GROUNDWATER ANALYTICAL RESULTS
VESTAL CHLORINATED HYDROCARBON SOURCE ASSESSMENT/REMEDY SITE
VESTAL, NEW YORK

	Well No.										
Analyte	ERT-1S	ERT-1I	ERT-1D	ERT-2S	ERT-2I	ERT-2D/DUP	ERT-3S	ERT-3I	ERT-3D	ERT-4I	ERT-4D/DUP
Chloroethane	U	U	U	U	U	U/U	**96.0 J**	U	U	U	U/U
1,1-DCE	U	U	U	**246 J**	U	U/U	**2,100**	U	U	**98.0 J**	U/U
cis-1,2-DCE	**751,000**	**1,750**	**4.24 J**	U	U	U/U	U	U	U	U	U/U
1,1-DCA	U	U	U	**65.5 J**	U	**628/690**	**2,710**	U	**72.7**	**114 J**	**83.2J/122**
1,1,1-TCA	**4,700 J**	U	**3.14 J**	**15,000**	**390**	**8,090/8,330**	**232,000**	**4,280**	**93.4**	**2,910**	**1,100/1,490**
TCE	**103,000**	**874**	U	U	U	U/U	**726**	U	U	U	U/U
PCE	U	U	U	U	U	U/U	**85.0 J**	U	U	U	U/U
Toluene	**2,150 J**	U	U	U	U	U/U	U	U	U	U	U/U
Ethylbenzene	**2,480 J**	U	U	U	U	U/U	U	U	U	U	U/U
p&m Xylene	**17,300**	U	U	U	U	U/U	U	U	U	U	U/U
0-Xylene	**11,600**	U	U	U	U	U/U	U	U	U	U	U/U
Isopropylbenzene	**3,550 J**	U	U	U	U	U/U	U	U	U	U	U/U
n-propylbenzene	**9,510**	U	U	U	U	U/U	U	U	U	U	U/U
1,3,5-Trimethylbenzene	**43,000**	U	U	U	U	U/U	U	U	U	U	U/U
1,2,4-Trimethylbenzene	**140,000**	U	U	U	U	U/U	U	U	U	U	U/U
sec-Butylbenzene	**3,950 J**	U	U	U	U	U/U	U	U	U	U	U/U
p-isopropyltoluene	**10,400**	U	U	U	U	U/U	U	U	U	U	U/U
1,2,4-Trichlorobenzene	**3,450 J**	U	U	U	U	U/U	U	U	U	U	U/U
Napthalene	**20,000**	U	U	U	U	U/U	U	U	U	U	U/U
	micrograms/liter										

1,1-DCE = 1,1-Dichloroethene
cis-1,2-DCE = cis-1,2-Dichloroethene
1,1-DCA = 1,1-Dichloroethane
1,1,1-TCA - 1,1,1-Trichloroethane
TCE = Trichloroethene
PCE = Tetrachloroethene

DUP = duplicate
U = non-detect
J = estimated value below method detection limit

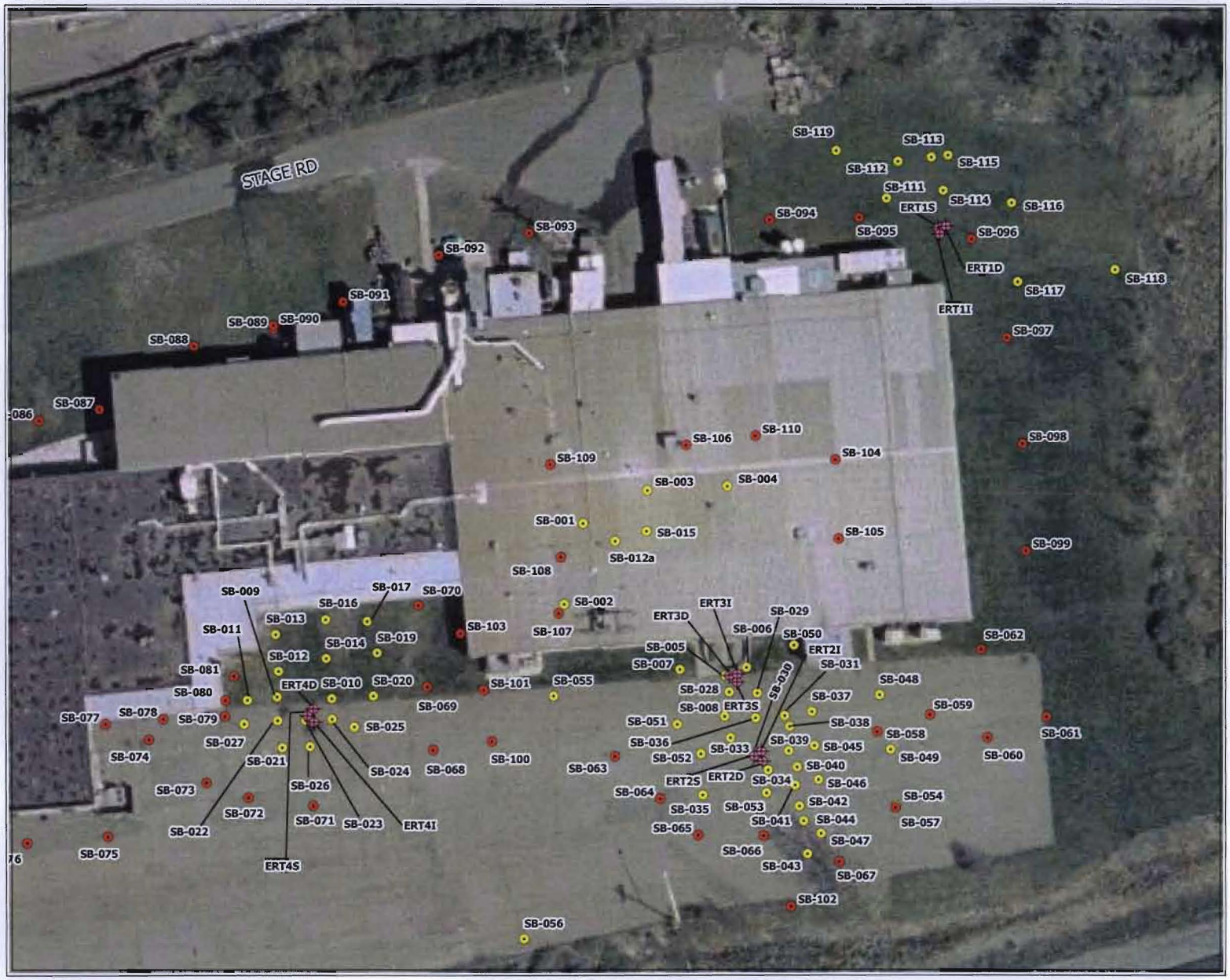
micrograms/liter X 1000 = milligrams/liter

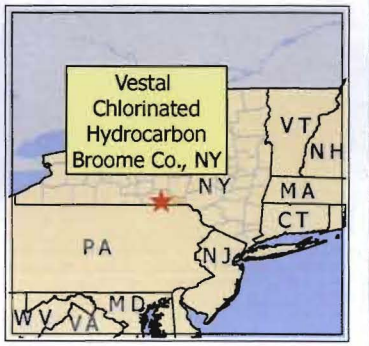
Note: Monitor Well ERT-4S was dry at time of sampling
Bold = detected compound

TABLE 3
SOIL ANALYTICAL RESULTS
VESTAL CHLORINATED HYDOCARBONS SOURCE ASSESSMENT/REMEDY SITE
VESTAL, NEW YORK

Boring No.	Vinyl Chloride	Chloromethane	Bromomethane	cis-1,2-Dichloroethene	1,1,1-Trichloroethane	Trichloroethene	Toluene	Ehtylbenzene	p&m xylene	0-Xylene	Isopropylbenzene	n-Propylbenzene	1,3,5-Trimethylbenzene	1,2,4-Trimethylbenzene	sec-Butylbenzene	p-Isopropyltoluene	1,2,4-Trichlorobenzene	Napthalene	1,2,3-Trichlorobenzene
SB-111, 10'	U	U	**773 J**	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
SB-111, 14'	U	U	U	U	U	U	U	U	**2,630 J**	**5,760 J**	**2,760 J**	**7,260**	**26,800**	**72,200**	**4,740 J**	**12,200**	**8,650**	**10,500**	**2,410 J**
SB-111, 17'	U	U	U	**19,800**	**7,160**	**244,000**	**2,540 J**	U	**3,980 J**	**3,840 J**	U	**3,340 J**	**13,300**	**34,400**	**2,220 J**	**3,980 J**	**1,870 J**	**4,400 J**	U
SB-111, 19.5'	U	U	U	**15,800**	U	**23,000**	U	U	U	U	U	**U**	**897 J**	**2,230 J**	U	U	U	U	U
SB-112, 9.5'	U	**169 J**	**1190 J**	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
SB-112, 14.5'	U	U	**1,380 J**	U	U	**380 J**	U	U	U	U	U	U	U	U	U	U	U	U	U
SB-112, 19.5'	U	U	U	U	U	**1,560**	U	U	U	U	U	U	U	U	U	U	U	U	U
SB-113, 7.7'	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
SB-113, 10'	U	U	U	U	U	U	U	U	U	U	U	U	U	U	**652**	**621**	U	U	U
SB-113, 15'	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
SB-113, 20'	U	U	U	U	U	U	U	U	U	U	U	**168 J**	**486 J**	U	U	U	U	**349 J**	U
SB-114, 6'	U	U	U	U	U	U	U	U	U	U	U	U	**2,480**	**611 J**	**226 J**	**1,080**	U	U	U
SB-114, 10 '	U	U	U	U	U	U	U	U	U	U	U	U	**365 J**	**627**	**225 J**	**527 J**	U	U	U
SB-114, 13'	U	U	U	**863 J**	U	U	**2,880 J**	**1,630 J**	**6,210 J**	**3,290**	**3,330**	**9,000**	**37,400**	**97,300**	**4,820**	**17,400**	**2,290 J**	**10,300 J**	U
SB-114, 15'	U	U	U	U	U	U	**351 J**	U	**619 J**	**584 J**	**238 J**	**669**	**2,690**	**7,250**	**446 J**	**1,380**	**404 J**	**1,120**	U
SB-114, 17.5'	U	U	U	**4,110**	U	U	U	U	U	U	U	U	**584 J**	**1,500**	U	**186 J**	U	**295 J**	U
SB-114, 20'	U	U	U	**4,190**	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
SB-115, 6.9'	U	U	U	U	U	U	**406 J**	**2,320**	**8,980**	**4,530**	**3,090**	**6,800**	**45,900**	**95,200**	**6,000**	**19,600**	U	**12,600**	U
SB-115, 10'	U	U	U	U	U	U	U	**174 J**	**220 J**	**147 J**	**162 J**	**412 J**	**1,450**	**2,240**	**279 J**	**573 J**	U	**462 J**	U
SB-115, 12.5'	U	U	U	U	U	U	**1,330**	**4,380**	**11,700**	**11,500**	**3,410**	**7,290**	**28,300**	**60,000**	**5,250**	**15,300**	U	**10,200 J**	U
SB-115, 15'	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
SB-115, 17'	U	U	U	**316 J**	U	U	U	U	U	U	U	U	U	**228 J**	U	U	U	**206 J**	U
SB-115, 20'	U	U	U	**889**	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
SB-116, 7.4'	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
SB-116, 9.5'	U	U	U	U	U	U	U	**5,560 J**	**7,910 J**	**6,980**	**5,760 J**	**12,800**	**45,600**	**107,000**	**11,300**	**18,700**	U	**5,210 J**	U
SB-116, 11.5 '	U	U	U	U	U	U	U	U	U	U	U	**799 J**	**2,220 J**	**6,270**	U	**866 J**	U	U	U
SB-116, 15'	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
SB-116, 20'	U	U	U	**306 J**	U	U	U	U	U	U	U	U	**207 J**	**406 J**	U	**285 J**	U	**583 J**	U
SB-117, 7.5'	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
SB-117, 10'	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
SB-117, 12.5'	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
SB-117, 15'	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
SB-117, 20'	U	**357 J**	**3,470**	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
SB-118, 10'	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
SB-118, 20'	U	U	U	U	U	**673**	U	U	U	U	U	U	U	U	U	U	U	U	U
SB-119, 6'	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
SB-119, 10'	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
SB-119, 12.5	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
SB-119, 20'	U	U	U	U	U	**1,720**	U	U	U	U	U	U	U	U	U	U	U	U	U
	micrograms/kilogram																		

Results are reported as dry weight
J = Estimated value below method detection limit U = non-detect micrograms/kilogram X 1000 = milligrams/kilogram
Bold = detected compound





Magnetic North

25 0 25 50

Feet

Map created using NY DOT DOQQ (2002) and site survey GPS data. GPS collected in Lat., Lon., Decimal Degrees, WGS84

Map Creation Date: October 2008

Coordinate system: New York State Plane (Central)
FIPS: 3102
Datum: NAD83
Units: Feet

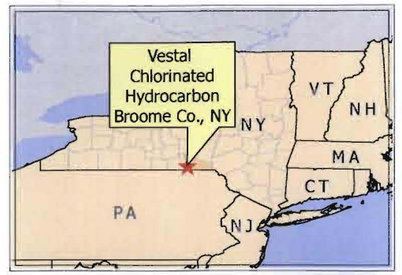
Data: g:\arcviewprojects\reac4\00-198
MXD file: g:\arcinfoprojects\reac4\EAC00198_VestalHydrocarbon\198_borwells_F1

Legend

- ERT Monitor Well
- Soil Boring (July 2008)
- Soil Boring (November/December 2007)
- Soil Boring (August/September 2006)

U.S. EPA Environmental Response Team
Response Engineering and Analytical Contract
EP-C-04-032
W.A.# 0-198

Figure 1
Boring and Monitor Well
Location Map
Vestal Chlorinated Hydrocarbon Site
Vestal, New York



Legend

- Soil Boring (July 2008)
- Soil Boring (November/December 2007)
- Soil Boring (August/September 2006)
- 0.031 Concentration (mg/kg)
- 18.5' Sample Depth - Feet Below Ground Surface
- 1,1,1-TCA: 1,1,1 - Trichloroethane
- U : Non Detect
- J : Estimated Value under the Reporting Limit
- E: Estimated Value
- NS: Not Sampled
- mg/kg milligrams/kilogram
- ppm parts / million
- Area Inside Record of Decision 0.170 ppm Remedial Goal

N
W E
S
Magnetic North

Map created using NY DOT DOQQ (2002) and site survey
GPS data. GPS collected in Lat., Lon., Decimal Degrees, WGS84

Map Creation Date: 26 September 2008

Coordinate system: New York State Plane (Central)
FIPS: 3102
Datum: NAD83
Units: Feet

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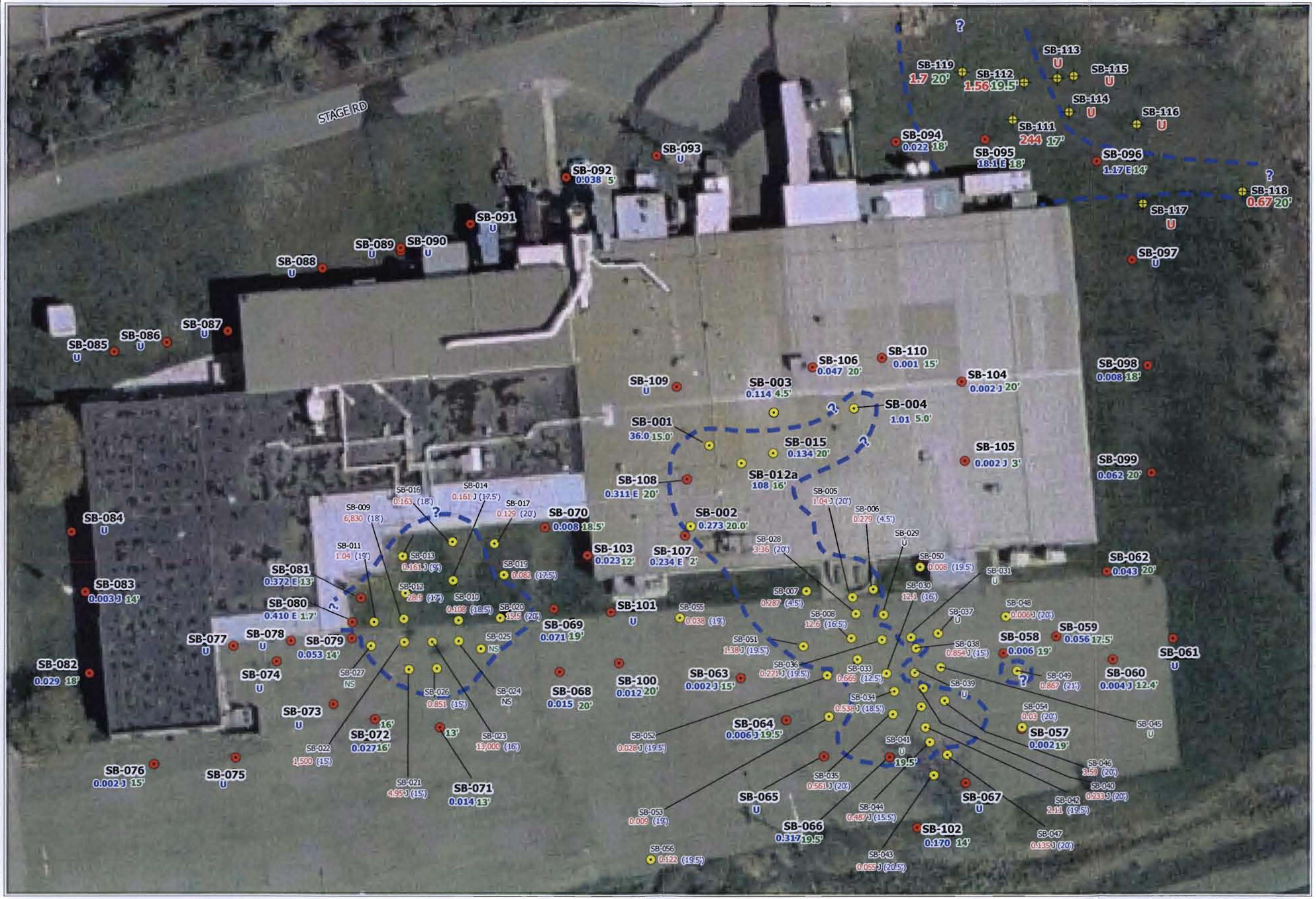
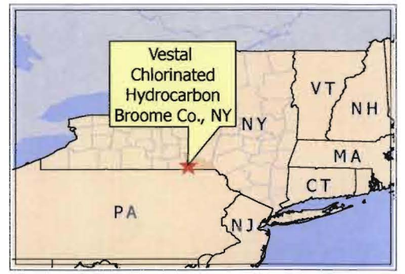
MXD file: g:\arcinfoprojects\reac4\EAC00198_VestalHydrocarbon\198_boringmap_F2_TCA_2

50 0 50 100
Feet

U.S. EPA Environmental Response Team
Response Engineering and Analytical Contract
EP-C-04-032
W.A.# 0-198

Figure 2
Maximum 1,1,1- TCA Concentrations in Soil Samples (mg/kg)
Vestal Chlorinated Hydrocarbon Site
Vestal, New York





Legend

- Soil Boring (July 2008)
- Soil Boring (November/December 2007)
- Soil Boring (August/September 2006)
- 0.003 Concentration (mg/kg)
- 18.5' Sample Depth - Feet Below Ground Surface
- TCE: Trichloroethylene
- U : Non Detect
- J : Estimated Value under the Reporting Limit
- E : Estimated Value
- NS : Not Sampled
- mg/kg milligrams/kilogram
- ppm parts / million
- Area Inside Record of Decision 0.140 ppm Remedial Goal

N W E S
Magnetic North

Map created using NY DOT DOQQ (2002) and site survey
GPS data. GPS collected in Lat., Lon., Decimal Degrees, WGS84

Map Creation Date: 30 September 2008

Coordinate system: New York State Plane (Central)
FIPS: 3102
Datum: NAD83
Units: Feet

