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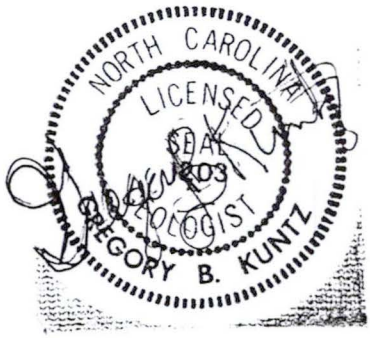
PHASE II GROUNDWATER QUALITY ASSESSMENT
WILMINGTON, NORTH CAROLINA FACILITY

Southern Wood Piedmont Company
Spartanburg, South Carolina



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PHASE II GROUND WATER QUALITY ASSESSMENT
SOUTHERN WOOD PIEDMONT
WILMINGTON, NORTH CAROLINA FACILITY

1.0 BACKGROUND

The Southern Wood Piedmont (SWP) Wilmington, North Carolina facility is located within the city limits in an industrialized area adjacent to the eastern bank of the Cape Fear River (Figure 1). Access to the site may be achieved by traveling north on Highway 17 to Wilmington. Once in Wilmington, Front Street should be taken to the south until Greenfield Street is encountered. Greenfield Street deadends to the west onto the SWP facility.

The SWP facility is bounded to the north by Hess Fuel Tank Farms and to the south by Greenfield Creek. Immediately adjacent to Greenfield Creek, on the opposite bank, is the Pactank, Inc. Tank Farm. Residential areas are located to the east of the facility and the Cape Fear River is located to the west.

The facility is situated on approximately 50.92 acres. The southern 6.7 acres of the site is leased to SWP by the North Carolina Ports Authority and the northern 44.22 acres of the site by the City of Wilmington. Roughly 9.07 acres of the property is covered with water.

1.1 Site History

Wood preserving operations were conducted at the site between 1932 and 1983 by SWP and its predecessors. In 1932 the North State Company leased the property previously operated by Liberty Shipyards. Taylor Colquitt Company acquired the property in 1935 to treat pilings and poles with creosote. In 1964, Taylor Colquitt Company changed names to Taylor Piedmont. International Telephone & Telegraph (ITT) purchased Taylor Piedmont in 1969. Early in 1971, ITT changed the company name to Southern Wood Piedmont. Southern Wood Piedmont operated the wood preserving facility until 1983. At this time wood treating operations ceased and closure operations commenced at the facility.

The wood preservatives used during plant operations included creosote coal tar, pentachlorophenol (PCP), and copper, chromate, and arsenate (CCA). Creosote was used throughout wood preserving operations, whereas, CCA treatment was added by SWP in the early 1970's followed by pentachlorophenol in the late 1970's.

2.0 PREVIOUS SITE ACTIVITIES

2.1 Landfarm Operation

In voluntary cooperation with the North Carolina Department of Human Resources, Solid and Hazardous Waste Management Branch, SWP operated a landfarm to treat soil containing wood preserving constituents. Following the removal of the existing railroad spurs and plant buildings

at the facility, a 5-acre area was bermed for landfarm operations. The landfarm is located on a previous treated pole storage area where low levels of wood preservative residuals are present in the soil.

Soil stained with wood preserving constituents excavated from a covered sludge ditch, track areas, and the wood treating areas were landfarmed between 1984 and 1991. Landfarm treatment included the placement of influenced soil in 2-inch lifts on the landfarm. Each lift was treated by adding irrigation water, 10-10-10 fertilizer, and chicken and turkey manure to promote microbial growth and wood preserving constituent degradation.

2.2 Landfarm Ground Water Monitoring

In September, 1985, Law Environmental Services (LES) installed four ground water monitoring wells around the limits of the landfarm and designated these monitoring wells as MW-6 through MW-9. The soil boring logs from the LES report indicated that the site is underlain primarily by fine to medium sands with a peat located beneath the sand. Each well was installed to an approximate depth of 20 feet below land surface such that the upper portion of the screen bracketed the contact between the fine to medium upper sands and the underlying peat unit.

In order to evaluate the direction of ground water flow within the uppermost aquifer LES collected water table elevations from 8 of the existing monitoring wells and the Cape Fear River at the facility. Based on this data, interpreted by LES, ground water flow around the limits of the landfarm appeared to be northwest, west, and southwest toward the Cape Fear River.

Hydraulic conductivity testing was also conducted by LES on monitoring wells MW-6 through MW-9. Horizontal hydraulic conductivity values ranged from 3×10^{-5} cm/sec to 1×10^{-6} cm/sec, which is typical of silty sediments (the peat at the facility is comparable in hydraulic conductivity to silty sediments). Also, the average ground water flow velocity was evaluated to be 0.10 feet per year for the screened well interval.

Additional information on the ground water monitoring in the landfarm area can be found in the Law Environmental Services report entitled: MONITORING WELL INSTALLATIONS AND HYDROGEOLOGIC REPORT dated November 27, 1985.

2.3 Wood Storage Area Soil Sampling

Between February 26 and March 1, 1991, Geraghty & Miller, Inc. completed 92 soil borings and collected 48 soil samples from treated and non-treated wood storage areas at the facility. Each of the soil borings were completed to a depth of 18-inches below land surface and visually assessed for the degree of staining and odor. Randomly selected soil boring locations were sampled for select semi-volatile organic constituents and the metals, arsenic, chromium, and

copper at depth intervals of 0- to 6-inches and 12- to 18-inches below land surface. A summary of the results of this investigation can be found in the letter report submitted to SWP on June 17, 1992 entitled: WILMINGTON, NORTH CAROLINA SOIL SAMPLING INVESTIGATION.

2.4 Phase I Ground Water Quality Assessment

During February 1992, ETE, Inc. initiated field activities directed at characterizing the site hydrogeology and evaluating potential ground water degradation associated with past wood preserving activities at the site. Activities completed during the Phase I ground water quality assessment included monitoring well installation, visual soil quality, lithologic interpretation, ground water flow/tidal influence evaluation, and ground water sampling.

2.4.1 Monitoring Well Installation

ETE, Inc. installed 13 ground water monitoring wells within the upper aquifer at the facility during the Phase I ground water quality assessment. Five of these monitoring wells (B2, B3, B4, B5, and B6) were installed as temporary monitoring wells to aid in the ground water flow and quality interpretation. The remaining 8 monitoring wells (MW-10 through MW-17) were installed into the upper aquifer beneath the site. Monitoring well MW-14 bracketed the contact between the upper sand and the underlying peat, whereas, the other monitoring wells were installed to bracket the water table. The temporary monitoring wells were installed such that the base of the screen rested on top of the peat.

2.4.2 Visual Soil Quality

During installation of the monitoring wells, a record was maintained of visually stained sediments. Soils encountered in boreholes B2, B3, B5, B6, and MW-10 appear to have no visual wood preserving or diesel fuel staining.

Soil samples from boreholes B4, MW-11, MW-12, MW-13, and MW-14 were noted to have visual wood preserving constituent staining. Borehole B4 had visual creosote staining near the surface of the borehole and again near the bottom of the borehole. Boreholes MW-11 and MW-12 were observed to have visual wood preserving constituent staining from approximately 3 feet below land surface to the upper sand and peat contact. Visual wood preserving constituent staining was present only at the surface of borehole MW-13. Visual wood preserving constituent staining was encountered almost immediately upon initiation of drilling activities at MW-14 and continued to be observed below the upper sand and peat contact to a point approximately 14 feet below land surface.

Visual diesel staining was noted in soils from MW-15, MW-16, and MW-17 located in the southwestern portion of the site. Soils from borehole MW-15 were stained with diesel fuel near the surface of the borehole, but no visual diesel staining was noted beyond 5 feet below land surface. Borehole MW-16 yielded soils that were stained with diesel fuel from the surface to approximately 5 feet below land surface. From this point, no visual diesel staining was observed, only a strong diesel odor. Monitoring well MW-17 encountered diesel stained soils from the surface to the bottom of the borehole.

2.4.3 Lithologic Interpretation

Soil borings completed during the Phase I monitoring well installation activities indicated that the site is generally underlain by a brown-tan, to brown, fine to medium sand from the land surface to approximately 10 to 15 feet below land surface. A dark brown to black peat with varying amounts of wood and root fragments is encountered beneath the sand. Based on a single boring (MW-14), the peat unit appears to be approximately 10 to 11.5 feet thick. Underlying the peat is a brown-tan, medium to coarse sand. The thickness of this underlying sand and the depth to the next confining unit was not evaluated during the Phase I ground water quality assessment.

2.4.4 Ground Water Flow Directions

In order to characterize the ground water flow directions under tidal influences at the site, a 12 hour ground water elevation evaluation was conducted on April 1, 1992 utilizing all existing monitoring wells and 2 staff gauges that were located in the Cape Fear River and a drainage ditch. Water level measurements were taken every 2 hours from each monitoring well and the staff gauges.

The results of the ground water flow evaluation indicated that the tidal cycle did affect the ground water elevations in the monitoring wells located at the site. At times when the tide exceeded the mean sea level (the time interval when the tide is approaching and receding high tide) during the tidal cycle, ground water "stagnation lines" occurred near the bank of the Cape Fear River and the drainage ditch. This zone of stagnation is the result of the water moving from the river and drainage ditch into the aquifer material (recharge) being opposed by the water being discharged from the aquifer material towards the Cape Fear River and the drainage ditch. When the tide level is below mean sea level during the tidal cycle, the ground water flows in a radial pattern from the center of the site and discharges into the Cape Fear River and the drainage ditches. The tidal cycle appears to only slightly influence water levels in the center of the site.

2.4.5 Ground Water Quality

Ground water quality at the facility was evaluated by collecting ground water samples from all of the existing monitoring wells that did not contain free product. The monitoring wells were sampled on March 13, 1992 and were analyzed for site specific semi-volatiles, volatiles, and the metals chromium, copper, arsenic, and lead.

The organic plume appeared to be partially defined in the northern, eastern, and western portions of the site. However, the southern edge of the plume was not defined. The total organic concentrations were highest in temporary monitoring well B4 with a value of 28.222 mg/L (ppm). Monitoring wells MW-13 and MW-14 yielded the next highest concentrations with values of 6.335 mg/L and 6.268 mg/L, respectively. Low concentrations of organic constituents were also detected in monitoring wells MW-15, MW-16, MW-17, and temporary well B6. Free product was detected in monitoring wells MW-11 and MW-12.

Concentrations of metals were detected in all ground water samples before filtration. However, after filtration all metal concentrations were below detection limits, except for temporary well B5. Ground water from this well yielded a concentration of 0.006 mg/L for copper.

Further, more detailed information on the Phase I ground water quality assessment is presented in the ETE, Inc. report entitled: SOUTHERN WOOD PIEDMONT GROUNDWATER QUALITY ASSESSMENT - WILMINGTON NORTH CAROLINA FACILITY dated August 3, 1992.

3.0 PHASE II GROUND WATER QUALITY ASSESSMENT

Data collected during the Phase I ground water quality assessment was utilized by ETE, Inc. in the preparation of recommendations for a Phase II ground water quality assessment. The purpose of the Phase II ground water quality assessment is to further define the hydrogeology and ground water quality with respect to past wood preserving activities at the facility. Phase II ground water quality assessment activities included the abandonment of five temporary monitoring wells, installation of 12 monitoring wells, ground water flow evaluation, ground water sampling, soil sampling, slug testing, and the preparation of an aerial photograph and topographic map depicting the site. For a complete description of the Phase II ground water quality assessment proposed activities, please refer to the letter reported submitted to SWP entitled: RECOMMENDATIONS AND COST PROPOSAL FOR A PHASE II GROUND WATER QUALITY ASSESSMENT - SOUTHERN WOOD PIEDMONT COMPANY-WILMINGTON, NORTH CAROLINA dated August 10, 1992.

Because dense vegetation can decrease the effectiveness of the aerial photograph depicting the site, it was recommended that the flight be completed during the winter months of 1993 when

the deciduous vegetation is at a minimum. Therefore, the results of the aerial photograph and topographic map will not be included in this Phase II ground water quality assessment report. Rather, the results will be submitted as an addendum to this report following completion of the aerial reconnaissance. Presented below is ETE's summary of findings for the Phase II ground water quality assessment.

3.1 Temporary Monitoring Well Abandonment

Five temporary monitoring wells (B2, B3, B4, B5, and B6), installed as part of the Phase I ground water quality assessment activities, were abandoned by overreaming the monitoring wells to below the well depth. Subsequent to overreaming, the temporary monitoring well construction materials were removed from the borehole. The resultant borehole was then abandoned by pressure grouting the borehole with a cement/bentonite (6% bentonite) grout to land surface using the tremie pipe method. Please refer to Attachment A for the well abandonment records.

3.2 Monitoring Well Installation

Based on the data collected during the Phase I ground water quality assessment, it was determined that additional monitoring wells were necessary to properly define the horizontal and vertical extent of dissolved and free product plumes present beneath the facility. Twelve additional monitoring wells were installed between September 28 and October 8, 1992 as part of Phase II ground water quality assessment activities. Please refer to Figure 2 for the locations of the newly installed monitoring wells.

In order to better define the horizontal extent of the plume within the upper aquifer, ETE, Inc. installed 9 monitoring wells (MW-18 through MW-26) to monitor the upper aquifer. During Phase I ground water quality assessment monitoring well installation, heaving and flowing sands were encountered, hampering the collection of representative upper aquifer soil samples and evaluating the depth to the top of the peat. To ensure representative sample collection, the Phase II monitoring wells were installed using the mud rotary drilling technique. The borehole for the upper aquifer monitoring wells was advanced to the top of the peat. Borehole depths ranged from 10 to 18 feet below land surface.

ETE, Inc. also completed 3 monitoring wells (MW-8A, MW-11A, and MW-19A) into the lower aquifer at the site. These deep monitoring wells were used to evaluate the thickness of the peat, the nature of the aquifer materials underlying the peat, the presence of a lower confining layer, the ground water quality within the lower aquifer, and the lower aquifer ground water flow direction(s) and hydraulic gradients. Because the stratigraphy below the peat was unknown prior to the deep monitoring well installations, the first borehole (MW-8A; stratigraphic borehole) was installed in an assumed clean area located to the north of the documented contaminant plume within the upper aquifer.

During the deep monitoring well installations, a 10-inch diameter borehole was advanced into the underlying peat to an approximate depth of 20 feet below land surface using the mud rotary drilling technique. A 6-inch diameter PVC pit casing was then installed into the open borehole and a grout mixture of cement and bentonite was placed by the positive pressure tremie pipe method into the annular space around the pit casing. The grout mixture was allowed to cure a minimum of 24 hours.

Within the pit casing, a 3.875-inch diameter borehole was drilled by the mud rotary method to the next confining unit of at least five feet in thickness. Upon completion, the borehole was grouted with a cement and bentonite mixture by the positive pressure tremie pipe method to the depth of selected screen placement. The screen placement was selected based on visual observations and OVA screening. Because elevated OVA readings and slight odors were encountered within the lower aquifer immediately below the peat in borehole MW-8A, the top of the screen was placed such that the screened interval monitored the uppermost portion of the lower aquifer.

Except for monitoring well MW-18, both the upper aquifer and lower aquifer monitoring wells were constructed using 2-inch diameter, 10-foot sections of flush joint threaded PVC riser with a 5-foot section of continuous slot (0.010 inch) stainless steel well screen. However, MW-19, MW-22, and MW-26 were constructed of stainless steel riser and screen due to the presence of stained soils in these areas. All of the monitoring wells were installed in accordance with SWP specifications. For a complete description of the monitoring well installation protocol, refer to the previously referenced Phase II ground water quality assessment proposal submitted to SWP on August 10, 1992. A well construction summary table and boring logs illustrating the sediments encountered, OVA screening, visual observations, olfactory observations, and monitoring well construction is presented in Attachment B.

One of the proposed monitoring wells (MW-25) was installed within a wetland area. Because of the monitoring well location, it was necessary to contact the appropriate regulatory agencies including: the U.S. Army Corps of Engineers, the Division of Coastal Management of the North Carolina Department of Environmental Health and Natural Resources (NCDEHNR) and the Water Quality Planning Division of the North Carolina Division of Environmental Management of NCDEHNR.

Since the monitoring well installation did not require building of roads and structures that may have ponded or drained the wetland area, no formal permits from the regulatory agencies were required. However, notification to the respective regulatory agencies was required. Please refer to Attachment C for a copy of the letter from each regulatory agency granting authorization to install the monitoring well within the wetland area. The letter sent to the regulatory agencies stated that two monitoring wells were to be installed within the wetland area. Following site reconnaissance, it was determined that only one of the proposed monitoring wells was located

within the wetland area. In addition, because the monitoring well location could not be reached using a drilling rig, MW-25 was installed by the hand auger method utilizing the natural formation materials as a filter media.

3.3 Regional and Site Geologic Conditions

3.3.1 Regional Geology

The SWP Wilmington, North Carolina facility is situated on relatively flat-lying Cretaceous and younger sediments of the Coastal Plain physiographic province that extends from the "Fall Line" to the continental margin (Soller and Mills, 1991). Area lithology consists of sands indicative of Post-Miocene surficial deposits overlying sediments of the Upper Cretaceous Peedee Formation (Berry, 1949).

The surficial soils in the site area typically consist of 5 to 60 feet of fine sands. The sands are tan to white in well-drained upland areas, while they are brown to black and contain several feet of organics in low lying or poorly-drained areas. The soils have been eroded and redeposited many times, resulting in buried stream channels, swamps and marsh areas, often containing soft organic silts, clays, and peat (Berry, 1949).

Beneath the surficial soil are sediments of the Peedee Formation that typically range from 650 to 700 feet in thickness. The Peedee soils generally consist of dense to very dense sand with zones of cemented sands and impure limestones. The sands have a characteristic salt and pepper appearance and the Peedee Formation is considered a major aquifer in this area (Blevins and Bradbourne, 1985).

3.3.2 Site Geology

The site is generally underlain by a very loose to loose, brown, fine to medium sand with a trace of coarse sand and small pebbles to a depth of 7 to 16 feet below land surface (Photograph A). This unit, for the purpose of this report, will be termed the upper sand. Encountered in every boring beneath the upper sand is a 13 to 15 feet thick, very loose, dark brown to black clayey peat to peaty clay with varying amounts of wood and root fragments (Photograph B). The maximum depth below land surface in which the peat was observed was 27.5 feet in monitoring well MW-11A. This unit will be termed the peat. The contact between the upper sand and the underlying peat is sharp (Photograph C). Underlying the peat is a 14 to 18 feet thick, very loose to loose, light brown to brown, medium to coarse sand (Photograph D). This unit has a sharp contact with the overlying peat and was observed to occur to a maximum depth of 44 feet below land surface at monitoring well MW-11A. For this report this lower sandy unit will be termed the lower sand. Present in the 3 deep monitoring well borings beneath the lower sand is a 2.5 to 4 feet thick, firm, tight, olive gray silty clay with 5 to 10% phosphate and glauconite grains

(Photograph E). The contact between the lower sand and the top of the clay is also sharp (Photograph F). Beneath the clay is a very dense, light gray sandy shell mold limestone and sand with alternating cemented shell molds and friable silt to large pebble sand laminae (Photograph G). The thickness of this limestone unit is currently unknown but, based on geologic literature, is estimated to be on the order of 650 to 700 feet in thickness. Please refer to the fence diagram portrayed as Figure 3 that graphically shows the geologic units encountered beneath the site.

Dr. Victor A. Zullo of the University of North Carolina Geology Department located in Wilmington, North Carolina was contacted on November 9, 1992, to discuss the most likely depositional and age history of the units encountered beneath the SWP facility. In order of decreasing age (decreasing depth), the limestone unit encountered may be the top portion of the middle to upper Peedee Formation (65 millon years before present) and has been named the Scotts Hill Member. These sandy limestones are shelfal deposits and contain a large fauna that is usually dominated by pelecypods. In these limestones, the aragonitic shelled mollusc have either been replaced by calcite or, when dissolved, occur as external molds. The locally occurring olive gray clay that caps the limestone at the SWP site is marine in origin and is also most likely part of the upper Peedee Formation (Sohl and Owens, 1991). The Eocene Castle Hayne Limestone is commonly present on top of the Peedee Formation in the North Carolina coastal plain, however in the Wilmington vicinity of the Cape Fear River, the Castle Hayne Formation is missing (Harris and Zullo, 1991). The lower sand at the site is most likely a Pleistocene (10,000 years before present) fluvial deposit occurring as a point bar, cut-off meander or an old oxbow lake sequence. The peat at the site probably occurred as the result of filling an oxbow lake with marsh and swamp type sediments. As a result, the peat at the SWP facility is probably regionally discontinuous in its lateral extent, even though it appears to be continuous beneath the entire SWP facility (Zullo, verbal communication, 1992). The upper sand appears to have been deposited as aeolian sand dunes during the Holocene (Soller and Mills, 1991).

3.4 Site Hydrogeology

3.4.1 Aquifers and Confining Units

Based on the borehole data collected to date, it appears that 3 aquifers and 2 confining units have been encountered beneath the SWP facility. The upper sand (upper aquifer) beneath the SWP facility is under water table conditions and should be termed an unconfined "water table" aquifer. This aquifer is not likely to be considered a major source for ground water users except for minor local uses. The upper aquifer at the site appears to be bounded on all sides by ground water discharge boundaries as illustrated by the upper aquifer water table flow map to be discussed later in this section. The ground water discharge boundaries include: the Cape Fear River to the west, the drainage ditches located along the north and east property boundaries, and

Greenfield Creek along the southern property boundary at the facility. Ground water within the upper aquifer migrating from the center of the SWP facility should discharge into these boundaries rather than migrating beyond their locations.

The peat is located beneath the upper aquifer. This unit consists of silt and clay with varying amounts of wood and root fragments. The nature of the materials making up the peat suggest that this unit should be termed a leaky confining unit that separates the upper and lower aquifers at the facility. Visual observation of the peat indicates that it is water saturated throughout its entire thickness, thereby demonstrating a hydraulic connection between the upper and lower aquifers.

The lower aquifer at the facility consists of a permeable sand material that should, at the SWP facility, be termed a semi-confined aquifer. This lower aquifer is also probably considered a minor source of ground water in this area, except, for minor local uses. Evidence that the lower aquifer is semi-confined relative to the upper aquifer is elucidated by the fact that: the peat is completely water saturated, the difference in direction of ground water flow within the lower aquifer relative to the upper aquifer, and by the differences in the elevation head (vertical hydraulic gradient) of the ground water in the upper and lower aquifers at the facility. The ground water flow direction within the lower aquifer appears to be controlled by the Cape Fear River at the facility, in that, the ground water within the lower aquifer is migrating towards and discharging into the Cape Fear River. Conversations with the local Corps of Engineers indicated that the Cape Fear River is dredged to the top of the limestone in the vicinity of Wilmington. This dredging of the river to the top of the limestone indicates that the lower aquifer is in complete hydraulic interconnection with the Cape Fear River. The vertical hydraulic gradients, as will be discussed later in this section, indicate that the upper and lower aquifers are to a small degree hydraulically connected.

Beneath the lower aquifer at the facility is an olive gray silty clay of marine origin. This clay is only 2.5 to 4 feet thick, but on visual observation, appeared to be tight and dry. Other than the visual observation, no hydraulic parameters were collected during the Phase II ground water quality assessment activities that would give evidence that this unit is not a confining layer at the facility.

The third and lowermost aquifer encountered beneath the SWP facility is the Peedee Limestone Formation. The unit is a confined aquifer and is a major source of ground water in this area. No direct hydraulic measurements were collected from this unit during the Phase II ground water quality assessment. However, the regional ground water flow directions are most probably towards the Atlantic Ocean with local deviation in flow direction towards the Cape Fear River, especially in the locations in which this aquifer is hydraulically connected to the Cape Fear River through dredging operations.

3.4.2 Ground Water Flow Directions

ETE, Inc. collected ground water levels from all the monitoring wells and staff gauges at the facility on October 15, 1992. All of the water level measurements were collected within a 1 hour period when the tide was approaching low tide conditions. By collecting the water levels at low tide, the resultant ground water flow map will illustrate the time interval when the ground water is discharging to the Cape Fear River and the drainage ditches at the facility. The time (high tide) when ground water stagnation lines develop in the upper aquifer at the facility will not be portrayed by these ground water level measurements.

The collected water level measurements were used to develop a water table surface map for the upper aquifer present beneath the facility (Figure 4). The data used to construct the water table map was collected by measuring the depth to water from the top of casing in all monitoring wells screened in the upper aquifer and the staff gauges that exist at the site. The top of casing was surveyed by a registered land surveyor to within 0.01 feet mean sea level (MSL). The depth to water in each well is subtracted from the top of casing elevation at each respective well to yield the elevation of the water table at that location.

As illustrated by the upper aquifer water table map, a water table high exists beneath the center of the site. From this high point, ground water appears to flow to the east and north towards the drainage ditches, to the south towards Greenfield Creek, and to the west towards the Cape Fear River. Local curvatures in the ground water isoelevation lines of the upper aquifer attest to the control exerted on the ground water flow within the upper aquifer by the discharge boundaries including the drainage ditches, creeks, and the Cape Fear River.

An average horizontal hydraulic gradient of the upper aquifer, based on the water table flow map isoelevation lines is 0.0015 ft/ft. A horizontal hydraulic gradient for the leaky confining peat can also be measured by using monitoring wells MW-6, MW-7, MW-8, and MW-9 because they are screen almost completely within the peat. The horizontal hydraulic gradient for the peat was evaluated to be 0.0013 ft/ft.

A potentiometric surface map was also constructed for the lower aquifer beneath the facility (Figure 5) using the same principals as discussed for the upper aquifer. Because only three monitoring points exist within the lower aquifer at the facility, the method of triangulation as described by Heath (1987) was used to evaluate the direction of ground water flow and the horizontal hydraulic gradient within the lower aquifer. The ground water flow direction within the lower aquifer appears to be to the northwest with a horizontal hydraulic gradient of 0.0002 ft/ft.

In addition, the vertical hydraulic gradients between the upper and lower aquifers were evaluated by comparing the ground water elevations in the three well clusters at the facility. The three

wells clusters are MW-8 and MW-8A, MW-11 and MW-11A, and MW-19 and MW-19A (Figure 6). The vertical hydraulic gradient can be calculated by dividing the difference in elevation head in each well in the well cluster by the difference in the mid-point elevation of the well screens. Using this evaluation technique, it appears that a upward vertical hydraulic gradient of 0.021 ft/ft exists at the MW-8 well cluster and downward vertical hydraulic gradients of 0.012 ft/ft and 0.002 ft/ft exist at MW-11 and MW-19 well clusters, respectively.

Using generally accepted principals in the study of hydrogeology, downward vertical hydraulic gradients exist in areas of recharge to the ground water system and upward vertical hydraulic gradients exist in areas of discharge from the ground water system. Evidence that the upper and lower aquifers at the SWP facility tend to behave as a locally isolated ground water system controlled by the drainage ditches, creeks and the Cape Fear River is illustrated by the vertical hydraulic gradients. In the area of recharge, as illustrated by the concentric water table high on the upper aquifer water table flow map, the vertical hydraulic gradient at well clusters MW-11 and MW-19 is downward (recharge). In the area of discharge to the Cape Fear River, the vertical hydraulic gradient is upward at monitoring well cluster MW-8 (discharge). Therefore, the downward vertical hydraulic gradients at the SWP facility suggest that recharge by precipitation enters the subsurface near the center of the site and migrates as ground water to the area of discharge and upward vertical hydraulic gradients near the Cape Fear River and the drainage ditches.

3.4.3 Hydraulic Conductivity and Seepage Velocity

ETE, Inc. completed a total of 15 in-situ recovery (slug) tests on selected monitoring wells within the upper aquifer, peat, and lower aquifer at the facility. The purpose of these recovery tests is to evaluate the hydraulic conductivity and seepage velocity of the aquifers underlying the site. Prior to performing the recovery test, the static water level in the well to be tested was measured and recorded. The well was then drawn down as much as possible by use of a centrifugal pump. At frequent, predetermined time intervals, the water level in the well and the respective elapsed time from the beginning of the test was measured and recorded. This procedure was continued until the water level recovered to approximately 90% of the original static water level.

Eleven monitoring wells were recovery tested to evaluate the average horizontal hydraulic conductivity across the screened interval within the upper aquifer at the facility. In order to arrive at the hydraulic conductivity, the elapsed time since initiation of the recovery test was plotted on semi-log paper versus the observed drawdown. This data was then utilized to solve for the hydraulic conductivity in an unconfined aquifer using the method demonstrated by Bouwer and Rice (1976). The plotting of the semi-log graphs and the hydraulic conductivity calculations were performed utilizing the aquifer test design and analysis computer software package AQTESOLV™ (1991). The horizontal hydraulic conductivity within the upper aquifer

ranged from 4.71 x 10^{-6} ft/sec in MW-17 to 1.20 x 10^{-5} ft/sec in MW-22. The average horizontal hydraulic conductivity measured in the upper aquifer is 1.66 x 10^{-5} ft/sec which is typical for clean fine grained sands (Heath, 1987).

Utilizing the ground water flow velocity equation known as Darcy's Law and adding the porosity term to the equation to arrive at the seepage velocity as described by Heath (1987), it was determined that the seepage velocity within the upper aquifer ranged from 0.89 ft/year in MW-17 to 4.60 ft/year for MW-19. The average seepage velocity for the tested wells within the upper aquifer is 2.64 ft/year. Please refer to Attachment D for a table summarizing the results of the recovery tests, the calculations and solution methodology of the Bouwer and Rice method, and for the semi-log graphs comparing drawdown versus time.

A recovery test was also conducted on MW-8 which is screened almost entirely within the peat. This test was completed and solved using the same methodology as the upper unconfined aquifer presented above. The calculated horizontal hydraulic conductivity within the peat is 1.05 x 10^{-6} ft/sec with a seepage velocity of 0.08 ft/year. This hydraulic conductivity is typical of silty sediments (Heath, 1987).

The three lower aquifer monitoring wells were also tested for recovery utilizing the same field procedures as those for the upper aquifer. However, because the lower aquifer is confined, the hydraulic conductivity value was determined using the Cooper, et. al. (1967) method. The Cooper et. al. method involves plotting the ratio of the initial head in the aquifer with the observed drawdown on a semi-log plot versus time since initiation of the recovery test. The horizontal hydraulic conductivity across the screened interval for the lower aquifer ranged between 8.48 x 10^{-5} ft/sec for MW-8A to 2.15 x 10^{-4} ft/sec for MW-19A. The average horizontal hydraulic conductivity for the lower aquifer is 1.33 x 10^{-4} ft/sec which is typical of clean medium sand (Heath, 1987).

The seepage velocity of the lower aquifer ranged between 1.78 ft/year to 4.52 ft/year with an average seepage velocity of 2.79 ft/year. Please refer to Attachment D for a table summarizing the results of the recovery tests, the calculations, assumptions and solution methodology of the Cooper, et. al. method, and for the semi-log graphs comparing head ratio versus time.

All water exiting the wells during slug testing was containerized and disposed of properly.

3.5 Soil Quality

During installation of the monitoring wells, close attention was given to the condition of the soils encountered. The soil observations were made by collecting split-spoon soil samples continuously from land surface to the bottom of the borehole in the upper aquifer monitoring wells. The soils in the lower aquifer monitoring well boreholes were observed by collecting

split-spoon soil samples continuously from land surface to the bottom of the peat, followed by five foot intervals below the peat to the bottom of the borehole. Soil observations included visual staining of the soil, odor, total organic vapor screening (OVA), and laboratory soil sampling.

3.5.1 Visual and Olfactory Soil Quality

Due to the coloring and odoriferous properties of wood preserving constituents, field experience on similar sites has shown that visual staining and strong odor are most often observed in source areas and in areas where free product has migrated through the subsurface. Furthermore, noticeable wood preserving constituent odors that are present, but are not associated with visual staining of the sediments, most commonly occur in areas where dissolved concentrations of wood preserving constituents are present in the soil and ground water and usually represent the mid-reaches of the plume. Field experience has also shown that the leading edges of the plumes, while still having laboratory detectable concentrations of wood preserving constituents may not contain odors. In light of past field experiences, important deductions can be made based on the visual and olfactory observations during the advancement of the borehole.

A review of past site activities immediately lead to the location of potential areas in which contaminants may have entered the subsurface. The potential areas in which contaminants may have entered the subsurface include: the creosote treatment area, CCA treatment area, old covered sludge ditch, large storage tank area, and the diesel storage tank area. Based solely on visual and olfactory observations from soil borings completed during the Phase I and II ground water quality assessment, the potential contaminant entry areas can be grouped into three main source areas (Figure 7). The first source area will be called the wood treatment source area, which includes the creosote treatment area, CCA treatment area and the old covered sludge ditch. The contaminants from these areas appear to have coalesced and are following the same migration pathways in the subsurface. The second source area is the large storage tank area; contaminants from this area are separated from the other areas and appear to be following a different migration pathway. The third source area is the diesel storage tank areas. This source can be separated by its location on the site, but mostly due to the physical behavior of the contaminants in the subsurface. The diesel contaminants are less dense than water and tend to float when present as free product. In addition, the dissolved phase associated with diesel does not tend to display a large degree of vertical movement into the subsurface. Wood preserving constituents are more dense than water and are therefore more likely to more downward into the subsurface.

For ease in discussion, the visual and olfactory observations will be addressed simultaneously with the assumption that if visual staining is present, strong odors are also present. In addition, as in the previous paragraphs, the observations will be addressed by source areas and will include observations made during the Phase I and Phase II ground water quality assessments.

The wood treatment source area is demarked by monitoring wells MW-11, MW-12 and MW-14 (Figures 8 and 9). Visual staining of the soils was observed in these monitoring wells from 3 feet below land surface to the top of the peat (13 feet below land surface) at MW-11 and to 8 feet below the top of the peat in MW-14 (16 feet below land surface). Migration of free product from the source area is observed in monitoring wells MW-12, MW-19, and MW-26. In these monitoring wells, the visual staining is observed to first occur at greater depths in the borehole suggesting that the contaminants were not introduced into the subsurface at these locations, but instead migrated to these areas. Visual staining is observed in MW-12 at a depth of 8 feet below land surface and is present to the top of the peat (14.5 feet below land surface). At MW-26, visual staining first occurs at a depth of 10 feet below land surface and is present to a depth of 1 foot below the top of the peat (17 feet below land surface). At MW-19, visual staining is present only within a 6-inch layer on top of the peat (11.5 to 12 feet below land surface). As the distance from the source area is increased, no visual staining was observed but faint odors were detected in MW-20, MW-23, and MW-24. Odors were present near land surface at MW-20 and MW-23 suggesting that these odors are from surface activities, such as drippage from treated wood storage, not from the migration of contaminants within the subsurface. Monitoring wells MW-20 and MW-24 detected odors towards the bottom of the borehole near the top of the peat. This location of the odor suggests that they are associated with plume migration within the subsurface.