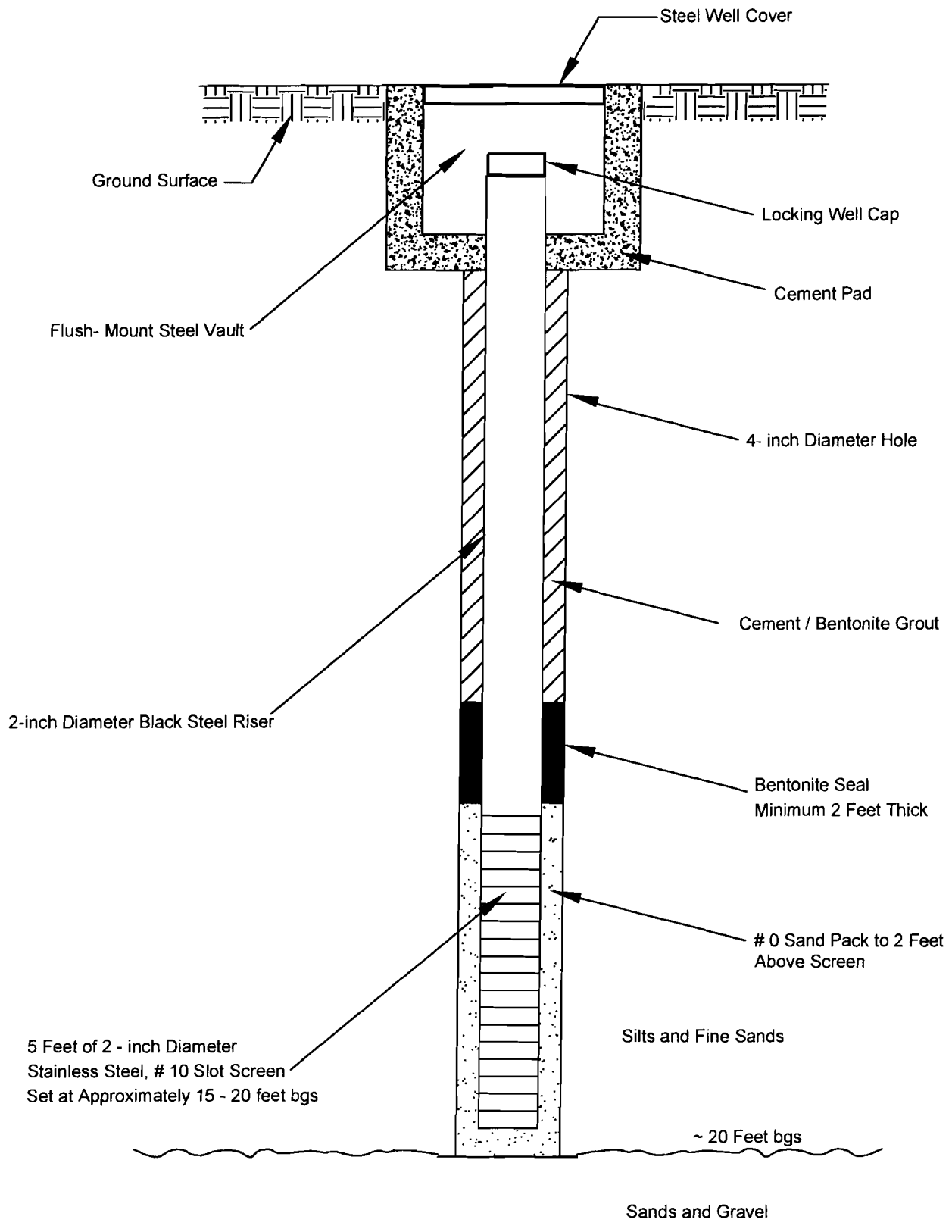
Data: g:\arcviewprojects\reac4\00-198
MXD file: g:\arcinfoprojects\reac4\EAC00198_VestalHydrocarbon\198_boringmap_f3_TCE_2

50 0 50 100
Feet

U.S. EPA Environmental Response Team
Response Engineering and Analytical Contract
EP-C-04-032
W.A.# 0-198

Figure 3
Maximum - TCE Concentrations
in Soil Samples (mg/kg)
Vestal Chlorinated Hydrocarbon Site
Vestal, New York

APPENDIX A
WELL CONSTRUCTION DIAGRAMS
VESTAL CHLORINATED HYDROCARBON SOURCE ASSESSMENT/REMEDY SITE
VESTAL, NEW YORK

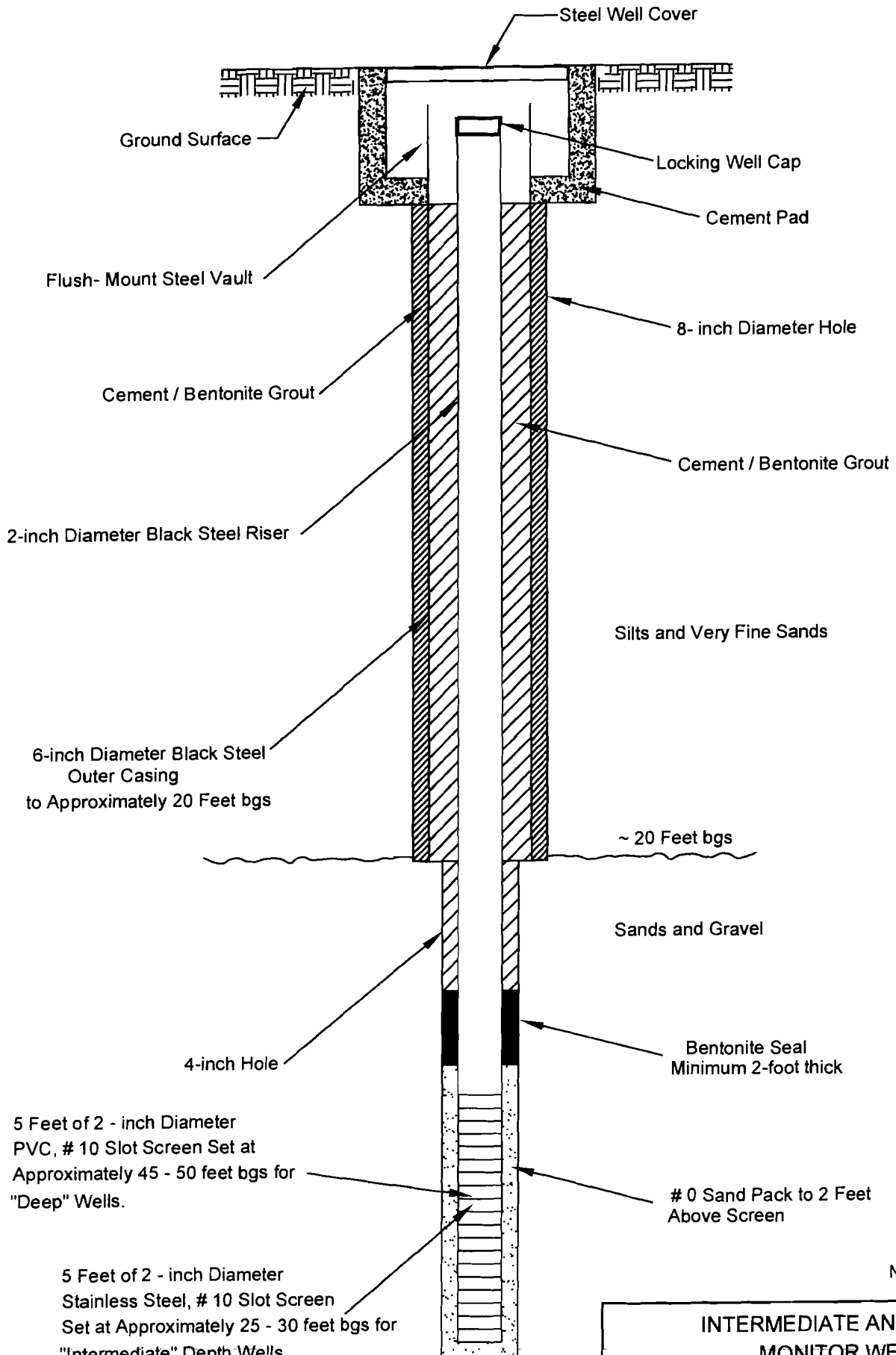


NOT TO SCALE

SHALLOW MONITOR WELL
CONSTRUCTION DIAGRAM
VESTAL CHLORINATED HYDROCARBON SITE
VESTAL, NEW YORK

U.S. EPA ENVIRONMENTAL RESPONSE TEAM
RESPONSE ENGINEERING AND ANALYTICAL CONTRACT
EP-C-04-032
W.A.# 0 - 198

198__shallow_MW_diagram.dwg 10/15/98



NOT TO SCALE

U.S. EPA ENVIRONMENTAL RESPONSE TEAM
RESPONSE ENGINEERING AND ANALYTICAL CONTRACT
EP-C-04-032
W.A.# 0 - 198

INTERMEDIATE AND DEEP
MONITOR WELL
CONSTRUCTION DIAGRAM
VESTAL CHLORINATED HYDROCARBON SITE
VESTAL, NEW YORK

198 Intmed MW diagram.dwg 10/14/98

APPENDIX B
BORING LOGS
VESTAL CHLORINATED HYDROCARBON SOURCE ASSESSMENT/REMEDY SITE
VESTAL, NEW YORK

BORING LOGS

Depth (feet bgs)	Recovery %	FID - ppm	Lithology
SB-111			
0 - 5	NA	8	TOPSOIL and fill, grading downward to gray-brown SILT, dry, darker at 4 to 5 ft
5 - 7	90 (5-10 ft)	80 +	CLAY, gray, moist, cohesive
7 - 10		80 +	SILT, brown, dry to moist, mottled
10 - 15	90	3 - 4 ppm at top 70 ppm at bottom	CLAY, gray, silty, cohesive, wet at 12 to 13 ft petroleum odor
15-20		150 - 200	SAND, dark brown, very fine, well-sorted, saturated
SB-112			
0 - 5	NA	16 - 24	TOPSOIL and fill, underlain by brown SILT, dry, plant fragments at 5 ft
5 - 10	NA	8 - 2 ppm top to bottom	SILT, gray to red-brown, mottled, dry, friable.
10 - 15	NA	0 -1	SILT, dark gray to dark brown, clayey, wet at 12 ft, cohesive
15 - 20	95	0 -1	CLAY, dark gray, silty, uniform, wet, wood fragments at 15 ft
SB-113			
0 - 5	70	0 - 1	Six inches of TOP SOIL underlain by SILT, brown, dry, friable with angular gravel and wood fragments at bottom of core (fill ?)
5 - 10	100	0/28/55 ppm top to bottom	Clay, gray to brown, silty, mottled, dry, uniform to 9.2 ft, underlain by very fine, dark gray SAND, saturated, petroleum odor
10 - 15	100	4 ppm in middle of core	CLAY, gray-brown, cohesive, grading downwards to very fine SAND at 13- to 15 ft, wet
15 - 20	100	0 - 2	SAND, very fine, dark gray, to SILT, clayey, uniform, saturated
SB-114			
0 - 5	95	0 - 1	FILL, brown SILT with large GRAVEL at bottom of core, dry
5 - 10	100	60 ppm at 6 ft, 24 ppm at 7.7 ft, 400 ppm at 10 ft	SILT, brown to red-brown, with wood and plant fragments at 5.5 to 5.8 ft, dry, grading down to mottled gray, red-brown SILT from 5.8 to 9.5 ft, underlain by very fine, well-sorted gray SAND, moist from 9.5 - 10 ft
10 - 15	100	16 ppm at 12 ft, 45 ppm at 12.5 ft 150 ppm at 13 ft, 40 ppm at 15 ft	SAND, very fine to SILT, dark gray, clayey, saturated
15 - 20	100	70 ppm at 16.2 ft, 150 ppm at 17.4 ft, 30 ppm at 20 ft	SILT, dark gray to very fine SAND, uniform, saturated, slight petroleum odor
SB-115			
0 - 5	75	0 - 1	TOPSOIL underlain by brown SILT with occasional gravel, dry
5 - 10	100	70 ppm at 6 ft, 160 ppm at 7.5 ft, 30 ppm at 8 ft, 40 ppm at 10 ft	SILT, dark gray, friable, uniform, mottled at bottom of core, rootlets at 10 ft, petroleum odor
10 - 15	80	600 ppm at 12.5 ft 100 ppm at 13.5 ft, 30 ppm at 15 ft	SILT, dark gray, clayey, slightly sandy, moist, uniform SILT, brown, uniform, dense, slightly clayey, moist
15 - 20	100	2 - 18	SILT, dark gray, clayey, to very fine SAND, well-sorted
SB-116			
0 - 5	85	NA	Four inches TOPSOIL underlain by brown SILT, clayey, dry, friable small gravel
5 - 10	100	20 - 35 ppm to 9 ft 80 ppm at 9.5 ft	SILT, dark gray, clayey, with occasional organic matter, friable, dry, petroleum odor at 9 to 10 ft.
10 - 15	95	390 ppm at 11.5 ft 30 - 70 ppm rest of core	CLAY, gray, silty, to silty CLAY, sandy at bottom of core, saturated CLAY, gray, silty
15 - 20	100	2 - 12 ppm top to bottom	SAND, brown, very fine, well-sorted, to SILT, saturated
SB-117			
0 - 5	75	0 - 1	TOPSOIL underlain by brown SILT with occasional gravel, dry
5 - 10	80	300 ppm at 7.5 ft and 10 ft	SILT, brown, friable, dry to moist, mottled
10 - 15	90	30 - 70	SILT, brown, clayey, uniform, to very fine SAND, wet at 12 ft
15 - 20	100	1 - 2	SILT, brown, clayey,with some fine SAND, saturated
SB-118			
0 - 5	80	0 - 1	TOP SOIL underlain by brown SILT, friable, dry
5 - 10	100	0 - 2	SILT, gray-brown, dry to 9.5 ft, then wet in sand lens at 9.5 to 10 ft
10 - 15	100	0 - 1	SILT to very fine SAND, brown, uniform, wet
15 - 20	100	0 - 1	Clay, gray, silty to clayey SILT, slightly sandy, wet
SB-119			
0 - 5	95	0	TOP SOIL underlain by brown SILT, friable, dry
5 - 10	100	300 ppm at 9 ft, 0 -1 ppm at 10 ft	SILT, dark gray to black, mottled at 6 to 10 ft, clayey, dry, friable
10 - 15	90	8 - 14 ppm at 10 to 12 ft 0 - 1 ppm at 12.5 to 15 ft	NA
15 - 20	95	0 - 1	CLAY, dark gray, silty, to clayey SILT, dense, uniform, wet

bgs = below ground surface
ft = feet
FID = flame ionization detector
NA = not available
ppm = parts per million
% = percent

APPENDIX C
LABORATORY ANALYTICAL REPORTS
VESTAL CHLORINATED HYDROCARBON SOURCE ASSESSMENT/REMEDY SITE
VESTAL, NEW YORK

Lockheed Martin
Response Engineering Analytical Contract
2890 Woodbridge Avenue Building 209 Annex
Edison, NJ 08837-3679
Telephone 732-321-4200 Facsimile 732-494-4021

LOCKHEED MARTIN

DATE: 28 August 2008

TO: R. Singhvi EPA/ERT

FROM: V. Kansal Analytical Section Leader Vinod Kansal

SUBJECT: DOCUMENT TRANSMITTAL UNDER WORK ASSIGNMENT # 0-198

Attached please find the following document prepared under this work assignment:

Vestal Chlorinated Hydrocarbon Source Assessment/Remedy - Analytical Report

T. Johnson	Work Assignment Manager (w/o attachment)
K. Woodruff	Task Leader (w/o attachment)
J. Soroka	Data Validation and Report Writing Group Leader (w/o attachment)
Central File	WA # 0-198 (w/attachment)

ANALYTICAL REPORT

Prepared by
LOCKHEED MARTIN, Inc.

Vestal Chlorinated Hydrocarbon Source Assessment/Remedy
Vestal, NY

August 2008

EPA Work Assignment No. 0-198
LOCKHEED MARTIN Work Order EAC00198
EPA Contract No.:EP-C-04-032

Submitted to
T. Johnson
EPA-ERT

Vinod Kansal 8/28/08
V. Kansal Date
Analytical Section Leader

Analysis by:
REAC

D. Killeen for 8/28/08
D. Killeen Date
Quality Assurance Officer

Prepared by:
M. Bernick

Lynn Miller 8/28/08
D. Miller Date
Program Manager

Reviewed by:
J. Soroka

Table of Contents

Appendices will be furnished on request.

Introduction

REAC personnel in response to WA 0-198, provided analytical support for environmental samples collected from the Vestal Chlorinated Hydrocarbon Source Assessment/Remedy, located in Vestal, NY as described in the following table. The support also included QA/QC, data review, and preparation of an analytical report containing a summary of the analytical and the QA/QC results.

The samples were treated with procedures consistent with those specified in SOP #1008.

Chain of Custody #	Number of Samples	Sampling Date	Date Received	Matrix	Analysis/ Method	Laboratory	Data Package
0-198-00127	13	07/21/08	07/23/07	Water	VOC/REAC SOP 1806	REAC[1]	T236
	1				TAL Metals No Hg /REAC SOP 1811		T233
0-198-00128	39	07/22/08		Soil	VOC/REAC SOP 1817		T244

[1]REAC is NELAC certified for VOC and TAL metals analysis.

Case Narrative

The laboratory reported the data to three significant figures. Any other representation of the data is the responsibility of the user. All data validation flags have been inserted into the results tables

VOC in Water Package T236

Acetone failed the percent difference (%D) criteria for the continuing calibration of 7/26/08. Acetone is qualified estimated (J) for sample 51840 and water blank B072608.

The 1,1,1-trichloroethane result for sample 51838 should be used with caution due to possible carry-over from the previous analysis.

VOC in Soil Package T244

Due to high non-target compound levels in the samples, samples were analyzed at an initial dilution of 100 times in methanol. Additional dilutions were done to bring high target compounds within calibration.

System B method blank 073108-2 contained 63.5 µg/kg napthalene. The naphthalene results for samples 51876 and 51877 are qualified not detected because the naphthalene concentration was less than five times the blank concentration.

In the initial calibration for system A on 7/30/08, the 5 ppb calibration standard was not used for bromomethane so that the calibration could meet the QC criteria. The reporting limit is based on the 20 ppb calibration standard for MeOH Blanks A 073008-1 and A 080108-1 and samples 51879 through 58891 and 51898.

In the initial calibration for system B on 7/28/08, the 5 ppb calibration standard was not used for dichlorodifluoromethane, trichlorofluoromethane and hexachlorobutadiene so that the calibration could meet the QC criteria. The reporting limit is based on the 20 ppb calibration standard for these compounds for method blank B 072908-1 and samples 51860 through 51869.

In the initial calibration for system B on 7/30/08, the 5 ppb calibration standard was not used for methylene chloride, chloroform, 1,2-dichloroethane, hexachlorobutadiene and 1,2,3-trichlorobenzene so that the calibration could meet the QC criteria. The reporting limit is based on the 20 ppb calibration standard for these compounds for MeOH Blanks B 073008-1, B 073108-2 and samples 51870 through 51878, 51892 through 51897 and 51890.

Dichlorofluoromethane was below and vinyl chloride, acetone, 2-butanone and 2-hexanone were above the percent recovery criteria for the system A LCS of 7/30/08. The dichlorofluoromethane results are qualified estimated for MeOH Blank A073008-1 and samples 51879 through 51891, and 51898.

Methylene chloride, and carbon disulfide were below and acetone, 2-butanone, 2,2-dichloropropane, 4-mthyl-2-pentanone, 2-hexanone, naphthalene and 1,2,3-trichlorobenzene were above the percent recovery criteria for the system B LCS of 7/29/08. The methylene chloride, and carbon disulfide results are qualified estimated for MeOH Blank B 072908-1 and samples 51860 through 51875 and the naphthalene results for samples are qualified estimated 51860 through 51862, 51867, 51869 and 51870.

Metals in Water Package T233

The package was examined and found to be acceptable.

Summary of Abbreviations

BFB	Bromofluorobenzene
C	Centigrade
CLP	Contract Laboratory Program
COC	Chain of Custody
conc	concentration
cont	continued
CRDL	Contract Required Detection Limit
CRQL	Contract Required Quantitation Limit
D	(Surrogate Table) value is from a diluted sample and was not calculated
Dioxin	Polychlorinated dibenzo-p-dioxins (PCDD) and Polychlorinated dibenzofurans (PCDF)
DFTPP	Decafluorotriphenylphosphine
EMPC	Estimated maximum possible concentration
GC/MS	Gas Chromatography/ Mass Spectrometry
IS	Internal Standard
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MDA	Minimum Detectable Activity
MS (BS)	Matrix Spike (Blank Spike)
MSD (BSD)	Matrix Spike Duplicate (Blank Spike Duplicate)
MW	Molecular Weight
NA	Not Applicable or Not Available
NAD	Normalized Absolute Difference
NC	Not Calculated
NR	Not Requested/Not Reported
NS	Not Spiked
% D	Percent Difference
% REC	Percent Recovery
SOP	Standard Operating Procedure
ppbv	parts per billion by volume
ppm	parts per million
pptv	parts per trillion by volume
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
QL	Quantitation Limit
REAC	Response Engineering and Analytical Contract
RL	Reporting Limit
RPD	Relative Percent Difference
RSD	Relative Standard Deviation
SIM	Selected Ion Monitoring
Sur	Surrogate
TIC	Tentatively Identified Compound
TCLP	Toxicity Characteristic Leaching Procedure
VOC	Volatile Organic Compound
*	Value exceeds the acceptable QC limits.

m^3	cubic meter	g	gram	kg	kilogram	L	liter
µg	microgram	µL	microliter	mg	milligram	mL	milliliter
ng	nanogram	pg	picogram	pCi	picocurie	s	sigma

Data Validation Flags

J	Value is estimated	R	Value is unusable
J+	Value is estimated high (metals only)	U	Not detected
J-	Value is estimated low (metals only)	UJ	Not detected and RL is estimated

Rev. 02/05/08

Table 1.1 Result of the Analysis for VOC in Water
WA # 0-198 Vestal Chlorinated Hydrocarbon Source Assessment/Remedy

Method: REAC SOP 1806

Sample Number	Water blank B 072408		51844		51846		51847		51843	
Sample Location:	N/A		ERT-2D		ERT-4D-Dup		ERT-4D		ERT-4I	
	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
Analyte	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Dichlorodifluoromethane	U	5.00	U	250	U	100	U	100	U	250
Chloromethane	U	5.00	U	250	U	100	U	100	U	250
Vinyl Chloride	U	5.00	U	250	U	100	U	100	U	250
Bromomethane	U	5.00	U	250	U	100	U	100	U	250
Chloroethane	U	5.00	U	250	U	100	U	100	U	250
Trichlorofluoromethane	U	5.00	U	250	U	100	U	100	U	250
Acetone	U	20.0	U	1000	U	400	U	400	U	1000
1,1-Dichloroethene	U	5.00	U	250	U	100	U	100	98.0 J	250
Methylene Chloride	U	5.00	U	250	U	100	U	100	U	250
Carbon Disulfide	U	5.00	U	250	U	100	U	100	U	250
Methyl tert-Butyl Ether	U	5.00	U	250	U	100	U	100	U	250
trans-1,2-Dichloroethene	U	5.00	U	250	U	100	U	100	U	250
1,1 Dichloroethane	U	5.00	628	250	122	100	83.2 J	100	114 J	250
2-Butanone	U	5.00	U	250	U	100	U	100	U	250
2,2-Dichloropropane	U	5.00	U	250	U	100	U	100	U	250
cis-1,2-Dichloroethene	U	5.00	U	250	U	100	U	100	U	250
Chloroform	U	5.00	U	250	U	100	U	100	U	250
1,1-Dichloropropene	U	5.00	U	250	U	100	U	100	U	250
1,2-Dichloroethane	U	5.00	U	250	U	100	U	100	U	250
1,1,1-Trichloroethane	U	5.00	8090	250	1490	100	1100	100	2910	250
Carbon Tetrachloride	U	5.00	U	250	U	100	U	100	U	250
Benzene	U	5.00	U	250	U	100	U	100	U	250
Trichloroethene	U	5.00	U	250	U	100	U	100	U	250
1,2-Dichloropropane	U	5.00	U	250	U	100	U	100	U	250
Bromodichloromethane	U	5.00	U	250	U	100	U	100	U	250
Dibromomethane	U	5.00	U	250	U	100	U	100	U	250
cis-1,3-Dichloropropene	U	5.00	U	250	U	100	U	100	U	250
trans-1,3-Dichloropropene	U	5.00	U	250	U	100	U	100	U	250
1,1,2-Trichloroethane	U	5.00	U	250	U	100	U	100	U	250
1,3-Dichloropropane	U	5.00	U	250	U	100	U	100	U	250
Dibromochloromethane	U	5.00	U	250	U	100	U	100	U	250
1,2-Dibromoethane	U	5.00	U	250	U	100	U	100	U	250
Bromoform	U	5.00	U	250	U	100	U	100	U	250
4-Methyl-2-Pentanone	U	5.00	U	250	U	100	U	100	U	250
Toluene	U	5.00	U	250	U	100	U	100	U	250
2-Hexanone	U	5.00	U	250	U	100	U	100	U	250
Tetrachloroethene	U	5.00	U	250	U	100	U	100	U	250
Chlorobenzene	U	5.00	U	250	U	100	U	100	U	250
1,1,1,2-Tetrachloroethane	U	5.00	U	250	U	100	U	100	U	250
Ethylbenzene	U	5.00	U	250	U	100	U	100	U	250
p&m-Xylene	U	10.0	U	500	U	200	U	200	U	500
o-Xylene	U	5.00	U	250	U	100	U	100	U	250
Styrene	U	5.00	U	250	U	100	U	100	U	250
Isopropylbenzene	U	5.00	U	250	U	100	U	100	U	250
1,1,2,2-Tetrachloroethane	U	5.00	U	250	U	100	U	100	U	250
1,2,3-Trichloropropane	U	5.00	U	250	U	100	U	100	U	250
n-Propylbenzene	U	5.00	U	250	U	100	U	100	U	250
Bromobenzene	U	5.00	U	250	U	100	U	100	U	250
1,3,5-Trimethylbenzene	U	5.00	U	250	U	100	U	100	U	250
2-Chlorotoluene	U	5.00	U	250	U	100	U	100	U	250
4-Chlorotoluene	U	5.00	U	250	U	100	U	100	U	250
tert-Butylbenzene	U	5.00	U	250	U	100	U	100	U	250
1,2,4-Trimethylbenzene	U	5.00	U	250	U	100	U	100	U	250
sec-Butylbenzene	U	5.00	U	250	U	100	U	100	U	250
p-Isopropyltoluene	U	5.00	U	250	U	100	U	100	U	250
1,3-Dichlorobenzene	U	5.00	U	250	U	100	U	100	U	250
1,4-Dichlorobenzene	U	5.00	U	250	U	100	U	100	U	250
n-Butylbenzene	U	5.00	U	250	U	100	U	100	U	250
1,2-Dichlorobenzene	U	5.00	U	250	U	100	U	100	U	250
1,2-Dibromo-3-Chloropropane	U	5.00	U	250	U	100	U	100	U	250
1,2,4-Trichlorobenzene	U	5.00	U	250	U	100	U	100	U	250
Hexachlorobutadiene	1.46 J	5.00	U	250	U	100	U	100	U	250
Naphthalene	1.81 J	5.00	70.5 J	250	U	100	U	100	U	250
1,2,3-Trichlorobenzene	1.30 J	5.00	U	250	U	100	U	100	U	250

Table 1.1 (cont.) Result of the Analysis for VOC in Water
WA # 0-198 Vestal Chlorinated Hydrocarbon Source Assessment/Remedy

Method: REAC SOP 1806

Sample Number	Water blank B 072508-1		51842		51849		51839		51848	
Sample Location:			ERT-2S		ERT-3D		ERT-2D DUP		ERT-2I	
	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
Analyte	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Dichlorodifluoromethane	U	5.00	U	250	U	5.00	U	500	U	250
Chloromethane	U	5.00	U	250	U	5.00	U	500	U	250
Vinyl Chloride	U	5.00	U	250	U	5.00	U	500	U	250
Bromomethane	U	5.00	U	250	U	5.00	U	500	U	250
Chloroethane	U	5.00	U	250	U	5.00	U	500	U	250
Trichlorofluoromethane	U	5.00	U	250	U	5.00	U	500	U	250
Acetone	U	20.0	U	1000	U	20.0	U	2000	U	1000
1,1-Dichloroethene	U	5.00	246 J	250	U	5.00	U	500	U	250
Methylene Chloride	U	5.00	U	250	U	5.00	U	500	U	250
Carbon Disulfide	U	5.00	U	250	U	5.00	U	500	U	250
Methyl tert-Butyl Ether	U	5.00	U	250	U	5.00	U	500	U	250
trans-1,2-Dichloroethene	U	5.00	U	250	U	5.00	U	500	U	250
1,1 Dichloroethane	U	5.00	65.5 J	250	72.7	5.00	690	500	U	250
2-Butanone	U	5.00	U	250	U	5.00	U	500	U	250
2,2-Dichloropropane	U	5.00	U	250	U	5.00	U	500	U	250
cis-1,2-Dichloroethene	U	5.00	U	250	U	5.00	U	500	U	250
Chloroform	U	5.00	U	250	U	5.00	U	500	U	250
1,1-Dichloropropene	U	5.00	U	250	U	5.00	U	500	U	250
1,2-Dichloroethane	U	5.00	U	250	U	5.00	U	500	U	250
1,1,1-Trichloroethane	U	5.00	15000	500	93.4	5.00	8330	500	390	250
Carbon Tetrachloride	U	5.00	U	250	U	5.00	U	500	U	250
Benzene	U	5.00	U	250	U	5.00	U	500	U	250
Trichloroethene	U	5.00	U	250	U	5.00	U	500	U	250
1,2-Dichloropropane	U	5.00	U	250	U	5.00	U	500	U	250
Bromodichloromethane	U	5.00	U	250	U	5.00	U	500	U	250
Dibromomethane	U	5.00	U	250	U	5.00	U	500	U	250
cis-1,3-Dichloropropene	U	5.00	U	250	U	5.00	U	500	U	250
trans-1,3-Dichloropropene	U	5.00	U	250	U	5.00	U	500	U	250
1,1,2-Trichloroethane	U	5.00	U	250	U	5.00	U	500	U	250
1,3-Dichloropropane	U	5.00	U	250	U	5.00	U	500	U	250
Dibromochloromethane	U	5.00	U	250	U	5.00	U	500	U	250
1,2-Dibromoethane	U	5.00	U	250	U	5.00	U	500	U	250
Bromoform	U	5.00	U	250	U	5.00	U	500	U	250
4-Methyl-2-Pentanone	U	5.00	U	250	U	5.00	U	500	U	250
Toluene	U	5.00	U	250	U	5.00	U	500	U	250
2-Hexanone	U	5.00	U	250	U	5.00	U	500	U	250
Tetrachloroethene	U	5.00	U	250	U	5.00	U	500	U	250
Chlorobenzene	U	5.00	U	250	U	5.00	U	500	U	250
1,1,1,2-Tetrachloroethane	U	5.00	U	250	U	5.00	U	500	U	250
Ethylbenzene	U	5.00	U	250	U	5.00	U	500	U	250
p&m-Xylene	U	10.0	U	500	U	10.0	U	1000	U	500
o-Xylene	U	5.00	U	250	U	5.00	U	500	U	250
Styrene	U	5.00	U	250	U	5.00	U	500	U	250
Isopropylbenzene	U	5.00	U	250	U	5.00	U	500	U	250
1,1,2,2-Tetrachloroethane	U	5.00	U	250	U	5.00	U	500	U	250
1,2,3-Trichloropropane	U	5.00	U	250	U	5.00	U	500	U	250
n-Propylbenzene	U	5.00	U	250	U	5.00	U	500	U	250
Bromobenzene	U	5.00	U	250	U	5.00	U	500	U	250
1,3,5-Trimethylbenzene	U	5.00	U	250	U	5.00	U	500	U	250
2-Chlorotoluene	U	5.00	U	250	U	5.00	U	500	U	250
4-Chlorotoluene	U	5.00	U	250	U	5.00	U	500	U	250
tert-Butylbenzene	U	5.00	U	250	U	5.00	U	500	U	250
1,2,4-Trimethylbenzene	U	5.00	U	250	U	5.00	U	500	U	250
sec-Butylbenzene	U	5.00	U	250	U	5.00	U	500	U	250
p-Isopropyltoluene	U	5.00	U	250	U	5.00	U	500	U	250
1,3-Dichlorobenzene	U	5.00	U	250	U	5.00	U	500	U	250
1,4-Dichlorobenzene	U	5.00	U	250	U	5.00	U	500	U	250
n-Butylbenzene	U	5.00	U	250	U	5.00	U	500	U	250
1,2-Dichlorobenzene	U	5.00	U	250	U	5.00	U	500	U	250
1,2-Dibromo-3-Chloropropane	U	5.00	U	250	U	5.00	U	500	U	250
1,2,4-Trichlorobenzene	U	5.00	U	250	U	5.00	U	500	U	250
Hexachlorobutadiene	U	5.00	U	250	U	5.00	U	500	U	250
Naphthalene	U	5.00	U	250	U	5.00	U	500	U	250
1,2,3-Trichlorobenzene	U	5.00	U	250	U	5.00	U	500	U	250

Table 1.1 (cont.) Result of the Analysis for VOC in Water
WA # 0-198 Vestal Chlorinated Hydrocarbon Source Assessment/Remedy

Method: REAC SOP 1806

Sample Number	51850		51838		51841		51845	
Sample Location:	ERT-3S		ERT-3I		ERT-1I		ERT-1S	
	Result	RL	Result	RL	Result	RL	Result	RL
Analyte	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Dichlorodifluoromethane	U	250	U	250	U	250	U	5000
Chloromethane	U	250	U	250	U	250	U	5000
Vinyl Chloride	U	250	U	250	U	250	U	5000
Bromomethane	U	250	U	250	U	250	U	5000
Chloroethane	96.0 J	250	U	250	U	250	U	5000
Trichlorofluoromethane	U	250	U	250	U	250	U	5000
Acetone	U	1000	U	1000	U	1000	U	20000
1,1-Dichloroethene	2100	250	U	250	U	250	U	5000
Methylene Chloride	U	250	U	250	U	250	U	5000
Carbon Disulfide	U	250	U	250	U	250	U	5000
Methyl tert-Butyl Ether	U	250	U	250	U	250	U	5000
trans-1,2-Dichloroethene	U	250	U	250	U	250	U	5000
1,1 Dichloroethane	2710	250	U	250	U	250	U	5000
2-Butanone	U	250	U	250	U	250	U	5000
2,2-Dichloropropane	U	250	U	250	U	250	U	5000
cis-1,2-Dichloroethene	U	250	U	250	1750	250	751000	25000
Chloroform	U	250	U	250	U	250	U	5000
1,1-Dichloropropene	U	250	U	250	U	250	U	5000
1,2-Dichloroethane	U	250	U	250	U	250	U	5000
1,1,1-Trichloroethane	232000	25000	4280	250	U	250	4700 J	5000
Carbon Tetrachloride	U	250	U	250	U	250	U	5000
Benzene	U	250	U	250	U	250	U	5000
Trichloroethene	726	250	U	250	874	250	103000	5000
1,2-Dichloropropane	U	250	U	250	U	250	U	5000
Bromodichloromethane	U	250	U	250	U	250	U	5000
Dibromomethane	U	250	U	250	U	250	U	5000
cis-1,3-Dichloropropene	U	250	U	250	U	250	U	5000
trans-1,3-Dichloropropene	U	250	U	250	U	250	U	5000
1,1,2-Trichloroethane	U	250	U	250	U	250	U	5000
1,3-Dichloropropane	U	250	U	250	U	250	U	5000
Dibromochloromethane	U	250	U	250	U	250	U	5000
1,2-Dibromoethane	U	250	U	250	U	250	U	5000
Bromoform	U	250	U	250	U	250	U	5000
4-Methyl-2-Pentanone	U	250	U	250	U	250	U	5000
Toluene	U	250	U	250	U	250	2150 J	5000
2-Hexanone	U	250	U	250	U	250	U	5000
Tetrachloroethene	85.0 J	250	U	250	U	250	U	5000
Chlorobenzene	U	250	U	250	U	250	U	5000
1,1,1,2-Tetrachloroethane	U	250	U	250	U	250	U	5000
Ethylbenzene	U	250	U	250	U	250	2480 J	5000
p&m-Xylene	U	500	U	500	U	500	17300	10000
o-Xylene	U	250	U	250	U	250	11600	5000
Styrene	U	250	U	250	U	250	U	5000
Isopropylbenzene	U	250	U	250	U	250	3550 J	5000
1,1,2,2-Tetrachloroethane	U	250	U	250	U	250	U	5000
1,2,3-Trichloropropane	U	250	U	250	U	250	U	5000
n-Propylbenzene	U	250	U	250	U	250	9510	5000
Bromobenzene	U	250	U	250	U	250	U	5000
1,3,5-Trimethylbenzene	U	250	U	250	U	250	43000	5000
2-Chlorotoluene	U	250	U	250	U	250	U	5000
4-Chlorotoluene	U	250	U	250	U	250	U	5000
tert-Butylbenzene	U	250	U	250	U	250	U	5000
1,2,4-Trimethylbenzene	U	250	U	250	U	250	140000	5000
sec-Butylbenzene	U	250	U	250	U	250	3950 J	5000
p-Isopropyltoluene	U	250	U	250	U	250	10400	5000
1,3-Dichlorobenzene	U	250	U	250	U	250	U	5000
1,4-Dichlorobenzene	U	250	U	250	U	250	U	5000
n-Butylbenzene	U	250	U	250	U	250	U	5000
1,2-Dichlorobenzene	U	250	U	250	U	250	U	5000
1,2-Dibromo-3-Chloropropane	U	250	U	250	U	250	U	5000
1,2,4-Trichlorobenzene	U	250	U	250	U	250	3450 J	5000
Hexachlorobutadiene	U	250	U	250	U	250	U	5000
Naphthalene	U	250	U	250	U	250	20000	5000
1,2,3-Trichlorobenzene	U	250	U	250	U	250	U	5000

Table 1.1 (cont.) Result of the Analysis for VOC in Water
WA # 0-198 Vestal Chlorinated Hydrocarbon Source Assessment/Remedy

Method: REAC SOP 1806

Sample Number	Water blank B 072608		51840	
Sample Location:			ERT-1D	
Analyte	Result µg/L	RL µg/L	Result µg/L	RL µg/L
Dichlorodifluoromethane	U	5.00	U	5.00
Chloromethane	U	5.00	U	5.00
Vinyl Chloride	U	5.00	U	5.00
Bromomethane	U	5.00	U	5.00
Chloroethane	U	5.00	U	5.00
Trichlorofluoromethane	U	5.00	U	5.00
Acetone	U J	20.0	U J	20.0
1,1-Dichloroethene	U	5.00	U	5.00
Methylene Chloride	U	5.00	U	5.00
Carbon Disulfide	U	5.00	U	5.00
Methyl tert-Butyl Ether	U	5.00	U	5.00
trans-1,2-Dichloroethene	U	5.00	U	5.00
1,1 Dichloroethane	U	5.00	U	5.00
2-Butanone	U	5.00	U	5.00
2,2-Dichloropropane	U	5.00	U	5.00
cis-1,2-Dichloroethene	U	5.00	4.24 J	5.00
Chloroform	U	5.00	U	5.00
1,1-Dichloropropene	U	5.00	U	5.00
1,2-Dichloroethane	U	5.00	U	5.00
1,1,1-Trichloroethane	U	5.00	3.14 J	5.00
Carbon Tetrachloride	U	5.00	U	5.00
Benzene	U	5.00	U	5.00
Trichloroethene	U	5.00	U	5.00
1,2-Dichloropropane	U	5.00	U	5.00
Bromodichloromethane	U	5.00	U	5.00
Dibromomethane	U	5.00	U	5.00
cis-1,3-Dichloropropene	U	5.00	U	5.00
trans-1,3-Dichloropropene	U	5.00	U	5.00
1,1,2-Trichloroethane	U	5.00	U	5.00
1,3-Dichloropropane	U	5.00	U	5.00
Dibromochloromethane	U	5.00	U	5.00
1,2-Dibromoethane	U	5.00	U	5.00
Bromoform	U	5.00	U	5.00
4-Methyl-2-Pentanone	U	5.00	U	5.00
Toluene	U	5.00	U	5.00
2-Hexanone	U	5.00	U	5.00
Tetrachloroethene	U	5.00	U	5.00
Chlorobenzene	U	5.00	U	5.00
1,1,1,2-Tetrachloroethane	U	5.00	U	5.00
Ethylbenzene	U	5.00	U	5.00
p&m-Xylene	U	10.0	U	10.0
o-Xylene	U	5.00	U	5.00
Styrene	U	5.00	U	5.00
Isopropylbenzene	U	5.00	U	5.00
1,1,2,2-Tetrachloroethane	U	5.00	U	5.00
1,2,3-Trichloropropane	U	5.00	U	5.00
n-Propylbenzene	U	5.00	U	5.00
Bromobenzene	U	5.00	U	5.00
1,3,5-Trimethylbenzene	U	5.00	U	5.00
2-Chlorotoluene	U	5.00	U	5.00
4-Chlorotoluene	U	5.00	U	5.00
tert-Butylbenzene	U	5.00	U	5.00
1,2,4-Trimethylbenzene	U	5.00	U	5.00
sec-Butylbenzene	U	5.00	U	5.00
p-Isopropyltoluene	U	5.00	U	5.00
1,3-Dichlorobenzene	U	5.00	U	5.00
1,4-Dichlorobenzene	U	5.00	U	5.00
n-Butylbenzene	U	5.00	U	5.00
1,2-Dichlorobenzene	U	5.00	U	5.00
1,2-Dibromo-3-Chloropropane	U	5.00	U	5.00
1,2,4-Trichlorobenzene	U	5.00	U	5.00
Hexachlorobutadiene	U	5.00	U	5.00
Naphthalene	U	5.00	U	5.00
1,2,3-Trichlorobenzene	U	5.00	U	5.00

Table 1.2 Result of the Analysis for VOC in Soil
WA # 0-198 Vestal Chlorinated Hydrocarbon Source Assessment/Remedy

Results are based on dry weight.