The second source area is the large storage tank area. In this area creosote and pentachlorophenol were stored for use in the wood preserving operations. Indications that this area is a source are present in monitoring wells MW-13 and MW-22. Monitoring well MW-13 had visually stained soils from 3 feet below land surface to a depth of 8 feet below land surface. The soils were stained in monitoring well MW-22 from 3 feet below land surface to a depth of 9 feet below land surface. In both of these monitoring wells the visual staining did not extend to the top of the peat. However, strong odors are present at these locations to the top of the peat. Based on visual observations, it appears that the contaminants are moving from MW-13 towards MW-22 and the Cape Fear River.

The diesel tank source areas are indicated by monitoring wells MW-15, MW-16, and MW-17. At MW-16 and MW-17, diesel stained soils were observed from the surface to a depth of 5 feet below land surface with a diesel odor occurring to the top of the peat. In the vicinity of MW-15, diesel stained soils were observed to a depth of 5 feet below land surface. Diesel odors were also observed near the surface in monitoring well MW-22 suggesting lateral movement of the dissolved diesel plume within the subsurface. During the Phase I ground water quality assessment, MW-17 was described as having diesel stained soils near the top of the borehole and again at the bottom of the borehole with no staining in the mid-portion of the borehole. Based on fluid dynamics this situation is unlikely to occur. Therefore, it is not certain at this time that diesel stained soils exist to the top of the peat at MW-17.

A very slight diesel odor was also observed within the sediments during the advancement of monitoring well MW-18. This odor is most likely not associated with on-site activities and may be contributed to an off-site source.

Within the lower aquifer at the site, a very slight odor was observed in monitoring wells MW-8A and MW-11A. In both of the monitoring wells, the odor was observed near the top of the aquifer and was not present at the bottom of the aquifer. Based on the ground water flow direction within the lower aquifer and an absence of an odor in MW-19A, it is likely that the dissolved contaminants are entering the lower aquifer near MW-11A and flowing with the ground water towards MW-8A.

3.5.2 Total Organic Vapor Analysis

Total organic vapor measurements were also collected during the advancement of the boreholes at the site using a Photovac organic vapor analyzer (OVA). OVA's are designed to provide the field hydrogeologist with real-time measurements to aid in making decisions in the field. As the name applies, the measurement is the total organic vapors present in the soil. Situations do arise when naturally occurring organic vapors may be present in soils, such as, methane from the decay of plants, that can result in false-positive detections. Furthermore, the constituents of interest need to be readily volatile to be detected by the OVA. Wood preserving constituents as a whole are not volatile, however, wood preserving constituents including, naphthalene, benzene, toluene, xylene, and ethyl benzene are readily detectable by the OVA. Other factors can influence the measurements when using an OVA such as, temperature, humidity, wind, and the length of time that the sample as been in the sealed container. With these considerations, it is obvious that the OVA readings obtained in the field should be utilized as a screening mechanism and in the evaluation into which sediment intervals are likely to contain contaminants.

The OVA measurements at the site were collected by taking a soil sample from each split-spoon and placing it in a zip lock plastic bag. Upon temperature equalization, the soil samples were screened with the OVA. The OVA measurement collected from the soil samples is provided on the boring logs presented in Attachment B. In short, the OVA readings correspond with and reinforce the visual and olfactory observations previously discussed and also correspond with the laboratory results to be discussed in the following sections.

3.5.3 Soil Sampling

On October 12 and 13, 1992, ETE Inc. collected 9 soil samples in the vicinity of the on-site tributary creek and along the north bank of Greenfield Creek. These soil samples were sent to the laboratory for analysis, but, were held past the approved holding time prior to analysis. Therefore, the original soil sample locations were resampled on December 9 and 14, 1992

(Figure 10). Soil samples were collected along the bank of the on-site drainage ditch (SS-4 through SS-7) and along the bank of the tributary creek to Greenfield Creek near the intersection of Front and Greenfield streets (SS-3) and along the east bank adjacent to the Optimist Park (SS-2). In addition, soil samples were collected along the north bank of Greenfield Creek (SS-1) upstream from the on-site tributary creek and downstream from the on-site tributary creek adjacent to the mouth of the Cape Fear River (SS-9). During the resampling event, two additional soil samples (SS-10 and SS-11) were collected along the on-site north bank of Greenfield Creek in location between SS-1 and SS-9. The soil samples were collected to augment the previous soil samples collected on-site by Geraghty & Miller in 1991.

The soil samples were collected utilizing a clean stainless steel hand auger advanced into the sediment along the bank of the drainage ditch and tidal creeks. The sample was removed from the hand auger with a clean stainless steel spoon and placed in clean sample containers provided by the laboratory. The hand auger borings were conducted at low tide so that the borings could be completed within the creekbed. Each boring was advanced to an approximate depth of 2 feet below land surface. The deepest sample retrieved from each borehole was sent to Heritage Laboratories, Inc. for analysis of the Wilmington site-specific constituents (Attachment E).

The hand auger was decontaminated between each soil sample by scrubbing the auger bucket and auger stem with a LIQUI-NOX™ and distilled water mixture followed by rinsing with distilled water. All soil excavated during completion of the soil borings was containerized in an approved roll-off container and disposed of properly. The horizontal location of the borehole was determined by a land surveyor.

The sediments encountered in each borehole ranged from a dark brown to black silt/peat to gray and tan coarse sand with silt and peat. Visual and olfactory observations that were noted included an organic decay odor at SS-2, visually stained sediments at SS-5, SS-6, and SS-7 and the presence of a diesel odor and sheen on the ground water that percolated into the open borehole at SS-9. Please refer to the soil sample collection summary sheets located in Attachment E of this report.

The soil samples were analyzed by the laboratory for the metals: arsenic, chromium, copper, and lead (Attachment E). These constituents were selected to evaluate potential soil contamination from the CCA wood treatment facility and from the storage of diesel (lead) at the site. Arsenic concentrations ranged between ND (below laboratory detection) and 5.2 mg/kg. The highest levels of arsenic detected were present at off-site locations SS-1 at 3.5 mg/kg, SS-2 at 5.2 mg/kg, and on-site locations SS-4 at 3.6 mg/kg, SS-5 at 1.5 mg/kg, and SS-7 at 2.3 mg/kg. Concentrations of chromium ranged between 1.3 mg/kg and 14.0 mg/kg. Once again, the higher detected levels of chromium occurred at off-site locations SS-1 at 5.5 mg/kg, SS-2 at 14.0 mg/kg and at on-site locations SS-4 at 11.0 mg/kg and SS-7 at 9.2 mg/kg. The same pattern was also observed in the laboratory results for copper and lead. The highest detected

copper and lead concentrations, respectively, occurred at off-site locations SS-1 at 6.1 and 14.0 mg/kg, SS-2 at 46.0 and 290.0 mg/kg, SS-3 at 8.0 and 61.0 mg/kg, and at on-site location SS-4 at 14.0 and 25.0 mg/kg. The two highest lead concentrations, 290 and 61 mg/kg occurred only at off-site locations. The highest lead concentration on-site occurred at location SS-4 at 25.0 mg/kg.

The CCA and diesel source locations at the site are located roughly 400 to 600 feet northwest of soil sample locations SS-5 and SS-6. In all cases, the lowest metal concentrations on-site occurred at soil sample locations SS-5 and SS-6, which are the closest soil sample locations to the source area. Because the highest laboratory detected metal concentrations occurred off-site and at on-site locations that are a considerable distance from the on-site sources, these laboratory detected values most probably represent naturally occurring background levels for the site vicinity and not levels that could be contributed to on-site activities. The on-site soil sampling by Geraghty & Miller in 1991 also suggested that the on-site metal concentrations most probably represented background levels for metals.

The collected soil samples were also analyzed by Heritage Laboratories, Inc. for semi-volatile and volatile organics. Please refer to the site-specific soil sample list located in Attachment E for a listing of the semi-volatile and volatile constituents that were analyzed by the laboratory. From the entire list of constituents analyzed, only a fraction of the constituents were detected. The semi-volatile organics that were detected in the soil include: acenaphthene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, carbazole, chrysene, dibenz(a,h)anthracene, fluoranthene, indeno(1,2,3-Cd)pyrene, naphthalene, and phenanthrene (13 out of 23 constituents were detected). The volatile organics that were detected in the soil include: dichloromethane, ethyl benzene, M/P xylene, O-xylene, and toluene (5 out 30 constituents were detected). Dichloromethane was utilized by the laboratory as the solvent in the extraction process for the soils. Therefore, it is suspect that the dichloromethane was introduced by the laboratory and is not present at the site.

For simplification in the discussion of the detected concentration levels for each soil sample, the detected organics at each soil sample location were added together to arrive at a total organic concentration value. This value will be used in the following discussion. Please refer to the soil sample summary table presented in Attachment E for a summary of the total organic concentration value detected at each soil sample location. The lowest total organic concentrations occurred at locations SS-2, SS-3, SS-8 and SS-11 with concentrations of 3.25, ND, 1.0, and ND mg/kg, respectively. Moderate values occurred at soil sample locations SS-1 at 9.936 mg/kg and SS-4 at 17.691 mg/kg. High detected concentrations of total organics occurred at SS-5 at 167.0724 mg/kg, SS-6 at 150.4248, SS-7 at 203.259 mg/kg, and SS-9 at 357.3546 mg/kg. The highest concentration of total organics occurred at SS-10 with a concentration of 6110.008 mg/kg. The total organic concentration at SS-10 is suspect for two reasons. First, the visual and olfactory observations made during the collection of the sample

did not indicate the presence of organics and second, the analytical result is an order of magnitude higher than soil samples in which visual and olfactory observations were apparent.

As demonstrated by the list of detected constituents, wood-preserving activities may have contributed to the observed organics in the soil. The on-site source of wood-preserving constituents is located roughly 400 feet northwest of soil sample location SS-5 and SS-6. As discussed above, high concentrations of detected organics occurred at these locations. Further from the source, the concentrations of organic wood-preserving constituents have decreased considerably at SS-1, SS-2, SS-3, SS-4, and SS-8. The soil samples along Greenfield creek (SS-1, SS-9, and SS-10) also had detectable organic concentration levels, both upstream and downstream from the on-site tributary creek. The detection along Greenfield Creek may suggest that additional off-site sources of these compounds are present.

3.6 Ground Water Quality

On October 13 through 16, 1992, ETE Inc. collected 21 ground water samples from the existing monitoring wells at the facility. Ground water samples were not collected from monitoring wells MW-11, MW-12, and MW-26 because visual free product was observed in these monitoring wells.

The representative ground water samples were collected from all monitoring wells utilizing a clean dedicated bailer to evacuate three well volumes of ground water from the well. The pH, conductivity, and temperature of the ground water were recorded and the ground water sample placed into respective sterilized ground water sample containers for each well. The containers were labeled according to owner, site name, well number, date, time, pH, conductivity, temperature, and type of analysis to be performed. The collected samples were kept cool by placing the samples immediately into a cooler chilled to 4°C with ice. The samples were then shipped Federal Express overnight to EMS Heritage Laboratories, Inc. for analysis. The ground water samples were analyzed for the Wilmington site-specific constituent list (Attachment F) as maintained by SWP. Standard ground water sampling protocol was followed as documented in the report entitled: SAMPLING AND ANALYSIS PLAN FOR GROUND WATER MONITORING - SOUTHERN WOOD PIEDMONT. Please refer to the ground water sample collection summary sheets located in Attachment F of this report for a listing of water level, well depth, sample appearance, volume purged, temperature, conductivity, pH, the presence of separate phase fluids and additional observations made during this ground water sampling event for each monitoring well at the facility. The thickness of separate phase oil, if present, was measured using an oil/water interface probe. All purge water was containerized in an approved roll-off container and disposed of properly.

The ground water samples were analyzed by the laboratory for dissolved and total metals including: arsenic, chromium, copper, and lead (Attachment F). These constituents were

selected to evaluate potential ground water contamination from the CCA storage and CCA treatment area and from the storage of diesel (lead) at the facility. The samples were analyzed prior to filtration (total metals) and then again after filtration (dissolved metals).

After filtration, all dissolved metal concentrations were listed below detection limits, except for monitoring wells MW-15, MW-17, and MW-22. Ground water from these wells yielded a dissolved arsenic concentration of 0.023, 0.0057, and 0.013 mg/L, respectively. Please refer to Figure 11 for the upper aquifer dissolved arsenic isoconcentration map for the facility. No dissolved metals were detected in the lower aquifer at the facility.

Total metal concentrations (not filtered) were detected in many of the monitoring wells in the upper and lower aquifers at the facility. Total arsenic concentrations within the upper aquifer ranged between ND and 0.11 mg/L. The highest level of total arsenic detected was present at MW-15 in close proximity to the CCA storage and treatment area. A total arsenic concentration of 0.005 mg/L was also detected in MW-19A screened within the lower aquifer at the facility.

Concentrations of total chromium ranged between ND and 0.67 mg/L. The two highest detected levels of chromium occurred along the northern property boundary at MW-18 (0.67 mg/L) and in the vicinity of the large storage tank area at MW-22 (0.2 mg/L). Total chromium concentrations of 0.012 mg/L at MW-11A and 0.011 mg/L at MW-19A were detected within the lower aquifer at the facility.

Total copper concentrations within the upper aquifer ranged between ND and 0.061 mg/L. The highest areas of detected levels of copper occurred along the northern property boundary at MW-18 (0.51 mg/L) and in the vicinity of the large storage tank area at MW-13 (0.061 mg/L), the CCA treatment area at MW-17 (0.054 mg/L), and the covered sludge ditch at MW-14 (0.059 mg/L). Total copper concentrations were not detected within the lower aquifer at the facility.

Total lead was also detected in the monitoring wells at the facility. Total lead concentrations within the upper aquifer ranged between ND and 0.12 mg/L. The highest level of total lead detected was present at MW-13, in close proximity to the large storage tank area. Total lead concentrations of 0.0095 mg/L at MW-11A and 0.011 mg/L at MW-19A were detected within the lower aquifer at the facility.

The collected ground water samples were also analyzed by Heritage Laboratories, Inc. for semi-volatile and volatile organics. Please refer to the site-specific ground water sample list located in Attachment F for a listing of the semi-volatile and volatile constituents that were analyzed by the laboratory. From the entire list of constituents analyzed, only a small fraction of the constituents were detected. The semi-volatile organics that were detected within the upper aquifer ground water include: acenaphthene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, carbazole, chrysene, 2,4-dimethylphenol, fluoranthene, indeno(1,2,3-

Cd)pyrene, naphthalene, and phenanthrene (12 out of 23 constituents were detected). The semi-volatile organics that were detected within the lower aquifer ground water include: acenaphthene, anthracene, carbazole, fluoranthene, and phenanthrene (5 out of 23 constituents were detected). The volatile organics that were detected within both the upper and lower aquifer include: benzene, chloroform, dichloromethane, ethyl benzene, M/P xylene, O-xylene, and toluene (7 out 30 constituents were detected). Dichloromethane was utilized by the laboratory as the solvent in the extraction process for the samples. Therefore, it is suspect that the dichloromethane was introduced by the laboratory and is not present at the site. In addition, chloroform was detected in monitoring wells MW-8A, MW-19A, MW-21, and MW-22. Chloroform is not commonly associated with wood preserving facilities. The City of Wilmington for many years in the past discharged untreated sanitary sewer water to the Cape Fear River. Two of the old sanitary sewer discharge pipes traverse in an east-west direction across the site. One of the old sanitary sewer discharge pipes is located in the vicinity of MW-8A and MW-21 and is most likely the source of chloroform that has been detected in these wells. The second sanitary sewer pipe is located near the Optimist Park and traverses the site immediately to the south of the wetland area.

For simplification in the discussion of the detected organic concentration levels for each ground water sample, the detected organics at each location were added together to arrive at a total organic concentration value. This value was used to produce the upper aquifer total organics isoconcentration map shown in Figure 12 and the lower aquifer total organics isoconcentration map depicted in Figure 13. In addition, please refer to the ground water sample summary tables presented in Attachment F.

The areas of free product and areas of greatest total dissolved organics concentration occurred in close relation to the source areas (large storage tank area, diesel storage tank area, and the wood treatment area). As demonstrated by the greater concentration of organics in the source areas, relative to the rest of the site, and by the list of detected constituents, wood-preserving activities most likely contributed to the observed organics in the ground water.

The highest detected concentration of total dissolved organics occurred at MW-13, MW-14 and MW-22, with concentrations of total organics of 8.130, 8.973, and 13.358 mg/L, respectively. Free product was present in MW-11, MW-12, and MW-26. It appears that an east-west trending band of dissolved and free phase organics occur along the southern City of Wilmington property boundary between the Cape Fear River to the west and the drainage ditch and creek to the east.

The dissolved organics from the wood treatment area and the covered sludge ditch most likely migrated to the east with the ground water flow towards the drainage ditch and the creek. Once the dissolved organics approached the area where the stagnation line occurs in the ground water flow (near the drainage ditch and creek), the dissolved organics appear to have been smeared in a north and south direction parallel to the drainage ditch and the creek as evidenced by

detection of low levels of dissolved organics in MW-20, MW-21, MW-24, and MW-25. This smearing of the dissolved organics along the ground water stagnation line in the upper aquifer is likely caused by tidal fluctuations forcing the ground water to move into and out of the upper aquifer sands. Any dissolved constituents that may have entered the surface water within the drainage ditch and creek can be moved both upstream with the high tide and downstream with the low tide. During the high tide, the surface water in the drainage ditch and creeks moves into the subsurface as ground water because of the higher head in the surface water body relative to the ground water head in the subsurface. This migration of surface water into and out of the subsurface most likely caused the smearing of the dissolved organics plume both upstream and downstream along the drainage ditch and the creek.

The dissolved organics in the vicinity of the diesel storage tank area and the large storage tank area appear to move to the west towards the Cape Fear River with the ground water flow direction. Large scale smearing of the contaminants along the ground water stagnation line parallel to the Cape Fear River does not appear to have occurred based on the data collected to date. Further data collection may be necessary to evaluate potential smearing of the dissolved organic constituents along the ground water stagnation line adjacent to the Cape Fear River.

The upper aquifer dissolved organic plume appears to be partially defined in the northwest, north, northeast and southwest portions of the site. However, the southeast portion of the site and the areas on-site and off-site to the east of the drainage ditch and creek are not well defined.

The dissolved organic plume also appears to have migrated vertically through the peat and into the lower aquifer in the vicinity of MW-11A beneath the wood treatment area. Once the dissolved organic plume entered the lower aquifer it appears to have migrated within the upper section of the lower aquifer in the direction of ground water flow towards the Cape Fear River. More data is needed in the lower aquifer to further define the vertical and lateral extent of the dissolved plume.

4.0 SUBSURFACE WOOD PRESERVING CONSTITUENT MIGRATION

Wood preserving constituents (creosote/coal tar) are considered to be dense non-aqueous phase liquids (DNAPLS). Wood preserving constituents, as a whole, are slightly heavier than water, have a high viscosity, and a low dissolved phase mobility (Cherry, 1992). Because wood preserving constituents are heavier than water, gravity and interfacial tension between the DNAPL and ground water plays an important role in the migration of the DNAPL. The DNAPL will continue to migrate vertically downward in the subsurface until it intercepts a barrier to its vertical migration. The barrier to migration could be a fine grained layer or a clay or any material in which the pore spaces are smaller than that of the host material. If the barrier is flat lying, the DNAPL will begin to pool and spread laterally on this barrier until a critical pool height is encountered. The critical pool height is the height of the DNAPL pool required to

exceed the entry pressure (capillary pore pressure and interfacial tension) within the pores of the material restricting the movement of the DNAPL. Once this critical pool height is reached, the DNAPL will then begin to flow through the original barrier to flow (Kueper, 1992). Once the entrance pressure is achieved and flow through the barrier has begun, the reduced interfacial tension can allow the entire free product pool to drain leaving only residual DNAPL behind. If the barrier encountered is sloping, the DNAPL will most likely flow by gravity downslope until another barrier to flow is encountered causing the DNAPL to pool. This can continue until the required entry pressure cannot be meet or until the free product is reduced to residual concentrations.

As the DNAPL is migrating through porous media, residual DNAPL is left behind the trailing edge of the moving DNAPL body due to snap-off and by-passing mechanisms. It can be expected that 20 percent of the DNAPL body will be left behind as residual during free phase migration. After a certain distance of migration, the free phase will be reduced to just residual concentrations (Kueper, 1992).

At the SWP Wilmington, North Carolina facility it appears that the concepts presented above exist. The wood preserving constituents within the subsurface at the facility seem to have migrated vertically in a bell shaped pattern to the top of the peat unit (Figures 8 and 9). Once the free product encountered the peat, it has begun to migrate down the dip of the peat as indicated between MW-11 and MW-19, MW-11 and MW-14, and MW-11 and MW-26 (Figure 14; SURFER™). The fine-grained nature and the sloping surface of the peat appears to prevent downward infiltration by preventing large pools of free product to accumulate, thereby, inhibiting downward infiltration of free product into the peat at these locations (Photographs H and I). However, in the area between MW-14 and MW-26, the surface of the peat rises and staining is observed within the peat. At this location, it is hypothesized that the free product migrating from the source area near MW-11 moved towards MW-14 until this rise in the peat surface was encountered. At the rise in the peat surface, the free product pooled until the critical pool height was reached allowing the free product to migrate into the peat. Once in the peat, the free product preferentially migrated horizontally until it encountered the area in the vicinity of MW-26. At this location the rise in the peat at MW-14 has changed to a low at MW-26.

Additional evidence in favor of this migration scenario is the presence of residual staining of the sediments and free product within the monitoring wells. Abundant visual staining and residual DNAPL was observed in the sediments in the vicinity of MW-11 and MW-14. However, only traces of free product have entered the monitoring wells at these locations. At MW-26, stained soils were also observed and roughly 3.5 inches of free product moved into the well under natural gradients within days after well installation. The lack of measurable free product near the source wells and measurable free product in wells a good distance from the source may

indicate that the free product has migrated from the source leaving only residual product behind and the free product pool has migrated to at least MW-26 at the facility.

As previously discussed, the free product beneath MW-13 and MW-22 has not reached the top of the peat. In this location, it appears that the migration of the free product is being controlled by the direction of ground water flow and the steeper hydraulic gradient (0.025 ft/ft) in this area close to the bank of the Cape Fear River.

5.0 REFERENCES

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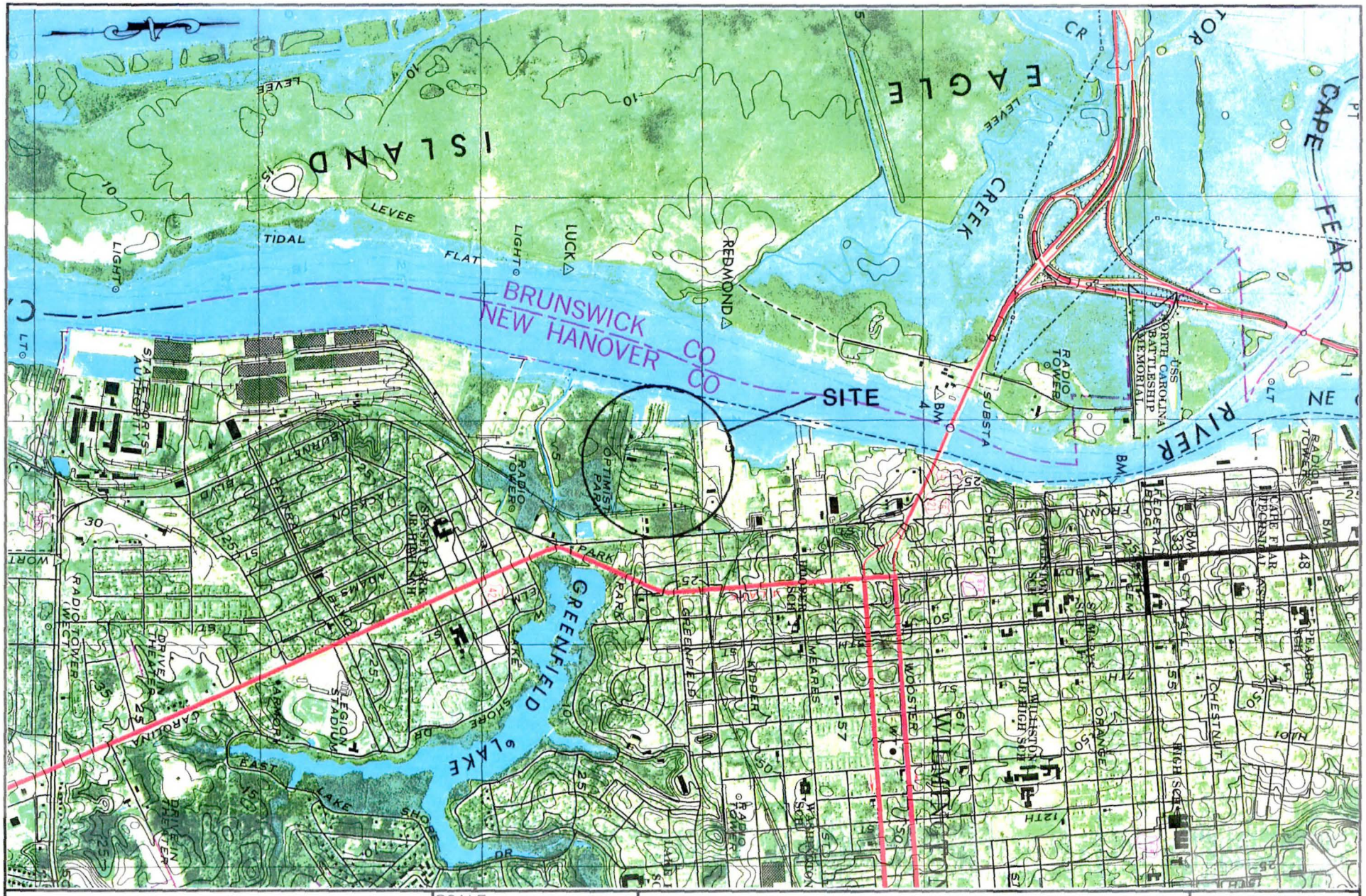

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Air • Water • Soil
TECHNOLOGY

ETE Division
ViroGroup, Inc.
1445 Pisgah Church Road
Lexington, SC 29072
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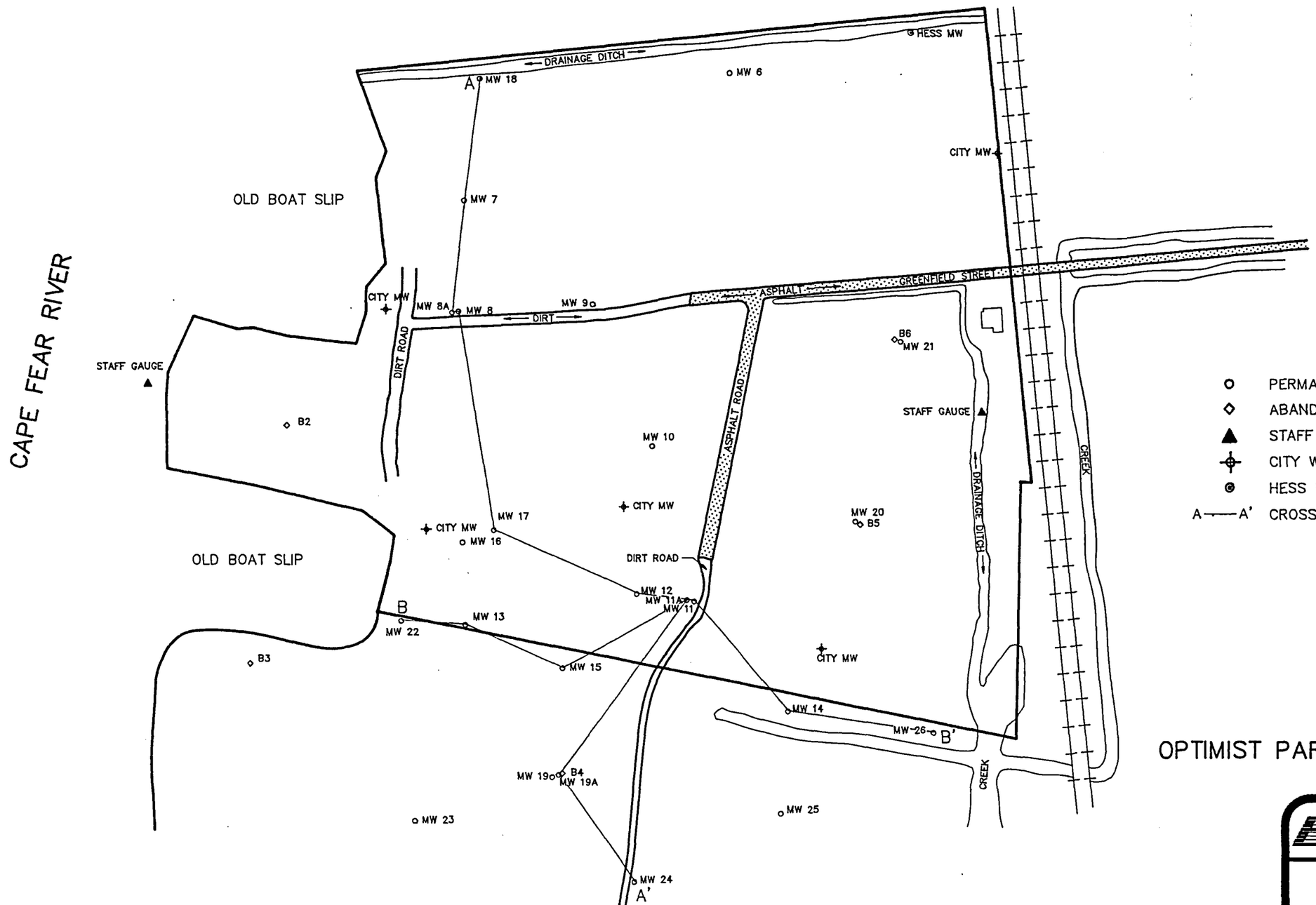
FAX 803-957-3845
Watts 1-800-786-0654

SCALE	1:24,000
DRAWN BY	CAB
CHECKED BY	GBK
DATE	2/11/94

SITE LOCATION MAP
SOUTHERN WOOD PIEDMONT/ WILMINGTON, N.C. FACILITY

FIGURE NO.	1
CADD NO.	G: 5301501
PROJECT NO.	12-53015.00

NO.	REVISION	DATE	BY



LEGEND

- ○ PERMANENT MONITORING WELLS (24)
- ◇ ABANDONED MONITORING WELLS (5)
- ▲ STAFF GAUGE (2)
- ✦ CITY WELLS (5)
- ◎ HESS WELLS (1)
- A——A' CROSS-SECTION LOCATION LINE

OPTIMIST PARK

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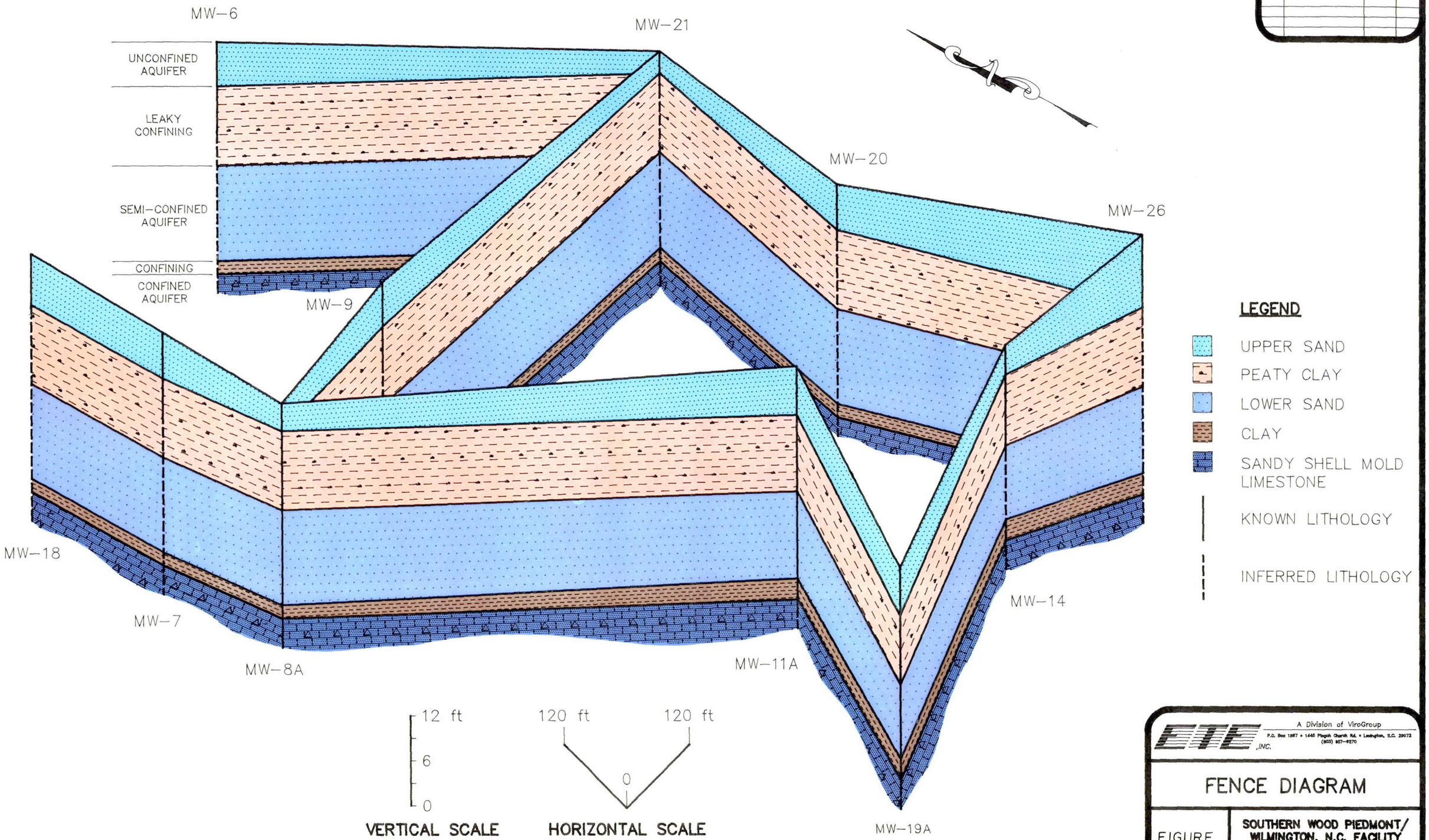
SITE MAP