Method: REAC SOP 1807

Sample Number	MeOH Blank A 073008-1		51879		51880		51881		51882	
Sample Location:			SB-117, 20'		SB-111, 19.5'		SB-112, 9.5'		SB-112, 19.5'	
Percent_Solids	100		81		78		84		79	
	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
Analyte	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Dichlorodifluoromethane	U J	250	U J	617	U J	3210	U J	595	U J	633
Chloromethane	U	250	357 J	617	U	3210	169 J	595	U	633
Vinyl Chloride	U	250	U	617	U	3210	U	595	U	633
Bromomethane	U	1000	3470	2470	U	12800	1190 J	2380	U	2530
Chloroethane	U	250	U	617	U	3210	U	595	U	633
Trichlorofluoromethane	U	250	U	617	U	3210	U	595	U	633
Acetone	U	1000	U	2470	U	12800	U	2380	U	2530
1,1-Dichloroethene	U	250	U	617	U	3210	U	595	U	633
Methylene Chloride	U	250	U	617	U	3210	U	595	U	633
Carbon Disulfide	U	250	U	617	U	3210	U	595	U	633
Methyl tert-Butyl Ether	U	250	U	617	U	3210	U	595	U	633
trans-1,2-Dichloroethene	U	250	U	617	U	3210	U	595	U	633
1,1 Dichloroethane	U	250	U	617	U	3210	U	595	U	633
2-Butanone	U	250	U	617	U	3210	U	595	U	633
2,2-Dichloropropane	U	250	U	617	U	3210	U	595	U	633
cis-1,2-Dichloroethene	U	250	U	617	15800	3210	U	595	U	633
Chloroform	U	250	U	617	U	3210	U	595	U	633
1,1-Dichloropropene	U	250	U	617	U	3210	U	595	U	633
1,2-Dichloroethane	U	250	U	617	U	3210	U	595	U	633
1,1,1-Trichloroethane	U	250	U	617	U	3210	U	595	U	633
Carbon Tetrachloride	U	250	U	617	U	3210	U	595	U	633
Benzene	U	250	U	617	U	3210	U	595	U	633
Trichloroethene	U	250	U	617	23000	3210	U	595	1560	633
1,2-Dichloropropane	U	250	U	617	U	3210	U	595	U	633
Bromodichloromethane	U	250	U	617	U	3210	U	595	U	633
Dibromomethane	U	250	U	617	U	3210	U	595	U	633
cis-1,3-Dichloropropene	U	250	U	617	U	3210	U	595	U	633
trans-1,3-Dichloropropene	U	250	U	617	U	3210	U	595	U	633
1,1,2-Trichloroethane	U	250	U	617	U	3210	U	595	U	633
1,3-Dichloropropane	U	250	U	617	U	3210	U	595	U	633
Dibromochloromethane	U	250	U	617	U	3210	U	595	U	633
1,2-Dibromoethane	U	250	U	617	U	3210	U	595	U	633
Bromoform	U	250	U	617	U	3210	U	595	U	633
4-Methyl-2-Pentanone	U	250	U	617	U	3210	U	595	U	633
Toluene	U	250	U	617	U	3210	U	595	U	633
2-Hexanone	U	250	U	617	U	3210	U	595	U	633
Tetrachloroethene	U	250	U	617	U	3210	U	595	U	633
Chlorobenzene	U	250	U	617	U	3210	U	595	U	633
1,1,1,2-Tetrachloroethane	U	250	U	617	U	3210	U	595	U	633
Ethylbenzene	U	250	U	617	U	3210	U	595	U	633
p&m-Xylene	U	500	U	1230	U	6410	U	1190	U	1270
o-Xylene	U	250	U	617	U	3210	U	595	U	633
Styrene	U	250	U	617	U	3210	U	595	U	633
Isopropylbenzene	U	250	U	617	U	3210	U	595	U	633
1,1,2,2-Tetrachloroethane	U	250	U	617	U	3210	U	595	U	633
1,2,3-Trichloropropane	U	250	U	617	U	3210	U	595	U	633
n-Propylbenzene	U	250	U	617	U	3210	U	595	U	633
Bromobenzene	U	250	U	617	U	3210	U	595	U	633
1,3,5-Trimethylbenzene	U	250	U	617	897 J	3210	U	595	U	633
2-Chlorotoluene	U	250	U	617	U	3210	U	595	U	633
4-Chlorotoluene	U	250	U	617	U	3210	U	595	U	633
tert-Butylbenzene	U	250	U	617	U	3210	U	595	U	633
1,2,4-Trimethylbenzene	U	250	U	617	2230 J	3210	U	595	U	633
sec-Butylbenzene	U	250	U	617	U	3210	U	595	U	633
p-Isopropyltoluene	U	250	U	617	U	3210	U	595	U	633
1,3-Dichlorobenzene	U	250	U	617	U	3210	U	595	U	633
1,4-Dichlorobenzene	U	250	U	617	U	3210	U	595	U	633
n-Butylbenzene	U	250	U	617	U	3210	U	595	U	633
1,2-Dichlorobenzene	U	250	U	617	U	3210	U	595	U	633
1,2-Dibromo-3-Chloropropane	U	250	U	617	U	3210	U	595	U	633
1,2,4-Trichlorobenzene	U	250	U	617	U	3210	U	595	U	633
Hexachlorobutadiene	U	250	U	617	U	3210	U	595	U	633
Naphthalene	U	250	U	617	U	3210	U	595	U	633
1,2,3-Trichlorobenzene	U	250	U	617	U	3210	U	595	U	633

Table 1.2 (cont.) Result of the Analysis for VOC in Soil
WA # 0-198 Vestal Chlorinated Hydrocarbon Source Assessment/Remedy

Results are based on dry weight.

Method: REAC SOP 1807

Sample Number	MeOH Blank A 073108-1		51883		51884		51886		51887	
Sample Location:			SB-112, 14.5'		SB-119, 20'		SB-119, 12.5'		SB-113, 15'	
Percent_Solids	100		76		78		80		81	
Analyte	Result µg/kg	RL µg/kg	Result µg/kg	RL µg/kg	Result µg/kg	RL µg/kg	Result µg/kg	RL µg/kg	Result µg/kg	RL µg/kg
Dichlorodifluoromethane	U J	250	U J	658	U J	641	U J	625	U J	617
Chloromethane	U	250	U	658	U	641	U	625	U	617
Vinyl Chloride	U	250	U	658	U	641	U	625	U	617
Bromomethane	U	1000	1380 J	2630	U	2560	U	2500	U	2470
Chloroethane	U	250	U	658	U	641	U	625	U	617
Trichlorofluoromethane	U	250	U	658	U	641	U	625	U	617
Acetone	U	1000	U	2630	U	2560	U	2500	U	2470
1,1-Dichloroethene	U	250	U	658	U	641	U	625	U	617
Methylene Chloride	U	250	U	658	U	641	U	625	U	617
Carbon Disulfide	U	250	U	658	U	641	U	625	U	617
Methyl tert-Butyl Ether	U	250	U	658	U	641	U	625	U	617
trans-1,2-Dichloroethene	U	250	U	658	U	641	U	625	U	617
1,1 Dichloroethane	U	250	U	658	U	641	U	625	U	617
2-Butanone	U	250	U	658	U	641	U	625	U	617
2,2-Dichloropropane	U	250	U	658	U	641	U	625	U	617
cis-1,2-Dichloroethene	U	250	U	658	U	641	U	625	U	617
Chloroform	U	250	U	658	U	641	U	625	U	617
1,1-Dichloropropene	U	250	U	658	U	641	U	625	U	617
1,2-Dichloroethane	U	250	U	658	U	641	U	625	U	617
1,1,1-Trichloroethane	U	250	U	658	U	641	U	625	U	617
Carbon Tetrachloride	U	250	U	658	U	641	U	625	U	617
Benzene	U	250	U	658	U	641	U	625	U	617
Trichloroethene	U	250	380 J	658	1720	641	U	625	U	617
1,2-Dichloropropane	U	250	U	658	U	641	U	625	U	617
Bromodichloromethane	U	250	U	658	U	641	U	625	U	617
Dibromomethane	U	250	U	658	U	641	U	625	U	617
cis-1,3-Dichloropropene	U	250	U	658	U	641	U	625	U	617
trans-1,3-Dichloropropene	U	250	U	658	U	641	U	625	U	617
1,1,2-Trichloroethane	U	250	U	658	U	641	U	625	U	617
1,3-Dichloropropane	U	250	U	658	U	641	U	625	U	617
Dibromochloromethane	U	250	U	658	U	641	U	625	U	617
1,2-Dibromoethane	U	250	U	658	U	641	U	625	U	617
Bromoform	U	250	U	658	U	641	U	625	U	617
4-Methyl-2-Pentanone	U	250	U	658	U	641	U	625	U	617
Toluene	U	250	U	658	U	641	U	625	U	617
2-Hexanone	U	250	U	658	U	641	U	625	U	617
Tetrachloroethene	U	250	U	658	U	641	U	625	U	617
Chlorobenzene	U	250	U	658	U	641	U	625	U	617
1,1,1,2-Tetrachloroethane	U	250	U	658	U	641	U	625	U	617
Ethylbenzene	U	250	U	658	U	641	U	625	U	617
p&m-Xylene	U	500	U	1320	U	1280	U	1250	U	1230
o-Xylene	U	250	U	658	U	641	U	625	U	617
Styrene	U	250	U	658	U	641	U	625	U	617
Isopropylbenzene	U	250	U	658	U	641	U	625	U	617
1,1,2,2-Tetrachloroethane	U	250	U	658	U	641	U	625	U	617
1,2,3-Trichloropropane	U	250	U	658	U	641	U	625	U	617
n-Propylbenzene	U	250	U	658	U	641	U	625	U	617
Bromobenzene	U	250	U	658	U	641	U	625	U	617
1,3,5-Trimethylbenzene	U	250	U	658	U	641	U	625	U	617
2-Chlorotoluene	U	250	U	658	U	641	U	625	U	617
4-Chlorotoluene	U	250	U	658	U	641	U	625	U	617
tert-Butylbenzene	U	250	U	658	U	641	U	625	U	617
1,2,4-Trimethylbenzene	U	250	U	658	U	641	U	625	U	617
sec-Butylbenzene	U	250	U	658	U	641	U	625	U	617
p-Isopropyltoluene	U	250	U	658	U	641	U	625	U	617
1,3-Dichlorobenzene	U	250	U	658	U	641	U	625	U	617
1,4-Dichlorobenzene	U	250	U	658	U	641	U	625	U	617
n-Butylbenzene	U	250	U	658	U	641	U	625	U	617
1,2-Dichlorobenzene	U	250	U	658	U	641	U	625	U	617
1,2-Dibromo-3-Chloropropane	U	250	U	658	U	641	U	625	U	617
1,2,4-Trichlorobenzene	U	250	U	658	U	641	U	625	U	617
Hexachlorobutadiene	U	250	U	658	U	641	U	625	U	617
Naphthalene	U	250	U	658	U	641	U	625	U	617
1,2,3-Trichlorobenzene	U	250	U	658	U	641	U	625	U	617

Table 1.2 (cont.) Result of the Analysis for VOC in Soil
WA # 0-198 Vestal Chlorinated Hydrocarbon Source Assessment/Remedy

Results are based on dry weight.

Method: REAC SOP 1807

Sample Number	51888		51889		51885		51891		51898	
Sample Location:	SB-113, 20'		SB-111, 14'		SB-116, 9.5'		SB-111, 17'		SB-116, 11.5'	
Percent_Solids	79		82		86		79		82	
	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
Analyte	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Dichlorodifluoromethane	U J	833	U J	6100	U J	5810	U J	6320	U J	3050
Chloromethane	U	633	U	6100	U	5810	U	6320	U	3050
Vinyl Chloride	U	633	U	6100	U	5810	U	6320	U	3050
Bromomethane	U	2530	U	24400	U	23300	U	25400	U	12200
Chloroethane	U	633	U	6100	U	5810	U	6320	U	3050
Trichlorofluoromethane	U	633	U	6100	U	5810	U	6320	U	3050
Acetone	U	2530	U	24400	U	23300	U	25400	U	12200
1,1-Dichloroethene	U	633	U	6100	U	5810	U	6320	U	3050
Methylene Chloride	U	633	U	6100	U	5810	U	6320	U	3050
Carbon Disulfide	U	633	U	6100	U	5810	U	6320	U	3050
Methyl tert-Butyl Ether	U	633	U	6100	U	5810	U	6320	U	3050
trans-1,2-Dichloroethene	U	633	U	6100	U	5810	U	6320	U	3050
1,1 Dichloroethane	U	633	U	6100	U	5810	U	6320	U	3050
2-Butanone	U	633	U	6100	U	5810	U	6320	U	3050
2,2-Dichloropropane	U	633	U	6100	U	5810	U	6320	U	3050
cis-1,2-Dichloroethene	U	633	U	6100	U	5810	19800	6320	U	3050
Chloroform	U	633	U	6100	U	5810	U	6320	U	3050
1,1-Dichloropropene	U	633	U	6100	U	5810	U	6320	U	3050
1,2-Dichloroethane	U	633	U	6100	U	5810	U	6320	U	3050
1,1,1-Trichloroethane	U	633	U	6100	U	5810	7160	6320	U	3050
Carbon Tetrachloride	U	633	U	6100	U	5810	U	6320	U	3050
Benzene	U	633	U	6100	U	5810	U	6320	U	3050
Trichloroethene	U	633	U	6100	U	5810	244000	6320	U	3050
1,2-Dichloropropane	U	633	U	6100	U	5810	U	8320	U	3050
Bromodichloromethane	U	633	U	6100	U	5810	U	8320	U	3050
Dibromomethane	U	633	U	6100	U	5810	U	6320	U	3050
cis-1,3-Dichloropropene	U	633	U	6100	U	5810	U	6320	U	3050
trans-1,3-Dichloropropene	U	633	U	6100	U	5810	U	6320	U	3050
1,1,2-Trichloroethane	U	633	U	6100	U	5810	U	6320	U	3050
1,3-Dichloropropane	U	633	U	6100	U	5810	U	6320	U	3050
Dibromochloromethane	U	633	U	6100	U	5810	U	6320	U	3050
1,2-Dibromoethane	U	633	U	6100	U	5810	U	6320	U	3050
Bromoform	U	633	U	6100	U	5810	U	6320	U	3050
4-Methyl-2-Pentanone	U	633	U	6100	U	5810	U	6320	U	3050
Toluene	U	633	U	6100	U	5810	2540 J	6320	U	3050
2-Hexanone	U	633	U	6100	U	5810	U	6320	U	3050
Tetrachloroethene	U	633	U	6100	U	5810	U	6320	U	3050
Chlorobenzene	U	633	U	6100	U	5810	U	6320	U	3050
1,1,1,2-Tetrachloroethane	U	633	U	6100	U	5810	U	6320	U	3050
Ethylbenzene	U	633	U	6100	5560 J	5810	U	6320	U	3050
p&m-Xylene	U	1270	U	12200	7910 J	11600	3980 J	12700	U	6100
o-Xylene	U	633	5760 J	6100	6980	5810	3840 J	6320	U	3050
Styrene	U	633	U	6100	U	5810	U	6320	U	3050
Isopropylbenzene	U	633	2760 J	6100	5760 J	5810	U	6320	U	3050
1,1,2,2-Tetrachloroethane	U	633	U	6100	U	5810	U	6320	U	3050
1,2,3-Trichloropropane	U	633	U	6100	U	5810	U	6320	U	3050
n-Propylbenzene	168 J	633	7260	6100	12800	5810	3340 J	6320	799 J	3050
Bromobenzene	U	633	U	6100	U	5810	U	6320	U	3050
1,3,5-Trimethylbenzene	486 J	633	26800	6100	45600	5810	13300	6320	2220 J	3050
2-Chlorotoluene	U	633	U	6100	U	5810	U	6320	U	3050
4-Chlorotoluene	U	633	U	6100	U	5810	U	6320	U	3050
tert-Butylbenzene	U	633	U	6100	U	5810	U	6320	U	3050
1,2,4-Trimethylbenzene	U	633	72200	6100	107000	5810	34400	6320	6270	3050
sec-Butylbenzene	U	633	4740 J	6100	11300	5810	2220 J	6320	U	3050
p-Isopropyltoluene	U	633	12200	6100	18700	5810	3980 J	6320	866 J	3050
1,3-Dichlorobenzene	U	633	U	6100	U	5810	U	6320	U	3050
1,4-Dichlorobenzene	U	633	U	6100	U	5810	U	6320	U	3050
n-Butylbenzene	U	633	U	6100	U	5810	U	6320	U	3050
1,2-Dichlorobenzene	U	633	U	6100	U	5810	U	6320	U	3050
1,2-Dibromo-3-Chloropropane	U	633	U	6100	U	5810	U	6320	U	3050
1,2,4-Trichlorobenzene	U	633	8650	6100	U	5810	1870 J	6320	U	3050
Hexachlorobutadiene	U	633	U	6100	U	5810	U	6320	U	3050
Naphthalene	349 J	633	10500	6100	5210 J	5810	4400 J	6320	U	3050
1,2,3-Trichlorobenzene	U	633	2410 J	6100	U	5810	U	6320	U	3050

Table 1.2 (cont.) Result of the Analysis for VOC in Soil
WA # 0-198 Vestal Chlorinated Hydrocarbon Source Assessment/Remedy

Results are based on dry weight.

Method: REAC SOP 1807

Sample Number	MeOH Blank B 072908-1		51860		51861		51862		51863	
Sample Location:			SB-115,12.5'		SB-114,15'		SB-115,17'		SB-114,10'	
Percent_Solids	100		83		80		83		83	
	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
Analyte	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Dichlorodifluoromethane	U	1000	U	4820	U	2500	U	2410	U	2410
Chloromethane	U	250	U	1200	U	625	U	602	U	602
Vinyl Chloride	U	250	U	1200	U	625	U	602	U	602
Bromomethane	U	250	U	1200	U	625	U	602	U	602
Chloroethane	U	250	U	1200	U	625	U	602	U	602
Trichlorofluoromethane	U	1000	U	4820	U	2500	U	2410	U	2410
Acetone	U	1000	U	4820	U	2500	U	2410	U	2410
1,1-Dichloroethene	U	250	U	1200	U	625	U	602	U	602
Methylene Chloride	U J	250	U J	1200	U J	625	U J	602	U J	602
Carbon Disulfide	U J	250	U J	1200	U J	625	U J	602	U J	602
Methyl tert-Butyl Ether	U	250	U	1200	U	625	U	602	U	602
trans-1,2-Dichloroethene	U	250	U	1200	U	625	U	602	U	602
1,1 Dichloroethane	U	250	U	1200	U	625	U	602	U	602
2-Butanone	U	250	U	1200	U	625	U	602	U	602
2,2-Dichloropropane	U	250	U	1200	U	625	U	602	U	602
cis-1,2-Dichloroethene	U	250	U	1200	U	625	316 J	602	U	602
Chloroform	U	250	U	1200	U	625	U	602	U	602
1,1-Dichloropropene	U	250	U	1200	U	625	U	602	U	602
1,2-Dichloroethane	U	250	U	1200	U	625	U	602	U	602
1,1,1-Trichloroethane	U	250	U	1200	U	625	U	602	U	602
Carbon Tetrachloride	U	250	U	1200	U	625	U	602	U	602
Benzene	U	250	U	1200	U	625	U	602	U	602
Trichloroethene	U	250	U	1200	U	625	U	602	U	602
1,2-Dichloropropane	U	250	U	1200	U	625	U	602	U	602
Bromodichloromethane	U	250	U	1200	U	625	U	602	U	602
Dibromomethane	U	250	U	1200	U	625	U	602	U	602
cis-1,3-Dichloropropene	U	250	U	1200	U	625	U	602	U	602
trans-1,3-Dichloropropene	U	250	U	1200	U	625	U	602	U	602
1,1,2-Trichloroethane	U	250	U	1200	U	625	U	602	U	602
1,3-Dichloropropane	U	250	U	1200	U	625	U	602	U	602
Dibromochloromethane	U	250	U	1200	U	625	U	602	U	602
1,2-Dibromoethane	U	250	U	1200	U	625	U	602	U	602
Bromoform	U	250	U	1200	U	625	U	602	U	602
4-Methyl-2-Pentanone	U	250	U	1200	U	625	U	602	U	602
Toluene	U	250	1330	1200	351 J	625	U	602	U	602
2-Hexanone	U	250	U	1200	U	625	U	602	U	602
Tetrachloroethene	U	250	U	1200	U	625	U	602	U	602
Chlorobenzene	U	250	U	1200	U	625	U	602	U	602
1,1,1,2-Tetrachloroethane	U	250	U	1200	U	625	U	602	U	602
Ethylbenzene	U	250	4380	1200	U	625	U	602	U	602
p&m-Xylene	U	500	11700	2410	619 J	1250	U	1200	U	1200
o-Xylene	U	250	11500	1200	584 J	625	U	602	U	602
Styrene	U	250	U	1200	U	625	U	602	U	602
Isopropylbenzene	U	250	3410	1200	238 J	625	U	602	U	602
1,1,2,2-Tetrachloroethane	U	250	U	1200	U	625	U	602	U	602
1,2,3-Trichloropropane	U	250	U	1200	U	625	U	602	U	602
n-Propylbenzene	U	250	7290	1200	669	625	U	602	U	602
Bromobenzene	U	250	U	1200	U	625	U	602	U	602
1,3,5-Trimethylbenzene	U	250	26300	1200	2690	625	U	602	365 J	602
2-Chlorotoluene	U	250	U	1200	U	625	U	602	U	602
4-Chlorotoluene	U	250	U	1200	U	625	U	602	U	602
tert-Butylbenzene	U	250	U	1200	U	625	U	602	U	602
1,2,4-Trimethylbenzene	U	250	60000	6000	7250	625	228 J	602	627	602
sec-Butylbenzene	U	250	5250	1200	446 J	625	U	602	225 J	602
p-Isopropyltoluene	U	250	15300	1200	1380	625	U	602	527 J	602
1,3-Dichlorobenzene	U	250	U	1200	U	625	U	602	U	602
1,4-Dichlorobenzene	U	250	U	1200	U	625	U	602	U	602
n-Butylbenzene	U	250	U	1200	U	625	U	602	U	602
1,2-Dichlorobenzene	U	250	U	1200	U	625	U	602	U	602
1,2-Dibromo-3-Chloropropane	U	250	U	1200	U	625	U	602	U	602
1,2,4-Trichlorobenzene	U	250	U	1200	404 J	625	U	602	U	602
Hexachlorobutadiene	U	1000	1170 J	4820	U	2500	U	2410	U	2410
Naphthalene	U	250	10200 J	1200	1120 J	625	208 J	602	U	602
1,2,3-Trichlorobenzene	U	250	U	1200	U	625	U	602	U	602

Table 1.2 (cont.) Result of the Analysis for VOC in Soil
WA # 0-198 Vestal Chlorinated Hydrocarbon Source Assessment/Remedy

Results are based on dry weight.