FIGURE 2

SOUTHERN WOOD PIEDMONT/ WILMINGTON, N.C. FACILITY

DRAWN BY:	JKB	DATE:	11/6/92
DESIGNED BY:	GBK	CADD NO:	53050304
APPROVED BY:	AMW	PROJECT NO:	530-08-503
SCALE:	1" =200'	SHEET NO.	OF

NO.	REVISION	DATE	BY



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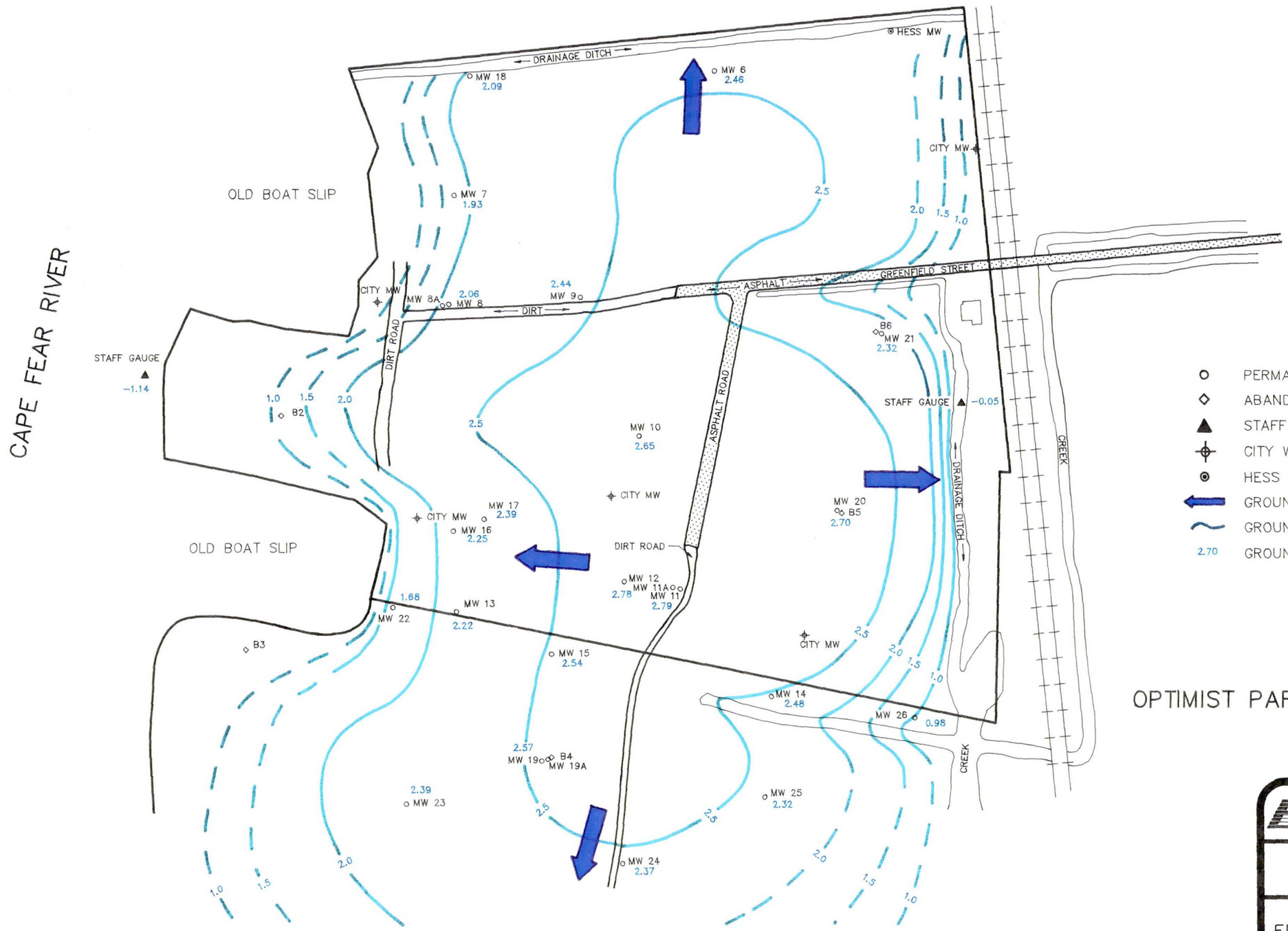
FENCE DIAGRAM

FIGURE 3

SOUTHERN WOOD PIEDMONT/ WILMINGTON, N.C. FACILITY

DRAWN BY:	JKB	DATE:	10/29/92
DESIGNED BY:	GBK	CADD NO:	53050303
APPROVED BY:	AMW	PROJECT NO:	530-06-503
SCALE:	AS SHOWN	SHEET NO.	OF

NO.	REVISION	DATE	BY



LEGEND

- ○ PERMANENT MONITORING WELLS (24)
- ◇ ABANDONED MONITORING WELLS (5)
- ▲ STAFF GAUGE (2)
- ⌖ CITY WELLS (5)
- ⊙ HESS WELLS (1)
- GROUNDWATER FLOW DIRECTION
- GROUNDWATER ISOELEVATION LINE
- 2.70 GROUNDWATER ELEVATION

OPTIMIST PARK

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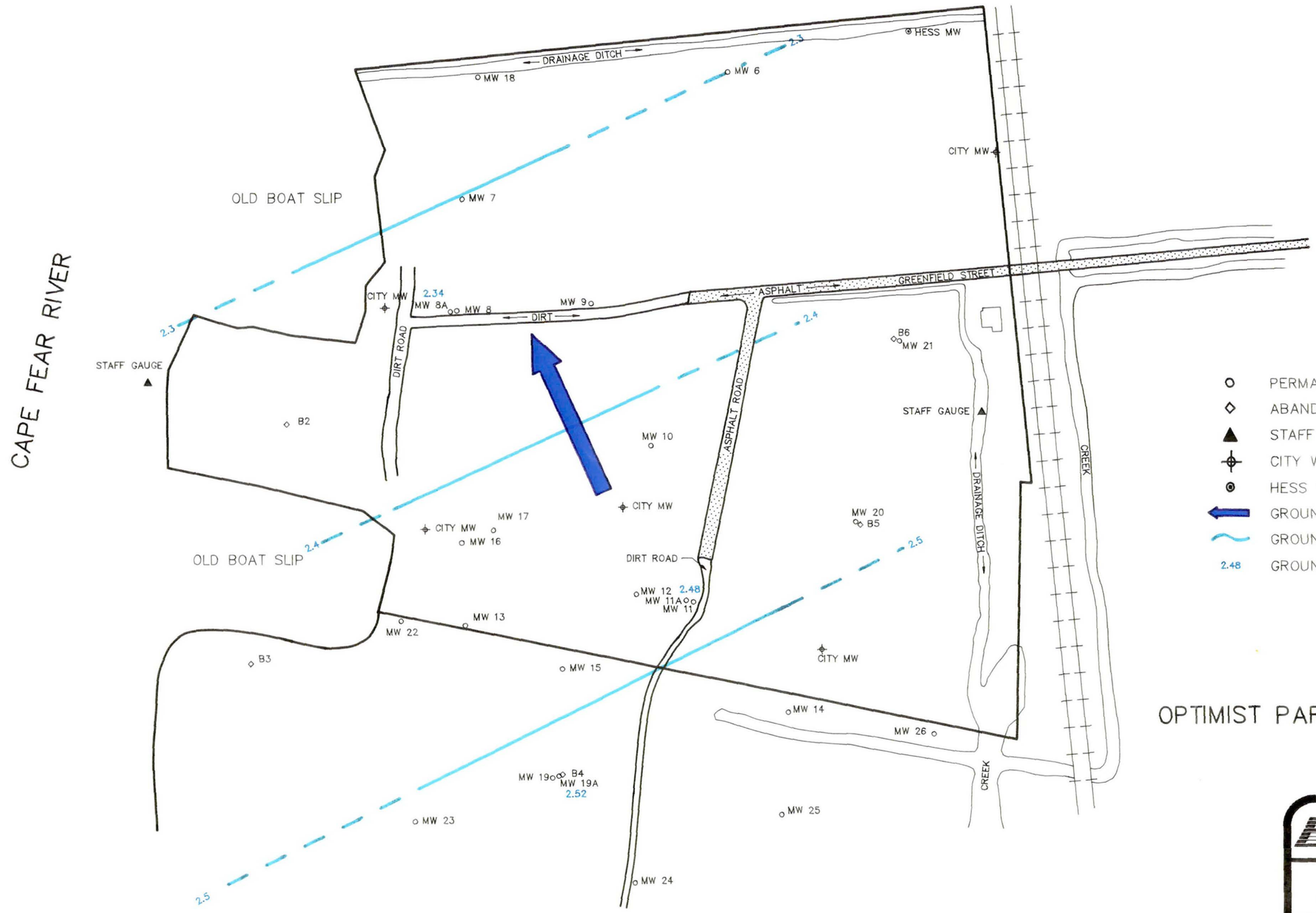
UPPER AQUIFER WATER TABLE MAP

FIGURE 4

SOUTHERN WOOD PIEDMONT/ WILMINGTON, N.C. FACILITY

DRAWN BY:	JKB	DATE:	11/6/92
DESIGNED BY:	GBK	CADD NO:	53050304
APPROVED BY:	AMW	PROJECT NO:	530-06-503
SCALE:	1"=200'	SHEET NO.	OF

NO.	REVISION	DATE	BY



LEGEND

- PERMANENT MONITORING WELLS (24)
- ABANDONED MONITORING WELLS (5)
- STAFF GAUGE (2)
- CITY WELLS (5)
- HESS WELLS (1)
- GROUNDWATER FLOW DIRECTION
- GROUNDWATER ISOELEVATION LINE
- 2.48 GROUNDWATER ELEVATION

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LOWER AQUIFER POTENTIOMETRIC MAP

FIGURE 5

SOUTHERN WOOD PIEDMONT/ WILMINGTON, N.C. FACILITY

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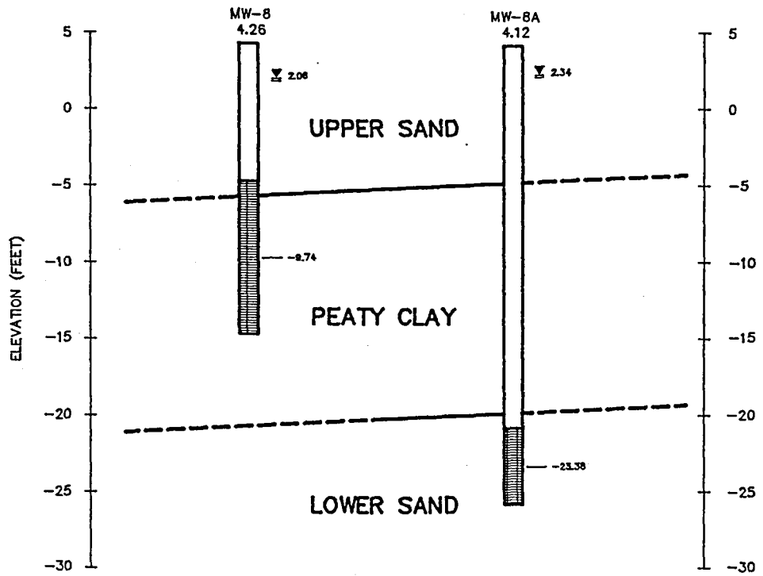
DESIGNED BY:	GBK	CADD NO:	53050304
APPROVED BY:	AMW	PROJECT NO:	530-06-503
SCALE:	1"=200'	SHEET NO.	OF

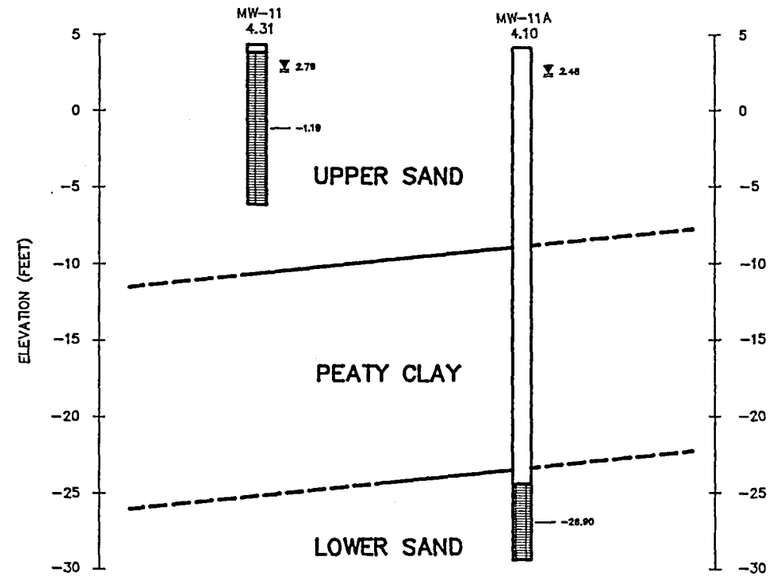
NO.	REVISION	DATE	BY

MW-8 AND MW-8A



$$\frac{2.34 - 2.06}{(-23.38) - (-9.74)} = \text{UPWARD } 0.021 \text{ ft/ft}$$

MW-11 AND MW-11A



$$\frac{2.79 - 2.48}{(-1.19) - (-26.90)} = \text{DOWNWARD } 0.012 \text{ ft/ft}$$

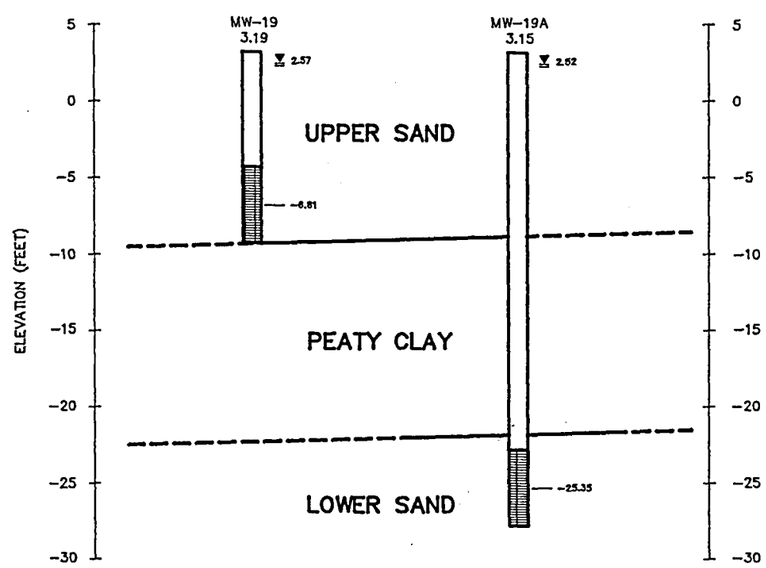
LEGEND

SCREEN

WATER LEVEL

—— -23.38 MID-SCREEN ELEVATION

MW-19 AND MW-19A



$$\frac{2.57 - 2.52}{(-6.81) - (-25.35)} = \text{DOWNWARD } 0.002 \text{ ft/ft}$$

SCALE

VERTICAL: 1" = 10'

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VERTICAL HYDRAULIC GRADIENTS

FIGURE 6

SOUTHERN WOOD PIEDMONT/ WILMINGTON, N.C. FACILITY

DRAWN BY:	JKB	DATE:	1/18/93
DESIGNED BY:	GBK	CADD NO:	53050309
APPROVED BY:	AMW	PROJECT NO:	530-06-503
SCALE:	AS SHOWN	SHEET NO.	OF

NO.	REVISION	DATE	BY

LEGEND

- PERMANENT MONITORING WELLS (24)
- ABANDONED MONITORING WELLS (5)
- STAFF GAUGE (2)
- CITY WELLS (5)
- HESS WELLS (1)
- SOURCE AREA OUTLINE

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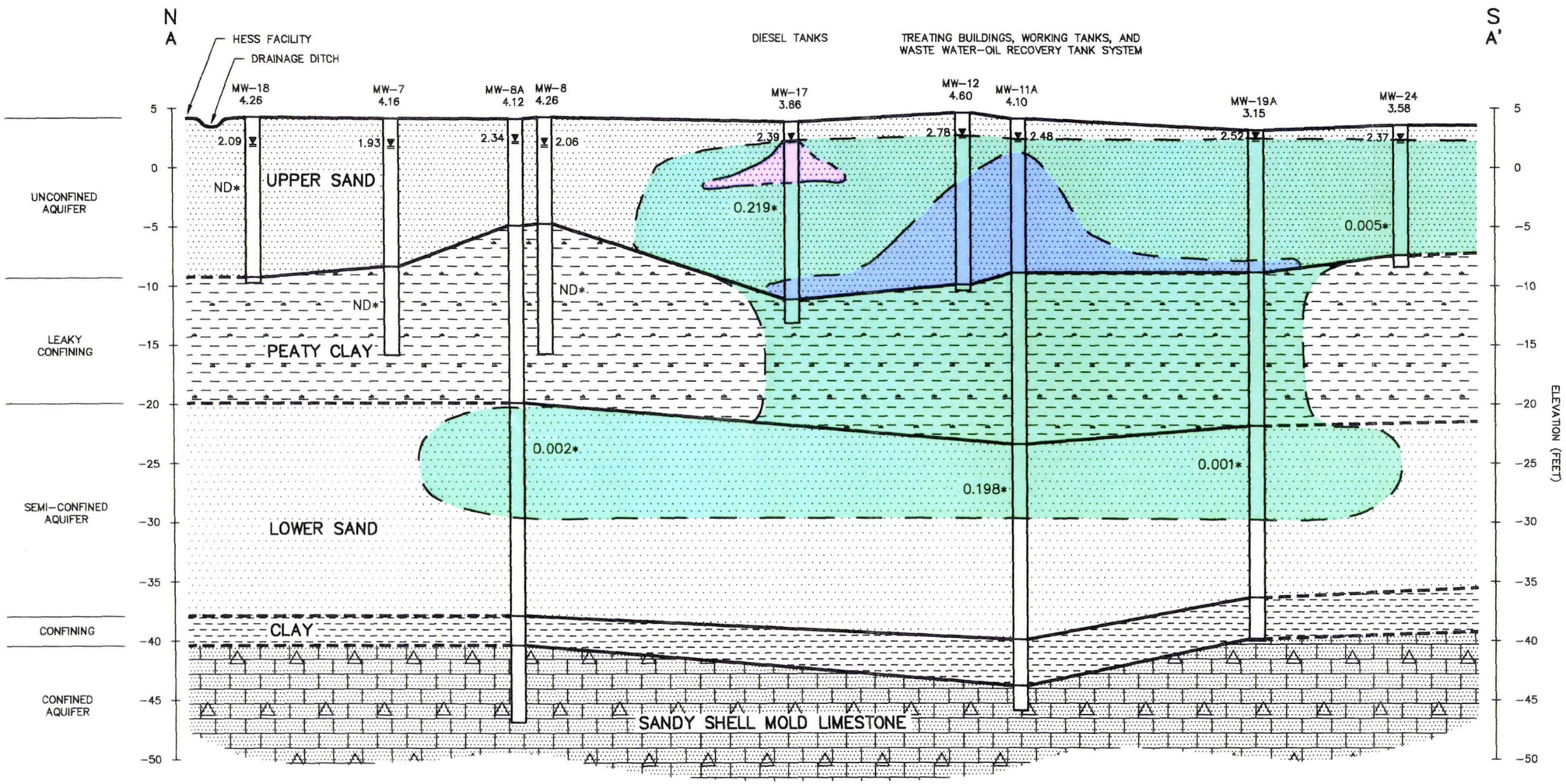
SOURCE AREA LOCATION MAP

FIGURE 7

SOUTHERN WOOD PIEDMONT/ WILMINGTON, N.C. FACILITY

DRAWN BY:	JKB	DATE:	1/18/93
DESIGNED BY:	GBK	CADD NO:	53050311
APPROVED BY:	AMW	PROJECT NO:	530-06-503
SCALE:	1"=200'	SHEET NO.	OF

NO.	REVISION	DATE	BY



LEGEND

- UPPER SAND
- PEATY CLAY
- LOWER SAND
- CLAY
- SANDY SHELL MOLD LIMESTONE
- CREOSOTE STAINED SOILS
- DIESEL STAINED SOILS
- TOTAL DISSOLVED ORGANICS PLUME
- 2.37 ▼ WATER LEVEL
- 0.198* TOTAL DISSOLVED ORGANICS (ppm)

SCALE

HORIZONTAL: 1" = 200'
VERTICAL: 1" = 10'

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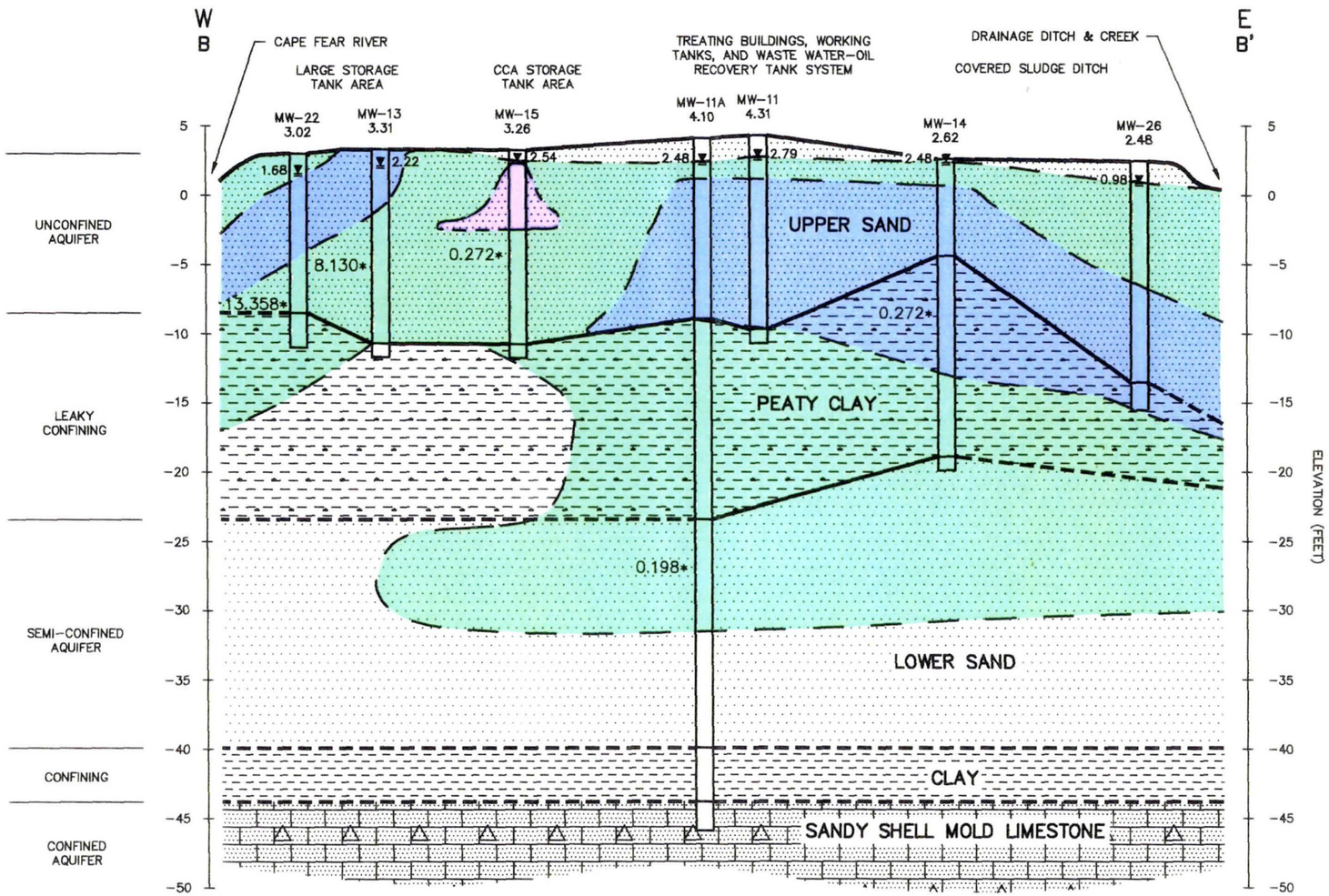
HYDROGEOLOGIC CROSS-SECTION A – A'

FIGURE 8

SOUTHERN WOOD PIEDMONT/ WILMINGTON, N.C. FACILITY

DRAWN BY:	JKB	DATE:	1/18/93
DESIGNED BY:	GBK	CADD NO:	53050308
APPROVED BY:	AMW	PROJECT NO:	530-06-503
SCALE:	AS SHOWN	SHEET NO.	OF

NO.	REVISION	DATE	BY



LEGEND

- UPPER SAND
- PEATY CLAY
- LOWER SAND
- CLAY
- SANDY SHELL MOLD LIMESTONE
- CREOSOTE STAINED SOILS
- DIESEL STAINED SOILS
- TOTAL DISSOLVED ORGANICS PLUME
- 0.98 ▼ WATER LEVEL
- 0.198* TOTAL DISSOLVED ORGANICS (ppm)

SCALE

HORIZONTAL: 1" = 200'
VERTICAL: 1" = 10'

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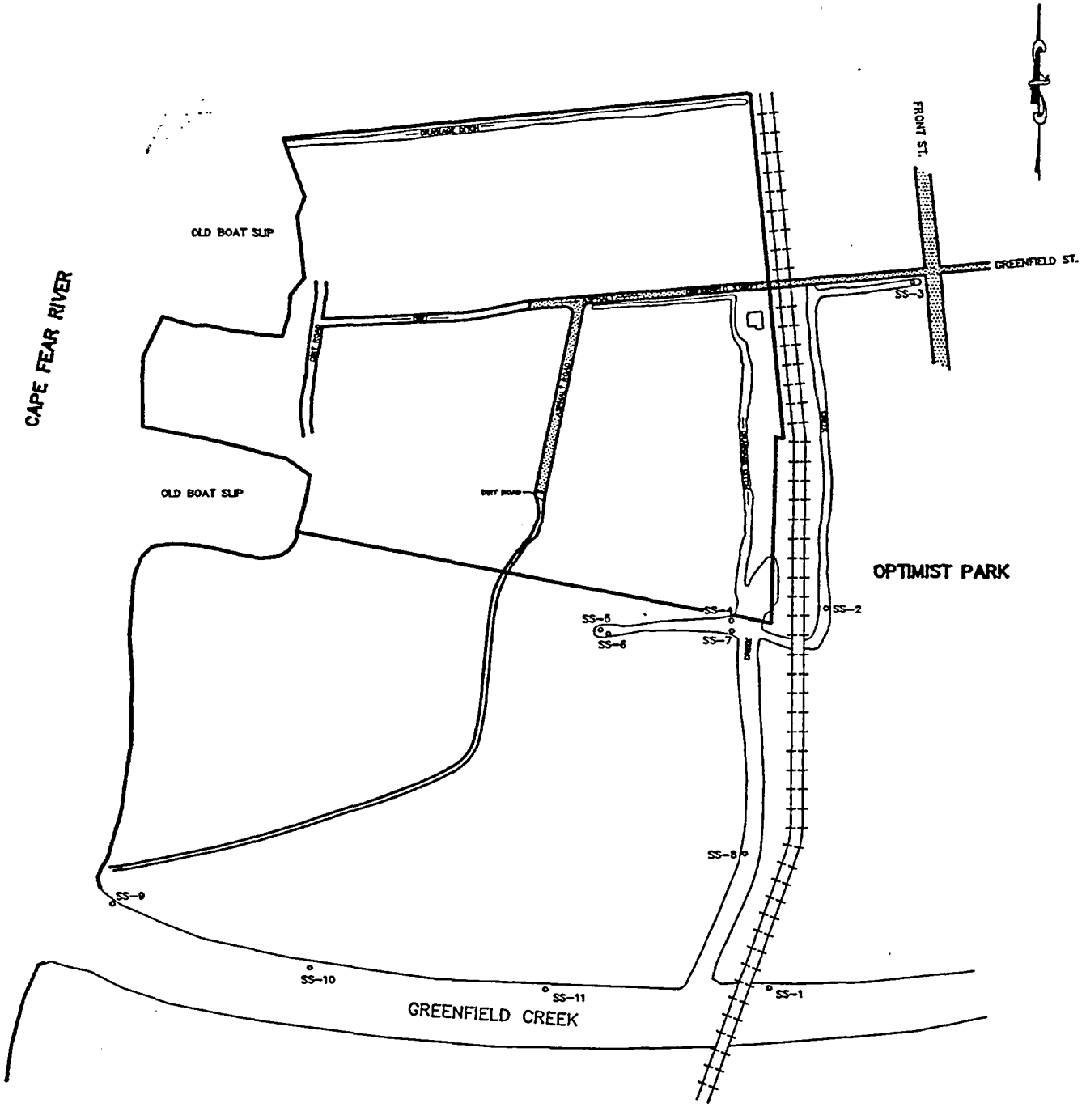
HYDROGEOLOGIC CROSS-SECTION B – B'

FIGURE 9

SOUTHERN WOOD PIEDMONT/ WILMINGTON, N.C. FACILITY

DRAWN BY:	JKB	DATE:	1/18/93
DESIGNED BY:	GBK	CADD NO:	53050307
APPROVED BY:	AMW	PROJECT NO:	530-06-503
SCALE:	AS SHOWN	SHEET NO.	OF



NOTE: SOIL SAMPLE LOCATIONS TO SCALE
CREEK, ROADS, AND RAILROAD N.T.S.

LEGEND

• SOIL SAMPLE LOCATION

ETE, Inc. A Division of VreGroup P.O. Box 1867 • 1445 Pleasant Church Rd. • Lexington, S.C. 29072 (803) 957-6270	SCALE 1"=400'	SOIL SAMPLE LOCATION MAP SOUTHERN WOOD PIEDMONT/ WILMINGTON, N.C. FACILITY	FIGURE 10
	DRAWN BY JKB		CADD NO. 53050310
	CHECKED BY GBK		PROJECT NO. 530-06-503
	DATE 1/18/93		

NO.	REVISION	DATE	BY

LEGEND

- ○ PERMANENT MONITORING WELLS (24)
- ◇ ABANDONED MONITORING WELLS (5)
- ▲ STAFF GAUGE (2)
- ⌖ CITY WELLS (5)
- ⊙ HESS WELLS (1)
- ~ ISOCONCENTRATION LINE
- 0.023 DISSOLVED ARSENIC CONCENTRATION (ppm)
- FP FREE PRODUCT IN WELL

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UPPER AQUIFER DISSOLVED ARSENIC ISOCONCENTRATION MAP

FIGURE 11

SOUTHERN WOOD PIEDMONT/ WILMINGTON, N.C. FACILITY

DRAWN BY:	JKB	DATE:	11/6/92
DESIGNED BY:	GBK	CADD NO:	53050304
APPROVED BY:	AMW	PROJECT NO:	530-06-503
SCALE:	1"=200'	SHEET NO.	OF

NO.	REVISION	DATE	BY

LEGEND

- ○ PERMANENT MONITORING WELLS (24)
- ◇ ABANDONED MONITORING WELLS (5)
- ▲ STAFF GAUGE (2)
- ⌖ CITY WELLS (5)
- ⊙ HESS WELLS (1)
- ~ ISOCONCENTRATION LINE
- 0.102 TOTAL ORGANIC CONCENTRATION (ppm)
- FP FREE PRODUCT IN WELL

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(803) 957-6270

UPPER AQUIFER TOTAL ORGANIC ISOCONCENTRATION MAP

FIGURE 12

SOUTHERN WOOD PIEDMONT/ WILMINGTON, N.C. FACILITY

DRAWN BY:	JKB	DATE:	1/18/93
DESIGNED BY:	GBK	CADD NO:	53050304
APPROVED BY:	AMW	PROJECT NO:	530-06-503
SCALE:	1"=200'	SHEET NO.	OF

NO.	REVISION	DATE	BY

LEGEND

- ○ PERMANENT MONITORING WELLS (24)
- ◇ ABANDONED MONITORING WELLS (5)
- ▲ STAFF GAUGE (2)
- ⌖ CITY WELLS (5)
- ⊙ HESS WELLS (1)
- ~ ISOCONCENTRATION LINE
- 0.001 TOTAL ORGANIC CONCENTRATION (ppm)

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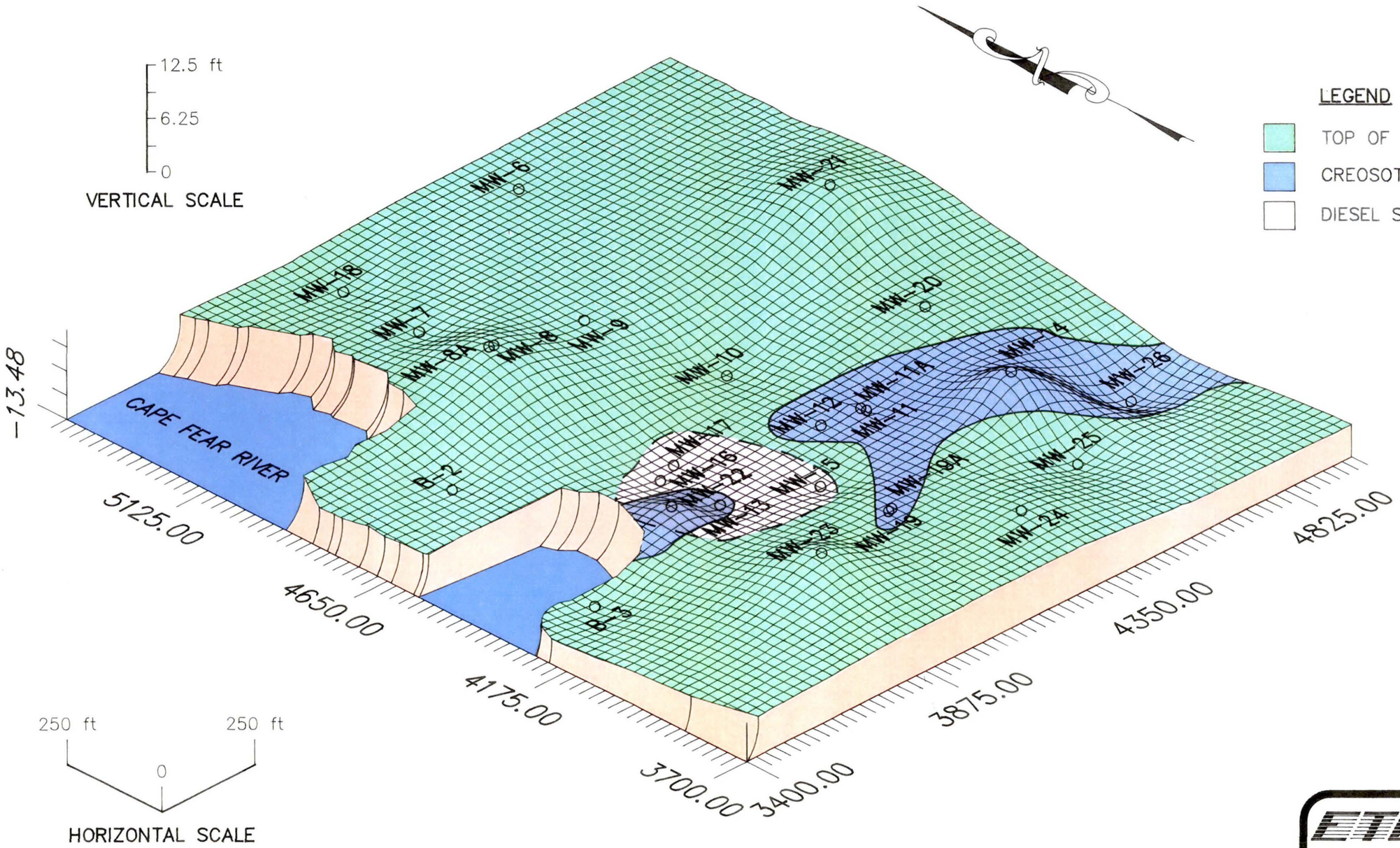
LOWER AQUIFER TOTAL ORGANIC ISOCONCENTRATION MAP

FIGURE 13

SOUTHERN WOOD PIEDMONT/ WILMINGTON, N.C. FACILITY

DRAWN BY:	JKB	DATE:	11/6/92
DESIGNED BY:	GBK	CADD NO:	53050304
APPROVED BY:	AMW	PROJECT NO:	530-06-503
SCALE:	1"=200'	SHEET NO.	OF

NO.	REVISION	DATE	BY



NOTE: VERTICAL EXAGGERATION = 20:1

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THREE-DIMENSIONAL VIEW OF TOP OF PEATY CLAY

FIGURE 14

SOUTHERN WOOD PIEDMONT/ WILMINGTON, N.C. FACILITY

DRAWN BY:	JKB	DATE:	11/2/92
DESIGNED BY:	GBK	CADD NO:	53050306
APPROVED BY:	AMW	PROJECT NO:	530-06-503
SCALE:	AS SHOWN	SHEET NO.	OF

ATTACHMENT A

FORM# AB350

WELL ABANDONMENT RECORD

EIE, Inc.
A Division of ViroGroup
P.O. Box 1867 • 1445 Pisgah Church Rd. • Lexington, S.C. 29072
(803) 957-6270

1. WELL LOCATION: (Show a sketch of well loaction.)

Nearest Town: Wilmington, N.C.