Method: REAC SOP 1807

Sample Number	51864		51865		51866		51867		51868	
Sample Location:	SB-114,20'		SB-117,10'		SB-117,12.5"		SB-115,10'		SB-117,15'	
Percent_Solids	78		82		81		85		80	
	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
Analyte	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Dichlorodifluoromethane	U	2560	U	2440	U	2470	U	2350	U	2500
Chloromethane	U	641	U	610	U	617	U	588	U	625
Vinyl Chloride	U	641	U	610	U	617	U	588	U	625
Bromomethane	U	641	U	610	U	617	U	588	U	625
Chloroethane	U	641	U	610	U	617	U	588	U	625
Trichlorofluoromethane	U	2560	U	2440	U	2470	U	2350	U	2500
Acetone	U	2560	U	2440	U	2470	U	2350	U	2500
1,1-Dichloroethene	U	641	U	610	U	617	U	588	U	625
Methylene Chloride	U J	641	U J	610	U J	617	U J	588	U J	625
Carbon Disulfide	U J	641	U J	610	U J	617	U J	588	U J	625
Methyl tert-Butyl Ether	U	641	U	610	U	617	U	588	U	625
trans-1,2-Dichloroethene	U	641	U	610	U	617	U	588	U	625
1,1 Dichloroethane	U	641	U	610	U	617	U	588	U	625
2-Butanone	U	641	U	610	U	617	U	588	U	625
2,2-Dichloropropane	U	641	U	610	U	617	U	588	U	625
cis-1,2-Dichloroethene	4190	641	U	610	U	617	U	588	U	625
Chloroform	U	641	U	610	U	617	U	588	U	625
1,1-Dichloropropene	U	641	U	610	U	617	U	588	U	625
1,2-Dichloroethane	U	641	U	610	U	617	U	588	U	625
1,1,1-Trichloroethane	U	641	U	610	U	617	U	588	U	625
Carbon Tetrachloride	U	641	U	610	U	617	U	588	U	625
Benzene	U	641	U	610	U	617	U	588	U	625
Trichloroethene	U	641	U	610	U	617	U	588	U	625
1,2-Dichloropropane	U	641	U	610	U	617	U	588	U	625
Bromodichloromethane	U	641	U	610	U	617	U	588	U	625
Dibromomethane	U	641	U	610	U	617	U	588	U	625
cis-1,3-Dichloropropene	U	641	U	610	U	617	U	588	U	625
trans-1,3-Dichloropropene	U	641	U	610	U	617	U	588	U	625
1,1,2-Trichloroethane	U	641	U	610	U	617	U	588	U	625
1,3-Dichloropropane	U	641	U	610	U	617	U	588	U	625
Dibromochloromethane	U	641	U	610	U	617	U	588	U	625
1,2-Dibromoethane	U	641	U	610	U	617	U	588	U	625
Bromoform	U	641	U	610	U	617	U	588	U	625
4-Methyl-2-Pentanone	U	641	U	610	U	617	U	588	U	625
Toluene	U	641	U	610	U	617	U	588	U	625
2-Hexanone	U	641	U	610	U	617	U	588	U	625
Tetrachloroethene	U	641	U	610	U	617	U	588	U	625
Chlorobenzene	U	641	U	610	U	617	U	588	U	625
1,1,1,2-Tetrachloroethane	U	641	U	610	U	617	U	588	U	625
Ethylbenzene	U	641	U	610	U	617	174 J	588	U	625
p&m-Xylene	U	1280	U	1220	U	1230	220 J	1180	U	1250
o-Xylene	U	641	U	610	U	617	147 J	588	U	625
Styrene	U	641	U	610	U	617	U	588	U	625
Isopropylbenzene	U	641	U	610	U	617	162 J	588	U	625
1,1,2,2-Tetrachloroethane	U	641	U	610	U	617	U	588	U	625
1,2,3-Trichloropropane	U	641	U	610	U	617	U	588	U	625
n-Propylbenzene	U	641	U	610	U	617	412 J	588	U	625
Bromobenzene	U	641	U	610	U	617	U	588	U	625
1,3,5-Trimethylbenzene	U	641	U	610	U	617	1450	588	U	625
2-Chlorotoluene	U	641	U	610	U	617	U	588	U	625
4-Chlorotoluene	U	641	U	610	U	617	U	588	U	625
tert-Butylbenzene	U	641	U	610	U	617	U	588	U	625
1,2,4-Trimethylbenzene	U	641	U	610	U	617	2240	588	U	625
sec-Butylbenzene	U	641	U	610	U	617	279 J	588	U	625
p-Isopropyltoluene	U	641	U	610	U	617	573 J	588	U	625
1,3-Dichlorobenzene	U	641	U	610	U	617	U	588	U	625
1,4-Dichlorobenzene	U	641	U	610	U	617	U	588	U	625
n-Butylbenzene	U	641	U	610	U	617	U	588	U	625
1,2-Dichlorobenzene	U	641	U	610	U	617	U	588	U	625
1,2-Dibromo-3-Chloropropane	U	641	U	610	U	617	U	588	U	625
1,2,4-Trichlorobenzene	U	641	U	610	U	617	U	588	U	625
Hexachlorobutadiene	U	2560	U	2440	U	2470	U	2350	U	2500
Naphthalene	U	641	U	610	U	617	462 J	588	U	625
1,2,3-Trichlorobenzene	U	641	U	610	U	617	U	588	U	625

Table 1.2 (cont.) Result of the Analysis for VOC in Soil
WA # 0-198 Vestal Chlorinated Hydrocarbon Source Assessment/Remedy

Results are based on dry weight.

Method: REAC SOP 1807

Sample Number		51869	
Sample Location:		SB-114,13'	
Percent_Solids		80	
Analyte	Result µg/kg		RL µg/kg
Dichlorodifluoromethane	U		12500
Chloromethane	U		3130
Vinyl Chloride	U		3130
Bromomethane	U		3130
Chloroethane	U		3130
Trichlorofluoromethane	U		12500
Acetone	U		12500
1,1-Dichloroethene	U		3130
Methylene Chloride	U	J	3130
Carbon Disulfide	U	J	3130
Methyl tert-Butyl Ether	U		3130
trans-1,2-Dichloroethene	U		3130
1,1 Dichloroethane	U		3130
2-Butanone	U		3130
2,2-Dichloropropane	U		3130
cis-1,2-Dichloroethene	863	J	3130
Chloroform	U		3130
1,1-Dichloropropene	U		3130
1,2-Dichloroethane	U		3130
1,1,1-Trichloroethane	U		3130
Carbon Tetrachloride	U		3130
Benzene	U		3130
Trichloroethene	U		3130
1,2-Dichloropropane	U		3130
Bromodichloromethane	U		3130
Dibromomethane	U		3130
cis-1,3-Dichloropropene	U		3130
trans-1,3-Dichloropropene	U		3130
1,1,2-Trichloroethane	U		3130
1,3-Dichloropropane	U		3130
Dibromochloromethane	U		3130
1,2-Dibromoethane	U		3130
Bromoform	U		3130
4-Methyl-2-Pentanone	U		3130
Toluene	2880	J	3130
2-Hexanone	U		3130
Tetrachloroethene	U		3130
Chlorobenzene	U		3130
1,1,1,2-Tetrachloroethane	U		3130
Ethylbenzene	1630	J	3130
p&m-Xylene	6210	J	6250
o-Xylene	3290		3130
Styrene	U		3130
Isopropylbenzene	3330		3130
1,1,2,2-Tetrachloroethane	U		3130
1,2,3-Trichloropropane	U		3130
n-Propylbenzene	9000		3130
Bromobenzene	U		3130
1,3,5-Trimethylbenzene	37400		3130
2-Chlorotoluene	U		3130
4-Chlorotoluene	U		3130
tert-Butylbenzene	U		3130
1,2,4-Trimethylbenzene	97300		3130
sec-Butylbenzene	4820		3130
p-Isopropyltoluene	17400		3130
1,3-Dichlorobenzene	U		3130
1,4-Dichlorobenzene	U		3130
n-Butylbenzene	U		3130
1,2-Dichlorobenzene	U		3130
1,2-Dibromo-3-Chloropropane	U		3130
1,2,4-Trichlorobenzene	2290	J	3130
Hexachlorobutadiene	U		12500
Naphthalene	10300	J	3130
1,2,3-Trichlorobenzene	U		3130

Table 1.2 (cont.) Result of the Analysis for VOC in Soil
WA # 0-198 Vestal Chlorinated Hydrocarbon Source Assessment/Remedy

Results are based on dry weight.

Method: REAC SOP 1807

Sample Number	MeOH Blank B 073008-1		51870		51871		51872		51873	
Sample Location:			SB-114,17.5'		SB-113,7.7'		SB-116,15'		SB-113,10'	
Percent_Solids	100		81		83		78		81	
	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
Analyte	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Dichlorodifluoromethane	U	250	U	617	U	602	U	641	U	617
Chloromethane	U	250	U	617	U	602	U	641	U	617
Vinyl Chloride	U	250	U	617	U	602	U	641	U	617
Bromomethane	U	250	U	617	U	602	U	641	U	617
Chloroethane	U	250	U	617	U	602	U	641	U	617
Trichlorofluoromethane	U	250	U	617	U	602	U	641	U	617
Acetone	U	1000	U	2470	U	2410	U	2560	U	2470
1,1-Dichloroethene	U	250	U	617	U	602	U	641	U	617
Methylene Chloride	U	1000	U	2470	U	2410	U	2560	U	2470
Carbon Disulfide	U	250	U	617	U	602	U	641	U	617
Methyl tert-Butyl Ether	U	250	U	617	U	602	U	641	U	617
trans-1,2-Dichloroethene	U	250	U	617	U	602	U	641	U	617
1,1 Dichloroethane	U	250	U	617	U	602	U	641	U	617
2-Butanone	U	250	U	617	U	602	U	641	U	617
2,2-Dichloropropane	U	250	U	617	U	602	U	641	U	617
cis-1,2-Dichloroethene	U	250	4110	617	U	602	U	641	U	617
Chloroform	U	1000	U	2470	U	2410	U	2560	U	2470
1,1-Dichloropropene	U	250	U	617	U	602	U	641	U	617
1,2-Dichloroethane	U	1000	U	2470	U	2410	U	2560	U	2470
1,1,1-Trichloroethane	U	250	U	617	U	602	U	641	U	617
Carbon Tetrachloride	U	250	U	617	U	602	U	641	U	617
Benzene	U	250	U	617	U	602	U	641	U	617
Trichloroethene	U	250	U	617	U	602	U	641	U	617
1,2-Dichloropropane	U	250	U	617	U	602	U	641	U	617
Bromodichloromethane	U	250	U	617	U	602	U	641	U	617
Dibromomethane	U	250	U	617	U	602	U	641	U	617
cis-1,3-Dichloropropene	U	250	U	617	U	602	U	641	U	617
trans-1,3-Dichloropropene	U	250	U	617	U	602	U	641	U	617
1,1,2-Trichloroethane	U	250	U	617	U	602	U	641	U	617
1,3-Dichloropropane	U	250	U	617	U	602	U	641	U	617
Dibromochloromethane	U	250	U	617	U	602	U	641	U	617
1,2-Dibromoethane	U	250	U	617	U	602	U	641	U	617
Bromoform	U	250	U	617	U	602	U	641	U	617
4-Methyl-2-Pentanone	U	250	U	617	U	602	U	641	U	617
Toluene	U	250	U	617	U	602	U	641	U	617
2-Hexanone	U	250	U	617	U	602	U	641	U	617
Tetrachloroethene	U	250	U	617	U	602	U	641	U	617
Chlorobenzene	U	250	U	617	U	602	U	641	U	617
1,1,1,2-Tetrachloroethane	U	250	U	617	U	602	U	641	U	617
Ethylbenzene	U	250	U	617	U	602	U	641	U	617
p&m-Xylene	U	500	U	1230	U	1200	U	1280	U	1230
o-Xylene	U	250	U	617	U	602	U	641	U	617
Styrene	U	250	U	617	U	602	U	641	U	617
Isopropylbenzene	U	250	U	617	U	602	U	641	U	617
1,1,2,2-Tetrachloroethane	U	250	U	617	U	602	U	641	U	617
1,2,3-Trichloropropane	U	250	U	617	U	602	U	641	U	617
n-Propylbenzene	U	250	U	617	U	602	U	641	U	617
Bromobenzene	U	250	U	617	U	602	U	641	U	617
1,3,5-Trimethylbenzene	U	250	584 J	617	U	602	U	641	U	617
2-Chlorotoluene	U	250	U	617	U	602	U	641	U	617
4-Chlorotoluene	U	250	U	617	U	602	U	641	U	617
tert-Butylbenzene	U	250	U	617	U	602	U	641	U	617
1,2,4-Trimethylbenzene	U	250	1500	617	U	602	U	641	U	617
sec-Butylbenzene	U	250	U	617	U	602	U	641	652	617
p-Isopropyltoluene	U	250	186 J	617	U	602	U	641	621	617
1,3-Dichlorobenzene	U	250	U	617	U	602	U	641	U	617
1,4-Dichlorobenzene	U	250	U	617	U	602	U	641	U	617
n-Butylbenzene	U	250	U	617	U	602	U	641	U	617
1,2-Dichlorobenzene	U	250	U	617	U	602	U	641	U	617
1,2-Dibromo-3-Chloropropane	U	250	U	617	U	602	U	641	U	617
1,2,4-Trichlorobenzene	U	250	U	617	U	602	U	641	U	617
Hexachlorobutadiene	U	1000	U	2470	U	2410	U	2560	U	2470
Naphthalene	U	250	295 J	617	U	602	U	641	U	617
1,2,3-Trichlorobenzene	U	1000	U	2470	U	2410	U	2560	U	2470

Table 1.2 (cont.) Result of the Analysis for VOC in Soil
WA # 0-198 Vestal Chlorinated Hydrocarbon Source Assessment/Remedy

Results are based on dry weight.

Method: REAC SOP 1807

Sample Number	51874		51875		
Sample Location:	SB-116,7.4'		SB-114,6'		
Percent_Solids	83		74		
Analyte	Result µg/kg	RL µg/kg	Result µg/kg		RL µg/kg
Dichlorodifluoromethane	U	602	U		676
Chloromethane	U	602	U		676
Vinyl Chloride	U	602	U		676
Bromomethane	U	602	U		676
Chloroethane	U	602	U		676
Trichlorofluoromethane	U	602	U		676
Acetone	U	2410	U		2700
1,1-Dichloroethene	U	602	U		676
Methylene Chloride	U	2410	U		2700
Carbon Disulfide	U	602	U		676
Methyl tert-Butyl Ether	U	602	U		676
trans-1,2-Dichloroethene	U	602	U		676
1,1 Dichloroethane	U	602	U		676
2-Butanone	U	602	U		676
2,2-Dichloropropane	U	602	U		676
cis-1,2-Dichloroethene	U	602	U		676
Chloroform	U	2410	U		2700
1,1-Dichloropropene	U	602	U		676
1,2-Dichloroethane	U	2410	U		2700
1,1,1-Trichloroethane	U	602	U		676
Carbon Tetrachloride	U	602	U		676
Benzene	U	602	U		676
Trichloroethene	U	602	U		676
1,2-Dichloropropane	U	602	U		676
Bromodichloromethane	U	602	U		676
Dibromomethane	U	602	U		676
cis-1,3-Dichloropropene	U	602	U		676
trans-1,3-Dichloropropene	U	602	U		676
1,1,2-Trichloroethane	U	602	U		676
1,3-Dichloropropane	U	602	U		676
Dibromochloromethane	U	602	U		676
1,2-Dibromoethane	U	602	U		676
Bromoform	U	602	U		676
4-Methyl-2-Pentanone	U	602	U		676
Toluene	U	602	U		676
2-Hexanone	U	602	U		676
Tetrachloroethene	U	602	U		676
Chlorobenzene	U	602	U		676
1,1,1,2-Tetrachloroethane	U	602	U		676
Ethylbenzene	U	602	U		676
p&m-Xylene	U	1200	U		1350
o-Xylene	U	602	U		676
Styrene	U	602	U		676
Isopropylbenzene	U	602	U		676
1,1,2,2-Tetrachloroethane	U	602	U		676
1,2,3-Trichloropropane	U	602	U		676
n-Propylbenzene	U	602	U		676
Bromobenzene	U	602	U		676
1,3,5-Trimethylbenzene	U	602	2480		676
2-Chlorotoluene	U	602	U		676
4-Chlorotoluene	U	602	U		676
tert-Butylbenzene	U	602	U		676
1,2,4-Trimethylbenzene	U	602	611	J	676
sec-Butylbenzene	U	602	226	J	676
p-Isopropyltoluene	U	602	1080		676
1,3-Dichlorobenzene	U	602	U		676
1,4-Dichlorobenzene	U	602	U		676
n-Butylbenzene	U	602	U		676
1,2-Dichlorobenzene	U	602	U		676
1,2-Dibromo-3-Chloropropane	U	602	U		676
1,2,4-Trichlorobenzene	U	602	U		676
Hexachlorobutadiene	U	2410	U		2700
Naphthalene	U	602	U		676
1,2,3-Trichlorobenzene	U	2410	U		2700

Table 1.2 (cont.) Result of the Analysis for VOC in Soil
WA # 0-198 Vestal Chlorinated Hydrocarbon Source Assessment/Remedy

Results are based on dry weight.

Method: REAC SOP 1807

Sample Number	MeOH Blank B 073108-2		51876		51877		51878		51892	
Sample Location:			SB-115, 15'		SB-115, 20'		SB-115, 6.9'		SB-116, 20'	
Percent_Solids	100		81		79		85		81	
	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
Analyte	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Dichlorodifluoromethane	U	250	U	617	U	633	U	588	U	617
Chloromethane	U	250	U	617	U	633	U	588	U	617
Vinyl Chloride	U	250	U	617	U	633	U	588	U	617
Bromomethane	U	250	U	617	U	633	U	588	U	617
Chloroethane	U	250	U	617	U	633	U	588	U	617
Trichlorofluoromethane	U	250	U	617	U	633	U	588	U	617
Acetone	U	1000	U	2470	U	2530	U	2350	U	2470
1,1-Dichloroethene	U	250	U	617	U	633	U	588	U	617
Methylene Chloride	U	1000	U	2470	U	2530	U	2350	U	2470
Carbon Disulfide	U	250	U	617	U	633	U	588	U	617
Methyl tert-Butyl Ether	U	250	U	617	U	633	U	588	U	617
trans-1,2-Dichloroethene	U	250	U	617	U	633	U	588	U	617
1,1 Dichloroethane	U	250	U	617	U	633	U	588	U	617
2-Butanone	U	250	U	617	U	633	U	588	U	617
2,2-Dichloropropane	U	250	U	617	U	633	U	588	U	617
cis-1,2-Dichloroethene	U	250	U	617	889	633	U	588	306 J	617
Chloroform	U	1000	U	2470	U	2530	U	2350	U	2470
1,1-Dichloropropene	U	250	U	617	U	633	U	588	U	617
1,2-Dichloroethane	U	1000	U	2470	U	2530	U	2350	U	2470
1,1,1-Trichloroethane	U	250	U	617	U	633	U	588	U	617
Carbon Tetrachloride	U	250	U	617	U	633	U	588	U	617
Benzene	U	250	U	617	U	633	U	588	U	617
Trichloroethene	U	250	U	617	U	633	U	588	U	617
1,2-Dichloropropane	U	250	U	617	U	633	U	588	U	617
Bromodichloromethane	U	250	U	617	U	633	U	588	U	617
Dibromomethane	U	250	U	617	U	633	U	588	U	617
cis-1,3-Dichloropropene	U	250	U	617	U	633	U	588	U	617
trans-1,3-Dichloropropene	U	250	U	617	U	633	U	588	U	617
1,1,2-Trichloroethane	U	250	U	617	U	633	U	588	U	617
1,3-Dichloropropane	U	250	U	617	U	633	U	588	U	617
Dibromochloromethane	U	250	U	617	U	633	U	588	U	617
1,2-Dibromoethane	U	250	U	617	U	633	U	588	U	617
Bromoform	U	250	U	617	U	633	U	588	U	617
4-Methyl-2-Pentanone	U	250	U	617	U	633	U	588	U	617
Toluene	U	250	U	617	U	633	406 J	588	U	617
2-Hexanone	U	250	U	617	U	633	U	588	U	617
Tetrachloroethene	U	250	U	617	U	633	U	588	U	617
Chlorobenzene	U	250	U	617	U	633	U	588	U	617
1,1,1,2-Tetrachloroethane	U	250	U	617	U	633	U	588	U	617
Ethylbenzene	U	250	U	617	U	633	2320	588	U	617
p&m-Xylene	U	500	U	1230	U	1270	8980	1180	U	1230
o-Xylene	U	250	U	617	U	633	4530	588	U	617
Styrene	U	250	U	617	U	633	U	588	U	617
Isopropylbenzene	U	250	U	617	U	633	3090	588	U	617
1,1,2,2-Tetrachloroethane	U	250	U	617	U	633	U	588	U	617
1,2,3-Trichloropropane	U	250	U	617	U	633	U	588	U	617
n-Propylbenzene	U	250	U	617	U	633	6800	588	U	617
Bromobenzene	U	250	U	617	U	633	U	588	U	617
1,3,5-Trimethylbenzene	U	250	U	617	U	633	45900	2940	207 J	617
2-Chlorotoluene	U	250	U	617	U	633	U	588	U	617
4-Chlorotoluene	U	250	U	617	U	633	U	588	U	617
tert-Butylbenzene	U	250	U	617	U	633	U	588	U	617
1,2,4-Trimethylbenzene	U	250	U	617	U	633	95200	2940	408 J	617
sec-Butylbenzene	U	250	U	617	U	633	6000	588	U	617
p-Isopropyltoluene	U	250	U	617	U	633	19600	588	285 J	617
1,3-Dichlorobenzene	U	250	U	617	U	633	U	588	U	617
1,4-Dichlorobenzene	U	250	U	617	U	633	U	588	U	617
n-Butylbenzene	U	250	U	617	U	633	U	588	U	617
1,2-Dichlorobenzene	U	250	U	617	U	633	U	588	U	617
1,2-Dibromo-3-Chloropropane	U	250	U	617	U	633	U	588	U	617
1,2,4-Trichlorobenzene	U	250	U	617	U	633	U	588	U	617
Hexachlorobutadiene	U	1000	U	2470	U	2530	U	2350	U	2470
Naphthalene	63.5 J	250	U	617	U	633	12600	588	583 J	617
1,2,3-Trichlorobenzene	U	1000	U	2470	U	2530	U	2350	U	2470

Table 1.2 (cont.) Result of the Analysis for VOC in Soil
WA # 0-198 Vestal Chlorinated Hydrocarbon Source Assessment/Remedy

Results are based on dry weight.