(Road, Community, Subdivision, Lot No.)

ABANDONMENT DATE 9/28/92

County: New Hanover

Quadrangle Name: Wilmington

Well No. B-2

2. OWNER: SWP

3. ADDRESS: Foot of Greenfield Street

4. TOPOGRAPHY: draw, slope, hilltop, valley, flat. Flat

5. USE OF WELL: Monitoring DATE: 9/28/92

6. TOTAL DEPTH: 13' DIAMETER: 2"

7. CASING AND SCREEN REMOVED:

	FEET	DIAMETER
PIT CASING:		
WELL CASING:	8'	2" Riser PVC
WELL SCREEN:	5'	2" #10 Slot PVC

8. SEALING MATERIAL

Neat Cement

bags of cement: 3

gals. of water: 18

Sand Cement

bags of cement:

yds. of sand:

gals. of water:

Other

Type material:

Amount:

9. EXPLAIN METHOD OF GROUT PLACEMENT:

Over-ream & tremie

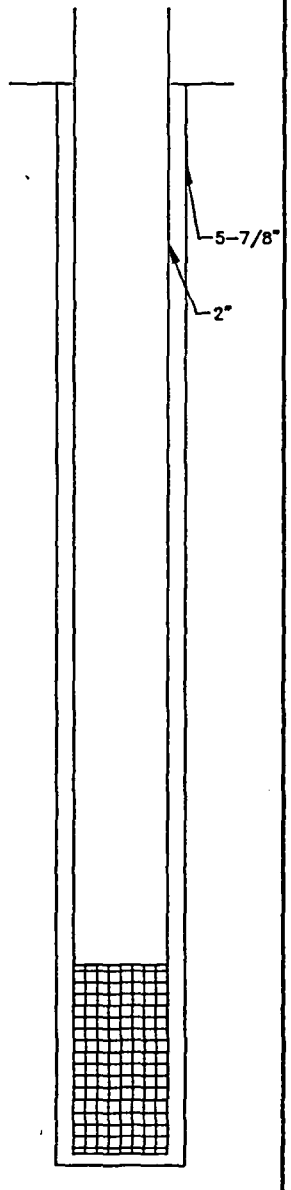
I do hereby certify that this well abandonment record is true and exact.

Signature

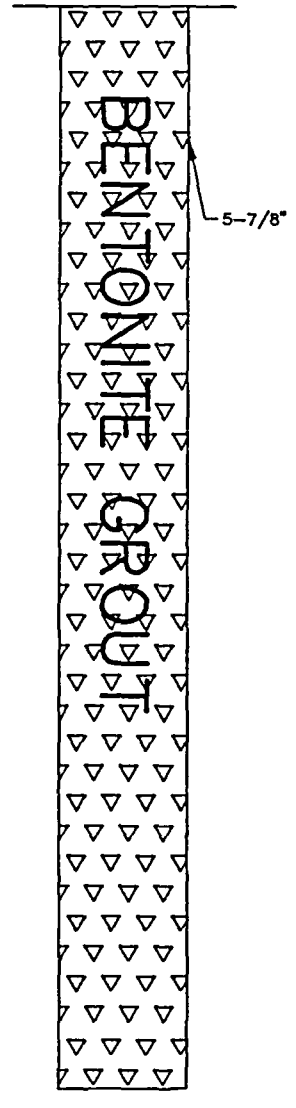
License No. Date

WELL DIAGRAM: Draw a detailed sketch of the well showing total depth, diameter and construction details prior to and subsequent to abandonment.

BEFORE



AFTER



FORM# AB350

WELL ABANDONMENT RECORD

, Inc.
A Division of ViroGroup
P.O. Box 1867 • 1445 Pisgah Church Rd. • Lexington, S.C. 29072
(803) 957-6270

1. WELL LOCATION: (Show a sketch of well loaction.)

Nearest Town: Wilmington, N.C.

(Road, Community, Subdivision, Lot No.)

ABANDONMENT DATE 9/28/92

County: New Hanover

Quadrangle Name: Wilmington

Well No. B-3

2. OWNER: SWP

3. ADDRESS: Foot of Greenfield Street

4. TOPOGRAPHY: draw, slope, hilltop, valley, flat. Flat

5. USE OF WELL: Temp. Monitoring DATE: 9/28/92

6. TOTAL DEPTH: 16' DIAMETER: 2"

7. CASING AND SCREEN REMOVED:

	FEET	DIAMETER
PIT CASING:		
WELL CASING:	8'	2" Riser PVC
WELL SCREEN:	5'	2" #10 Slot PVC

8. SEALING MATERIAL

Neat Cement

bags of cement: 4

gals. of water: 24

Sand Cement

bags of cement:

yds. of sand:

gals. of water:

Other

Type material:

Amount:

9. EXPLAIN METHOD OF GROUT PLACEMENT:

Over-ream & tremie

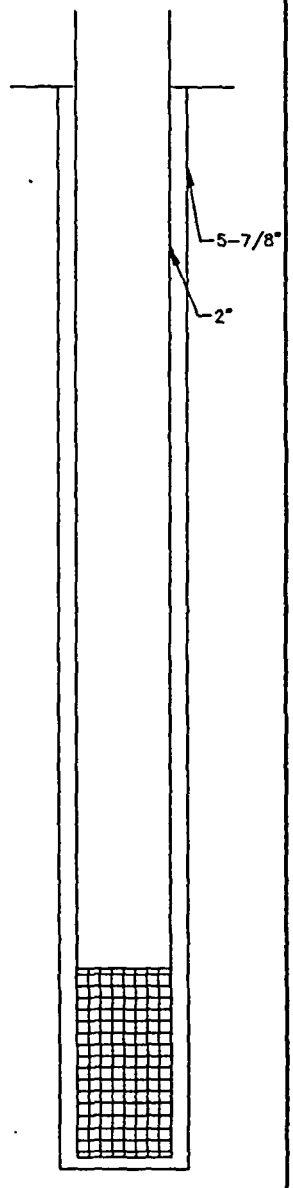
I do hereby certify that this well abandonment record is true and exact.

Signature

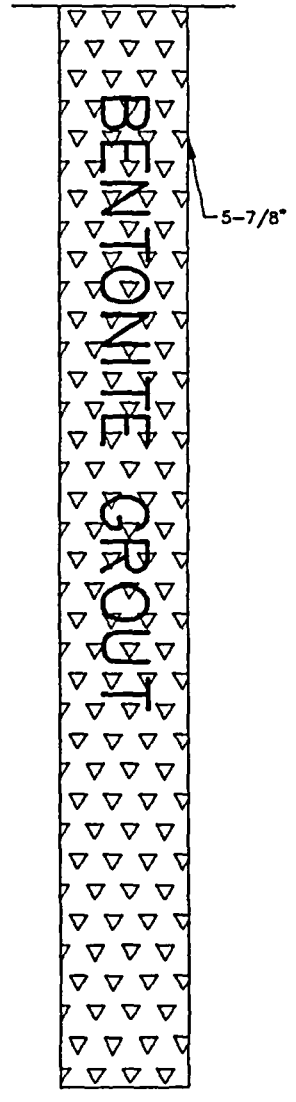
License No. Date

WELL DIAGRAM: Draw a detailed sketch of the well showing total depth, diameter and construction details prior to and subsequent to abandonment.

BEFORE



AFTER



FORM# AB350

WELL ABANDONMENT RECORD

, Inc.
A Division of ViroGroup
P.O. Box 1867 • 1445 Pisgah Church Rd. • Lexington, S.C. 29072
(803) 957-6270

1. WELL LOCATION: (Show a sketch, of well loaction.)

ABANDONMENT DATE 9/28/92

Nearest Town: Wilmington, N.C.

County: New Hanover

Quadrangle Name: Wilmington

(Road, Community, Subdivision, Lot No.)

Well No. B-4

2. OWNER: SWP

3. ADDRESS: Foot of Greenfield Street

4. TOPOGRAPHY: draw, slope, hilltop, valley, flat. Flat

5. USE OF WELL: Monitoring DATE: 9/28/92

6. TOTAL DEPTH: 14' DIAMETER: 2"

7. CASING AND SCREEN REMOVED:

	FEET	DIAMETER
PIT CASING:		
WELL CASING:	9'	2" Riser PVC
WELL SCREEN:	5'	2" #10 Slot PVC

8. SEALING MATERIAL

Neat Cement

bags of cement: 3

gals. of water: 18

Sand Cement

bags of cement:

yds. of sand:

gals. of water:

Other

Type material:

Amount:

9. EXPLAIN METHOD OF GROUT PLACEMENT:

Over-ream & tremie

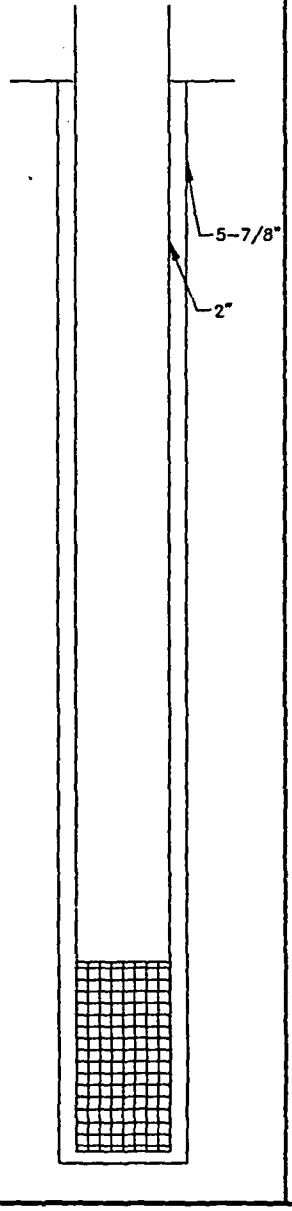
I do hereby certify that this well abandonment record is true and exact.

Signature

License No. Date

WELL DIAGRAM: Draw a detailed sketch of the well showing total depth, diameter and construction details prior to and subsequent to abandonment.

BEFORE



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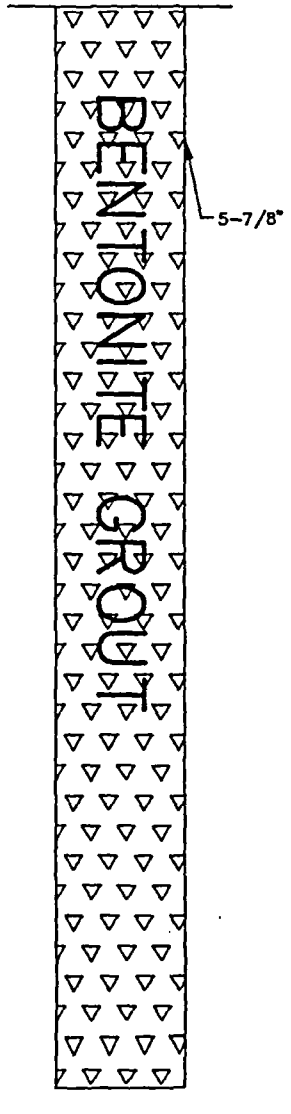


, Inc.
A Division of ViroGroup
P.O. Box 1867 • 1445 Pisgah Church Rd. • Lexington, S.C. 29072
(803) 957-8270

FORM# AB350

WELL ABANDONMENT RECORD

1. WELL LOCATION: (Show a sketch of well loaction.)

Nearest Town: Wilmington, N.C.

(Road, Community, Subdivision, Lot No.)

ABANDONMENT DATE 9/28/92

County: New Hanover

Quadrangle Name: Wilmington

Well No. B-5

2. OWNER: SWP

3. ADDRESS: Foot of Greenfield Street

4. TOPOGRAPHY: draw, slope, hilltop, valley, flat. Flat

5. USE OF WELL: Monitoring DATE: 9/28/92

6. TOTAL DEPTH: 12' DIAMETER: 2"

7. CASING AND SCREEN REMOVED:

	FEET	DIAMETER
PIT CASING:		
WELL CASING:	7'	2" Riser PVC
WELL SCREEN:	5'	2" #10 Slot PVC

8. SEALING MATERIAL

Neat Cement

bags of cement: 3

gals. of water: 18

Sand Cement

bags of cement:

yds. of sand:

gals. of water:

Other

Type material:

Amount:

9. EXPLAIN METHOD OF GROUT PLACEMENT:

Over-ream & tremie

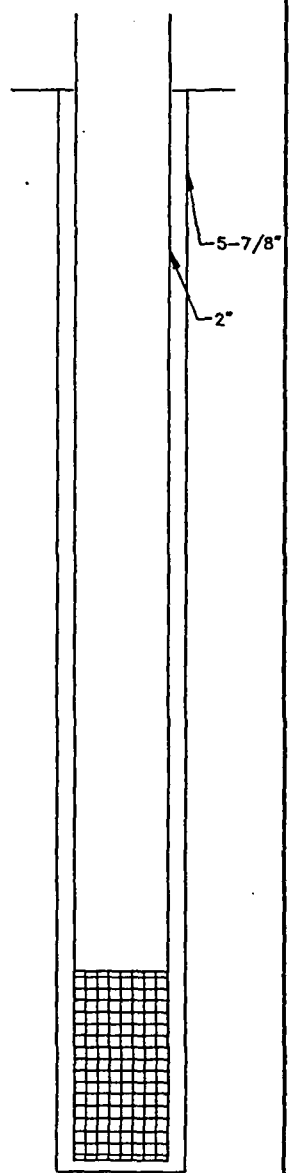
I do hereby certify that this well abandonment record is true and exact.

Signature

License No. Date

WELL DIAGRAM: Draw a detailed sketch of the well showing total depth, diameter and construction details prior to and subsequent to abandonment.

BEFORE



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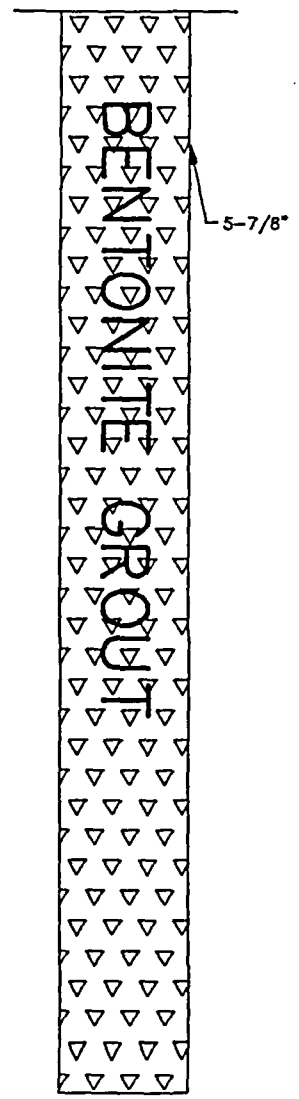


FORM# AB350

WELL ABANDONMENT RECORD

, Inc.
A Division of ViroGroup
P.O. Box 1867 • 1445 Pisgah Church Rd. • Lexington, S.C. 29072
(803) 957-6270

1. WELL LOCATION: (Show a sketch of well loaction.)

ABANDONMENT DATE 9/28/92

Nearest Town: Wilmington, N.C.

(Road, Community, Subdivision, Lot No.)

County: New Hanover

Quadrangle Name: Wilmington

Well No. B-6

2. OWNER: SWP

3. ADDRESS: Foot of Greenfield Street

4. TOPOGRAPHY: draw, slope, hilltop, valley, flat. Flat

5. USE OF WELL: Monitoring DATE: 9/28/92

6. TOTAL DEPTH: 10' DIAMETER: 2"

7. CASING AND SCREEN REMOVED:

	FEET	DIAMETER
PIT CASING:		
WELL CASING:	5'	2" Riser PVC
WELL SCREEN:	5'	2" #10 Slot PVC

8. SEALING MATERIAL

Neat Cement

bags of cement: 3

gals. of water: 18

Sand Cement

bags of cement:

yds. of sand:

gals. of water:

Other

Type material:

Amount:

9. EXPLAIN METHOD OF GROUT PLACEMENT:

Over-ream & tremie

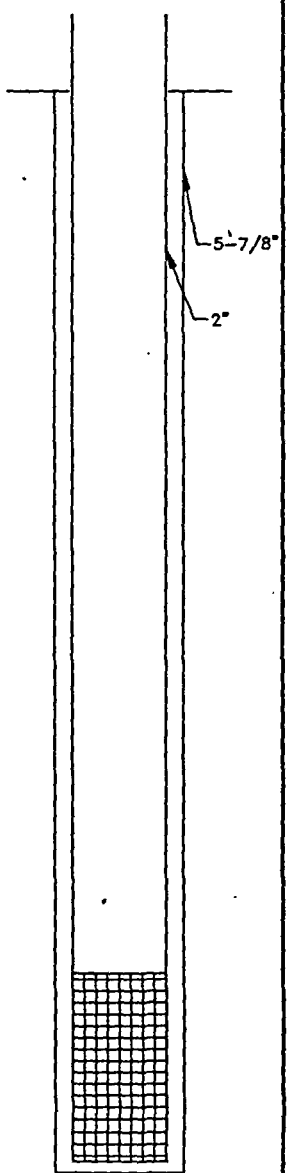
I do hereby certify that this well abandonment record is true and exact.

Signature

License No. Date

WELL DIAGRAM: Draw a detailed sketch of the well showing total depth, diameter and construction details prior to and subsequent to abandonment.

BEFORE



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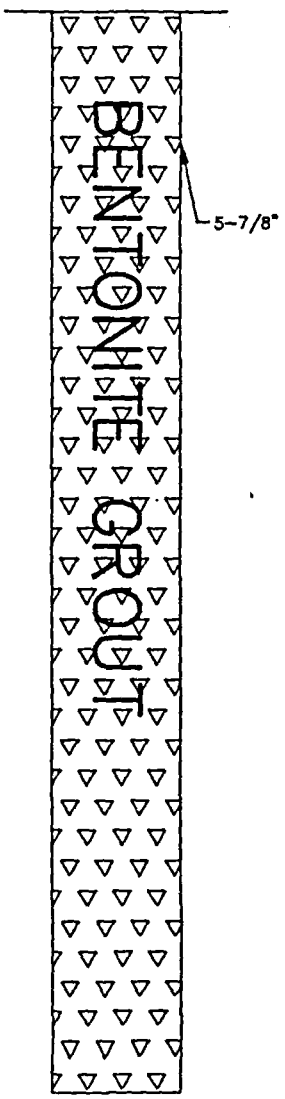


ATTACHMENT B

Well Log Database Table

WELL LOG DATABASE
SOUTHERN WOOD PIEDMONT - WILMINGTON, NORTH CAROLINA FACILITY

Plant	Well	Inst Date	Boring Term	Surface Elev	Riser Elev	Bottom Elev	Well Depth	Riser Depth
WIL	MW-6	09/05/85	20.00	3.40	5.07	-16.38	19.78	21.45
WIL	MW-7	09/06/85	19.80	3.87	6.03	-15.65	19.52	21.68
WIL	MW-8	09/09/85	19.20	4.16	6.80	-14.86	19.02	21.66
WIL	MW-8A	10/01/92	51.00	4.12	6.43	-26.63	30.75	33.06
WIL	MW-9	09/10/85	19.40	4.26	6.43	-14.96	19.22	21.39
WIL	MW-10	02/18/92	13.00	3.63	7.41	-6.87	10.50	14.28
WIL	MW-11	02/18/92	13.00	4.31	8.02	-6.19	10.50	14.21
WIL	MW-11A	10/01/92	50.00	4.10	6.38	-29.79	33.89	36.17
WIL	MW-12	02/18/92	12.00	4.60	8.22	-5.90	10.50	14.12
WIL	MW-13	02/18/92	12.00	3.31	6.97	-7.19	10.50	14.16
WIL	MW-14	02/19/92	22.00	2.62	6.30	-13.38	16.0	19.68
WIL	MW-15	02/19/92	13.00	3.26	7.07	-7.24	10.50	14.31
WIL	MW-16	02/19/92	13.00	3.88	7.69	-6.62	10.50	14.31
WIL	MW-17	02/19/92	15.00	3.86	7.65	-6.64	10.50	14.29
WIL	MW-18	10/07/92	14.00	4.26	6.61	-6.87	11.13	13.48
WIL	MW-19	10/06/92	14.00	3.19	5.44	-9.68	12.87	15.12
WIL	MW-19A	10/02/92	43.17	3.15	5.25	-28.02	31.17	33.27
WIL	MW-20	10/07/92	14.00	3.17	5.44	-9.13	12.30	14.57
WIL	MW-21	10/07/92	10.00	3.17	5.34	-3.62	6.79	8.96
WIL	MW-22	10/07/92	14.00	3.02	5.26	-8.09	11.11	13.35
WIL	MW-23	10/08/92	12.00	2.67	4.96	-6.39	9.06	11.35
WIL	MW-24	10/05/92	12.00	3.58	5.79	-8.02	11.60	13.81
WIL	MW-25	10/08/92	13.00	1.78	4.96	-10.27	12.05	15.23
WIL	MW-26	10/05/92	18.00	2.48	4.91	-15.14	17.62	20.05

Boring Logs

ENVIRONMENTAL TECHNOLOGY ENGINEERING, INC.
CONSULTING ENGINEERS, SURVEYORS AND HYDROGEOLOGISTS
HYDROGEOLOGIC SERVICES

TEST BORING LOG

BORING NO. B-2

PROJECT: SOUTHERN WOOD PIEDMONNT – WILMINGTON, NC		SHEET NO. 1 OF 1	
CLIENT: SOUTHERN WOOD PIEDMONT	DATE FINISHED 2-19-92	JOB NO. 530-06-501	
BORING CONTRACTOR: ETE	DRILLER C. AARON	ELEVATION	
RIG USED MOBILE B-57	INSPECTOR K. ANDERSON	DATE STARTED 2-19-92	

WELL CONSTRUCTION: CLAY; PLUG; SAND PACK; SAND PACK

DEPTH FEET	SAMPLE URMLNY	No.	TYPE	BLOWS PER 6"	CLASSIFICATION	REMARKS
0						
5		1	SS		Medium to coarse brown SAND	Water saturated OVA = 0.0
10		2	SS		Same as above	No visual contamination OVA = 0.0
15		3	SS		Brown to black PEAT with root fragments	No visual contamination OVA = 2.0
20						
25						
30						
35						
40						
45						
50						

H:53050182

ENVIRONMENTAL TECHNOLOGY ENGINEERING, INC.
CONSULTING ENGINEERS, SURVEYORS AND HYDROGEOLOGISTS
HYDROGEOLOGIC SERVICES

TEST BORING LOG

BORING NO. B-3

PROJECT: SOUTHERN WOOD PIEDMONT – WILMINGTON, NC		SHEET NO. 1 OF 1	
CLIENT: SOUTHERN WOOD PIEDMONT	DATE FINISHED 2-20-92	JOB NO. 530-06-501	
BORING CONTRACTOR: ETE	DRILLER C. AARON	ELEVATION	
RIG USED MOBILE B-57	INSPECTOR K. ANDERSON	DATE STARTED 2-20-92	

WELL CONSTRUCTION	DEPTH FEET	SAMPLE: LITHOLOGY	SAMPLE: No.	SAMPLE: TYPE	SAMPLE: BLOWS PER 6"	CLASSIFICATION	REMARKS
	0						
	5		1	SS		Fine to medium brown SAND with small wood fragments at 4.5 feet	Water saturated OVA = 3.1
CLAY / PLUG			2	SS		Same as above	No visual contamination OVA = 0.9
SAND PACK / SAND PACK	10						
			3	SS		Dark brown to black PEAT with wood fragments	No visual contamination OVA = 0.8
	15						
	20						
	25						
	30						
	35						
	40						
	45						
	50						

H:530501B3

ENVIRONMENTAL TECHNOLOGY ENGINEERING, INC.
CONSULTING ENGINEERS, SURVEYORS AND HYDROGEOLOGISTS
HYDROGEOLOGIC SERVICES

TEST BORING LOG

BORING NO. B-4

PROJECT: SOUTHERN WOOD PIEDMONT – WILMINGTON, NC		SHEET NO. 1 OF 1	
CLIENT: SOUTHERN WOOD PIEDMONT	DATE FINISHED 2-20-92	JOB NO. 530-06-501	
BORING CONTRACTOR: ETE	DRILLER C. AARON	ELEVATION	
RIG USED MOBILE B-57	INSPECTOR K. ANDERSON	DATE STARTED 2-20-92	

WELL CONSTRUCTION	DEPTH FEET	SAMPLE: LITHOLOGY	SAMPLE: No.	SAMPLE: TYPE	SAMPLE: BLOWS PER 6"	CLASSIFICATION	REMARKS
	0						Visual creosote at top of hole
			1	SS		Fine to medium brown SAND with wood fragments	No visual contamination OVA = 1.7
CLAY	5						
PLUG							
SAND PACK			2	SS		Same as above	No visual contamination OVA = 5.1
SAND PACK	10						
			3	SS			Visual creosote in sand above PEAT OVA = 98.9
	15					Dark brown to black PEAT with wood fragments	
	20						
	25						
	30						
	35						
	40						
	45						
	50						

H:530501B4

ENVIRONMENTAL TECHNOLOGY ENGINEERING, INC.
CONSULTING ENGINEERS, SURVEYORS AND HYDROGEOLOGISTS
HYDROGEOLOGIC SERVICES

TEST BORING LOG

BORING NO. B-5

PROJECT: SOUTHERN WOOD PIEDMONT -- WILMINGTON, NC		SHEET NO. 1 OF 1	
CLIENT: SOUTHERN WOOD PIEDMONT	DATE FINISHED 2-20-92	JOB NO. 530-06-501	
BORING CONTRACTOR: ETE	DRILLER C. AARON	ELEVATION	
RIG USED MOBILE B-57	INSPECTOR K. ANDERSON	DATE STARTED 2-20-92	

WELL CONSTRUCTION	DEPTH FEET	SAMPLE: LITHOLOGY	No.	TYPE	BLOWS PER 6"	CLASSIFICATION	REMARKS
	0		1	SS		Fine to medium brown SAND	Water saturated No visual contamiation OVA = 54.3
CLAY PLUG	5						
SAND PACK SAND PACK			2	SS		Same as above	OVA = 21.7
	10						
			3	SS		Dark black to brown PEAT with wood fragments	No visual contamination OVA = 3.9
	15						
	20						
	25						
	30						
	35						
	40						
	45						
	50						

H:530501B5

ENVIRONMENTAL TECHNOLOGY ENGINEERING, INC.
CONSULTING ENGINEERS, SURVEYORS AND HYDROGEOLOGISTS
HYDROGEOLOGIC SERVICES

TEST BORING LOG

BORING NO. B-6

PROJECT: SOUTHERN WOOD PIEDMONT – WILMINGTON, NC		SHEET NO. 1 OF 1	
CLIENT: SOUTHERN WOOD PIEDMONT	DATE FINISHED 2-20-923	JOB NO. 530-06-501	
BORING CONTRACTOR: ETE	DRILLER C. AARON	ELEVATION	
RIG USED MOBILE B-57	INSPECTOR K. ANDERSON	DATE STARTED 2-20-92	

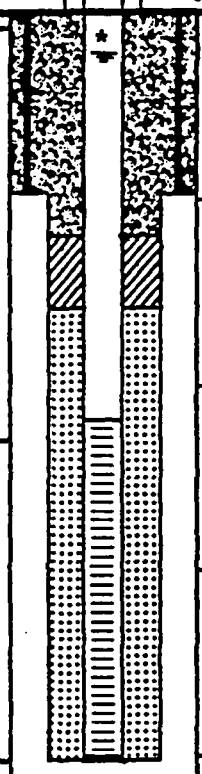
WELL CONSTRUCTION	DEPTH FEET	SAMPLE: LITHOLOGY	No.	TYPE	BLOWS PER 6"	CLASSIFICATION	REMARKS
CLAY	0						
PLUG							
SAND PACK			1	SS		Fine to mdedium brown SAND	Water saturated No visual contamination OVA = 1.7
SAND PACK	5						
			2	SS		Dark brown to black PEAT with wood fragments	OVA = 1.0
	10						
	15						
	20						
	25						
	30						
	35						
	40						
	45						
	50						

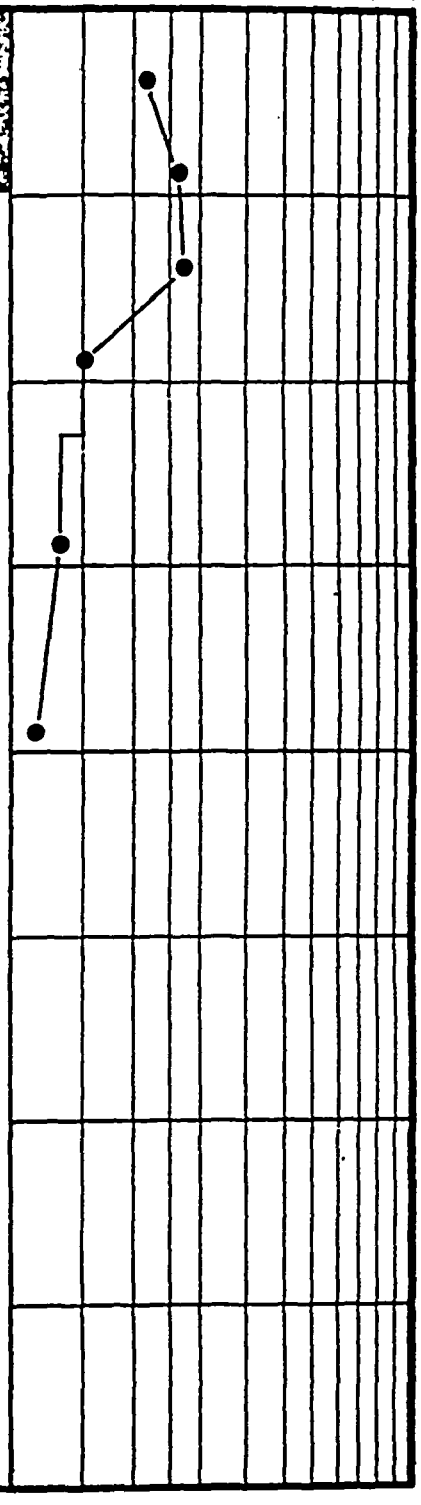
H:530501B6

TEST BORING RECORD

Elevation of top of PVC pipe: 5.04'

ELEV.	DEPTH FEET	DESCRIPTION
3.46	0.0	
	0.5	FILL: Dark brown and black CINDERS and silty fine to medium SAND
-1.54		Firm to loose dark to light brownish-gray/grayish-brown fine to medium SAND with traces of silt
-6.54		
	11.5	
-11.54		Soft to very soft dark brown PEAT and ORGANIC SILT with wood and root fragments
-16.54	20.0	BORING TERMINATED
-21.54		





REMARKS:

* Water level on 9-19-85

1) Wash drilled with 10-inch wing bit using a bentonite and potable water drilling fluid mixture to 4.8 feet; Wash drilled with 5 7/8-inch rotary bit using a bentonite and potable water drilling fluid mixture from 4.8 to 20.0 feet

2) Well developed on 9-10-85

DRILLED BY L.S.
LOGGED BY J.T.B.
CHECKED BY C.A.S.

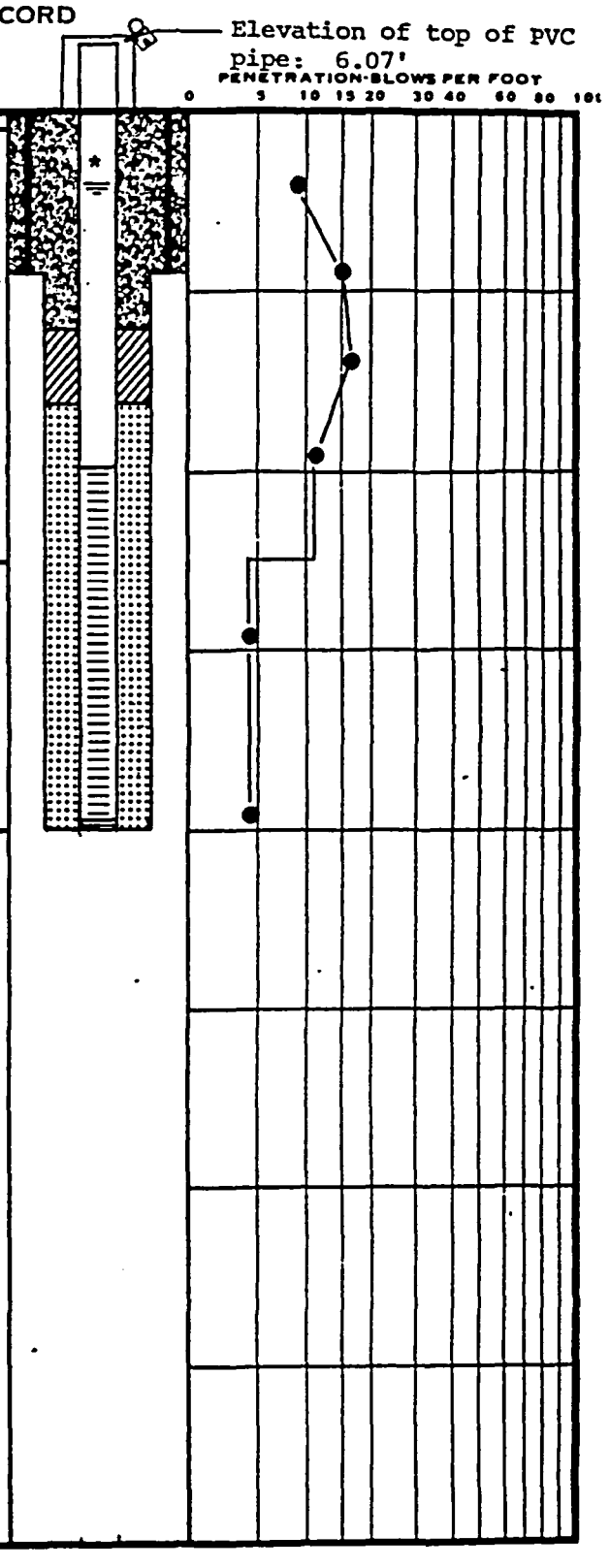
BORING NUMBER MW-6
DATE STARTED 9-4-85
DATE COMPLETED 9-5-85
JOB NUMBER HA-5276

SWP - Wilmington

TEST BORING RECORD

Elevation of top of PVC pipe: 6.07'

ELEV.	DEPTH FEET	DESCRIPTION
4.16	0.0	FILL: Brown slightly silty fine SAND with cinders
	0.5	
-0.84		Loose to firm brown slightly silty fine to medium SAND to fine to medium SAND with traces of silt
-5.84		
	12.5	
-10.84		Soft to firm dark brown PEAT and ORGANIC SILT with wood and root fragments becoming predominantly wood in last sample
-15.84	20.0	BORING TERMINATED
-20.84		



REMARKS:

* Water level on 9-19-85

1) Wash drilled with 10-inch wing bit using a bentonite and potable water drilling fluid mixture to 4.5 feet; wash drilled with 5 7/8-inch roller bit using a bentonite and potable water drilling fluid mixture from 4.5 to 20.0 feet

2) Well developed on 9-11-85

DRILLED BY L.S.
LOGGED BY J.T.B.
CHECKED BY C.A.S.

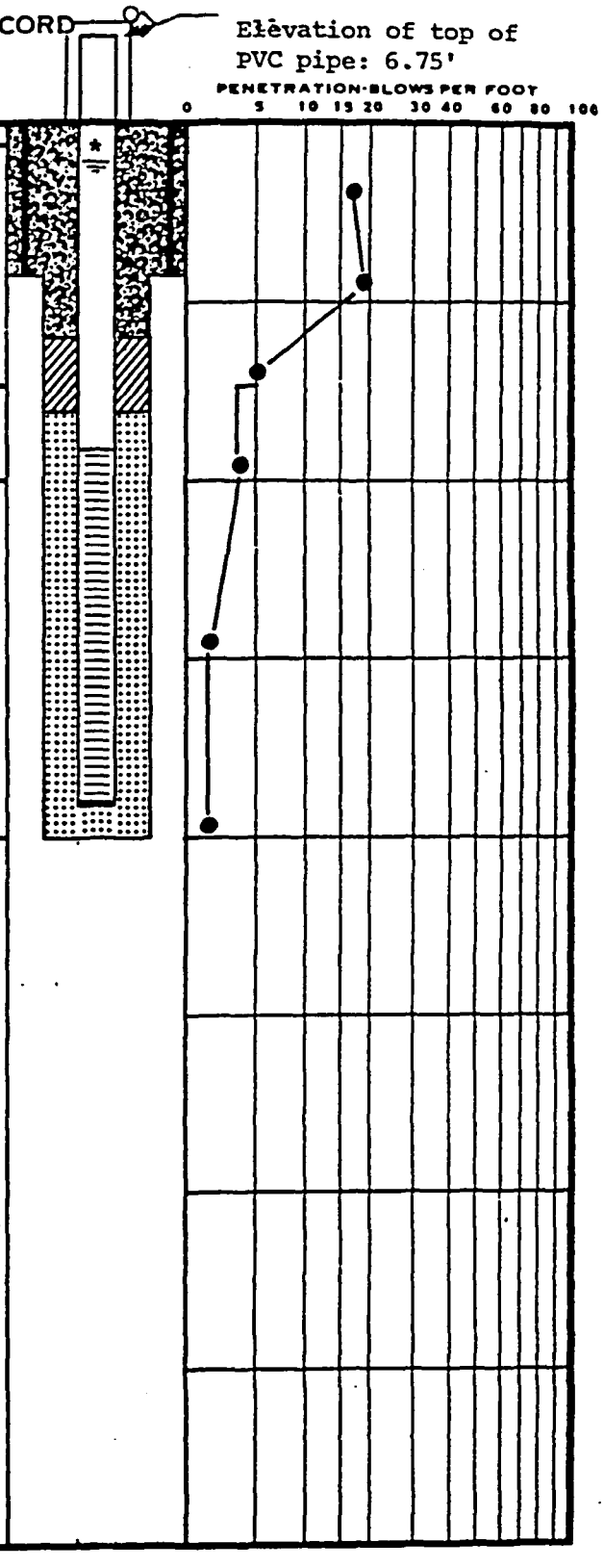
BORING NUMBER MW-7
DATE STARTED 9-4-85
DATE COMPLETED 9-6-85
JOB NUMBER HA-5276

SWP - Wilmington

TEST BORING RECORD

Elevation of top of PVC pipe: 6.75'

ELEV.	DEPTH FEET	DESCRIPTION
4.26	0.0	
	0.7	FILL: Dark brown silty fine SAND with occasional coarse sand
-0.74		Firm to loose dark brown to grayish-brown and brown slightly silty fine to medium SAND with traces of coarse sand
	7.4	
		Buried log from 7.4 to 10.0 feet
-5.74	10.0	
-10.74		Very soft to soft dark brown PEAT and ORGANIC SILT with wood and root fragments
-15.74	20.0	
		BORING TERMINATED
-20.74		



REMARKS:

* Water level on 9-19-85

1) Wash drilled with 10-inch wing bit using a bentonite and potable water drilling fluid mixture to 4.5 feet; wash drilled with 5 7/8-inch roller bit using a bentonite and potable water drilling fluid mixture from 4.5 to 20.0 feet

2) Well developed on 9-11-85

DRILLED BY L.S.
LOGGED BY J.T.B.
CHECKED BY C.A.S.

BORING NUMBER MW-8
DATE STARTED 9-4-84
DATE COMPLETED 9-9-85
JOB NUMBER HA-5276

SWP - Wilmington

ENVIRONMENTAL TECHNOLOGY ENGINEERING, INC.
CONSULTING ENGINEERS, SURVEYORS AND HYDROGEOLOGISTS
HYDROGEOLOGIC SERVICES

TEST BORING LOG

BORING NO. MW-8A

PROJECT: SOUTHERN WOOD PIEDMONT-WILMINGTON		SHEET NO. 1 OF 1	
CLIENT: CHUCK DAVIS	DATE FINISHED 10-1-92	JOB NO. 530-06-503	
BORING CONTRACTOR: ETE	DRILLER T. COPPIN	ELEVATION 4.12	
RIG USED ATV MUD ROTARY	INSPECTOR G.KUNTZ	DATE STARTED 9-28-92	

WELL CONSTRUCTION: GROUT; 6" PVC CASING; 2" PVC CASING; 6" PVC CASING; GROUT; CLAY; PLUG; SAND PACK; SAND PACK

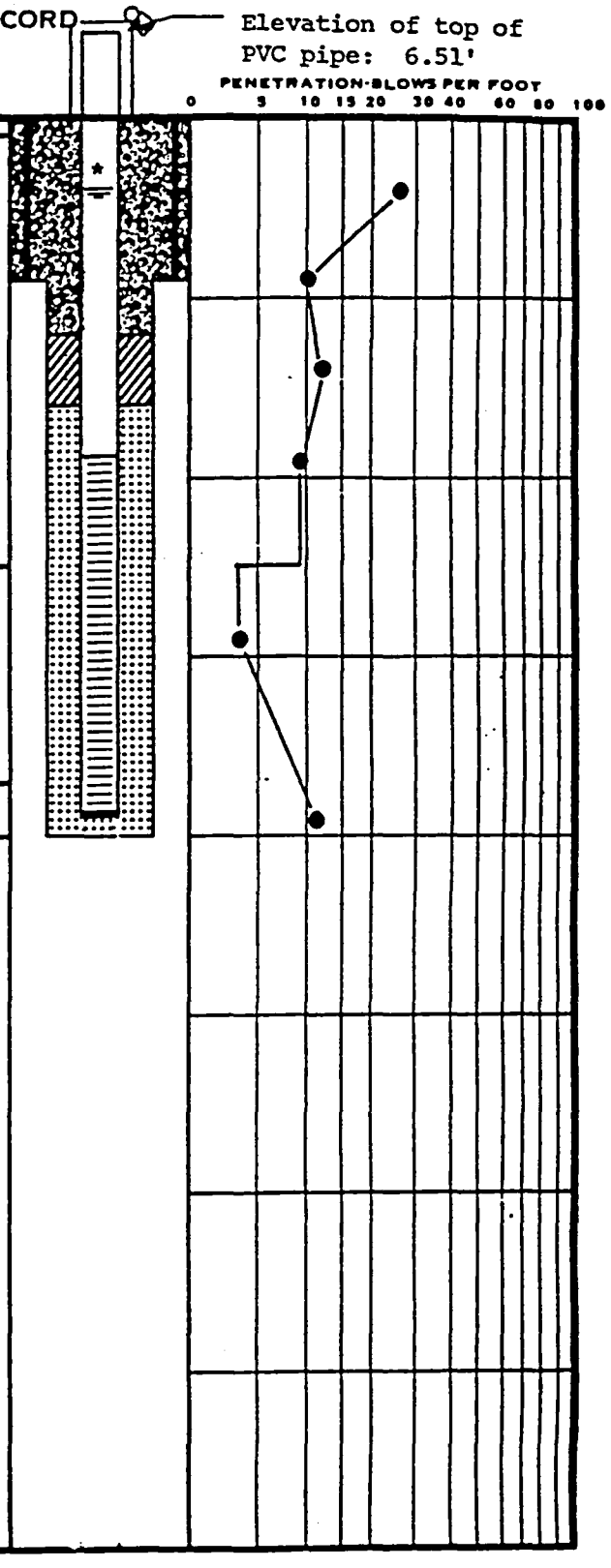
DEPTH FEET	SAMPLE No.	TYPE	BLOWS PER 6"	CLASSIFICATION	REMARKS
0	1	SS	7-6 / 6-11	Loose, yellowish brown SAND, fine to coarse, 5% clay	16" recovery No odor OVA = 114 ppm
	2	SS	5-10 / 18-16	Firm, brownish gray SAND, fine to coarse	18" recovery No odor OVA = 38.1 ppm
5	3	SS	14-15 / 16-20	Firm, brownish black organic rich silty SAND, silt to medium, 10% small pebble, 5% clay, 5% organics	8" recovery No odor OVA = 25.6 ppm
	4	SS	2-3 / 4-4	Very loose, brown SAND, fine to coarse	8" recovery No odor OVA = 38.6 ppm
	5	SS	1-1 / 1-1	Very loose, same to 9 feet, then dark brown CLAY, trace coarse to small pebble, 10% wood	12" recovery No odor OVA = 32.7 ppm
10	6	SS	1-1 / 1-1	Very loose, same as above	8" recovery No odor OVA = 28.4 ppm
	7	SS	1-1 / 1-2	Very loose, dark brown peaty CLAY, 30% wood	14" recovery No odor OVA = 25.7 ppm
15	8	SS	1-1 / 1-1	Very loose, same as above, 40% wood	12" recovery No odor OVA = 20.8 ppm
	9	SS	1-1 / 1-1	Very loose, dark brown peaty CLAY, 50% wood	10" recovery No odor OVA = 6.0 ppm
	10	SS	1-1 / 6-2	Loose, dark brown clayey PEAT, 35% clay	18" recovery No odor OVA = 14.3 ppm
20	11	SS	1-0 / 1-1	Very loose, same as above	12" recovery No odor OVA = 3.9 ppm
	12	SS	1-1 / 1-1	Very loose, PEAT, large wood chunk blocked shoe	2" recovery No odor OVA = 7.3 ppm
25	13	SS	1-5 / 7-8	Loose, brown SAND, fine to coarse, well sorted coarse	10" recovery Very slight odor OVA = 78.6 ppm
	14	SS	6-7 / 6-6	Loose, same as above	18" recovery Very slight odor OVA = 99.2 ppm
30	15	SS	1-0 / 4-5	Very loose, brown SAND, fine to coarse, moderately sorted medium, trace granule, 2% phosphate	16" recovery No odor OVA = 53.7 ppm
35	16	SS	6-4 / 3-3	Very loose, brown SAND, well sorted medium, 2% phosphate	10" recovery No odor OVA = 42.6 ppm
40	17	SS	2-2 / 1-1	Very loose, brown SAND, fine to coarse, poorly sorted, 10% granule to medium pebble, 2% phosphate, trace lignite	12" recovery No odor OVA = 9.5 ppm
	18	SS	12-22 / 36-50	Dense, olive gray CLAY to 44.5 feet with 5% phosphate and glauconite then light gray sandy shell mold LIMESTONE and SAND, alternating cemented shell molds and friable sand laminae, silt to large pebble	24" recovery No odor OVA = 2.5 ppm
45					24" recovery No odor OVA = 1.1 ppm
50	19	SS	15-35 / 48-15	Dense, same as above	TD = 51 feet

H:530MW8A

TEST BORING RECORD

Elevation of top of PVC pipe: 6.51'

ELEV.	DEPTH FEET	DESCRIPTION
4.46	0.0	
	0.5	FILL: Dark brown silty fine SAND with occasional coarse sand
-0.54		Very firm to loose gray to grayish-brown fine to medium SAND with traces of silt
-5.54		
	12.5	
-10.54		Soft dark brown PEAT and ORGANIC SILT with root and wood fragments
	18.5	
-15.54	20.0	Buried log from 18.5 to 20.0 feet
		BORING TERMINATED
-20.54		



REMARKS:

* Water level on 9-19-85

1) Wash drilled with 10-inch wing bit using a bentonite and potable water drilling fluid mixture to 4.5 feet; wash drilled with 5 7/8-inch roller bit using a bentonite and potable water drilling fluid mixture from 4.5 to 20.0 feet

2) Well developed on 9-11-85

DRILLED BY L.S.
LOGGED BY J.T.B.
CHECKED BY C.A.S.

BORING NUMBER MW-9
DATE STARTED 9-5-85
DATE COMPLETED 9-10-85
JOB NUMBER HA-5276

SWP - Wilmington

ENVIRONMENTAL TECHNOLOGY ENGINEERING, INC.
CONSULTING ENGINEERS, SURVEYORS AND HYDROGEOLOGISTS
HYDROGEOLOGIC SERVICES

TEST BORING LOG

BORING NO. MW-10

PROJECT: SOUTHERN WOOD PIEDMONT – WILMINGTON, NC		SHEET NO. 1 OF 1	
CLIENT: SOUTHERN WOOD PIEDMONT	DATE FINISHED 2-18-92	JOB NO. 530-06-501	
BORING CONTRACTOR: ETE	DRILLER C. AARON	ELEVATION	
RIG USED MOBILE B-57	INSPECTOR K. ANDERSON	DATE STARTED 2-18-92	

WELL CONSTRUCTION	DEPTH FEET	SAMPLE: LITHOLOGY	No.	TYPE	BLOWS PER 6"	CLASSIFICATION	REMARKS
CLAY; PLUG; SAND PACK; SAND PACK	0						
	5		1	SS	06-10 10-15	Black – tan fine to meduium SAND	Saturated with water OVA = 0.0
	10		2	SS	04-26 50	Tan fine to medium SAND	Saturated with water; OVA = 0.0
	15		3	SS		Tan fine to medium SAND in upper portion of spoon; Dark brown to black PEAT at bottom of spoon	Boring terminated at 13.0 ft. OVA = 0.0
	20						
	25						
	30						
	35						
	40						
	45						
	50						

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ENVIRONMENTAL TECHNOLOGY ENGINEERING, INC.
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TEST BORING LOG

BORING NO. MW-11

PROJECT: SOUTHERN WOOD PIEDMONT – WILMINGTON, NC			SHEET NO. 1 OF 1
CLIENT: SOUTHERN WOOD PIEDMONT	DATE FINISHED	2-18-92	JOB NO. 530-06-501
BORING CONTRACTOR: ETE	DRILLER	C. AARON	ELEVATION
RIG USED MOBILE B-57	INSPECTOR	K. ANDERSON	DATE STARTED 2-18-92

WELL CONSTRUCTION: CLAY; PLUG; SAND PACK; SAND PACK

DEPTH FEET	SAMPLE: LITHOLOGY	SAMPLE: NO.	SAMPLE: TYPE	SAMPLE: BLOWS PER 6"	CLASSIFICATION	REMARKS
0						
		1	SS		Hit concrete and other buried debris	
5		2	SS	10-05 05-05	Brown-tan fine to medium SAND	Saturated with Creosote from 5 to 7 feet: OVA = 34.
		3	SS	02-02 02-01	Brown-tan fine to medium SAND	Saturated with Creosote OVA = 38.1
10						
		4	SS		Brown-tan fine to medium SAND in upper spoon; Encountered a dark brown to black PEAT with roots at 15.0'	Sand unit saturated with Creosote; OVA = 69.8
15						
20						
25						
30						
35						
40						
45						
50						

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ENVIRONMENTAL TECHNOLOGY ENGINEERING, INC.
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HYDROGEOLOGIC SERVICES

TEST BORING LOG

BORING NO. MW-11A

PROJECT: SOUTHERN WOOD PIEDMONT-WILMINGTON		SHEET NO. 1 OF 1	
CLIENT: CHUCK DAVIS	DATE FINISHED 10-1-92	JOB NO. 530-06-503	
BORING CONTRACTOR: ETE	DRILLER T. COPPIN	ELEVATION 4.10	
RIG USED ATV MUD ROTARY	INSPECTOR G. KUNTZ	DATE STARTED 9-29-92	

WELL CONSTRUCTION: GROUT; 6" PVC CASING; 2" PVC CASING; 6" PVC CASING; GROUT; CLAY; PLUG; SAND PACK; SAND PACK

DEPTH FEET	SAMPLE No.	TYPE	BLOWS PER 6"	CLASSIFICATION	REMARKS
0	1	SS	8-8 10-24	Loose, brown SAND, fine to coarse, well sorted medium	18" recovery No odor OVA = 124 ppm
	2	SS	7-7 10-22	Loose, brown SAND, fine to coarse, 5% wood. At 3 feet visually stained soil.	12" recovery Strong odor OVA = 877
5	3	SS	2-1 1-1	Very loose, brown SAND, fine to coarse, 5% wood, 2" dark brown CLAY layer at 5 feet. Visually stained soil.	8" recovery Strong odor OVA = 89.1 ppm
	4	SS	6-8 1-1	Very loose, brown SAND, fine to coarse, trace wood, 8-inch dark brown peaty CLAY lense at 6 feet. Visually stained soil.	24" recovery Strong odor OVA = 153 ppm
	5	SS	4-4 5-7	Loose, brown SAND, fine to coarse, 5% wood, visually stained soils to 8.5' then 1/4" seams of stained soil	24" recovery Strong odor OVA = 113 ppm
10	6	SS	2-4 5-4	Very loose, brown SAND, fine to coarse. Visually stained soils.	12" recovery Strong odor OVA = 186 ppm
	7	SS	2-2 3-2	Very loose, same as above to 13 feet, then dark brown peaty CLAY, 30% wood. Visually stained soils in sands, no visual staining in peaty clay.	10" recovery Strong odor OVA = 131
15	8	SS	2-3 2-3	Very loose, dark brown PEAT, 20% clay	24" recovery Strong odor OVA = 66.2 ppm
	9	SS	2-4 2-3	Very loose, brownish black peaty CLAY, 30% peat	10" recovery Strong odor OVA = 98.1 ppm
	10	SS	2-2 3-2	Very loose, same as above, 40% wood	16" recovery Strong odor OVA = 113 ppm
20	11	SS	50	Grout	3" recovery
	12	SS	6-2 3-2	Very loose, brownish black peaty CLAY, 25% wood	4" recovery Moderate odor OVA = 112 ppm
25	13	SS	0-0 0-0	Very loose, same as above	24" recovery No odor OVA = 17.3 ppm
	14	SS	2-2 4-6	Very loose, same to 27.5 feet, then dark brown SAND, fine to coarse, well sorted medium	24" recovery Very slight odor OVA = 34.3 ppm
	15	SS	3-4 7-8	Loose, same as above, 10% wood	12" recovery Very slight odor OVA = 26.9 ppm
30	16	SS	5-8 7-14	Loose, light brown SAND, very fine to medium, well sorted fine, 2% phosphate	12" recovery No odor OVA = 18.6 ppm
35	17	SS	4-8 8-12	Loose, brown SAND, fine to granule, poorly sorted, 5% small pebble, 2% phosphate	12" recovery No odor OVA = 12.8 ppm
40	18	SS	25-22 20-28	Firm, brown SAND, fine to granule to 44 feet, then olive gray CLAY, 5% phosphate and glauconite, tight and dry	24" recovery No odor OVA = 7.2 ppm
45				Dense, lt gray shell mold	14" recovery
	19	SS	48-26 50+	LIMESTONE and SAND, alternating lenses of indurated cemented shell molds and friable sand, silt to very coarse, 10% granule	No odor OVA = 10.8 ppm TD = 50 feet
50					

H:530MW11A

ENVIRONMENTAL TECHNOLOGY ENGINEERING, INC.
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HYDROGEOLOGIC SERVICES

TEST BORING LOG

BORING NO. MW-12

PROJECT: SOUTHERN WOOD PIEDMONT – WILMINGTON, NC		SHEET NO. 1 OF 1	
CLIENT: SOUTHERN WOOD PIEDMONT	DATE FINISHED 2-18-92	JOB NO. 530-06-501	
BORING CONTRACTOR: ETE	DRILLER C. AARON	ELEVATION	
RIG USED MOBILE B-57	INSPECTOR K. ANDERSON	DATE STARTED 2-18-92	

WELL CONSTRUCTION: CLAY; PLUG; SAND PACK; SAND PACK

DEPTH FEET	SAMPLE No.	TYPE	BLOWS PER 6"	CLASSIFICATION	REMARKS
0					
5	1	SS	19-14 06-07	Brown-tan fine to medium well sorted SAND	No visual Creosote OVA = 13.3
10	2	SS	03-05 10-18	Same as above except Sand is saturated with Creosote	OVA = 72.7
	3	SS	08-11 19-28	Same as above	OVA = 45.1
15				Organic rich dark brown to black PEAT with roots	
20					
25					
30					
35					
40					
45					
50					

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ENVIRONMENTAL TECHNOLOGY ENGINEERING, INC.
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HYDROGEOLOGIC SERVICES

TEST BORING LOG

BORING NO. MW-13

PROJECT: SOUTHERN WOOD PIEDMONT – WILMINGTON, NC		SHEET NO. 1 OF 1	
CLIENT: SOUTHERN WOOD PIEDMONT	DATE FINISHED 2-18-92	JOB NO. 530-06-501	
BORING CONTRACTOR: ETE	DRILLER C. AARON	ELEVATION	
RIG USED MOBILE B-57	INSPECTOR K. ANDERSON	DATE STARTED 2-18-92	

WELL CONSTRUCTION: CLAY; PLUG; SAND PACK; SAND PACK

DEPTH FEET	SAMPLE LITHOLOGY	SAMPLE No.	SAMPLE TYPE	BLOWS PER 6"	CLASSIFICATION	REMARKS
0						
5		1	SS	03-01 / 01-0	Brown-tan fine to medium SAND	Visual Creosote encountered in borehole immediately upon drilling OVA = 102.0
10		2	SS	05-07 / 12	Same as above	No visual Creosote; OVA = 47.8
15		3	SS		Dark brown to balck organic rich PEAT	No visual Creosote OVA = 3.0
20						
25						
30						
35						
40						
45						
50						

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HYDROGEOLOGIC SERVICES

TEST BORING LOG

BORING NO. MW-14

PROJECT: SOUTHERN WOOD PIEDMONT – WILMINGTON, NC			SHEET NO. 1 OF 1
CLIENT: SOUTHERN WOOD PIEDMONT	DATE FINISHED	2-19-92	JOB NO. 530-06-501
BORING CONTRACTOR: ETE	DRILLER	C. AARON	ELEVATION
RIG USED MOBILE B-57	INSPECTOR	K. ANDERSON	DATE STARTED 2-19-92

WELL CONSTRUCTION: CLAY; PLUG; SAND PACK; SAND PACK

DEPTH FEET	SAMPLE No.	TYPE	BLOWS PER 6"	CLASSIFICATION	REMARKS
0	1	SS	2-5 / 6-5	Dark brown-black Fill material	OVA = 0.0
	2	SS	9-5 / 4-3	Brown-tan fine to medium SAND	Visual Creosote OVA = 0.0
5	3	SS	2-2 / 4-3	Same as above	Visual Creosote OVA = 19.3
	4	SS	3-3 / 4-10	Same as above	Visual Creosote OVA = 34.7
	5	SS		Black-brown organic rich PEAT with roots	Visual Creosote OVA = 27.1
10	6	SS		Same as above with large wood fragments throughout	Visual Creosote OVA = 9.6
	7	SS		Black PEAT with brown-orange wood fragment at end of spoon	Visual Creosote OVA = 25.3
15	8	SS		Black-brown PEAT with root fragments	Visual Creosote OVA = 19.4
	9	SS		No sample retrieved	
	10	SS		Black-brown PEAT with root fragments	No visual Creosote OVA = 8.0
20	11	SS		Black-brown PEAT to approximately 21.5 ft bgs; Brown-tan medium to coarse SAND below peat	No visual Creosote OVA = 5.2
25					
30					
35					
40					
45					
50					

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HYDROGEOLOGIC SERVICES

TEST BORING LOG

BORING NO. MW-15

PROJECT: SOUTHERN WOOD PIEDMONT – WILMINGTON, NC		SHEET NO. 1 OF 2	
CLIENT: SOUTHERN WOOD PIEDMONT	DATE FINISHED 2-19-92	JOB NO. 530-06-501	
BORING CONTRACTOR: ETE	DRILLER C. AARON	ELEVATION	
RIG USED MOBILE B-57	INSPECTOR K. ANDERSON	DATE STARTED 2-19-92	

WELL CONSTRUCTION	DEPTH FEET	SAMPLE: LITHOLOGY	SAMPLE: NO.	SAMPLE: TYPE	SAMPLE: BLOWS PER 6"	CLASSIFICATION	REMARKS
CLAY / PLUG; SAND PACK / SAND PACK	0						
	5		1	SS	1-1 / 4-4	Fine to medium, loose to very loose brown SAND	Visual oil; diesel fuel odor OVA = 58.3
	10		2	SS		Fine to medium, brown SAND	No visual oil; OVA = 15.6
	15		3	SS		Fine to medium, brown SAND in upper spoon; Dark brown to black PEAT with root fragments in lower part of spoon	No visual oil OVA = 5.4
	20						
	25						
	30						
	35						
	40						
	45						
	50						

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ENVIRONMENTAL TECHNOLOGY ENGINEERING, INC.
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HYDROGEOLOGIC SERVICES

TEST BORING LOG

BORING NO. MW-16

PROJECT: SOUTHERN WOOD PIEDMONT – WILMINGTON, NC			SHEET NO. 1 OF 1
CLIENT: SOUTHERN WOOD PIEDMONT	DATE FINISHED	2-19-92	JOB NO. 530-06-501
BORING CONTRACTOR: ETE	DRILLER	C. AARON	ELEVATION
RIG USED MOBILE B-57	INSPECTOR	K. ANDERSON	DATE STARTED 2-19-92

WELL CONSTRUCTION: CLAY PLUG; SAND PACK; SAND PACK

DEPTH FEET	SAMPLE No.	SAMPLE TYPE	CLASSIFICATION	REMARKS
0				
5	1	SS	Fine to medium, brown SAND	Saturated with diesel fuel OVA = 104
10	2	SS	Medium tan to brown SAND with some wood fragments	Little odor OVA = 42.6
			Same as above	Slight diesel odor OVA = 32.5
15	3	SS	Dark brown to black PEAT contact at 15.0 ft.	
20				
25				
30				
35				
40				
45				
50				

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TEST BORING LOG

BORING NO. MW-17

PROJECT: SOUTHERN WOOD PIEDMONT – WILMINGTON, NC		SHEET NO. 1 OF 1	
CLIENT: SOUTHERN WOOD PIEDMONT	DATE FINISHED 2-19-92	JOB NO. 530-06-501	
BORING CONTRACTOR: ETE	DRILLER C. AARON	ELEVATION	
RIG USED MOBILE B-57	INSPECTOR K. ANDERSON	DATE STARTED 2-19-92	

WELL CONSTRUCTION	DEPTH FEET	SAMPLE: LITHOLOGY	No.	TYPE	BLOWS PER 6"	CLASSIFICATION	REMARKS
CLAY / PLUG; SAND PACK / SAND PACK	0						
	-5		1	SS	10-2 / 2-2	Fine to medium brown SAND with wood fragment at bottom of spoon	Saturated with diesel fuel: OVA = 118
	-10		2	SS	2-2 / 2-2	Wood fragments in upper portion of spoon with a fine to medium brown SAND in bottom of spoon	Diesel fuel odor OVA = 57.1
			3	SS		Fine to medium brown SAND	Saturated with diesel fuel; OVA = 72.3
	-15		4	SS		Dark Brown PEAT with root fragments	No visual oil OVA = 39.1
	-20						
	-25						
	-30						
	-35						
	-40						
	-45						
	-50						

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ENVIRONMENTAL TECHNOLOGY ENGINEERING, INC.
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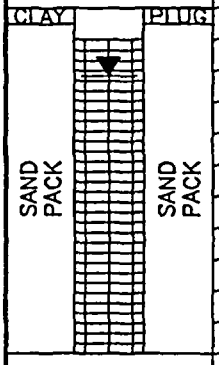
HYDROGEOLOGIC SERVICES

TEST BORING LOG

BORING NO. MW-18

PROJECT: SOUTHERN WOOD PIEDMONT-WILMINGTON		SHEET NO. 1 OF 1	
CLIENT: CHUCK DAVIS	DATE FINISHED 10-7-92	JOB NO. 530-06-503	
BORING CONTRACTOR: ETE	DRILLER T. COPPIN	ELEVATION 4.26	
RIG USED ATV MUD ROTARY	INSPECTOR G. KUNTZ	DATE STARTED 10-6-92	

WELL CONSTRUCTION



DEPTH FEET	SAMPLE No.	TYPE	BLOWS PER 6"	CLASSIFICATION	REMARKS
0	1	SS	0-0 0-0	Very loose, brown SAND, fine to medium, 5% coarse to granule	14" recovery No odor OVA = 30 ppm
	2	SS	4-4 10-13	Loose, brown SAND, fine to coarse, 5% granule, poorly sorted	18" recovery Slight diesel odor OVA = 35.3 ppm
5	3	SS	3-2 3-2	Very loose, brown SAND, fine to coarse, coarse dominant, 20% very coarse	14" recovery No odor OVA = 27.9 ppm
	4	SS	4-5 6-7	Loose, same as above, 35% very coarse to granule, 2% small pebble	18" recovery Slight diesel odor OVA = 20.6 ppm
	5	SS	6-12 12-10	Firm, brown pebbly SAND, fine to coarse, 30% granule to small pebble	12" recovery No odor OVA = 9.9 ppm
10	6	SS	4-6 5-11	Loose, brown SAND, fine to coarse, medium dominant	18" recovery No odor OVA = 6.6 ppm
	7	SS	6-8 10-9	Loose, brown pebbly SAND, very fine to coarse, 30% granule to small pebble to 13.5 feet, then dark brown clayey PEAT, 30% clay	24" recovery No odor OVA = 5.1 ppm TD = 14 feet
15					
20					
25					
30					
35					
40					
45					
50					