Method: REAC SOP 1807

Sample Number	51893		51894		51895		51896		51897	
Sample Location:	SB-117, 7.5'		SB-119, 10'		SB-119, 6'		SB-118, 10'		SB-118, 20'	
Percent_Solids	85		82		66		81		77	
	Result	*RL*	Result	*RL*	Result	*RL*	Result	*RL*	Result	*RL*
Analyte	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Dichlorodifluoromethane	U	588	U	610	U	758	U	617	U	649
Chloromethane	U	588	U	610	U	758	U	617	U	649
Vinyl Chloride	U	588	U	610	U	758	U	617	U	649
Bromomethane	U	588	U	610	U	758	U	617	U	649
Chloroethane	U	588	U	610	U	758	U	617	U	649
Trichlorofluoromethane	U	588	U	610	U	758	U	617	U	649
Acetone	U	2350	U	2440	U	3030	U	2470	U	2600
1,1-Dichloroethene	U	588	U	610	U	758	U	617	U	649
Methylene Chloride	U	2350	U	2440	U	3030	U	2470	U	2600
Carbon Disulfide	U	588	U	610	U	758	U	617	U	649
Methyl tert-Butyl Ether	U	588	U	610	U	758	U	617	U	649
trans-1,2-Dichloroethene	U	588	U	610	U	758	U	617	U	649
1,1 Dichloroethane	U	588	U	610	U	758	U	617	U	649
2-Butanone	U	588	U	610	U	758	U	617	U	649
2,2-Dichloropropane	U	588	U	610	U	758	U	617	U	649
cis-1,2-Dichloroethene	U	588	U	610	U	758	U	617	U	649
Chloroform	U	2350	U	2440	U	3030	U	2470	U	2600
1,1-Dichloropropene	U	588	U	610	U	758	U	617	U	649
1,2-Dichloroethane	U	2350	U	2440	U	3030	U	2470	U	2600
1,1,1-Trichloroethane	U	588	U	610	U	758	U	617	U	649
Carbon Tetrachloride	U	588	U	610	U	758	U	617	U	649
Benzene	U	588	U	610	U	758	U	617	U	649
Trichloroethene	U	588	U	610	U	758	U	617	673	649
1,2-Dichloropropane	U	588	U	610	U	758	U	617	U	649
Bromodichloromethane	U	588	U	610	U	758	U	617	U	649
Dibromomethane	U	588	U	610	U	758	U	617	U	649
cis-1,3-Dichloropropene	U	588	U	610	U	758	U	617	U	649
trans-1,3-Dichloropropene	U	588	U	610	U	758	U	617	U	649
1,1,2-Trichloroethane	U	588	U	610	U	758	U	617	U	649
1,3-Dichloropropane	U	588	U	610	U	758	U	617	U	649
Dibromochloromethane	U	588	U	610	U	758	U	617	U	649
1,2-Dibromoethane	U	588	U	610	U	758	U	617	U	649
Bromoform	U	588	U	610	U	758	U	617	U	649
4-Methyl-2-Pentanone	U	588	U	610	U	758	U	617	U	649
Toluene	U	588	U	610	U	758	U	617	U	649
2-Hexanone	U	588	U	610	U	758	U	617	U	649
Tetrachloroethene	U	588	U	610	U	758	U	617	U	649
Chlorobenzene	U	588	U	610	U	758	U	617	U	649
1,1,1,2-Tetrachloroethane	U	588	U	610	U	758	U	617	U	649
Ethylbenzene	U	588	U	610	U	758	U	617	U	649
p&m-Xylene	U	1180	U	1220	U	1520	U	1230	U	1300
o-Xylene	U	588	U	610	U	758	U	617	U	649
Styrene	U	588	U	610	U	758	U	617	U	649
Isopropylbenzene	U	588	U	610	U	758	U	617	U	649
1,1,2,2-Tetrachloroethane	U	588	U	610	U	758	U	617	U	649
1,2,3-Trichloropropane	U	588	U	610	U	758	U	617	U	649
n-Propylbenzene	U	588	U	610	U	758	U	617	U	649
Bromobenzene	U	588	U	610	U	758	U	617	U	649
1,3,5-Trimethylbenzene	U	588	U	610	U	758	U	617	U	649
2-Chlorotoluene	U	588	U	610	U	758	U	617	U	649
4-Chlorotoluene	U	588	U	610	U	758	U	617	U	649
tert-Butylbenzene	U	588	U	610	U	758	U	617	U	649
1,2,4-Trimethylbenzene	U	588	U	610	U	758	U	617	U	649
sec-Butylbenzene	U	588	U	610	U	758	U	617	U	649
p-Isopropyltoluene	U	588	U	610	U	758	U	617	U	649
1,3-Dichlorobenzene	U	588	U	610	U	758	U	617	U	649
1,4-Dichlorobenzene	U	588	U	610	U	758	U	817	U	649
n-Butylbenzene	U	588	U	610	U	758	U	617	U	649
1,2-Dichlorobenzene	U	588	U	610	U	758	U	617	U	649
1,2-Dibromo-3-Chloropropane	U	588	U	610	U	758	U	617	U	649
1,2,4-Trichlorobenzene	U	588	U	610	U	758	U	617	U	649
Hexachlorobutadiene	U	2350	U	2440	U	3030	U	2470	U	2600
Naphthalene	U	588	U	610	U	758	U	617	U	649
1,2,3-Trichlorobenzene	U	2350	U	2440	U	3030	U	2470	U	2600

Table 1.2 (cont.) Result of the Analysis for VOC in Soil
WA # 0-198 Vestal Chlorinated Hydrocarbon Source Assessment/Remedy

Results are based on dry weight.

Method: REAC SOP

Sample Number	MeOH Blank A 080108-1		51890		
Sample Location:			SB-111, 10'		
Percent_Solids	100		85		
	Result	*RL*	Result		*RL*
Analyte	µg/kg	µg/kg	µg/kg		µg/kg
Dichlorodifluoromethane	U	250	U		588
Chloromethane	U	250	U		588
Vinyl Chloride	U	250	U		588
Bromomethane	U	1000	773	J	2350
Chloroethane	U	250	U		588
Trichlorofluoromethane	U	250	U		588
Acetone	U	1000	U		2350
1,1-Dichloroethene	U	250	U		588
Methylene Chloride	U	250	U		588
Carbon Disulfide	U	250	U		588
Methyl tert-Butyl Ether	U	250	U		588
trans-1,2-Dichloroethene	U	250	U		588
1,1 Dichloroethane	U	250	U		588
2-Butanone	U	250	U		588
2,2-Dichloropropane	U	250	U		588
cis-1,2-Dichloroethene	U	250	U		588
Chloroform	U	250	U		588
1,1-Dichloropropene	U	250	U		588
1,2-Dichloroethane	U	250	U		588
1,1,1-Trichloroethane	U	250	U		588
Carbon Tetrachloride	U	250	U		588
Benzene	U	250	U		588
Trichloroethene	U	250	U		588
1,2-Dichloropropane	U	250	U		588
Bromodichloromethane	U	250	U		588
Dibromomethane	U	250	U		588
cis-1,3-Dichloropropene	U	250	U		588
trans-1,3-Dichloropropene	U	250	U		588
1,1,2-Trichloroethane	U	250	U		588
1,3-Dichloropropane	U	250	U		588
Dibromochloromethane	U	250	U		588
1,2-Dibromoethane	U	250	U		588
Bromoform	U	250	U		588
4-Methyl-2-Pentanone	U	250	U		588
Toluene	U	250	U		588
2-Hexanone	U	250	U		588
Tetrachloroethene	U	250	U		588
Chlorobenzene	U	250	U		588
1,1,1,2-Tetrachloroethane	U	250	U		588
Ethylbenzene	U	250	U		588
p&m-Xylene	U	500	U		1180
o-Xylene	U	250	U		588
Styrene	U	250	U		588
Isopropylbenzene	U	250	U		588
1,1,2,2-Tetrachloroethane	U	250	U		588
1,2,3-Trichloropropane	U	250	U		588
n-Propylbenzene	U	250	U		588
Bromobenzene	U	250	U		588
1,3,5-Trimethylbenzene	U	250	U		588
2-Chlorotoluene	U	250	U		588
4-Chlorotoluene	U	250	U		588
tert-Butylbenzene	U	250	U		588
1,2,4-Trimethylbenzene	U	250	U		588
sec-Butylbenzene	U	250	U		588
p-Isopropyltoluene	U	250	U		588
1,3-Dichlorobenzene	U	250	U		588
1,4-Dichlorobenzene	U	250	U		588
n-Butylbenzene	U	250	U		588
1,2-Dichlorobenzene	U	250	U		588
1,2-Dibromo-3-Chloropropane	U	250	U		588
1,2,4-Trichlorobenzene	U	250	U		588
Hexachlorobutadiene	U	250	U		588
Naphthalene	U	250	U		588
1,2,3-Trichlorobenzene	U	250	U		588

Table 1.3 Results of the Analysis for Metals in Water
WA # 0-198 Vestal Chlorinated Hydrocarbon Source Assessment/Remedy

Method REAC SOP 1811				
Sample No.	Method Blank-07/30/08-1		51851	
Location	Lab		ERT-2D	
Analyte	Result µg/L	RL µg/L	Result µg/L	RL µg/L
Aluminum	U	100	U	100
Antimony	U	14.0	U	14.0
Arsenic	U	17.0	19.4	17.0
Barium	U	2.00	491	2.00
Beryllium	U	2.00	U	2.00
Cadmium	U	3.00	U	3.00
Calcium	U	60.0	94700	60.0
Chromium	U	3.00	U	3.00
Cobalt	U	3.00	U	3.00
Copper	U	4.00	U	4.00
Iron	U	25.0	8570	25.0
Lead	U	10.0	U	10.0
Magnesium	U	160	15000	160
Manganese	U	2.00	1030	2.00
Nickel	U	5.00	U	5.00
Potassium	U	200	2030	200
Selenium	U	15.0	U	15.0
Silver	U	4.00	U	4.00
Sodium	U	1200	32000	1200
Thallium	U	18.0	U	18.0
Vanadium	U	3.00	U	3.00
Zinc	U	6.00	U	6.00

Table 2.1 Results of MS/MSD Analysis for VOC in Water
WA # 0-198 Vestal Chlorinated Hydrocarbon Source Assessment/Remedy

Sample No. : 51847/20x

Compound Name	Sample Conc. (µg/L)	MS Spike Added (µg/L)	MSD Spike Added (µg/L)	MS Conc. (µg/L)	MSD Conc. (µg/L)	MS % Rec.	MSD % Rec.	RPD	RPD	QC Limits % Rec.
1,1-Dichloroethene	U	1000	1000	1120	1130	112	113	1	14	61 - 145
Benzene	U	1000	1000	967	972	97	97	1	11	76 - 127
Trichloroethene	U	1000	1000	898	906	90	91	1	14	71 - 120
Toluene	U	1000	1000	958	963	96	96	1	13	76 - 125
Chlorobenzene	U	1000	1000	944	941	94	94	0	13	75 - 130

Sample No. : 51849

Compound Name	Sample Conc. (µg/L)	MS Spike Added (µg/L)	MSD Spike Added (µg/L)	MS Conc. (µg/L)	MSD Conc. (µg/L)	MS % Rec.	MSD % Rec.	RPD	RPD	QC Limits % Rec.
1,1-Dichloroethene	U	50.0	50.0	41.3	40.1	83	80	3	14	61 - 145
Benzene	U	50.0	50.0	49.8	50.2	100	100	1	11	76 - 127
Trichloroethene	U	50.0	50.0	47.0	47.9	94	96	2	14	71 - 120
Toluene	U	50.0	50.0	46.9	48.1	94	96	3	13	76 - 125
Chlorobenzene	U	50.0	50.0	45.9	47.1	92	94	2	13	75 - 130

Table 2.2 Results of LCS Analysis for VOC in Water
WA # 0-198 Vestal Chlorinated Hydrocarbon Source Assessment/Remedy

Sample ID: LCS BW072408	LCS Spike Added	LCS Conc.	LCS %		QC Limits
Compound Name	(µg/L)	(µg/L)	Rec.		% Rec.
Dichlorodifluoromethane	50.0	39.9	80		70 - 130
Chloromethane	50.0	46.1	92		70 - 130
Vinyl Chloride	50.0	58.9	118		70 - 130
Bromomethane	50.0	51.9	104		70 - 130
Chloroethane	50.0	50.2	100		70 - 130
Trichlorofluoromethane	50.0	53.5	107		70 - 130
Acetone	50.0	88.0	176	*	70 - 130
1,1-Dichloroethene	50.0	58.1	116		70 - 130
Methylene Chloride	50.0	49.0	98		70 - 130
Carbon Disulfide	50.0	46.5	93		70 - 130
Methyl-t-butyl Ether	50.0	45.0	90		70 - 130
trans-1,2-Dichloroethene	50.0	52.2	104		70 - 130
1,1-Dichloroethane	50.0	52.3	105		70 - 130
2-Butanone	50.0	81.5	163	*	70 - 130
2,2-Dichloropropane	50.0	50.7	101		70 - 130
cis-1,2-Dichloroethene	50.0	48.4	97		70 - 130
Chloroform	50.0	51.5	103		70 - 130
1,1-Dichloropropene	50.0	50.7	101		70 - 130
1,2-Dichloroethane	50.0	50.7	101		70 - 130
1,1,1-Trichloroethane	50.0	50.3	101		70 - 130
Carbon Tetrachloride	50.0	50.7	101		70 - 130
Benzene	50.0	50.0	100		70 - 130
Trichloroethene	50.0	47.6	95		70 - 130
1,2-Dichloropropane	50.0	47.5	95		70 - 130
Bromodichloromethane	50.0	47.2	94		70 - 130
Dibromomethane	50.0	47.2	94		70 - 130
cis-1,3-Dichloropropene	50.0	48.7	97		70 - 130
trans-1,3-Dichloropropene	50.0	52.3	105		70 - 130
1,1,2-Trichloroethane	50.0	47.4	95		70 - 130
1,3-Dichloropropane	50.0	47.7	95		70 - 130
Dibromochloromethane	50.0	48.0	96		70 - 130
1,2-Dibromoethane	50.0	47.9	96		70 - 130
Bromoform	50.0	48.4	97		70 - 130
4-Methyl-2-Pentanone	50.0	49.3	99		70 - 130
Toluene	50.0	49.2	98		70 - 130
2-Hexanone	50.0	77.0	154	*	70 - 130
Tetrachloroethene	50.0	48.5	97		70 - 130
Chlorobenzene	50.0	48.4	97		70 - 130
1,1,1,2-Tetrachloroethane	50.0	47.1	94		70 - 130
Ethylbenzene	50.0	49.2	98		70 - 130
p&m-Xylene	100.0	101.0	101		70 - 130
o-Xylene	50.0	49.9	100		70 - 130
Styrene	50.0	48.4	97		70 - 130
Isopropylbenzene	50.0	51.2	102		70 - 130
1,1,2,2-Tetrachloroethane	50.0	46.7	93		70 - 130
1,2,3-Trichloropropane	50.0	45.8	92		70 - 130
n-Propylbenzene	50.0	49.9	100		70 - 130
Bromobenzene	50.0	49.2	98		70 - 130
1,3,5-Trimethylbenzene	50.0	50.5	101		70 - 130
2-Chlorotoluene	50.0	49.7	99		70 - 130
4-Chlorotoluene	50.0	48.4	97		70 - 130
tert-Butylbenzene	50.0	49.2	98		70 - 130
1,2,4-Trimethylbenzene	50.0	48.8	98		70 - 130
sec-Butylbenzene	50.0	49.9	100		70 - 130
p-Isopropyltoluene	50.0	49.7	99		70 - 130
1,3-Dichlorobenzene	50.0	48.2	96		70 - 130
1,4-Dichlorobenzene	50.0	48.4	97		70 - 130
n-Butylbenzene	50.0	49.9	100		70 - 130
1,2-Dichlorobenzene	50.0	48.1	96		70 - 130
1,2-Dibromo-3-chloropropane	50.0	46.2	92		70 - 130
1,2,4-Trichlorobenzene	50.0	44.6	89		70 - 130
Hexachlorobutadiene	50.0	42.2	84		70 - 130
Naphthalene	50.0	42.3	85		70 - 130
1,2,3-Trichlorobenzene	50.0	42.9	86		70 - 130

Table 2.3 Results of MS/MSD Analysis for VOC in Soil
WA # 0-198 Vestal Chlorinated Hydrocarbon Source Assessment/Remedy
Results are based on dry weight

Sample No. : 51883/100x

Compound Name	Sample Conc. (µg/kg)	MS Spike Added (µg/kg)	MSD Spike Added (µg/kg)	MS Conc. (µg/kg)	MSD Conc. (µg/kg)	MS % Rec.	MSD % Rec.	RPD	QC Limits % Rec.	QC Limits RPD
1,1-Dichloroethene	U	6580	6580	7640	7630	116	116	0	59 - 172	22
Benzene	U	6580	6580	6360	6250	97	95	2	66 - 142	21
Trichloroethene	380	6580	6580	6230	6030	89	86	3	62 - 137	24
Toluene	U	6580	6580	6320	6330	96	96	0	59 - 139	21
Chlorobenzene	U	6580	6580	6360	6290	97	96	1	60 - 133	21

Sample No. : 51862/100x

Compound Name	Sample Conc. (µg/kg)	MS Spike Added (µg/kg)	MSD Spike Added (µg/kg)	MS Conc. (µg/kg)	MSD Conc. (µg/kg)	MS % Rec.	MSD % Rec.	RPD	QC Limits % Rec.	QC Limits RPD
1,1-Dichloroethene	U	6020	6020	5160	5640	86	94	9	59 - 172	22
Benzene	U	6020	6020	5020	5750	83	95	14	66 - 142	21
Trichloroethene	U	6020	6020	4680	5320	78	88	13	62 - 137	24
Toluene	U	6020	6020	5060	5820	84	97	14	59 - 139	21
Chlorobenzene	U	6020	6020	5000	5780	83	96	14	60 - 133	21

Sample No. : 51871/100x

Compound Name	Sample Conc. (µg/kg)	MS Spike Added (µg/kg)	MSD Spike Added (µg/kg)	MS Conc. (µg/kg)	MSD Conc. (µg/kg)	MS % Rec.	MSD % Rec.	RPD	QC Limits % Rec.	QC Limits RPD
1,1-Dichloroethene	U	6020	6020	3770	4060	63	67	7	59 - 172	22
Benzene	U	6020	6020	4070	4220	68	70	4	66 - 142	21
Trichloroethene	U	6020	6020	3820	3950	63	66	3	62 - 137	24
Toluene	U	6020	6020	4070	4170	68	69	2	59 - 139	21
Chlorobenzene	U	6020	6020	4220	4300	70	71	2	60 - 133	21

Sample No. : 51877/100x

Compound Name	Sample Conc. (µg/kg)	MS Spike Added (µg/kg)	MSD Spike Added (µg/kg)	MS Conc. (µg/kg)	MSD Conc. (µg/kg)	MS % Rec.	MSD % Rec.	RPD	QC Limits % Rec.	QC Limits RPD
1,1-Dichloroethene	U	6330	6330	4210	5710	67	90	30 *	59 - 172	22
Benzene	U	6330	6330	4460	5650	70	89	23 *	66 - 142	21
Trichloroethene	U	6330	6330	4230	5360	67	85	24	62 - 137	24
Toluene	U	6330	6330	4350	5610	69	89	25 *	59 - 139	21
Chlorobenzene	U	6330	6330	4440	5780	70	91	26 *	60 - 133	21

Table 2.4 Results of LCS Analysis for VOC in Soil
WA # 0-198 Vestal Chlorinated Hydrocarbon Source Assessment/Remedy

LCS AW 073008-1

Compound Name	LCS Spike Added (µg/L)	LCS Conc. (µg/L)	LCS % Rec.		QC Limits % Rec.
Dichlorodifluoromethane	50.0	34.0	68	*	70 - 130
Chloromethane	50.0	51.2	102		70 - 130
Vinyl Chloride	50.0	305	610	*	70 - 130
Bromomethane	50.0	39.8	80		70 - 130
Chloroethane	50.0	50.2	100		70 - 130
Trichlorofluoromethane	50.0	49.7	99		70 - 130
Acetone	50.0	84.8	170	*	70 - 130
1,1-Dichloroethene	50.0	51.8	104		70 - 130
Methylene Chloride	50.0	59.9	120		70 - 130
Carbon Disulfide	50.0	45.4	91		70 - 130
Methyl-t-butyl Ether	50.0	43.6	87		70 - 130
trans-1,2-Dichloroethene	50.0	49.3	99		70 - 130
1,1-Dichloroethane	50.0	51.7	103		70 - 130
2-Butanone	50.0	66.0	132	*	70 - 130
2,2-Dichloropropane	50.0	50.4	101		70 - 130
cis-1,2-Dichloroethene	50.0	47.1	94		70 - 130
Chloroform	50.0	51.0	102		70 - 130
1,1-Dichloropropene	50.0	48.1	96		70 - 130
1,2-Dichloroethane	50.0	48.8	98		70 - 130
1,1,1-Trichloroethane	50.0	48.9	98		70 - 130
Carbon Tetrachloride	50.0	48.9	98		70 - 130
Benzene	50.0	49.9	100		70 - 130
Trichloroethene	50.0	47.3	95		70 - 130
1,2-Dichloropropane	50.0	47.4	95		70 - 130
Bromodichloromethane	50.0	46.6	93		70 - 130
Dibromomethane	50.0	48.4	97		70 - 130
cis-1,3-Dichloropropene	50.0	49.0	98		70 - 130
trans-1,3-Dichloropropene	50.0	53.7	107		70 - 130
1,1,2-Trichloroethane	50.0	48.9	98		70 - 130
1,3-Dichloropropane	50.0	48.3	97		70 - 130
Dibromochloromethane	50.0	48.9	98		70 - 130
1,2-Dibromoethane	50.0	48.9	98		70 - 130
Bromoform	50.0	47.3	95		70 - 130
4-Methyl-2-Pentanone	50.0	51.4	103		70 - 130
Toluene	50.0	48.8	98		70 - 130
2-Hexanone	50.0	67.2	134	*	70 - 130
Tetrachloroethene	50.0	47.8	96		70 - 130
Chlorobenzene	50.0	48.6	97		70 - 130
1,1,1,2-Tetrachloroethane	50.0	47.0	94		70 - 130
Ethylbenzene	50.0	49.4	99		70 - 130
p&m-Xylene	100.0	99.1	99		70 - 130
o-Xylene	50.0	50.5	101		70 - 130
Styrene	50.0	49.5	99		70 - 130
Isopropylbenzene	50.0	52.6	105		70 - 130
1,1,2,2-Tetrachloroethane	50.0	51.3	103		70 - 130
1,2,3-Trichloropropane	50.0	49.8	100		70 - 130
n-Propylbenzene	50.0	50.5	101		70 - 130
Bromobenzene	50.0	50.9	102		70 - 130
1,3,5-Trimethylbenzene	50.0	51.2	102		70 - 130
2-Chlorotoluene	50.0	50.9	102		70 - 130
4-Chlorotoluene	50.0	51.9	104		70 - 130
tert-Butylbenzene	50.0	50.5	101		70 - 130
1,2,4-Trimethylbenzene	50.0	50.4	101		70 - 130
sec-Butylbenzene	50.0	51.1	102		70 - 130
p-Isopropyltoluene	50.0	51.3	103		70 - 130
1,3-Dichlorobenzene	50.0	51.5	103		70 - 130
1,4-Dichlorobenzene	50.0	51.2	102		70 - 130
n-Butylbenzene	50.0	51.7	103		70 - 130
1,2-Dichlorobenzene	50.0	51.6	103		70 - 130
1,2-Dibromo-3-chloropropane	50.0	49.2	98		70 - 130
1,2,4-Trichlorobenzene	50.0	52.2	104		70 - 130
Hexachlorobutadiene	50.0	48.5	97		70 - 130
Naphthalene	50.0	55.1	110		70 - 130
1,2,3-Trichlorobenzene	50.0	53.8	108		70 - 130

Table 2.4 (cont.) Results of LCS Analysis for VOC in Soil
WA # 0-198 Vestal Chlorinated Hydrocarbon Source Assessment/Remedy

LCS BW 072908-2

Compound Name	LCS Spike Added (µg/L)	LCS Conc. (µg/L)	LCS % Rec.		QC Limits % Rec.
Dichlorodifluoromethane	50.0	44.0	88		70 - 130
Chloromethane	50.0	47.0	94		70 - 130
Vinyl Chloride	50.0	63.2	126		70 - 130
Bromomethane	50.0	56.8	114		70 - 130
Chloroethane	50.0	53.8	108		70 - 130
Trichlorofluoromethane	50.0	48.8	98		70 - 130
Acetone	50.0	110	220	*	70 - 130
1,1-Dichloroethene	50.0	35.6	71		70 - 130
Methylene Chloride	50.0	31.6	63	*	70 - 130
Carbon Disulfide	50.0	31.6	63	*	70 - 130
Methyl-t-butyl Ether	50.0	51.8	104		70 - 130
trans-1,2-Dichloroethene	50.0	50.0	100		70 - 130
1,1-Dichloroethane	50.0	49.6	99		70 - 130
2-Butanone	50.0	117	234	*	70 - 130
2,2-Dichloropropane	50.0	66.4	133	*	70 - 130
cis-1,2-Dichloroethene	50.0	46.4	93		70 - 130
Chloroform	50.0	48.8	98		70 - 130
1,1-Dichloropropene	50.0	49.4	99		70 - 130
1,2-Dichloroethane	50.0	51.2	102		70 - 130
1,1,1-Trichloroethane	50.0	53.2	106		70 - 130
Carbon Tetrachloride	50.0	55.0	110		70 - 130
Benzene	50.0	52.0	104		70 - 130
Trichloroethene	50.0	50.4	101		70 - 130
1,2-Dichloropropane	50.0	50.6	101		70 - 130
Bromodichloromethane	50.0	50.6	101		70 - 130
Dibromomethane	50.0	56.0	112		70 - 130
cis-1,3-Dichloropropene	50.0	56.6	113		70 - 130
trans-1,3-Dichloropropene	50.0	64.0	128		70 - 130
1,1,2-Trichloroethane	50.0	55.4	111		70 - 130
1,3-Dichloropropane	50.0	54.8	110		70 - 130
Dibromochloromethane	50.0	55.0	110		70 - 130
1,2-Dibromoethane	50.0	57.0	114		70 - 130
Bromoform	50.0	58.2	116		70 - 130
4-Methyl-2-Pentanone	50.0	76.6	153	*	70 - 130
Toluene	50.0	50.6	101		70 - 130
2-Hexanone	50.0	135	270	*	70 - 130
Tetrachloroethene	50.0	51.4	103		70 - 130
Chlorobenzene	50.0	50.4	101		70 - 130
1,1,1,2-Tetrachloroethane	50.0	50.8	102		70 - 130
Ethylbenzene	50.0	50.2	100		70 - 130
p&m-Xylene	100.0	103	103		70 - 130
o-Xylene	50.0	51.4	103		70 - 130
Styrene	50.0	51.0	102		70 - 130
Isopropylbenzene	50.0	52.8	106		70 - 130
1,1,2,2-Tetrachloroethane	50.0	59.2	118		70 - 130
1,2,3-Trichloropropane	50.0	57.0	114		70 - 130
n-Propylbenzene	50.0	51.6	103		70 - 130
Bromobenzene	50.0	52.6	105		70 - 130
1,3,5-Trimethylbenzene	50.0	52.6	105		70 - 130
2-Chlorotoluene	50.0	51.0	102		70 - 130
4-Chlorotoluene	50.0	51.8	104		70 - 130
tert-Butylbenzene	50.0	51.0	102		70 - 130
1,2,4-Trimethylbenzene	50.0	50.6	101		70 - 130
sec-Butylbenzene	50.0	51.8	104		70 - 130
p-Isopropyltoluene	50.0	52.4	105		70 - 130
1,3-Dichlorobenzene	50.0	52.0	104		70 - 130
1,4-Dichlorobenzene	50.0	52.4	105		70 - 130
n-Butylbenzene	50.0	53.2	106		70 - 130
1,2-Dichlorobenzene	50.0	53.8	108		70 - 130
1,2-Dibromo-3-chloropropane	50.0	63.6	127		70 - 130
1,2,4-Trichlorobenzene	50.0	62.4	125		70 - 130
Hexachlorobutadiene	50.0	51.2	102		70 - 130
Naphthalene	50.0	70.8	142	*	70 - 130
1,2,3-Trichlorobenzene	50.0	69.0	138	*	70 - 130

Table 2.4 (cont.) Results of LCS Analysis for VOC in Soil
WA # 0-198 Vestal Chlorinated Hydrocarbon Source Assessment/Remedy

LCS BW 073108

Compound Name	LCS Spike Added (µg/L)	LCS Conc. (µg/L)	LCS % Rec.		QC Limits % Rec.
Dichlorodifluoromethane	50.0	35.1	70		70 - 130
Chloromethane	50.0	41.4	83		70 - 130
Vinyl Chloride	50.0	52.9	106		70 - 130
Bromomethane	50.0	51.8	104		70 - 130
Chloroethane	50.0	48.8	98		70 - 130
Trichlorofluoromethane	50.0	48.9	98		70 - 130
Acetone	50.0	84.0	168	*	70 - 130
1,1-Dichloroethene	50.0	50.8	102		70 - 130
Methylene Chloride	50.0	50.1	100		70 - 130
Carbon Disulfide	50.0	43.8	88		70 - 130
Methyl-t-butyl Ether	50.0	45.3	91		70 - 130
trans-1,2-Dichloroethene	50.0	49.9	100		70 - 130
1,1-Dichloroethane	50.0	50.0	100		70 - 130
2-Butanone	50.0	77.1	154	*	70 - 130
2,2-Dichloropropane	50.0	49.3	99		70 - 130
cis-1,2-Dichloroethene	50.0	46.9	94		70 - 130
Chloroform	50.0	52.0	104		70 - 130
1,1-Dichloropropene	50.0	49.1	98		70 - 130
1,2-Dichloroethane	50.0	51.5	103		70 - 130
1,1,1-Trichloroethane	50.0	49.6	99		70 - 130
Carbon Tetrachloride	50.0	50.0	100		70 - 130
Benzene	50.0	49.2	98		70 - 130
Trichloroethene	50.0	47.9	96		70 - 130
1,2-Dichloropropane	50.0	47.3	95		70 - 130
Bromodichloromethane	50.0	45.9	92		70 - 130
Dibromomethane	50.0	49.0	98		70 - 130
cis-1,3-Dichloropropene	50.0	48.7	97		70 - 130
trans-1,3-Dichloropropene	50.0	52.6	105		70 - 130
1,1,2-Trichloroethane	50.0	47.9	96		70 - 130
1,3-Dichloropropane	50.0	47.7	95		70 - 130
Dibromochloromethane	50.0	48.2	96		70 - 130
1,2-Dibromoethane	50.0	48.5	97		70 - 130
Bromoform	50.0	48.4	97		70 - 130
4-Methyl-2-Pentanone	50.0	54.8	110		70 - 130
Toluene	50.0	48.3	97		70 - 130
2-Hexanone	50.0	78.2	156	*	70 - 130
Tetrachloroethene	50.0	48.7	97		70 - 130
Chlorobenzene	50.0	48.7	97		70 - 130
1,1,1,2-Tetrachloroethane	50.0	47.7	95		70 - 130
Ethylbenzene	50.0	48.1	96		70 - 130
p&m-Xylene	100.0	98.8	99		70 - 130
o-Xylene	50.0	49.3	99		70 - 130
Styrene	50.0	48.5	97		70 - 130
Isopropylbenzene	50.0	50.3	101		70 - 130
1,1,2,2-Tetrachloroethane	50.0	48.6	97		70 - 130
1,2,3-Trichloropropane	50.0	47.5	95		70 - 130
n-Propylbenzene	50.0	47.8	96		70 - 130
Bromobenzene	50.0	48.2	96		70 - 130
1,3,5-Trimethylbenzene	50.0	48.8	98		70 - 130
2-Chlorotoluene	50.0	48.4	97		70 - 130
4-Chlorotoluene	50.0	49.1	98		70 - 130
tert-Butylbenzene	50.0	47.8	96		70 - 130
1,2,4-Trimethylbenzene	50.0	47.3	95		70 - 130
sec-Butylbenzene	50.0	47.0	94		70 - 130
p-Isopropyltoluene	50.0	47.2	94		70 - 130
1,3-Dichlorobenzene	50.0	47.9	96		70 - 130
1,4-Dichlorobenzene	50.0	47.9	96		70 - 130
n-Butylbenzene	50.0	45.9	92		70 - 130
1,2-Dichlorobenzene	50.0	48.2	96		70 - 130
1,2-Dibromo-3-chloropropane	50.0	47.3	95		70 - 130
1,2,4-Trichlorobenzene	50.0	44.9	90		70 - 130
Hexachlorobutadiene	50.0	42.7	85		70 - 130
Naphthalene	50.0	46.4	93		70 - 130
1,2,3-Trichlorobenzene	50.0	47.4	95		70 - 130

Table 2.5 Results of the MS/MSD Analysis for Metals in Water
WA # 0-198 Vestal Chlorinated Hydrocarbon Source Assessment/Remedy

Sample No. 51851

Analyte	Sample Result µg/L	MS Spike Added µg/L	MS Result µg/L	MS % Rec	MSD Spike Added µg/L	MSD Result µg/L	MSD % Rec	RPD	Recommended QC Limits % Rec	Recommended QC Limits RPD
Aluminum	U	1110	1150	104	1110	1170	105	2	75-125	20
Antimony	U	111	116	104	111	115	104	1	75-125	20
Arsenic	19.4	55.6	76.7	103	55.6	75.3	101	2	75-125	20
Barium	491	111	596	NC	111	594	NC	0	75-125	20
Beryllium	U	111	113	102	111	113	102	0	75-125	20
Cadmium	U	111	115	104	111	115	104	0	75-125	20
Calcium	94700	1110	95300	NC	1110	95500	NC	0	75-125	20
Chromium	U	111	113	102	111	112	101	1	75-125	20
Cobalt	U	111	112	101	111	112	101	0	75-125	20
Copper	U	111	109	98	111	109	98	0	75-125	20
Iron	8570	1110	9550	NC	1110	9560	NC	0	75-125	20
Lead	U	55.6	56.4	102	55.6	54.8	99	3	75-125	20
Magnesium	15000	1110	16000	NC	1110	16000	NC	0	75-125	20
Manganese	1030	111	1130	NC	111	1130	NC	0	75-125	20
Nickel	U	111	113	102	111	114	103	1	75-125	20
Potassium	2030	1110	3160	102	1110	3170	103	0	75-125	20
Selenium	U	55.6	52.5	95	55.6	54.5	98	4	75-125	20
Silver	U	111	99.1	89	111	98.6	89	1	75-125	20
Sodium	32000	4440	36300	NC	4440	36300	NC	0	75-125	20
Thallium	U	55.6	50.6	91	55.6	52.5	95	4	75-125	20
Vanadium	U	111	110	99	111	110	99	0	75-125	20
Zinc	U	111	118	106	111	118	106	0	75-125	20

Table 2.6 Results of the LCS Analysis for Metals in Water
WA # 0-198 Vestal Chlorinated Hydrocarbon Source Assessment/Remedy

LCS Standard: VHG - 2nd Source std-(073008-1)
Date Analyzed: 07/31/08

Analyte	Conc. Recovered µg/L	Certified Value µg/L	% Rec	Recommended QC Limits % Rec
Aluminum	4080	4000	102	75-125
Antimony	205	200	103	75-125
Arsenic	199	200	100	75-125
Barium	208	200	104	75-125
Beryllium	204	200	102	75-125
Calcium	4010	4000	100	75-125
Cadmium	210	200	105	75-125
Chromium	209	200	105	75-125
Cobalt	206	200	103	75-125
Copper	199	200	100	75-125
Iron	4150	4000	104	75-125
Lead	204	200	102	75-125
Magnesium	4010	4000	100	75-125
Manganese	208	200	104	75-125
Nickel	208	200	104	75-125
Potassium	4270	4000	107	75-125
Selenium	199	200	100	75-125
Silver	189	200	95	75-125
Sodium	3720	4000	93	75-125
Thallium	203	200	102	75-125
Vanadium	204	200	102	75-125
Zinc	212	200	106	75-125

(973) 321-4200
EPA CONTRACT EP-C-04-032

CHAIN OF CUSTODY RECORD

Project Name: Vestal Chlorinated Hydrocarbons
Project Number: 0-198
LM Contact: R. Phone:

0-198 0127
No: 4050 RW
Sheet 01 of 01 (Do not copy)
(for addnl. samples use new form)

0198-DAR-00880

Sample Identification

Analyses Requested: TAL Metals / No Hg

REAC#	Sample No	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	VOCs	Short List Metals			
17357	51844	ERT-2D	GW	7/21/08	3	40ml Vial/4°C	X		JM 7/23/08		
17358	51843	ERT-4I			3		X				
17359	51846	ERT-4D dup			3		X				
17360	51847	ERT-4D			3		X				
17361	51842	ERT-2S			3		X				
17362	51839	ERT-2D dup			3		X				
17363	51848	ERT-2I			3		X				
17364	51850	ERT-3S			1		X				
17365	51838	ERT-3I			3		X				
17366	51849	ERT-3D			6		X				
17367	51840	ERT-1D			3		X				
17368	51841	ERT-1I			6		X				
17369	51845	ERT-1S *			3		X				
17370	51851	ERT-2D			1	1 Liter Poly/4°C		X			

Matrix:

A- Air	PW- Potable Water
AT-Animal Tissue	S- Soil
DL- Drum Liquids	SD- Sediment
DS- Drum Solids	SL- Sludge
GW- Groundwater	SW- Surface Water
O- Oil	TX-TCLP Extract
PR-Product	W- Water
PT-Plant Tissue	X- Other

Special Instructions:

* probably product - mixed oils - Note all of ERT-1 series may be high in VOCs.
Rest of samples may also have high VOC concentrations, particularly 1,1,1-TCA and/or TCE.

Received 2°C JM 7/23/08

SAMPLES TRANSFERRED FROM CHAIN OF CUSTODY #:

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished by	Date	Received by	Date	Time
All analyses	[illegible]	7/23/08	[illegible]	7/23/08	8:30						
All Analyses	[illegible]	7/23/08	[illegible]	7/23/08	13:10						
13/VOC Analysis	[illegible]	7/23/08	[illegible]	7-23-08	14:35						
1/Metals Analysis	[illegible]	7/23/08	[illegible]	7-23-08	14:45						

☆U. S. Government Printing Office 2005: 315-502

CHAIN OF CUSTODY RECORD

(2) 221-4200
A CONTRACT - P-C-04-032

Project Name: Vertex Chromated Hydrocarbons
Project Number: 0-198
LM Contact: R Woodruff Phone: 609-865-9317

No: 4024 02 62 , KW
Sheet ~~01~~ of ~~01~~ (Do not copy)
(for addnl. samples use new form)

0198-DAR-0028

Sample Identification

REACT	Sample No	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	VOCs
7339	51879	SB-117, 20'	S	7/23/08	1	40 glass/4°C	X
7338	51880	SB-111, 19.5'					X
7339	51881	SB-112, 9.5'					X
7340	51882	SB-112, 19.5'					X
7341	51883	SB-112, 14.5'					X
7342	51884	SB-119, 20'					X
7343	51885	SB-116, 9.5'					X
7344	51886	SB-119, 12.5'					X
7345	51887	SB-113, 15'					X
7346	51888	SB-113, 20'					X
7347	51889	SB-111, 14'					X
7348	51890	SB-111, 10'					X
7349	51891	SB-111, 17'*					X
7350	51892	SB-116, 20'					X
7351	51893	SB-117, 7.5'					X
7352	51894	SB-119, 10'					X
7353	51895	SB-119, 6'					X
7354	51896	SB-118, 10'					X
7355	51897	SB-118, 20'					X
Matrix: 17356	51898	SB-116, 11.5'** KW					X

Special Instructions:

Analyses Requested

KW

SAMPLES TRANSFERRED FROM CHAIN OF CUSTODY #:

A- Air
AT-Animal Tissue
DL- Drum Liquids
DS- Drum Solids
GW- Groundwater
O- Oil
PR-Product
PT-Plant Tissue
PW- Potable Water
S- Soil
SD- Sediment
SL- Sludge
SW- Surface Water
TX-TCLP Extract
W- Water
X- Other

* FID ≈ 200 ppm
** FID ≈ 390 ppm

Received 2°C JM 7/23/08

Items/Reason	Relinquished by	Date	Received by	Date	Time
all/Analysis	R Woodruff	7/23/08		7/23/08	1330
724/Analysis		7/23/08		7/23/08	13:10
All/Analysis		7/23/08		7-23-08	14:25

Items/Reason	Relinquished by	Date	Received by	Date	Time

U. S. Government Printing Office 2005: 315-502

)) 321-4200
CONTRACT EP-C-04-032

0198-DAR-08888

CHAIN OF CUSTODY RECORD

Project Name: Vertel Chlorinated Hydrocarbons
Project Number: 0-198
LM Contact: R Woodruff Phone: 609 865-9317

0-198-00128
No: 4024 RW
Sheet 01 of 01 (Do not copy)
(for addnl. samples use new form)

Sample Identification

Analyses Requested

EACH	Sample No	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	VOCs
319	51860	(1) SB-115, 12.5'	S	7/22/08	1	40z glass/4°C	X
320	51861	SB-114, 15'			1		X
320	51862	SB-115, 17'			1		X
321	51863	SB-114, 10'*			1		X
322	51864	SB-114, 20'			1		X
323	51865	SB-117, 10'			1		X
324	51866	SB-117, 12.5'			1		X
325	51867	SB-115, 10'			1		X
326	51868	SB-117, 15'			1		X
327	51869	SB-114, 13'			1		X
328	51870	SB-114, 17.5'			1		X
329	51871	SB-113, 7.7'			1		X
330	51872	SB-116, 15'			1		X
331	51873	SB-113, 10'			1		X
332	51874	SB-116, 7.4'			1		X
333	51875	SB-114, 6'			1		X
334	51876	SB-115, 15'			1		X
335	51877	SB-115, 20'			1		X
336	51878	SB-115, 6.9'			1		X

RW

Matrix:

A- Air
A- Animal Tissue
D- Drum Liquids
D- Drum Solids
G- Groundwater
O- Oil
P- Product
P- Plant Tissue

PW- Potable Water
S- Soil
SD- Sediment
SL- Sludge
SW- Surface Water
TX-TCLP Extract
W- Water
X- Other

Special Instructions:

* FID = 400 ppm
(1) FID = 600 ppm

SAMPLES TRANSFERRED FROM CHAIN OF CUSTODY #:

Received 2°C JM 7/23/08

Items/Reason	Relinquished by	Date	Received by	Date	Time
All analyses	R Woodruff	7/23/08	[illegible]	7/23/08	8 30
44 Archive	[illegible]	7/23/08	[illegible]	7/23/08	13:10
All Analys. 5	[illegible]	7/23/08	[illegible]	7-23-08	14:35

Items/Reason	Relinquished by	Date	Received by	Date	Time

APPENDIX D
OIL FINGERPRINT REPORT
VESTAL CHLORINATED HYDROCARBON SOURCE ASSESSMENT/REMEDY SITE
VESTAL, NEW YORK

Woodruff, Kenneth D

From: Syslo, John E
Sent: Monday, August 18, 2008 4:14 PM
To: Lin, Yi-Hua; Kansal, Vinod C; Woodruff, Kenneth D; johnson.terrence@epa.gov
Cc: Syslo, John E; Soroka, Joseph M
Subject: Vestal Oil Fingerprint Sample Preliminary Results
Attachments: VestalFing.pdf

Case Narrative: Results of GC/MS Oil Fingerprint Analysis
Project: Vestal Chlorinated Hydrocarbons: WA# 0-198
Chain of Custody: 0-198-00129
Samples/matrix: One Ground Water with Product.