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ENVIRONMENTAL TECHNOLOGY ENGINEERING, INC.
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TEST BORING LOG

BORING NO. MW-19

PROJECT: SOUTHERN WOOD PIEDMONT-WILMINGTON		SHEET NO. 1 OF 1	
CLIENT: CHUCK DAVIS	DATE FINISHED 10-6-92	JOB NO. 530-06-503	
BORING CONTRACTOR: ETE	DRILLER T. COPPIN	ELEVATION 3.19	
RIG USED ATV MUD ROTARY	INSPECTOR G. KUNTZ	DATE STARTED 10-6-92	

WELL CONSTRUCTION: GROUT; 2" STAINLESS STEEL; GROUT; CLAY; PLUG; SAND PACK; SAND PACK

DEPTH FEET	SAMPLE No.	TYPE	BLOWS PER 6"	CLASSIFICATION	REMARKS
0	1	SS	0-0 / 0-0	Very loose, dark brown SAND, fine to coarse, 5% granule	8" recovery No odor OVA = 201 ppm
	2	SS	4-4 / 5-5	Loose, brown SAND, fine to coarse, poorly sorted	18" recovery No odor OVA = 276 ppm
5	3	SS	6-7 / 5-7	Loose, brown SAND, fine to medium, well sorted medium	12" recovery No odor OVA = 92.4 ppm
	4	SS	5-5 / 6-8	Loose, brown SAND, fine to coarse, poorly sorted	18" recovery No odor OVA = 69.6 ppm
	5	SS	6-7 / 8-9	Loose, same as above, 10% wood	24" recovery Slight odor OVA = 183 ppm
10	6	SS	3-3 / 3-1	Very loose, same as above, 20% wood. Visually stained soil 11.5 to 12 feet.	24" recovery Strong odor OVA = 210 ppm
	7	SS	1-1 / 1-1	Very loose, brownish black clayey PEAT, 25% clay	18" recovery Moderate odor OVA = 45.6 ppm TD = 14 feet

15, 20, 25, 30, 35, 40, 45, 50

H:530MW19

1.125

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TEST BORING LOG

BORING NO. MW-19A

PROJECT: SOUTHERN WOOD PIEDMONT-WILMINGTON		SHEET NO. 1 OF 1	
CLIENT: CHUCK DAVIS	DATE FINISHED	10-2-92	JOB NO. 530-06-503
BORING CONTRACTOR: ETE	DRILLER	T. COPPIN	ELEVATION 3.15
RIG USED ATV MUD ROTARY	INSPECTOR	G. KUNTZ	DATE STARTED 9-30-92

WELL CONSTRUCTION: GROUT; 6" PVC CASING; 2" PVC CASING; 6" PVC CASING; GROUT; CLAY; PLUG; SAND PACK; SAND PACK

DEPTH FEET	SAMPLE No.	TYPE	BLOWS PER 6"	CLASSIFICATION	REMARKS
0	1	SS	3-2 / 2-3	Very loose, brown SAND, fine to coarse	16" recovery; No odor; OVA = 214 ppm
	2	SS	8-7 / 6-8	Loose, brown pebbly SAND, fine to coarse, 25% small pebble	8" recovery; No odor; OVA = 290 ppm
5	3	SS	4-5 / 6-8	No recovery	
	4	SS	6-8 / 8-9	Loose, brown SAND, fine to coarse, 5% wood	16" recovery; No odor; OVA = 89.5 ppm
	5	SS	4-4 / 3-1	Very loose, same as above	12" recovery; Slight odor; OVA = 183 ppm
10	6	SS	5-4 / 3-1	Very loose, same as above to 11.5 feet, then 1-inch dark brown clay lense followed by same sand to 12 feet	18" recovery; Visual creosote 11.5' to 12'; OVA = 210 ppm
	7	SS	1-1 / 1-2	Very loose, brownish black clayey PEAT, 25% clay	18" recovery; Moderate odor; OVA = 42.3 ppm
15	8	SS	1-1 / 1-1	Very loose, brownish black peaty CLAY, 30% peat	24" recovery; No odor; OVA = 19.0 ppm
	9	SS	1-1 / 1-1	Very loose, same as above, 50% wood	18" recovery; No odor; OVA = 10.1 ppm
	10	SS	1-2 / 1-0	Same as above	14" recovery; No odor; OVA = 8.6 ppm
20	11	SS	5-1 / 1-2		No recovery
	12	SS	0-0 / 2-3	Very loose, dark brown peaty CLAY, 30% wood	12" recovery; No odor; OVA = 11.9 ppm
25	13	SS	1-2 / 2-4	Very loose, same as above to 25 feet, then brown SAND, fine to coarse, poorly sorted	24" recovery; No odor; OVA = 8.6 ppm
30	14	SS	6-9 / 7-7	Loose, light brown SAND, fine to coarse, well sorted medium	12" recovery; No odor; OVA = 9.8 ppm
35	15	SS	5-3 / 3-2	Very loose, brown SAND, fine to granule, moderately sorted medium, 2% phosphate	12" recovery; No odor; OVA = 4.6 ppm
40	16	SS	0-0 / 12-16	Firm, olive gray CLAY, 5% phosphate and glauconite, tight and dry	24" recovery; No odor; OVA = 4.9 ppm
	17	SS	8-27 / 27-26	Firm, same as above, 10% phosphate and glauconite	24" recovery; No odor; OVA = 5.2 ppm
	18	SS	65	Very dense, light gray sandy shell mold LIMESTONE, 35% sand	2" recovery; No odor; OVA = 3.1 ppm; TD = 43 feet 2 inches
45					
50					

H:530MW19A

ENVIRONMENTAL TECHNOLOGY ENGINEERING, INC.
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HYDROGEOLOGIC SERVICES

TEST BORING LOG

BORING NO. MW-20

PROJECT: SOUTHERN WOOD PIEDMONT-WILMINGTON		SHEET NO. 1 OF 1	
CLIENT: CHUCK DAVIS	DATE FINISHED 10-7-92	JOB NO. 530-06-503	
BORING CONTRACTOR: ETE	DRILLER T. COPPIN	ELEVATION 3.17	
RIG USED ATV MUD ROTARY	INSPECTOR G. KUNTZ	DATE STARTED 10-7-92	

WELL CONSTRUCTION: GROUT; CLAY; SAND PACK; 2" PVC CASING; GROUT; PLUG; SAND PACK

DEPTH FEET	SAMPLE No.	TYPE	BLOWS PER 6"	CLASSIFICATION	REMARKS
0	1	SS	1-0	Very loose, black clayey PEAT to 1 foot then brown SAND, fine to coarse	18" recovery Slight odor OVA = 120 ppm
			0-0		
	2	SS	5-5	Loose, brown SAND, fine to coarse, poorly sorted	24" recovery Very slight odor OVA = 66.0 ppm
			7-11		
5	3	SS	0-0	Very loose, same as above	18" recovery Very slight odor OVA = 106 ppm
			5-5		
	4	SS	5-5	Loose, same as above	18" recovery No odor OVA = 43.5 ppm
			5-6		
	5	SS	4-2	Very loose, brown SAND, very fine to medium, 10% coarse, 1/4" dark gray clay lense at 10 feet	14" recovery No odor OVA = 57.1 ppm
			1-2		
10	6	SS	1-0	Very loose, brownish gray silty SAND, silt to medium, 35% silt, 10% clay, 1-inch dark gray lense at 11.5 feet	20" recovery No odor OVA = 9.8 ppm
			1-2		
	7	SS	1-2	Very loose, brownish black peaty CLAY, 25% wood	24" recovery Very slight odor OVA = 15.7 ppm TD = 14 feet
			1-2		
15					
20					
25					
30					
35					
40					
45					
50					

H:530MW20

ENVIRONMENTAL TECHNOLOGY ENGINEERING, INC.
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TEST BORING LOG

BORING NO. MW-21

PROJECT: SOUTHERN WOOD PIEDMONT-WILMINGTON		SHEET NO. 1 OF 1	
CLIENT: CHUCK DAVIS	DATE FINISHED 10-7-92	JOB NO. 530-06-503	
BORING CONTRACTOR: ETE	DRILLER T. COPPIN	ELEVATION 3.17	
RIG USED ATV MUD ROTARY	INSPECTOR G. KUNTZ	DATE STARTED 10-7-92	

WELL CONSTRUCTION: CLAY; 2" PVC; PLUG; SAND PACK; SAND PACK

DEPTH FEET	SAMPLE No.	TYPE	BLOWS PER 6"	CLASSIFICATION	REMARKS
0	1	SS	1-1 / 1-1	Very loose, brownish black clayey PEAT to 6", then brown SAND, fine to coarse	18" recovery No odor OVA = 43.2 ppm
	2	SS	5-3 / 6-8	Loose, brown SAND, fine to coarse, coarse dominant	18" recovery No odor OVA = 86.6 ppm
5	3	SS	4-2 / 2-2	Very loose, brown SAND, fine to coarse, medium dominant	12" recovery No odor OVA = 52.6 ppm
	4	SS	1-3 / 7-8	Loose, same to 7', then 4" dark gray clay lense, then peaty CLAY, 30% wood	24" recovery No odor OVA = 20.6 ppm
	5	SS	1-1 / 0-1	Very loose, brownish black peaty CLAY, 30% wood	24" recovery No odor OVA = 10.8 ppm TD= 10 feet
10					
15					
20					
25					
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35					
40					
45					
50					

H:530MW21

ENVIRONMENTAL TECHNOLOGY ENGINEERING, INC.
CONSULTING ENGINEERS, SURVEYORS AND HYDROGEOLOGISTS
HYDROGEOLOGIC SERVICES

TEST BORING LOG

BORING NO. MW-22

PROJECT: SOUTHERN WOOD PIEDMONT-WILMINTON		SHEET NO. 1 OF 1	
CLIENT: CHUCK DAVIS	DATE FINISHED	10-7-92	JOB NO. 530-06-503
BORING CONTRACTOR: ETE	DRILLER	T. COPPIN	ELEVATION 3.02
RIG USED ATV MUD ROTARY	INSPECTOR	G. KUNTZ	DATE STARTED 10-7-92

WELL CONSTRUCTION: GROUT; 2" STAINLESS STEEL; GROUT; CLAY; PLUG; SAND PACK; SAND PACK

DEPTH FEET	SAMPLE No.	TYPE	BLOWS PER 6"	CLASSIFICATION	REMARKS
0	1	SS	5-4	Loose, black organic rich SAND, silt to coarse, 20% clay, 15% plant and wood material to 1.5', then brown SAND	18" recovery Slight diesel odor OVA = 109 ppm
			6-5		
	2	SS	5-6	Loose, brown SAND, fine to coarse	24" recovery Creosote stained soil at 3' OVA = 87.7 ppm
			6-4		
5	3	SS	4-2	Very loose, same as above	14" recovery Creosote stained soils OVA = 107 ppm
			4-3		
	4	SS	4-2	Loose, brown SAND, fine to coarse, well sorted medium	24" recovery Creosote stained soils OVA = 157 ppm
			6-9		
	5	SS	4-3	Very loose, same as above	20" recovery Creosote stained soils to 9' OVA = 75.6 ppm
			4-4		
10	6	SS	2-3	Loose, brown SAND, fine to coarse, poorly sorted, few 1/2" dark brown clay lenses at 11.5'	18" recovery Moderate odor OVA = 84.7 ppm
			6-7		
	7	SS	1-1	Very loose, brownish black clayey PEAT, 35% clay	24" recovery Slight creosote odor OVA = 25.5 ppm TD = 14 feet
			1-2		
15					
20					
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H:530MW22

ENVIRONMENTAL TECHNOLOGY ENGINEERING, INC.
CONSULTING ENGINEERS, SURVEYORS AND HYDROGEOLOGISTS
HYDROGEOLOGIC SERVICES

TEST BORING LOG

BORING NO. MW-23

PROJECT: SOUTHERN WOOD PIEDMONT-WILMINGTON		SHEET NO. 1 OF 1	
CLIENT: CHUCK DAVIS	DATE FINISHED 10-8-92	JOB NO. 530-06-503	
BORING CONTRACTOR: ETE	DRILLER T. COPPIN	ELEVATION 2.67	
RIG USED ATV MUD ROTARY	INSPECTOR G. KUNTZ	DATE STARTED 10-8-92	

WELL CONSTRUCTION: GROUT; CLAY; 2" PVC; GROUT; PLUG; SAND PACK; SAND PACK

DEPTH FEET	SAMPLE No.	TYPE	BLOWS PER 6"	CLASSIFICATION	REMARKS
0	1	SS	2-50	Very loose, brownish black PEAT to 6", then brown SAND, fine to coarse, 5% granule, wood fragment blocked shoe	8" recovery Very slight odor OVA = 12.2 ppm
	2	SS	0-2 1-0	Very loose, brownish gray SAND, silt to coarse, 20% clay	12" recovery No odor OVA = 12.7 ppm
5	3	SS	2-4 3-4	Very loose, brownish gray CLAY to 5', then brown SAND, fine to coarse, well sorted coarse	20" recovery No odor OVA = 14.6 ppm
	4	SS	3-4 4-4	Very loose, same as above	24" recovery No odor OVA = 16.2 ppm
	5	SS	1-1 1-1	Very loose, same as above to 9', then PEAT, 20% clay	14" recovery No odor OVA = 16.2 ppm
10	6	SS	2-2 2-2	Very loose, brownish black clayey PEAT, 35% clay	18" recovery No odor OVA =13.4 ppm TD = 12 feet
15					
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H:530MW23

ENVIRONMENTAL TECHNOLOGY ENGINEERING, INC.
CONSULTING ENGINEERS, SURVEYORS AND HYDROGEOLOGISTS
HYDROGEOLOGIC SERVICES

TEST BORING LOG

BORING NO. MW-24

PROJECT: SOUTHERN WOOD PIEDMONT-WILMINGTON		SHEET NO. 1 OF 1	
CLIENT: CHUCK DAVIS	DATE FINISHED	10-5-92	JOB NO. 530-06-503
BORING CONTRACTOR: ETE	DRILLER	T. COPPIN	ELEVATION 3.58
RIG USED ATV MUD ROTARY	INSPECTOR	G. KUNTZ	DATE STARTED 10-5-92

WELL CONSTRUCTION: GROUT; 2" PVC; GROUT; CLAY; PLUG; SAND PACK; SAND PACK

DEPTH FEET	LITHOLOGY	SAMPLE No.	TYPE	BLOWS PER 6"	CLASSIFICATION	REMARKS
0		1	SS	6-8, 8-7	Loose, dark brown with black SAND, silt to coarse, 10% clay, 10% organics, 2% small pebble	18" recovery; No odor; OVA = 36.2 ppm
		2	SS	7-9, 7-9	Loose, light brown SAND, fine to coarse, 5% clay, trace small pebble	18" recovery; No odor; OVA = 47.1 ppm
5		3	SS	5-6, 4-3	Very loose, light grayish brown SAND, very fine to medium, 5% heavy minerals	12" recovery; No odor; OVA = 52.9 ppm
		4	SS	3-3, 3-2	Very loose, brown SAND, fine to coarse	12" recovery; Very slight odor; OVA = 105 ppm
		5	SS	4-2, 2-1	Very loose, same as above	6" recovery; Very slight odor; OVA = 71.3 ppm
10		6	SS	4-3, 2-3	Very loose, same as above to 11.5 feet, then brownish black clayey PEAT, 35% clay	18" recovery; Very slight odor; OVA = 104 ppm; TD = 12 feet
15						
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H:530MW24

ENVIRONMENTAL TECHNOLOGY ENGINEERING, INC.
CONSULTING ENGINEERS, SURVEYORS AND HYDROGEOLOGISTS
HYDROGEOLOGIC SERVICES

TEST BORING LOG

BORING NO. MW-25

PROJECT: SOUTHERN WOOD PIEDMONT-WILMINGTON		SHEET NO. 1 OF 1	
CLIENT: CHUCK DAVIS	DATE FINISHED	10-8-92	JOB NO. 530-06-503
BORING CONTRACTOR: ETE	DRILLER	J. MASSEY	ELEVATION 1.78
RIG USED HAND AUGER	INSPECTOR	G. KUNTZ	DATE STARTED 10-8-92

WELL CONSTRUCTION: CLAY; PLUG; 2" PVC CASING; NATURAL PACK; NATURAL PACK

DEPTH FEET	SAMPLE: LITHOLOGY	No.	TYPE	BLOWS PER 6"	CLASSIFICATION	REMARKS
0		1	HA		Borehole was hand augered because well location is within a wetland area. Representative samples were not obtained during the augering process because the loose nature of the sediments prevented sample retrival.	
5					Sediments encountered are believed to be marsh mud to 2 feet, then loose brown sand to 13 feet, then the peat unit was encountered. The well was hand pushed to 13 feet using a well point and was constructed using a natural filter pack.	
10						
15						
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25						
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45						
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H:530MW25

ENVIRONMENTAL TECHNOLOGY ENGINEERING, INC.
CONSULTING ENGINEERS, SURVEYORS AND HYDROGEOLOGISTS
HYDROGEOLOGIC SERVICES

TEST BORING LOG

BORING NO. MW-26

PROJECT: SOUTHERN WOOD PIEDMONT-WILMINGTON		SHEET NO. 1 OF 1	
CLIENT: CHUCK DAVIS	DATE FINISHED 10-5-92	JOB NO. 530-06-503	
BORING CONTRACTOR: ETE	DRILLER T. COPPIN	ELEVATION 2.48	
RIG USED ATV MUD ROTARY	INSPECTOR G. KUNTZ	DATE STARTED 10-5-92	

WELL CONSTRUCTION: GROUT; 2" STAINLESS STEEL; GROUT; CLAY; PLUG; SAND PACK; SAND PACK

DEPTH FEET	SAMPLE No.	TYPE	BLOWS PER 6"	CLASSIFICATION	REMARKS
0	1	SS	7-6 / 6-5	Loose, brown SAND, fine to coarse, poorly sorted	18" recovery No odor OVA = 13.5 ppm
	2	SS	7-6 / 6-6	Loose, brown SAND, silt to coarse, well sorted medium	18" recovery No odor OVA = 14.6 ppm
5	3	SS	3-3 / 2-3	Very loose, brown SAND, very fine to coarse, poorly sorted	8" recovery No odor OVA = 14.7 ppm
	4	SS	1-1 / 0-1	Very loose, same as above	10" recovery Very slight odor OVA = 15.1 ppm
	5	SS	1-1 / 6-7	Loose, same as above	14" recovery Creosote stained soil OVA = 140 ppm
10	6	SS	4-4 / 7-8	Loose, same as above	16" recovery Creosote stained soil OVA = 206 ppm
	7	SS	3-7 / 50	Loose, dark brown SAND, medium to coarse, 10% wood, wood blocked shoe	14" recovery Creosote stained soil OVA = 236 ppm
15	8	SS	2-1 / 1-1	Very loose, no recovery, pebble blocked shoe	Creosote stained soils
	9	SS	6-7 / 9-8	Loose, dark blackish brown clayey PEAT grading to peaty CLAY, interval between 16' and 17' visually stained with creosote, no staining below 17'	18" recovery Strong odor OVA = 110 ppm TD = 18 feet
20					
25					
30					
35					
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45					
50					

H:530MW26

ATTACHMENT C

WETLAND WELL INSTALLATION AUTHORIZATION LETTERS

DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
P.O. BOX 1890
WILMINGTON, NORTH CAROLINA 28402-1890

IN REPLY REFER TO

November 4, 1992

Regulatory Branch

Action ID. 199300253 and Nationwide Permit No. 5 (Scientific Measurement Devices)

North Carolina State Ports Authority
c/o Environmental Technology Engineering, Inc.
Attn: Mr. Gregory B. Kuntz
Post Office Box 1867
Lexington, South Carolina 29072

Dear Mr. Kuntz:

Thank you for your inquiry of September 22, 1992, regarding your plans to install two monitoring wells within a wetland area adjacent to the Cape Fear River, at the foot of Greenfield Street in Wilmington, New Hanover County, North Carolina.

For the purposes of the U.S. Army Corps of Engineers' Regulatory Program, Title 33, Code of Federal Regulations (CFR), Part 330.6, published in the Federal Register on November 22, 1991, lists nationwide permits (NWP). Authorization, pursuant to Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act, was provided for staff gages, tide gages, water recording devices, water quality testing and improvement devices, and similar scientific structures.

Your work is authorized by this NWP provided it is accomplished in strict accordance with the enclosed conditions and provided you receive a Section 401 water quality certification from the North Carolina Division of Environmental Management and, in the coastal area, a consistency determination from the North Carolina Division of Coastal Management. You should contact Mr. John Dorney, telephone (919) 733-1786, regarding water quality certification, and Mr. Steve Benton, telephone (919) 733-2293, regarding consistency determination. This NWP does not relieve you of the responsibility to obtain other required State or local approval.

This verification will be valid for 2 years from the date of this letter unless the NWP authorization is modified, reissued, or revoked. Also, this verification will remain valid for the 2 years if, during that period, the NWP authorization is reissued without modification or the activity complies with any subsequent modification of the NWP authorization. If during the 2 years, the NWP authorization expires or is suspended or revoked, or is modified, such

that the activity would no longer comply with the terms and conditions of the NWP, activities which have commenced (i.e., are under construction) or are under contract to commence in reliance upon the NWP will remain authorized provided the activity is completed within 12 months of the date of the NWP's expiration, modification or revocation, unless discretionary authority has been exercised on a case-by-case basis to modify, suspend, or revoke the authorization.

Questions or comments may be addressed to Mr. Jeff Richter, Wilmington Field Office, Regulatory Branch, telephone (919) 251-4636.

Sincerely,

G. Wayne Wright
Chief, Regulatory Branch

Enclosure

Copies Furnished (without enclosure):

Mr. John Parker
North Carolina Department of
Environment, Health and
Natural Resources
Post Office Box 27687
Raleigh, North Carolina 27611-7687

Mr. John Dorney
Water Quality Section
Division of Environmental Management
North Carolina Department of
Environment, Health and
Natural Resources
Post Office Box 27687
Raleigh, North Carolina 27611-7687

Mr. Bob Stroud
Acting Office Manager
Wilmington Regional Office
North Carolina Division of
Coastal Management
127 Cardinal Drive Extension
Wilmington, North Carolina 28405-3845

GENERAL CONDITIONS

1. **Navigation.** No activity may cause more than a minimal adverse effect on navigation.

2. **Proper Maintenance.** Any structure or fill authorized shall be properly maintained, including maintenance to ensure public safety.

3. **Erosion and Siltation Controls.** Appropriate erosion and siltation controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills must be permanently stabilized at the earliest practicable date.

4. **Aquatic Life Movements.** No activity may substantially disrupt the movement of those species of aquatic life indigenous to the waterbody, including those species which normally migrate through the area, unless the activity's primary purpose is to impound water.

5. **Equipment.** Heavy equipment working in wetlands must be placed on mats or other measures must be taken to minimize soil disturbance.

6. **Regional and Case-by-case Conditions.** The activity must comply with any regional conditions which may have been added by the Division Engineer and any case specific conditions added by the Corps.

7. **Wild and Scenic Rivers.** No activity may occur in a component of the National Wild and Scenic River System; or in a river officially designated by Congress as a "study river" for possible inclusion in the system, while the river is in an official study status. Information on Wild and Scenic Rivers may be obtained from the National Park Service and the U.S. Forest Service.

8. **Tribal Rights.** No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

9. **Water Quality Certification.** In certain states, an individual state water quality certification must be obtained or waived.

10. **Coastal Zone Management.** In certain states, an individual state coastal zone management consistency concurrence must be obtained or waived.

11. **Endangered Species.** No activity is authorized under any NWP which is likely to jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act, or which is likely to destroy or adversely modify the critical habitat of such species. Non-Federal permittees shall notify the District Engineer if any listed species or critical habitat might

be affected or is in the vicinity of the project and shall not begin work on the activity until notified by the District Engineer that the requirements of the Endangered Species Act have been satisfied and that the activity is authorized. Information on the location of threatened and endangered species can be obtained from the U.S. Fish and Wildlife Service and National Marine Fisheries Service.

12. **Historic Properties.** No activity which may affect Historic Properties listed, or eligible for listing, in the National Register of Historic Places is authorized, until the District Engineer has complied with the provisions of 33 CFR 325, Appendix C. The prospective permittee must notify the District Engineer if the authorized activity may affect any historic properties listed, determined to be eligible, or which the prospective permittee has reason to believe may be eligible for listing on the National Register of Historic Places, and shall not begin the activity until notified by the District Engineer that the requirements of the National Historic Preservation Act have been satisfied and that the activity is authorized. Information on the location and existence of historic resources can be obtained from the State Historic Preservation Office and the National Register of Historic Places (see 33 CFR 330.4(g)).

13. **Notification** (for discharges between 10 and 25 cubic yards).

a. Where required by the terms of the NWP, the prospective permittee must notify the District Engineer as early as possible and shall not begin the activity:

(1) until notified by the District Engineer that the activity may proceed under the NWP with any special conditions imposed by the District or Division Engineer; or

(2) if notified by the District or Division Engineer that an individual permit is required; or

(3) Unless 30 days have passed from the District Engineer's receipt of the notification and the prospective permittee has not received notice from the District or Division Engineer. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

b. The notification must be in writing and include the following information and any required fees:

(1) Name, address and telephone number of the prospective permittee;

(2) Location of the proposed project;

(3) Brief description of the proposed project; the project's purpose; direct and indirect adverse environmental effects the project would cause; any other NWP(s), regional general permit(s) or individual permit(s) used or intended to be used to authorize any part of the proposed project or related activity;

(4) Where required by the terms of the NWP, a delineation of affected special aquatic sites, including wetlands; and

(5) A statement that the prospective permittee has contacted;

(a) The USFWS/NMFS regarding the presence of any Federally listed (or proposed for listing) endangered or threatened species or critical habitat in the permit area that may be affected by the proposed project; and any available information provided by those agencies. (The prospective permittee may contact Corps District Offices for USFWS/NMFS agency contacts and list of critical habitat.)

(b) The SHPO regarding the presence of any historic properties in the permit area that may be affected by the proposed project; and the available information, if any provided by that agency.

14. **Water Supply Intakes.** No discharge of dredged or fill material may occur in the proximity of a public water supply intake except where the discharge is repair of the public water supply intake structures or adjacent bank stabilization.

15. **Shellfish Production.** No discharge of dredged or fill material may occur in areas of concentrated shellfish production, unless the discharge is directly related to a shellfish harvest activity authorized by nationwide permit.

16. **Suitable Material.** No discharge of dredged or fill material may consist of unsuitable material (e.g., trash, debris, car bodies, etc.) and material discharged must be free from toxic pollutants in toxic amounts.

17. **Mitigation.** Discharges of dredged or fill material into waters of the United States must be minimized or avoided to the maximum extent practicable at the project site (i.e., on-site), unless the District Engineer has approved a compensation mitigation plan for the specific regulated activity.

18. **Spawning Areas.** Discharges in spawning areas during spawning seasons must be avoided to the maximum extent practicable.

19. **Obstructions of High Flows.** To the maximum extent practicable, discharges must not permanently restrict or impede the passage of normal or expected high flows or cause the relocation of the water (unless the primary purpose of the fill is to impound waters).

20. **Adverse Impacts from Impoundments.** If the discharge creates an impoundment of water, adverse impacts on the aquatic system caused by the accelerated passage of water and/or the restriction of its flow shall be minimized to the maximum extent practicable.

21. **Waterfowl Breeding Areas.** Discharges into breeding areas for migratory waterfowl must be avoided to the maximum extent practicable.

22. **Removal of Temporary Fills.** Any temporary fills must be removed in their entirety and the affected areas returned to their preexisting elevation.

NOTES:

1. Qualification for and issuance of a nationwide permit does not relieve the applicant of the need to obtain any other required State or local permits.

2. Should all or part of a proposed activity be located within an Area of Environmental Concern (AEC) as designated by the North Carolina Coastal Resources Commission, a CAMA permit is required from the North Carolina Division of Coastal Management. Should an activity within or potentially affecting an AEC be proposed by a Federal agency, a consistency determination pursuant to 15 CFR 930 must be provided to the North Carolina Division of Coastal Management at least 90 days before the onset of the proposed activity.

REGIONAL CONDITION

1. All weirs and flumes authorized by this nationwide permit must be removed immediately upon the completion of their intended use. Weirs and flumes are not allowed in areas identified by the North Carolina Division of Marine Fisheries and/or the North Carolina Wildlife Resources Commission as anadromous fish spawning areas.

STATE CONSISTENCY CONDITION

1. All weirs and flumes authorized by this nationwide permit must be removed immediately upon the completion of their intended use. This permit is not available for weirs and flumes in areas identified by the North Carolina Division of Marine Fisheries and/or the North Carolina Wildlife Resources Commission as anadromous fish spawning areas.

GENERAL CERTIFICATION CONDITIONS

1. These activities do not require written concurrence from the North Carolina Division of Environmental Management as long as they comply with all conditions of this General Certification.

2. Established sediment and erosion control practices will be utilized to prevent violations of the appropriate turbidity water quality standard (50 NTU's in streams and rivers not designated as trout waters by the North Carolina Division of Environmental Management, 25 NTU's in all saltwater classes and all lakes and reservoirs and 10 NTU's in trout waters).

3. Measures shall be taken to prevent live or fresh concrete from coming into contact with waters of the State until the concrete has hardened.

4. Additional site-specific conditions may be added to this Certification in order to ensure compliance with all applicable water quality and effluent standards.

5. Concurrence from the North Carolina Division of Environmental Management that this Certification applies to an individual project shall expire three years from the date of the cover letter from the North Carolina Division of Environmental Management.

State of North Carolina
Department of Environment, Health, and Natural Resources
Wilmington Regional Office

James G. Martin, Governor
William W. Cobey, Jr., Secretary

Bob Jamieson
Regional Manager

November 24, 1992

Gregory B. Kuntz
ETE Incorporation
P.O. Box 1867
1445 Pisgah Church Rd.
Lexington, South Carolina 29072

Dear Mr. Kuntz,

I am writing to you regarding the information sent to me concerning the proposed monitoring wells to be placed in the Greenfield Lake vicinity of Wilmington, North Carolina. These wells as you have proposed them require no permit from our Division. Constructed as described, and at the stated location, no authorization is needed. However, this does not relieve you from the responsibility of obtaining any other required federal, state or local permits. The project appears to be in the jurisdiction of the U. S. Army Corps of Engineers, and as such may need their authorization.

If I can be of any further help, please feel free to call.

Sincerely,

T. Barrett

T. Barrett

cc: Bob Stroud
Ann Hines, LPO
Jeff Richter, COE

127 Cardinal Drive Extension, Wilmington, N.C. 28405-3845 • Telephone 919-395-3900 • Fax 919-350-2004

An Equal Opportunity Affirmative Action Employer

State of North Carolina
Department of Environment, Health, and Natural Resources
Division of Environmental Management
512 North Salisbury Street • Raleigh, North Carolina 27604

James G. Martin, Governor
William W. Cobey, Jr., Secretary

A. Preston Howard, Jr., P.E.
Acting Director

November 23, 1992

Mr. Gregory Kuntz
ETE, Inc.
P.O. Box 1867
1445 Pisgah Church Road
Lexington, S.C. 29702

Dear Mr. Kuntz:

RE: Inquiry about the need for 401 Certification for wetland monitoring well installation

On 9 November 1992, you wrote inquiring whether a 401 Water Quality Certification is needed for the installation of monitoring wells in wetlands for the purpose of wetland delineations. In many instances there would be no discharge of fill material and therefore no 404/401 action. In other instances, the COE has issued Nationwide Permit No. 5 (Scientific Measuring Devices) for this activity. On 21 January 1992, the Division of Environmental Management issued Certification Number 2745 for NW Permit # 5 (attached). As long as these conditions are followed, no written notification is required to DEM and no written approval is required from DEM. Therefore, we have no objection to the installation of wetland monitoring wells for the purpose of determining wetland delineations.

I hope that this letter answers your concerns. Please call me at 919-733-1786 if you have any questions.

Sincerely,

John R. Dorney
Wetlands and Technical Review Group

well.ltr
cc: Ron Ferrell
Wilmington DEM Regional Office
Wilmington District Office Corps of Engineers

GENERAL CERTIFICATION

FOR PROJECTS ELIGIBLE FOR CORPS OF ENGINEERS NATIONWIDE PERMIT NUMBERS 3 (MAINTENANCE), 4 (FISH AND WILDLIFE HARVESTING DEVICES AND ACTIVITIES), 5 (SCIENTIFIC MEASUREMENT DEVICES), 7 (OUTFALL STRUCTURES), 13 (BANK STABILIZATION FOR PROJECTS LESS THAN 500 FEET IN LENGTH), 14 (ROAD CROSSINGS FOR PROJECTS a) IMPACTING WATERS ONLY AND b) SUBJECT TO SEPA OR NEPA), 18 (MINOR DISCHARGES FOR PROJECTS WITH LESS THAN 10 CUBIC YARDS OF FILL IN WATERS OR WETLANDS), 20 (OIL SPILL CLEANUP), 22 (REMOVAL OF VESSELS), 23 (CATEGORICAL EXCLUSIONS), 25 (STRUCTURAL DISCHARGE), 26 (HEADWATERS AND ISOLATED WETLANDS WITH LESS THAN OR EQUAL TO ONE-THIRD ACRE FILL OF WATERS OR WETLANDS), 27 (WETLAND RESTORATION ACTIVITIES), 32 (COMPLETED ENFORCEMENT ACTIONS), 36 (BOAT RAMPS [IN NONWETLAND SITES]), AND 37 (EMERGENCY WATERSHED PROTECTION)

This General Certification is issued in conformity with the requirements of Section 401, Public Laws 92-500 and 95-217 of the United States and subject to the North Carolina Division of Environmental Management Regulations in 15 NCAC 2H, Section .0500 and 15 NCAC 2B .0109 and .0201 for the discharge of fill material to waters and wetland areas which are waters of the United States as described in 33 CFR 330 Appendix A (B) (3, 4, 5, 20, 22, 27, 32, 36, and 37) of the Corps of Engineers regulations. This Certification replaces Certification Number 2663.

The State of North Carolina certifies that the specified category of activity will not violate Sections 301, 302, 303, 306 and 307 of the Public Laws 92-500 and 95-217 if conducted in accordance with the conditions hereinafter set forth.

Conditions of Certification:

1. These activities do not require written concurrence from the Division of Environmental Management as long as they comply with all conditions of this General Certification.
2. The use of Nationwide 23 (Categorical Exclusions) requires written notification to DEM of the extent of impact to waters and wetlands;
3. That established sediment and erosion control practices are utilized to prevent violations of the appropriate turbidity water quality standard (50 NTUs in streams and rivers not designated as trout by DEM; 25 NTUs in all saltwater classes, and all lakes and reservoirs; and 10 NTUs in trout waters);
4. Measures shall be taken to prevent live or fresh concrete from coming into contact with waters of the state until the concrete has hardened;
5. The use of Nationwide 13 shall minimize fill in significant wetlands and waters.
6. This Certification shall expire when the appropriate Nationwide Permit is reissued, expires or is modified.

Non-compliance with or violation of the conditions herein set forth by a specific fill project shall result in revocation of

this Certification for the project.

This is the 30st day of July, 1992

DIVISION OF ENVIRONMENTAL MANAGEMENT

By

A. Preston Howard, Jr. P.E.
Acting Director

Certification # 2745
gencerta.nor
jrd/gc

Hydraulic Conductivity and Seepage Velocity Summary Table

HYDRAULIC CONDUCTIVITY AND GROUND WATER SEEPAGE VELOCITY SUMMARY TABLE
SOUTHERN WOOD PIEDMONT - WILMINGTON, NORTH CAROLINA FACILITY

Unit	Well Number	Material	Hydraulic Conductivity (ft/sec)	Hydraulic Gradient (ft/ft)	Porosity (%)	Seepage Velocity (ft/year)
Upper Sand	MW-10	Fine to Coarse	1.99×10^{-5}	0.0015	0.30	3.13
Upper Sand	MW-16	Fine to Medium	6.14×10^{-6}	0.0015	0.25	1.16
Upper Sand	MW-17	Fine to Medium	4.71×10^{-6}	0.0015	0.25	0.89
Upper Sand	MW-18	Fine to Coarse	2.76×10^{-5}	0.0015	0.30	4.35
Upper Sand	MW-19	Fine to Coarse	2.92×10^{-5}	0.0015	0.30	4.60
Upper Sand	MW-20	Fine to Coarse	2.46×10^{-5}	0.0015	0.25	3.88
Upper Sand	MW-21	Fine to Coarse	1.39×10^{-5}	0.0015	0.30	2.19
Upper Sand	MW-22	Fine to Coarse	1.20×10^{-5}	0.0015	0.30	1.89
Upper Sand	MW-23	Fine to Coarse	1.78×10^{-5}	0.0015	0.30	2.80
Upper Sand	MW-24	Fine to Coarse	9.65×10^{-6}	0.0015	0.30	1.52
Upper Sand	MW-26	Fine to Coarse	1.69×10^{-5}	0.0015	0.30	2.66
Peat	MW-8	Clay & Wood	1.05×10^{-6}	0.0013	0.50	0.08
Lower Sand	MW-8A	Fine to Coarse	8.48×10^{-5}	0.0002	0.30	1.78
Lower Sand	MW-11A	Fine to Coarse	9.82×10^{-5}	0.0002	0.30	2.06
Lower Sand	MW-19A	Fine to Coarse	2.15×10^{-4}	0.0002	0.30	4.52

Slug Test Methods and Assumptions

SLUG TEST METHOD FOR UNCONFINED AQUIFERS

REFERENCE: Bouwer, H. and R. C. Rice, 1976. A slug test method for determining hydraulic conductivity of unconfined aquifers with completely or partially penetrating wells, Water Resources Research, vol. 12, no. 3, pp. 423-428.

SOLUTION:

$$\ln s_o - \ln s_t = \frac{2\,K\,L\,t}{r_c^2 \ln(r_e/r_w)}$$

where:

s_o = initial drawdown in well due to instantaneous removal of water from well [L]

s_t = drawdown in well at time t [L]

L = length of well screen [L]

r_c = radius of well casing [L]

$\ln(r_e/r_w)$ = empirical "shape factor" determined from tables provided in Bouwer and Rice (1976)

r_e = equivalent radius over which head loss occurs [L]

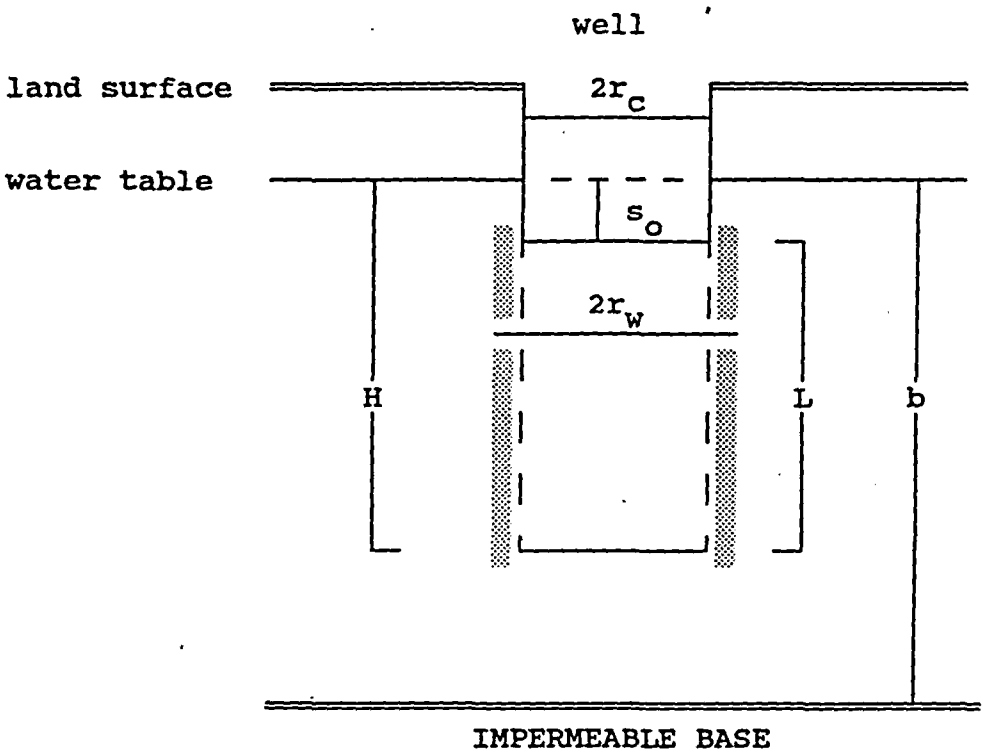
r_w = radius of well (including gravel pack) [L]

H = static height of water in well [L]

b = saturated thickness of aquifer

SLUG TEST METHOD FOR UNCONFINED AQUIFERS
(continued)

DEFINITION OF TERMS:



SLUG TEST FOR CONFINED AQUIFERS

REFERENCE: Cooper, H. H., J. D. Bredehoeft, and S. S. Papadopulos, response of a finite-diameter well to an instantaneous charge of water, Water Resources Research, vol. 3, no. 1, pp. 263-269.

ASSUMPTIONS:
- aquifer has infinite areal extent
- aquifer is homogeneous, isotropic, and of uniform thickness
- aquifer potentiometric surface is initially horizontal
- a volume of water, V, is injected into or discharged from the well instantaneously
- pumping well is fully penetrating
- flow to pumping well is horizontal
- aquifer is confined
- flow is unsteady
- water is released instantaneously from storage with decline of hydraulic head
- diameter of pumping well is very small so that storage in the well can be neglected

SOLUTION:

Integral solution for dimensionless drawdown in well:

$$H/H_0 = \frac{8\alpha}{\pi^2} \int_0^\infty \frac{e^{-\beta u^2/\alpha}}{u \cdot \{[uJ_0(u)-2\alpha J_1(u)]^2 + [uY_0-2\alpha Y_1(u)]^2\}} \, du$$

Laplace solution for response in well:

$$\bar{h} = \frac{r_w S H_0 K_0(rq)}{T q [r_w q K_0(r_w q) + 2\alpha K_1(r_w q)]}$$

$$q = (pS/T)^{1/2}$$

p = Laplace transform variable

where:

H = head in well at time t [L]

H_0 = initial head in well well due to slug injection or extraction [L]

$\alpha = r_w^2 S/r_c^2$ [dimensionless]

SLUG TEST FOR CONFINED AQUIFERS
(continued)

r_w = effective radius of well [L]

r_c = internal radius of well casing [L]

β = Tt/r_c^2

J_0 = Bessel function of first kind, zero order

J_1 = Bessel function of first kind, first order

Y_0 = Bessel function of second kind, zero order

Y_1 = Bessel function of second kind, first order

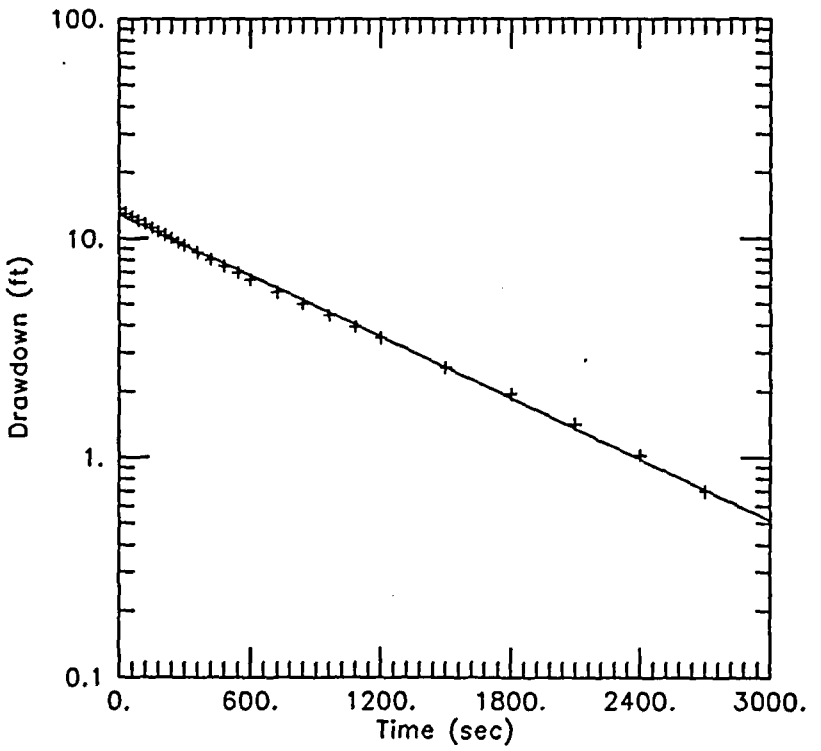
K_0 = modified Bessel function of second kind, zero order

K_1 = modified Bessel function of second kind, first order

Slug Test Data Plots and Calculations

SOUTHERN WOOD PIEDMONT	Client: CHUCK DAVIS
Project No.: 530-06-503	Location: WILMINGTON, NORTH CAROLINA

MW-8



DATA SET:
F:\530\06503\SLUGMW8.DAT
10/22/92

AQUIFER TYPE:
Unconfined

SOLUTION METHOD:
Bouwer-Rice

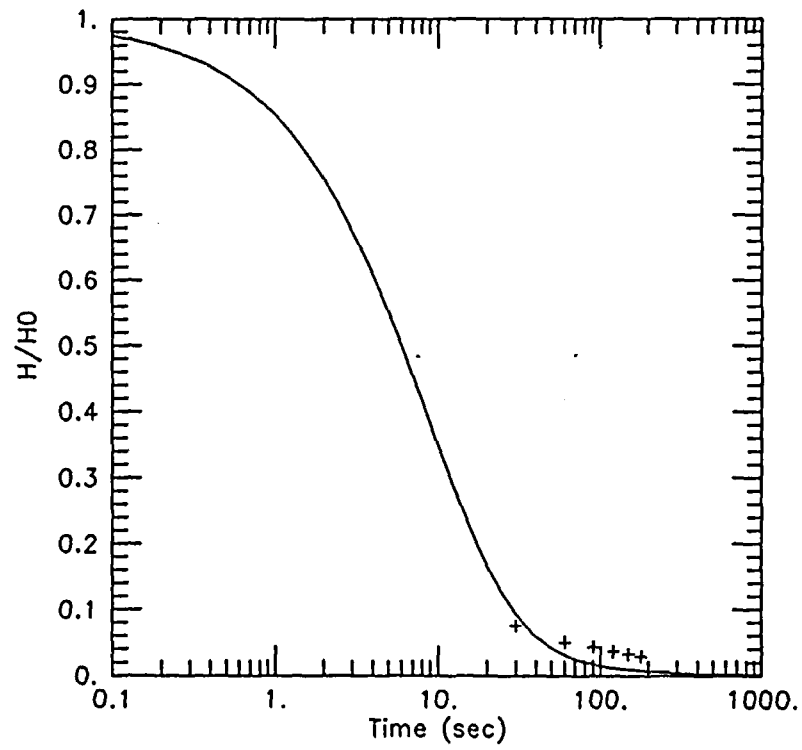
TEST DATE:
OCTOBER 1992

ESTIMATED PARAMETERS:
K = 1.0484E-06 ft/sec
y0 = 12.83 ft

TEST DATA:
H0 = 13.6 ft
rc = 0.083 ft
rw = 0.25 ft
L = 10. ft
b = 16.24 ft
H = 15.26 ft

SOUTHERN WOOD PIEDMONT	Client: CHUCK DAVIS
Project No.: 530-06-503	Location: WILMINGTON, NORTH CAROLINA

MW-8A



DATA SET:
F:\530\06503\SLUGMW8A.DAT
10/22/92

AQUIFER TYPE:
Confined

SOLUTION METHOD:
Cooper et al.

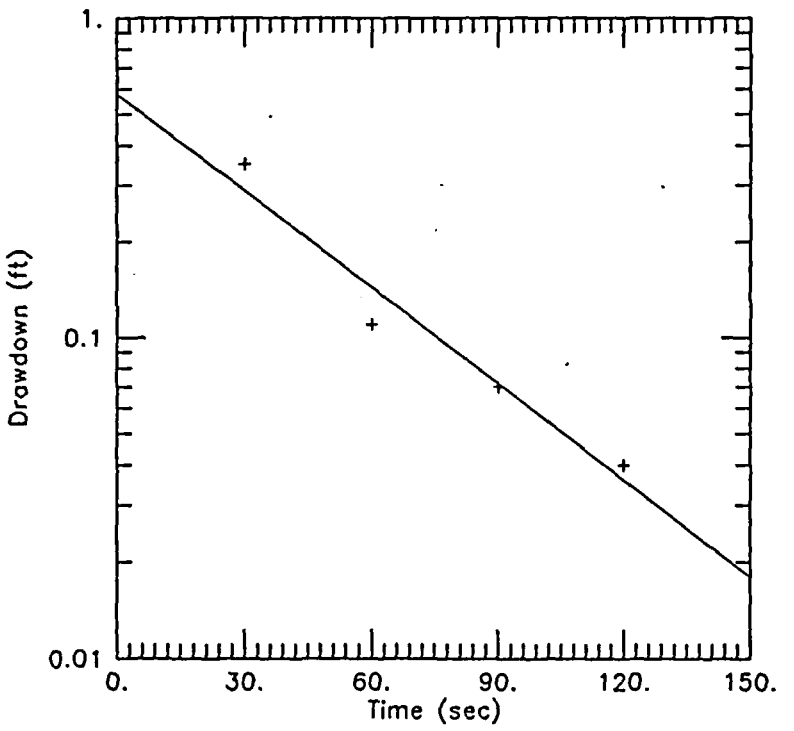
TEST DATE:
OCTOBER 7, 1992

ESTIMATED PARAMETERS:
T = 0.001527 ft^2/sec
S = 0.0001

TEST DATA:
H0 = 2.78 ft
rc = 0.083 ft
rw = 0.25 ft

SOUTHERN WOOD PIEDMONT	Client: CHUCK DAVIS
Project No.: 530-06-503	Location: WILMINGTON, NORTH CAROLINA

MW-10



DATA SET:
F:\530\06503\SLUGMW10.DAT
10/22/92

AQUIFER TYPE:
Unconfined

SOLUTION METHOD:
Bouwer-Rice

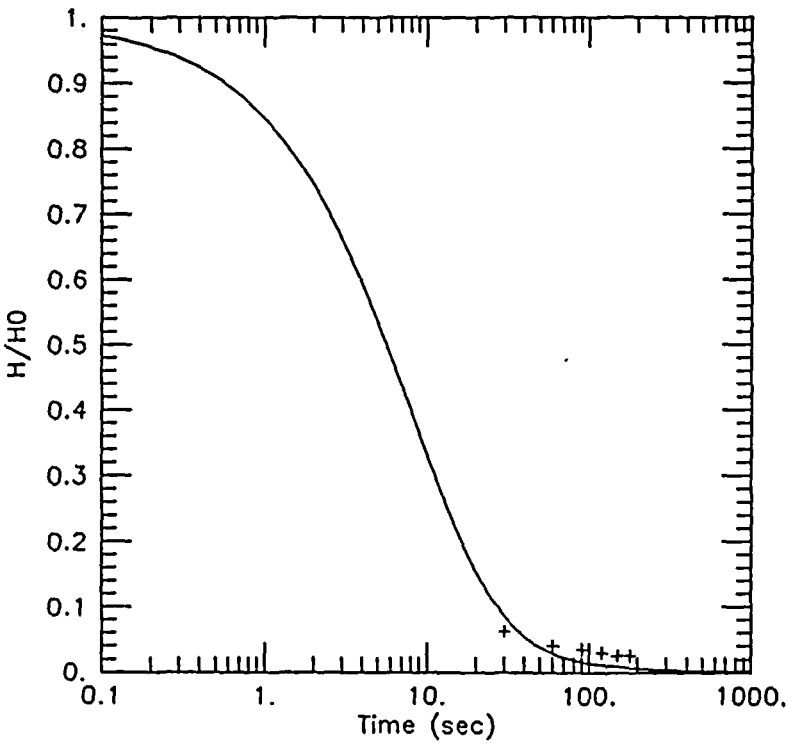
TEST DATE:
OCTOBER 1992

ESTIMATED PARAMETERS:
K = 1.9949E-05 ft/sec
y0 = 0.5804 ft

TEST DATA:
H0 = 1.14 ft
rc = 0.083 ft
rw = 0.25 ft
L = 10. ft
b = 13.72 ft
H = 9.72 ft

SOUTHERN WOOD PIEDMONT	Client: CHUCK DAVIS
Project No.: 530-06-503	Location: WILMINGTON, NORTH CAROLINA

MW-11A



DATA SET:
F:\530\06503\SLUGM11A.DAT
10/22/92

AQUIFER TYPE:
Confined

SOLUTION METHOD:
Cooper et al.

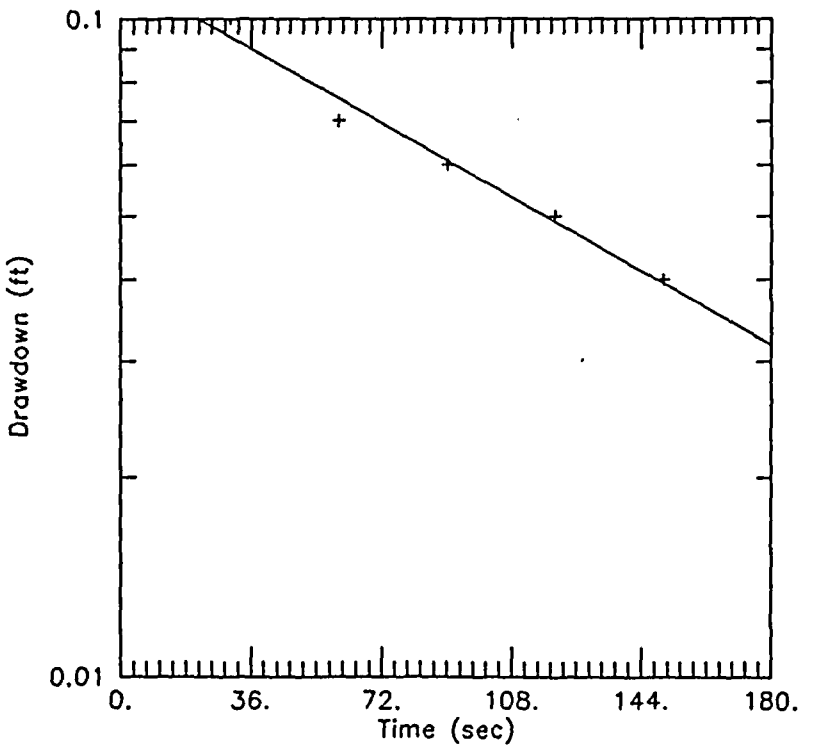
TEST DATE:
OCTOBER 7, 1992

ESTIMATED PARAMETERS:
T = 0.001621 ft^2/sec
S = 0.0001

TEST DATA:
H0 = 4. ft
rc = 0.083 ft
rw = 0.25 ft

SOUTHERN WOOD PIEDMONT	Client: CHUCK DAVIS
Project No.: 530-06-503	Location: WILMINGTON, NORTH CAROLINA

MW-16



DATA SET:
F:\530\06503\SLUGMW16.DAT
10/22/92

AQUIFER TYPE:
Unconfined

SOLUTION METHOD:
Bouwer-Rice

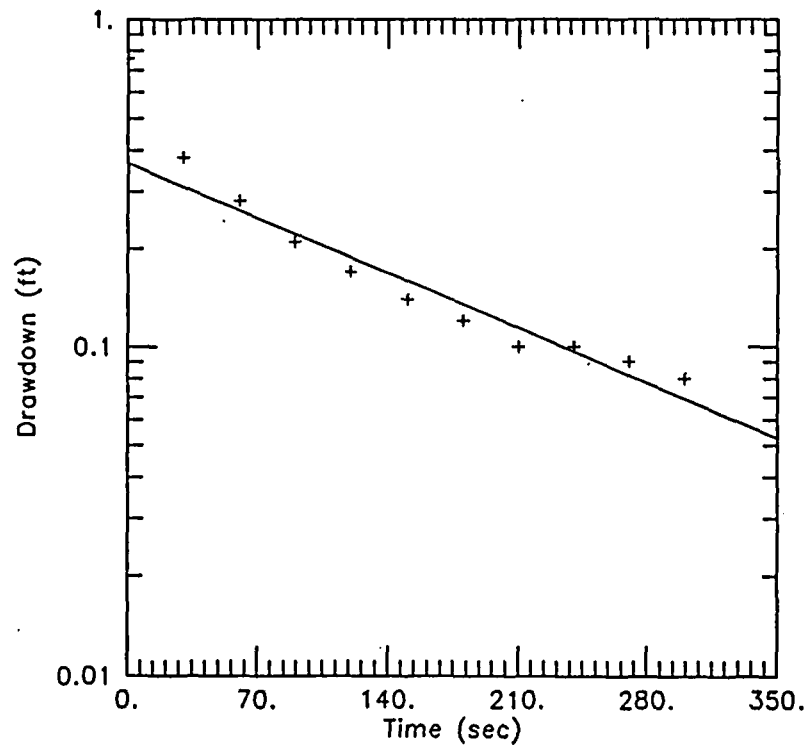
TEST DATE:
OCTOBER 1992

ESTIMATED PARAMETERS:
K = 6.137E-06 ft/sec
y0 = 0.1168 ft

TEST DATA:
H0 = 0.76 ft
rc = 0.083 ft
rw = 0.25 ft
L = 10. ft
b = 13.77 ft
H = 9.27 ft

SOUTHERN WOOD PIEDMONT	Client: CHUCK DAVIS
Project No.: 530-06-503	Location: WILMINGTON, NORTH CAROLINA

MW-17



DATA SET:
F:\530\06503\SLUGMW17.DAT
10/22/92

AQUIFER TYPE:
Unconfined

SOLUTION METHOD:
Bouwer-Rice

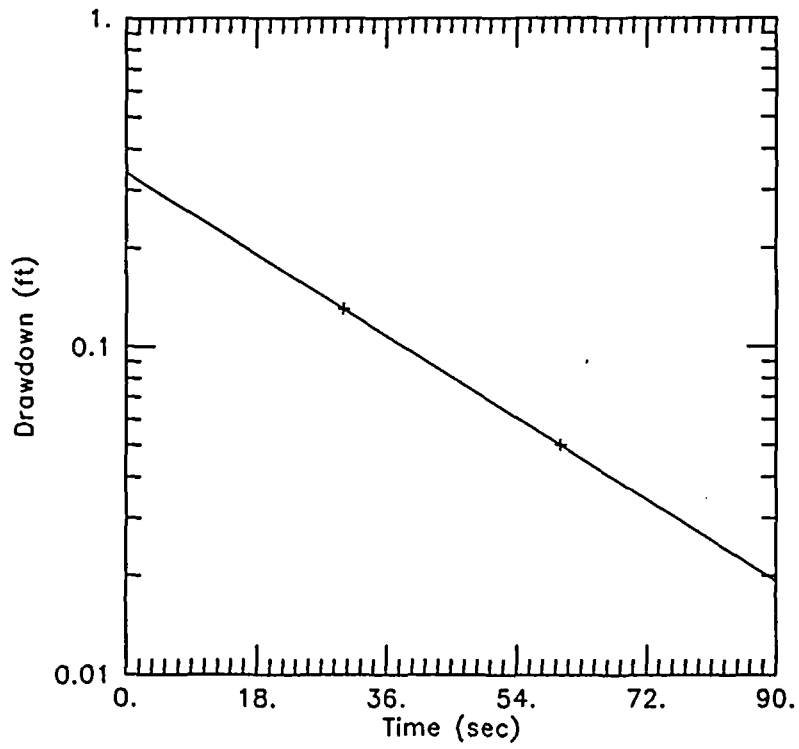
TEST DATE:
OCTOBER 1992

ESTIMATED PARAMETERS:
K = 4.7057E-06 ft/sec
y0 = 0.3658 ft

TEST DATA:
H0 = 0.76 ft
rc = 0.083 ft
rw = 0.25 ft
L = 10. ft
b = 13.8 ft
H = 9.3 ft

SOUTHERN WOOD PIEDMONT	Client: CHUCK DAVIS
Project No.: 530-06-503	Location: WILMINGTON, NORTH CAROLINA

MW-18



DATA SET:
F:\530\06503\SLUGMW18.DAT
10/22/92

AQUIFER TYPE:
Unconfined

SOLUTION METHOD:
Bouwer-Rice

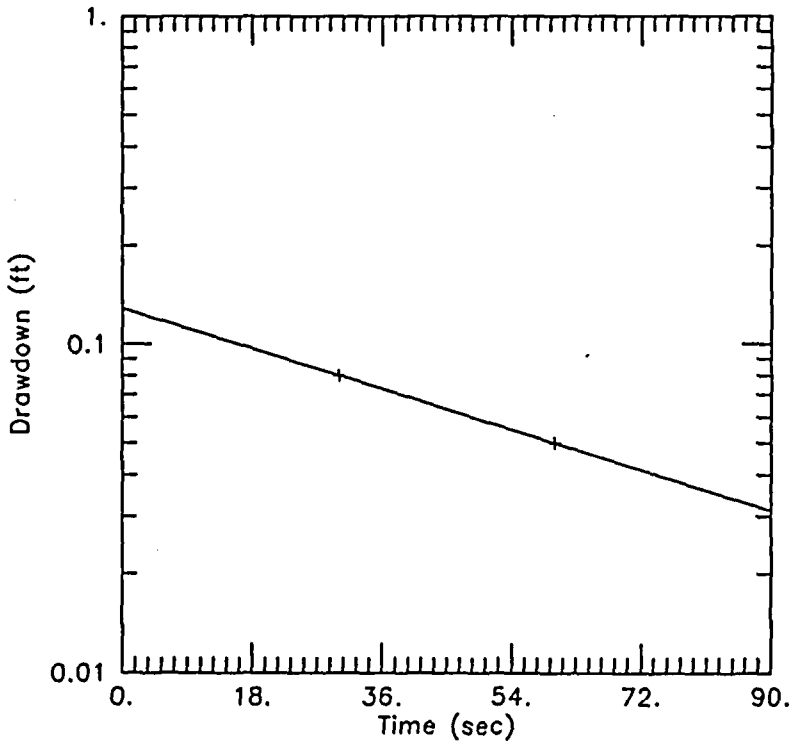
TEST DATE:
OCTOBER 1992

ESTIMATED PARAMETERS:
K = 2.759E-05 ft/sec
y0 = 0.338 ft

TEST DATA:
H0 = 0.6 ft
rc = 0.083 ft
rw = 0.25 ft
L = 10. ft
b = 11.75 ft
H = 9.38 ft

SOUTHERN WOOD PIEDMONT	Client: CHUCK DAVIS
Project No.: 530-06-503	Location: WILMINGTON, NORTH CAROLINA

MW-19



DATA SET:
F:\530\06503\SLUGMW19.DAT
10/22/92

AQUIFER TYPE:
Unconfined

SOLUTION METHOD:
Bouwer-Rice

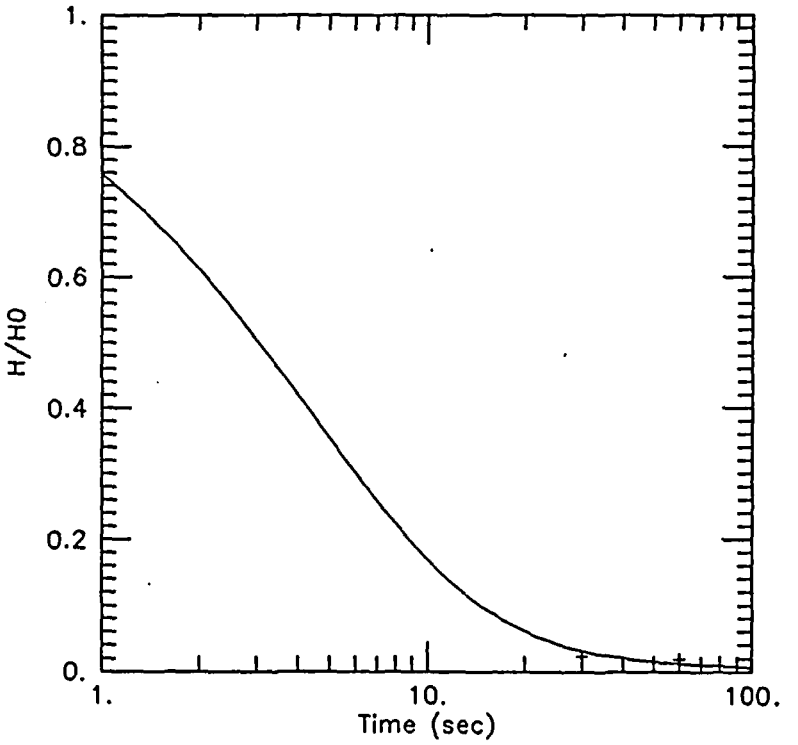
TEST DATE:
OCTOBER 1992

ESTIMATED PARAMETERS:
K = 2.9194E-05 ft/sec
y0 = 0.128 ft

TEST DATA:
H0 = 1.15 ft
rc = 0.083 ft
rw = 0.25 ft
L = 5. ft
b = 11.6 ft
H = 11.6 ft

SOUTHERN WOOD PIEDMONT	Client: CHUCK DAVIS
Project No.: 530-06-503	Location: WILMINGTON, NORTH CAROLINA

MW-19A



DATA SET:
F:\530\06503\SLUGM19A.DAT
10/22/92

AQUIFER TYPE:
Confined

SOLUTION METHOD:
Cooper et al.