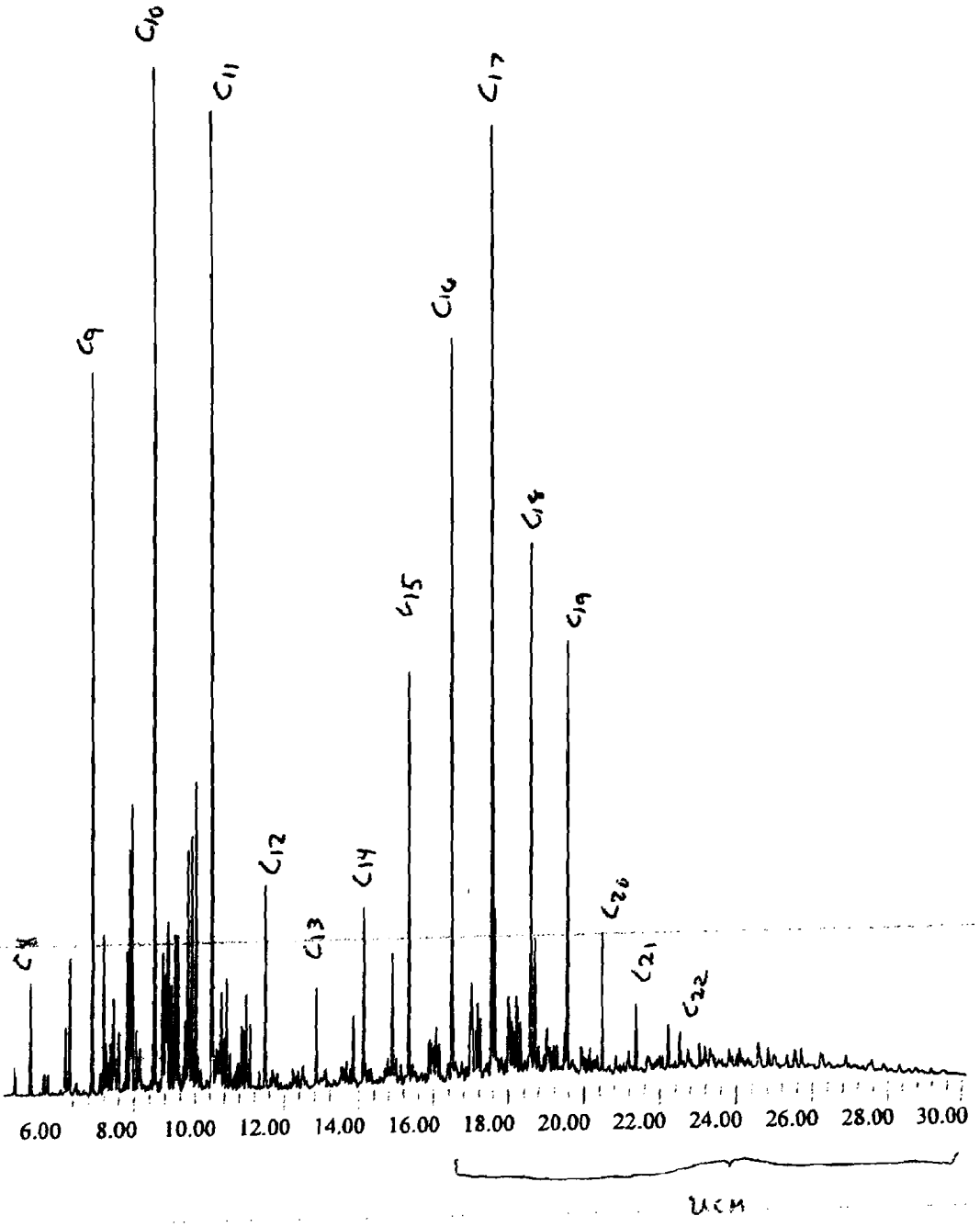
On 07/23/08 the REAC lab received one ground water sample for oil fingerprint analysis using REAC Oil Characteristic Method SOP #1803. The sample was received was a ground water, and the contents contained a pronounced layer of floating oil/product. The sample was extracted using the waste oil dilution method, by taking 0.1 grams of the floating product and diluting it with dichloromethane to 5.0mL. Internal standard was added to a one mL portion and analyzed by gc/ms.

The objective of the fingerprint analysis was to ascertain what type of oil was present in the sample by comparing characteristic "fingerprints" from the sample to known source oils. If the sample does not match any archived source or standard oils, then the gc/ms oil analyst will assess the product based upon different characteristics observed in the gc/ms fingerprints.

Figure 1: TPH Fingerprint

The ion 85 TPH fingerprint for sample B51852 in Figure 1 shows what appears to be two distinct Gaussian distributions of n-saturated hydrocarbons: One that starts with C8 at 6.0 minutes and ending with C13 at 13 minutes with the peak at C10; the other starting with C13 at 13 minutes and ending at C22 at 23 minutes with the peak at C17. This type of distribution is not produced either by distillation or by simple degradation and is most likely the result of two mixed products. One being a light petroleum distillate that elutes between 6 and 14 minutes, and the other a medium weight petroleum distillate that elutes between 13 to 24 minutes. The two products do not match kerosene or diesel fuel. I have not encountered nor identified this product, and can assume that it is probably a mixed lubricating oil designed for some specific application or purpose.

TPH Fingerprint: Ion 85



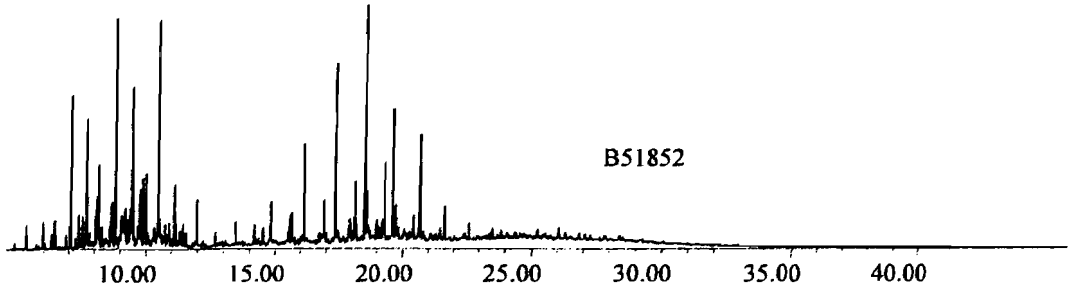
There is also the possibility of a third product which is not visibly apparent using the ion 85 TPH fingerprint. The third oil appears as a small UCM (Unresolved Complex Mixture of hydrocarbons) that starts around 15 minutes and extends to about 45 minutes. In the UCM I was able to observe abundant hopane and sterane fingerprints which are characteristic of both refined and unrefined crude oils. This oil appears to have undergone extensive depletion of the n-saturated hydrocarbons, leaving the UCM, and/or the presence of the other two light products with this oil mask the degree of weathering or type of weathering process.

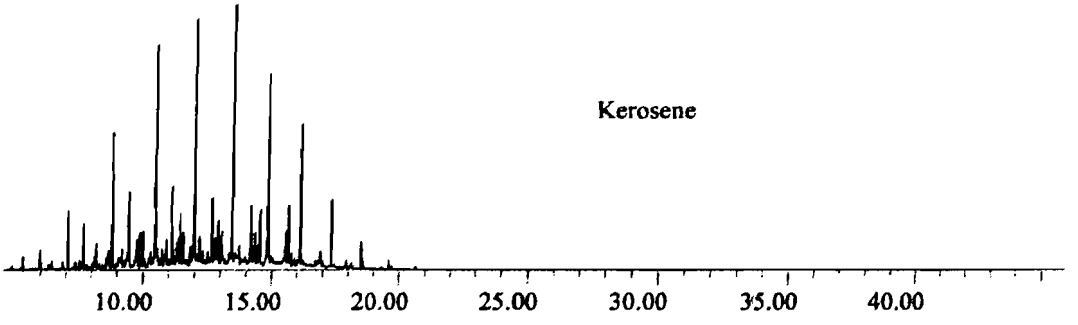
I've attached an Adobe file that show the ion 85 TPH fingerprint with the peaks and retention times labeled, the TPH fingerprint of sample B51852 compared to a kerosene and #2 diesel samples to show the differences, and the hopanes and steranes detected in the oil.

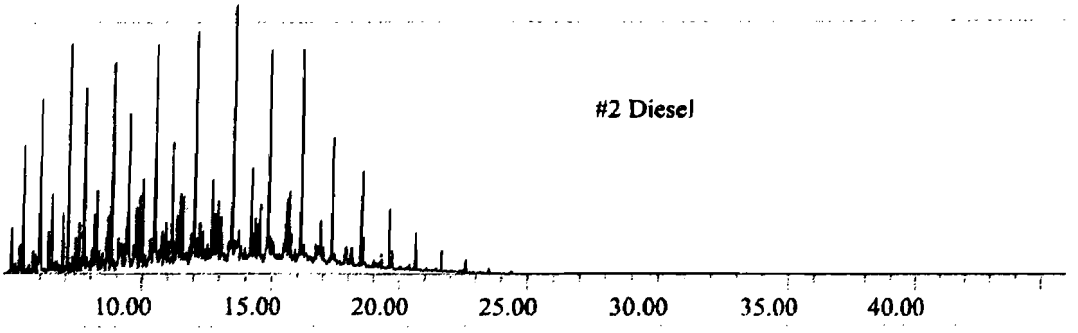
In conclusion, the product floating on the surface of the water appears to be a mixture of two or more products which has not been identified (yet) and is probably some commercially used lubricating oil that utilizes a specific mixture of light petroleum distillates.

J. Syslo

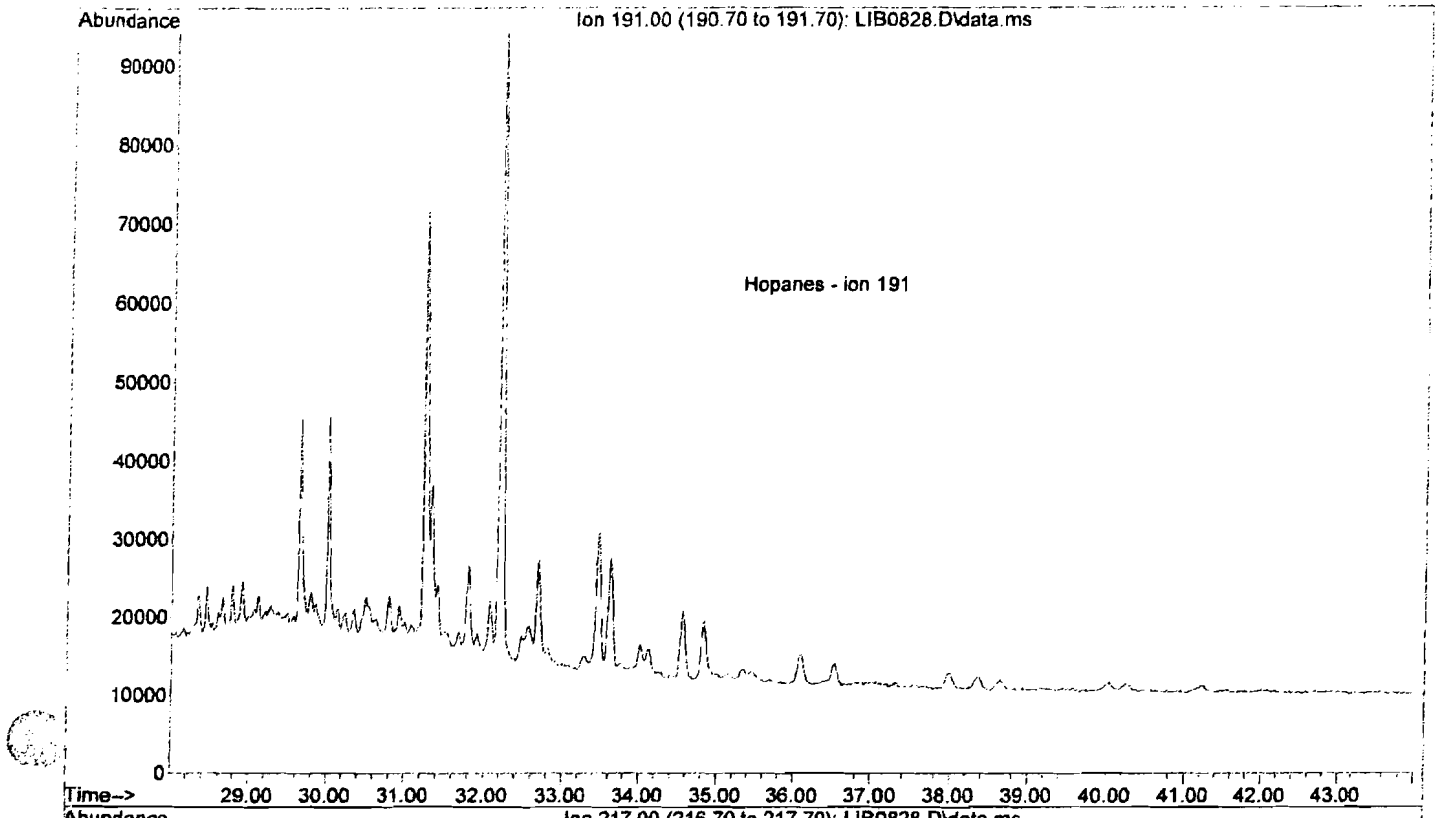
Vestal Sample B51852: TPH Fingerprint

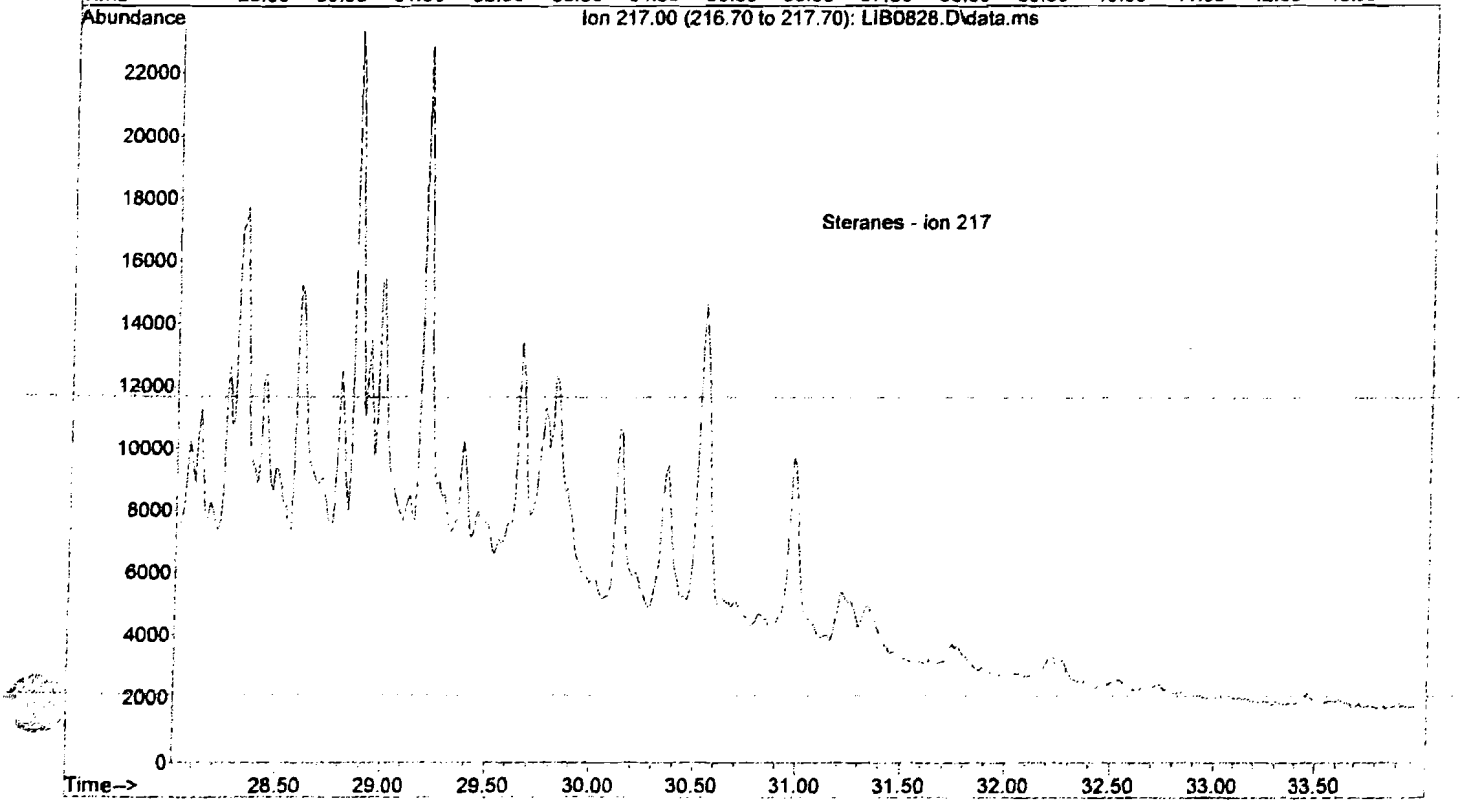






Operator : JS
Acquired : 1 Aug 2008 7:19 pm using AcqMethod OX030508.M
Instrument : Liberty
Sample Name: 51852 product
Misc Info : ERT-1S 0.1g in 5.0mL DCM
Vial Number: 1





REAC, EDISON, NJ
(732) 321-4200
EPA CONTRACT EP-C-04-032

CHAIN OF CUSTODY RECORD

Project Name: Vented Chlorinated Hydrocarbons
Project Number: 0-198
LM Contact: R Woodruff Phone: 609-865-9317

0-198-00129
No: 40827 RW
Sheet 01 of 01 (Do not copy)
(for addnl. samples use new form)

Sample Identification | **Analyses Requested**

REAC#	Sample No	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	Fingerprint
17317	51852	EQT-1S	GW	7/21/08	2	8oz glass/4°C	X

RW

RW

Matrix:

A- Air	PW- Potable Water
AT-Animal Tissue	S- Soil
DL- Drum Liquids	SD- Sediment
DS- Drum Solids	SL- Sludge
GW- Groundwater	SW- Surface Water
O- Oil	TX-TCLP Extract
PR-Product	W- Water
PT-Plant Tissue	X- Other

Special Instructions:

May be two phases - oil and DNAPL + water?

SAMPLES TRANSFERRED FROM CHAIN OF CUSTODY #:

Received 2°C JM 7/23/08

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished by	Date	Received by	Date	Time
all/analysis		7/23/08		7/23/08	9:30						
all/analysis		7/23/08		7/23/08	13:10						
all/analysis		7/23/08		7/23/08	14:45						

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