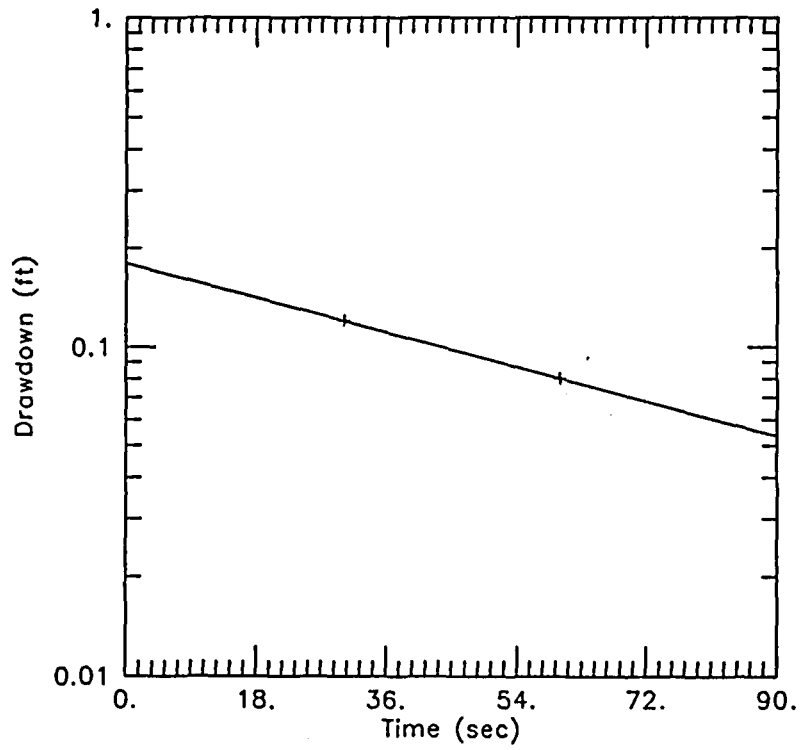
TEST DATE:
OCTOBER 1992

ESTIMATED PARAMETERS:
T = 0.003015 ft^2/sec
S = 0.0001

TEST DATA:
H0 = 2.64 ft
rc = 0.083 ft
rw = 0.25 ft

SOUTHERN WOOD PIEDMONT	Client: CHUCK DAVIS
Project No.: 530-06-503	Location: WILMINGTON, NORTH CAROLINA

MW-20



DATA SET:
f:\530\06503\slugmw20.dat
10/26/92

AQUIFER TYPE:
Unconfined

SOLUTION METHOD:
Bouwer-Rice

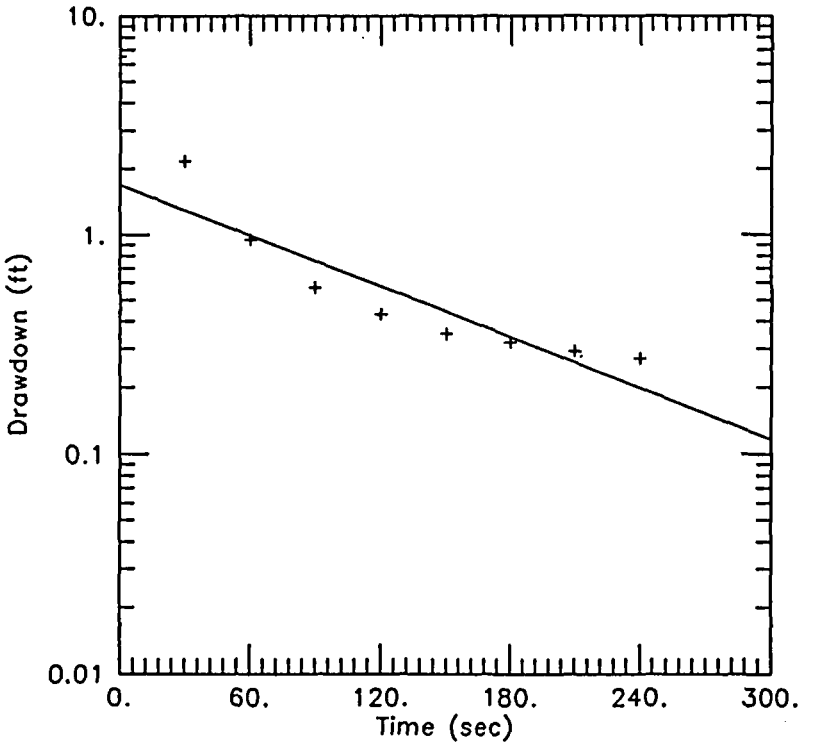
TEST DATE:
OCTOBER 1992

ESTIMATED PARAMETERS:
K = 2.4576E-05 ft/sec
y0 = 0.18 ft

TEST DATA:
H0 = 2.93 ft
rc = 0.083 ft
rw = 0.25 ft
L = 5. ft
b = 10.3 ft
H = 10.3 ft

SOUTHERN WOOD PIEDMONT	Client: CHUCK DAVIS
Project No.: 530-06-503	Location: WILMINGTON, NORTH CAROLINA

MW-21



DATA SET:
F:\530\06503\SLUGMW21.DAT
10/22/92

AQUIFER TYPE:
Unconfined

SOLUTION METHOD:
Bouwer-Rice

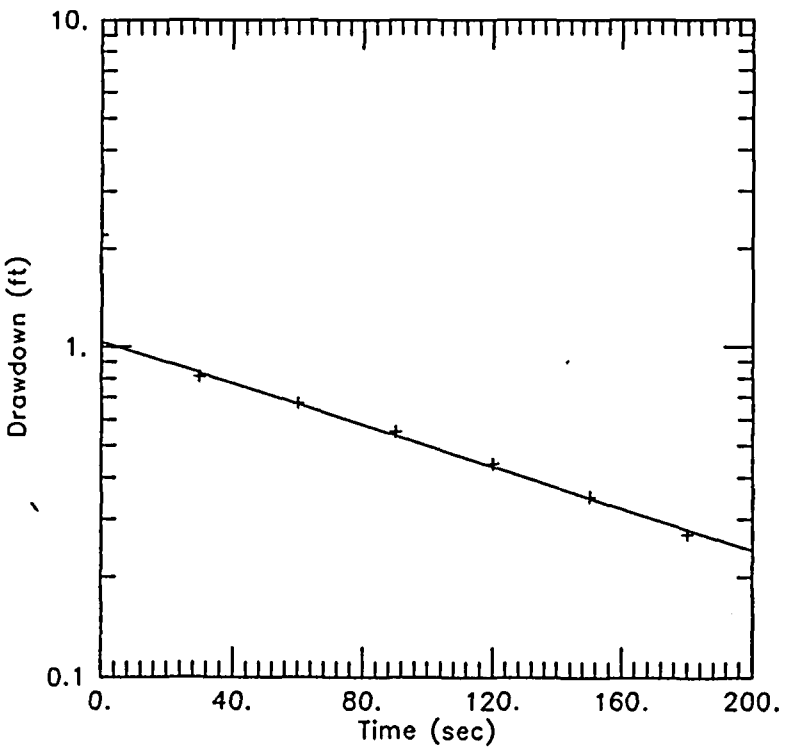
TEST DATE:
OCTOBER 1992

ESTIMATED PARAMETERS:
K = 1.389E-05 ft/sec
y0 = 1.692 ft

TEST DATA:
H0 = 6.55 ft
rc = 0.083 ft
rw = 0.25 ft
L = 5. ft
b = 6.72 ft
H = 6.51 ft

SOUTHERN WOOD PIEDMONT	Client: CHUCK DAVIS
Project No.: 530-06-503	Location: WILMINGTON, NORTH CAROLINA

MW-22



DATA SET:
f:\530\06503\slugmw22.dat
10/26/92

AQUIFER TYPE:
Unconfined

SOLUTION METHOD:
Bouwer-Rice

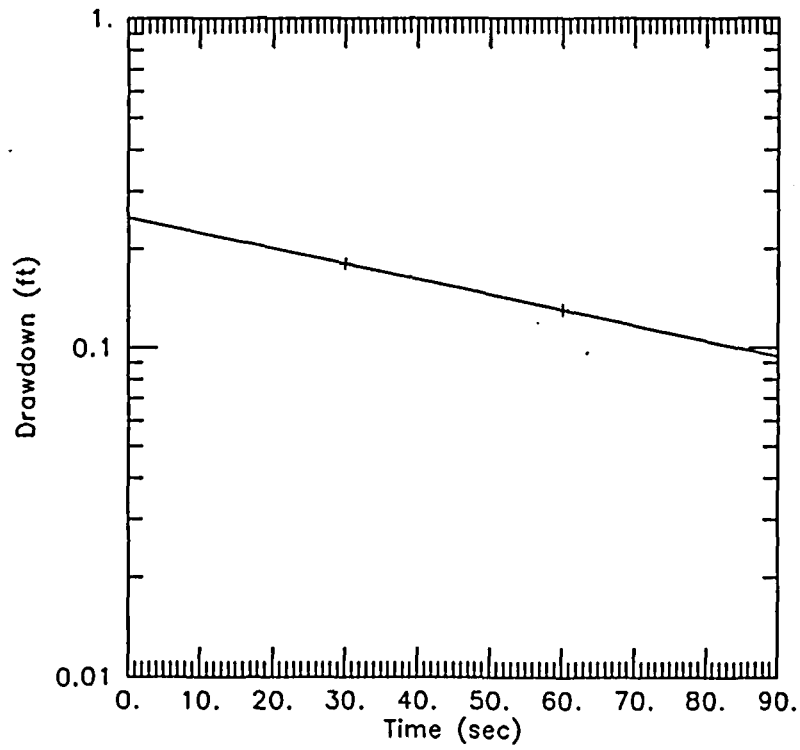
TEST DATE:
OCTOBER 1992

ESTIMATED PARAMETERS:
K = 1.1981E-05 ft/sec
y0 = 1.036 ft

TEST DATA:
H0 = 2.2 ft
rc = 0.083 ft
rw = 0.25 ft
L = 5. ft
b = 11.29 ft
H = 10.55 ft

SOUTHERN WOOD PIEDMONT	Client: CHUCK DAVIS
Project No.: 530-06-503	Location: WILMINGTON, NORTH CAROLINA

MW-23



DATA SET:
F:\530\06503\SLUGMW23.DAT
10/22/92

AQUIFER TYPE:
Unconfined

SOLUTION METHOD:
Bouwer-Rice

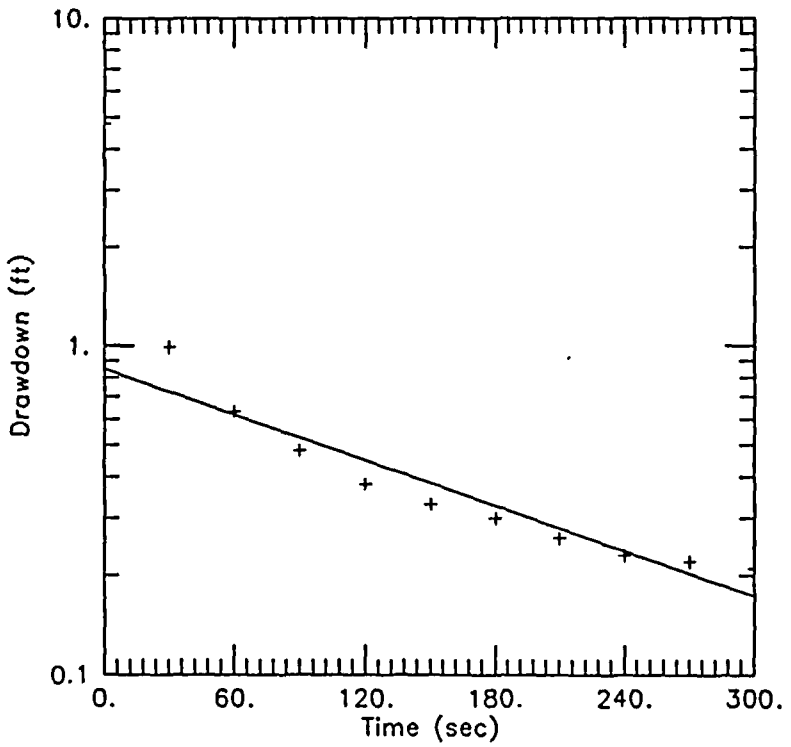
TEST DATE:
OCTOBER 1992

ESTIMATED PARAMETERS:
K = 1.7793E-05 ft/sec
y0 = 0.2492 ft

TEST DATA:
H0 = 1.24 ft
rc = 0.083 ft
rw = 0.25 ft
L = 5. ft
b = 8.98 ft
H = 8.69 ft

SOUTHERN WOOD PIEDMONT	Client: CHUCK DAVIS
Project No.: 530-06-503	Location: WILMINGTON, NORTH CAROLINA

MW-24



DATA SET:
F:\530\065031\SLUGMW24.DAT
10/22/92

AQUIFER TYPE:
Unconfined

SOLUTION METHOD:
Bouwer-Rice

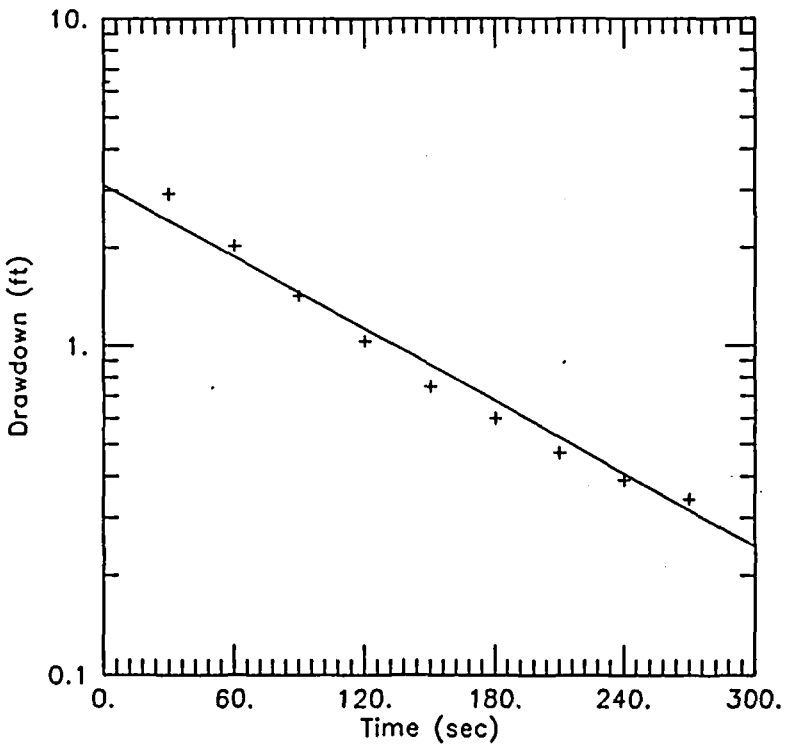
TEST DATE:
OCTOBER 1992

ESTIMATED PARAMETERS:
K = 9.654E-06 ft/sec
y0 = 0.8493 ft

TEST DATA:
H0 = 4.78 ft
rc = 0.083 ft
rw = 0.25 ft
L = 5. ft
b = 10.39 ft
H = 10.39 ft

SOUTHERN WOOD PIEDMONT	Client: CHUCK DAVIS
Project No.: 530-06-503	Location: WILMINGTON, NORTH CAROLINA

MW-26



DATA SET:
f:\530\06503\slugmw26.dat
10/22/92

AQUIFER TYPE:
Unconfined

SOLUTION METHOD:
Bouwer-Rice

TEST DATE:
OCTOBER 1992

ESTIMATED PARAMETERS:
K = 1.6883E-05 ft/sec
y0 = 3.119 ft

TEST DATA:
H0 = 6.42 ft
rc = 0.083 ft
rw = 0.25 ft
L = 5. ft
b = 16.35 ft
H = 16.35 ft

Site-Specific Soil Sample List

SITE-SPECIFIC SOIL SAMPLE LIST
SOUTHERN WOOD PIEDMONT FACILITY
WILMINGTON, NORTH CAROLINA

METALS

Arsenic
Copper
Chromium
Lead

SEMI-VOLATILES

Acenaphthene
Benzo(a)anthracene
Benzo(b)fluoranthene
Bis(2-chloroethyl)ether
4-chloro-3-methylphenol
Chrysene
2,4-dimethylphenol
Fluoranthene
Naphthalene
Phenanthrene
Tetrachlorophenol
2,4,6-trichlorophenol
Anthracene
Benzo(a)pyrene
Benzo(k)fluoranthene
Carbazole
2-chlorophenol
Dibenzo(a,h)anthracene
2,4-dinitrophenol
Indeno(1,2,3-cd)pyrene
Pentachlorophenol
Phenol
2,4,5-trichlorophenol

VOLATILES

Benzene
Bromomethane
Chlorobenzene
2-chloroethylvinylether
Chloromethane
Dibromochloromethane
Dichlorodifluoromethane
1,2-dichloroethane
Dichloromethane
Ethyl benzene
M/P-Xylene
O-Xylene
Toluene
1,1,1-trichloroethane
Trichloroethene
Bromodichloromethane
Carbon Tetrachloride
Chloroethane
Chloroform
Cis-1,3-dichloropropene
1,2-dibromomethane (Edb)
1,1-dichloroethane
1,1-dichloroethene
1,2-dichloropropane
Fluorotrichloromethane
Methyl-T-Butyl Ether (Mtbe)
1,1,2,2-tetrachloroethane
Trans-1,2-dichloroethene
1,1,2-trichloroethane
Vinyl Chloride

Soil Sample Summary Table

SOIL SAMPLE SUMMARY
SOUTHERN WOOD PIEDMONT FACILITY
WILMINGTON, NORTH CAROLINA

SAMPLE NUMBER	METALS (mg/kg)				TOTAL SEMI-VOLATILE ORGANICS (mg/kg)	TOTAL VOLATILE ORGANICS (mg/kg)	TOTAL VOLATILE ORGANICS CORRECTED FOR DICHLOROMETHANE* (mg/kg)	TOTAL ORGANICS (mg/kg)
	ARSENIC	CHROMIUM	COPPER	LEAD				
SS-1	3.5	5.5	6.1	14.0	9.93	0.03	0.006	9.936
SS-2	5.2	14.0	46.0	290.0	3.25	0.0064	ND	3.25
SS-3	ND	2.1	8.0	61.0	ND	0.015	ND	ND
SS-4	3.6	11.0	14.0	25.0	17.69	0.018	0.001	17.691
SS-5	1.5	5.2	2.4	3.4	167.07	0.0144	0.0024	167.0724
SS-6	ND	3.1	2.8	3.1	150.42	0.0188	0.0048	150.4248
SS-7	2.3	9.2	5.1	6.3	202.94	0.378	0.319	203.259
SS-8	ND	4.2	1.9	2.3	1.00	0.007	ND	1.0
SS-9	ND	4.1	4.4	6.9	357.34	0.0346	0.0146	357.3546
SS-10	ND	2.6	3.9	6.2	6110.00	0.008	ND	6110.008
SS-11	ND	1.3	1.0	1.9	ND	0.0068	ND	ND

ND Below Laboratory Detection Limit

* Dichloromethane was detected in all the soil samples analyzed. Because dichloromethane is used as the solvent in the extraction process for the soils, it is suspect, in that it may have been introduced to the soil in the laboratory.

Soil Sample Parameters Summary Tables

SOIL SAMPLE PARAMETER SUMMARY TABLE
METALS
SOUTHERN WOOD PIEDMONT FACILITY
WILMINGTON, NORTH CAROLINA

	SS-1		SS-2		SS-3		SS-4		SS-5		SS-6		SS-7		SS-8		SS-9		SS-10		SS-11	
METALS	R*	DL	R*	DL	R*	DL	R*	DL	R*	DL	R*	DL	R*	DL	R*	DL	R*	DL	R*	DL	R*	DL
Arsenic	3.5	1.2	5.2	1.2	ND	1.2	3.6	1.2	1.5	1.2	ND	1.2	2.3	1.2	ND	1.2	ND	1.2	ND	1.2	ND	1.2
Chromium	5.5	0.75	14	0.75	2.1	0.75	11	0.75	5.2	0.75	3.1	0.75	9.2	0.75	4.2	0.75	4.1	0.75	2.6	0.75	1.3	0.75
Copper	6.1	0.75	46	0.75	8	0.75	14	0.75	2.4	0.75	2.8	0.75	5.1	0.75	1.9	0.75	4.4	0.75	3.9	0.75	1.9	0.75
Lead	14	5	290	5	61	5	25	5	3.4	1.2	3.1	1.1	6.3	5	2.3	1.2	6.9	5	6.2	5	1.9	5

R*: Laboratory Analytical Result
DL: Laboratory Detection Limit
Note: The Laboratory Analytical Results and Detection Limits are in mg/kg.

SOIL SAMPLE PARAMETER SUMMARY TABLE
SEMI-VOLATILES
SOUTHERN WOOD PIEDMONT FACILITY
WILMINGTON, NORTH CAROLINA

	SS-1		SS-2		SS-3		SS-4		SS-5		SS-6		SS-7		SS-8		SS-9		SS-10		SS-11	
SEMI-VOLATILES	R*	DL	R*	DL	R*	DL	R*	DL	R*	DL	R*	DL	R*	DL	R*	DL	R*	DL	R*	DL	R*	DL
Acenaphthene	0.51	0.33	ND	0.33	ND	0.33	0.59	0.33	4.4	0.33	2.9	0.33	44	0.33	1.0	0.33	32	0.66	ND	0.33	ND	0.33
Anthracene	ND	0.33	ND	0.33	ND	0.33	ND	0.33	45	0.33	36	0.33	10	0.33	ND	0.33	49	0.66	ND	0.33	ND	0.33
Benz(a)Anthracene	1.1	0.33	0.54	0.33	ND	0.33	1.1	0.33	5.8	0.33	7.4	0.33	3.2	0.33	ND	0.33	26	0.66	730	0.33	ND	0.33
Benzo(a)Pyrene	0.42	0.33	ND	0.33	ND	0.33	2.0	0.33	3.1	0.33	1.9	0.33	0.64	0.33	ND	0.33	9	0.66	680	0.33	ND	0.33
Benzo(b)Fluoranthene	ND	0.33	0.75	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	15	0.33	1800	0.33	ND	0.33
Benzo(k)Fluoranthene	1.5	0.33	ND	0.33	ND	0.33	4.9	0.33	3.8	0.33	3.6	0.33	1.2	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33
Bis(2-Chloroethyl)Ether	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33
Carbazole	ND	0.33	ND	0.33	ND	0.33	ND	0.33	18	0.33	4.4	0.33	17	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33
4-Chloro-3-Methylphenol	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33
2-Chlorophenol	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33
Chrysene	1.1	0.33	0.53	0.33	ND	0.33	1.6	0.33	4.5	0.33	5.5	0.33	1.9	0.33	ND	0.33	22	0.33	920	0.33	ND	0.33
Dibenz(a,h)Anthracene	ND	0.33	ND	0.33	ND	0.33	3.7	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	0.94	0.33	ND	0.33	ND	0.33
2,4-Dimethylphenol	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33
2,4-Dinitrophenol	ND	1.60	ND	1.60	ND	1.60	ND	1.60	ND	1.60	ND	1.60	ND	1.60	ND	0.33	ND	0.33	ND	1.60	ND	1.60
Fluoranthene	3.8	0.33	0.87	0.33	ND	0.33	1.8	0.33	38	0.33	52	0.33	26	0.33	ND	0.33	130	0.66	1300	0.33	ND	0.33
Indeno(1,2,3-Cd)Pyrene	ND	0.33	ND	0.33	ND	0.33	2.0	0.33	0.67	0.33	0.72	0.33	ND	0.33	ND	0.33	3.4	0.33	680	0.33	ND	0.33
Naphthalene	ND	0.33	ND	0.33	ND	0.33	ND	0.33	1.8	0.33	ND	0.33	44	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33
Pentachlorophenol	ND	1.60	ND	1.60	ND	1.60	ND	1.60	ND	1.60	ND	1.60	ND	1.60	ND	0.33	ND	0.33	ND	1.60	ND	1.60
Phenanthrene	1.5	0.33	0.56	0.33	ND	0.33	ND	0.33	42	0.33	36	0.33	55	0.33	ND	0.33	70	0.66	ND	0.33	ND	0.33
Phenol	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33
Tetrachlorophenol	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33
2,4,5-Trichlorophenol	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33
2,4,6-Trichlorophenol	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33	ND	0.33

R*: Laboratory Analytical Result
DL: Laboratory Detection Limit
Note: The Laboratory Analytical Results and Detection Limits are in mg/kg.

SOIL SAMPLE PARAMETER SUMMARY TABLE-VOLATILES
SOUTHERN WOOD PIEDMONT FACILITY-WILMINGTON, NORTH CAROLINA

	SS-1		SS-2		SS-3		SS-4		SS-5		SS-6		SS-7		SS-8		SS-9		SS-10		SS-11	
VOLATILES	R*	DL	R*	DL	R*	DL	R*	DL	R*	DL	R*	DL	R*	DL	R*	DL	R*	DL	R*	DL	R*	DL
Benzene	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.005	ND	0.001	ND	0.001
Bromodichloromethane	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.005	ND	0.001	ND	0.001
Bromomethane	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.025	ND	0.005	ND	0.005
Carbon Tetrachloride	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.005	ND	0.001	ND	0.001
Chlorobenzene	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.005	ND	0.001	ND	0.001
Chloroethane	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.025	ND	0.005	ND	0.005
2-Chloroethylvinylether	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.005	ND	0.001	ND	0.001
Chloroform	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.005	ND	0.001	ND	0.001
Chloromethane	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.025	ND	0.005	ND	0.005
Cis-1,3-Dichloropropene	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.005	ND	0.001	ND	0.001
Dibromochloromethane	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.005	ND	0.001	ND	0.001
1,2-Dibromoethane (Edb)	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.025	ND	0.005	ND	0.005
Dichlorodifluoromethane	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.025	ND	0.005	ND	0.005
1,1-Dichloroethane	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.005	ND	0.001	ND	0.001
1,2-Dichloroethane	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.005	ND	0.001	ND	0.001
1,1-Dichloroethene	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.005	ND	0.001	ND	0.001
Dichloromethane	0.024	0.001	0.0064	0.001	0.015	0.001	0.017	0.001	0.012	0.001	0.014	0.001	0.059	0.001	0.007	0.001	0.020	0.005	0.008	0.001	0.0068	0.001
1,2-Dichloropropane	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.005	ND	0.001	ND	0.001
Ethyl Benzene	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	0.15	0.001	ND	0.001	ND	0.005	ND	0.001	ND	0.001
Fluorotrichloromethane	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.025	ND	0.005	ND	0.005
M/P-Xylene	0.0025	0.001	ND	0.001	ND	0.001	0.001	0.001	0.0011	0.001	0.0014	0.001	0.084	0.001	ND	0.001	0.0071	0.005	ND	0.001	ND	0.001
Methyl-T-Butyl Ether (Mtbe)	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.025	ND	0.005	ND	0.005
O-Xylene	0.0011	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	0.069	0.001	ND	0.001	0.0075	0.005	ND	0.001	ND	0.001
1,1,2,2-Tetrachloroethane	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.005	ND	0.001	ND	0.001
Toluene	0.0024	0.001	ND	0.001	ND	0.001	ND	0.001	0.0013	0.001	0.0034	0.001	0.016	0.001	ND	0.001	ND	0.005	ND	0.001	ND	0.001
Trans-1,2-Dichloroethene	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.005	ND	0.001	ND	0.001
1,1,1-Trichloroethane	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.005	ND	0.001	ND	0.001
1,1,2-Trichloroethane	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.005	ND	0.001	ND	0.001
Trichloroethene	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.005	ND	0.001	ND	0.001
Vinyl Chloride	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.025	ND	0.005	ND	0.005

R*: Laboratory Analytical Result
DL: Laboratory Detection Limit
Note: The Laboratory Analytical Results and Detection Limits are in mg/kg.

Soil Sample Collection Summary Sheets

ETE, Inc.

P O BOX 1867
1445 Pisgah Church Rd.
Lexington SC 29072
(803) 957-6270

SAMPLE COLLECTION SUMMARY SHEET

Project Number: 530-06-506 Date: 12/09/92

Sampled By: Kuntz Time: 14:00

Sampling Point Identification: SS-1 #10782

Site Name/City/County: SWP-Wilmington

Weather Conditions: Clear 50°

Sample Type: Soil

Sampling Method: Stainless spoon and stainless steel hand auger

Splits/Spikes/Duplicates:

Sampling Containers:(Number/Size/Type) 1/500ml/G;2/250ml/G

Appearance of Sample: Brownish Black Clay and Silt, 25% Organics

Reason for Sampling: Phase II Assessment Soil Resample

Lab Performing Analysis: EMS Heritage

Respiratory Protection: None

Personnel Present: Kuntz

ETE, Inc.

P O BOX 1867
1445 Pisgah Church Rd.
Lexington SC 29072
(803) 957-6270

SAMPLE COLLECTION SUMMARY SHEET

Project Number: 530-06-506 Date: 12/09/92

Sampled By: Kuntz Time: 14:45

Sampling Point Identification: SS-2 #10783

Site Name/City/County: SWP-Wilmington

Weather Conditions: Clear 50°

Sample Type: Soil

Sampling Method: Stainless spoon and stainless steel hand auger

Splits/Spikes/Duplicates:

Sampling Containers:(Number/Size/Type) 1/500ml/G;2/250ml/G

Appearance of Sample: Dark Black Sandy Silty Peat; Slight Organic Odor

Reason for Sampling: Phase II Assessment Soil Resample

Lab Performing Analysis: EMS Heritage

Respiratory Protection: None

Personnel Present: Kuntz

ETE, Inc.

P O BOX 1867
1445 Pisgah Church Rd.
Lexington SC 29072
(803) 957-6270

SAMPLE COLLECTION SUMMARY SHEET

Project Number: 530-06-506 Date: 12/09/92

Sampled By: Kuntz Time: 15:15

Sampling Point Identification: SS-3 #10784

Site Name/City/County: SWP-Wilmington

Weather Conditions: Clear 50°

Sample Type: Soil

Sampling Method: Stainless spoon and stainless steel hand auger

Splits/Spikes/Duplicates:

Sampling Containers:(Number/Size/Type) 1/500ml/G;2/250ml/G

Appearance of Sample: Blackish Brown Sand, 15% Silt, Trace Organics

Reason for Sampling: Phase II Assessment Soil Resample

Lab Performing Analysis: EMS Heritage

Respiratory Protection: None

Personnel Present: Kuntz

ETE, Inc.

P O BOX 1867
1445 Pisgah Church Rd.
Lexington SC 29072
(803) 957-6270

SAMPLE COLLECTION SUMMARY SHEET

Project Number: 530-06-506 Date: 12/09/92

Sampled By: Kuntz Time: 16:00

Sampling Point Identification: SS-4 #10785

Site Name/City/County: SWP-Wilmington

Weather Conditions: Clear 50°

Sample Type: Soil

Sampling Method: Stainless spoon and stainless steel hand auger

Splits/Spikes/Duplicates:

Sampling Containers:(Number/Size/Type) 1/500ml/G;2/250ml/G

Appearance of Sample: Blackish Gray Clay and Peat

Reason for Sampling: Phase II Assessment Soil Resample

Lab Performing Analysis: EMS Heritage

Respiratory Protection: None

Personnel Present: Kuntz

ETE, Inc.

P O BOX 1867
1445 Pisgah Church Rd.
Lexington SC 29072
(803) 957-6270

SAMPLE COLLECTION SUMMARY SHEET

Project Number: 530-06-506 Date: 12/09/92

Sampled By: Kuntz Time: 17:30

Sampling Point Identification: SS-5 #10786

Site Name/City/County: SWP-Wilmington

Weather Conditions: Clear 50°

Sample Type: Soil

Sampling Method: Stainless spoon and stainless steel hand auger

Splits/Spikes/Duplicates:

Sampling Containers:(Number/Size/Type) 1/500ml/G;2/250ml/G

Appearance of Sample: Gray Sand, 10% Small to Large Pebbles, 10% Clay; Creosote Stained

Reason for Sampling: Phase II Assessment Soil Resample

Lab Performing Analysis: EMS Heritage

Respiratory Protection: None

Personnel Present: Kuntz

ETE, Inc.

P O BOX 1867
1445 Pisgah Church Rd.
Lexington SC 29072
(803) 957-6270

SAMPLE COLLECTION SUMMARY SHEET

Project Number: 530-06-506 Date: 12/09/92

Sampled By: Kuntz Time: 18:15

Sampling Point Identification: SS-6 #10787

Site Name/City/County: SWP-Wilmington

Weather Conditions: Clear 50°

Sample Type: Soil

Sampling Method: Stainless spoon and stainless steel hand auger

Splits/Spikes/Duplicates:

Sampling Containers:(Number/Size/Type) 1/500ml/G;2/250ml/G

Appearance of Sample: Gray Sand, 15% Small to Large Pebble, 10% Clay, Creosote Stained

Reason for Sampling: Phase II Assessment Soil Resample

Lab Performing Analysis: EMS Heritage

Respiratory Protection: None

Personnel Present: Kuntz

ETE, Inc.

P O BOX 1867
1445 Pisgah Church Rd.
Lexington SC 29072
(803) 957-6270

SAMPLE COLLECTION SUMMARY SHEET

Project Number: 530-06-506 Date: 12/09/92

Sampled By: Kuntz Time: 16:30

Sampling Point Identification: SS-7 #10788

Site Name/City/County: SWP-Wilmington

Weather Conditions: Clear 50°

Sample Type: Soil

Sampling Method: Stainless spoon and stainless steel hand auger

Splits/Spikes/Duplicates:

Sampling Containers:(Number/Size/Type) 1/500ml/G;2/250ml/G

Appearance of Sample: Brown Peaty Clay, 30% Peat, Creosote Stained

Reason for Sampling: Phase II Assessment Soil Resample

Lab Performing Analysis: EMS Heritage

Respiratory Protection: None

Personnel Present: Kuntz

ETE, Inc.

P O BOX 1867
1445 Pisgah Church Rd.
Lexington SC 29072
(803) 957-6270

SAMPLE COLLECTION SUMMARY SHEET

Project Number: 530-06-506 Date: 12/14/92

Sampled By: Kuntz Time: 07:30

Sampling Point Identification: SS-8 #10789

Site Name/City/County: SWP-Wilmington

Weather Conditions: Clear 50°

Sample Type: Soil

Sampling Method: Stainless spoon and stainless steel hand auger

Splits/Spikes/Duplicates:

Sampling Containers:(Number/Size/Type) 1/500ml/G;2/250ml/G

Appearance of Sample: Dark Brown and Black Clay and Peat

Reason for Sampling: Phase II Assessment Soil Resample

Lab Performing Analysis: EMS Heritage

Respiratory Protection: None

Personnel Present: Kuntz

ETE, Inc.

P O BOX 1867
1445 Pisgah Church Rd.
Lexington SC 29072
(803) 957-6270

SAMPLE COLLECTION SUMMARY SHEET

Project Number: 530-06-506 Date: 12/14/92

Sampled By: Kuntz Time: 09:00

Sampling Point Identification: SS-9 #10790

Site Name/City/County: SWP-Wilmington

Weather Conditions: Clear 50°

Sample Type: Soil

Sampling Method: Stainless spoon and stainless steel hand auger

Splits/Spikes/Duplicates:

Sampling Containers:(Number/Size/Type) 1/500ml/G;2/250ml/G

Appearance of Sample: Brown Sand, 20% Clay, Strong Diesel Odor and Sheen

Reason for Sampling: Phase II Assessment Soil Resample

Lab Performing Analysis: EMS Heritage

Respiratory Protection: None

Personnel Present: Kuntz

ETE, Inc.

P O BOX 1867
1445 Pisgah Church Rd.
Lexington SC 29072
(803) 957-6270

SAMPLE COLLECTION SUMMARY SHEET

Project Number: 530-06-506 Date: 12/14/92

Sampled By: Kuntz Time: 09:45

Sampling Point Identification: SS-10 #10791

Site Name/City/County: SWP-Wilmington

Weather Conditions: Clear 50°

Sample Type: Soil

Sampling Method: Stainless spoon and stainless steel hand auger

Splits/Spikes/Duplicates:

Sampling Containers:(Number/Size/Type) 1/500ml/G;2/250ml/G

Appearance of Sample: Brown Sand 5% Clay

Reason for Sampling: Phase II Assessment Soil Resample

Lab Performing Analysis: EMS Heritage

Respiratory Protection: None

Personnel Present: Kuntz

ETE, Inc.

P O BOX 1867
1445 Pisgah Church Rd.
Lexington SC 29072
(803) 957-6270

SAMPLE COLLECTION SUMMARY SHEET

Project Number: 530-06-506 Date: 12/14/92

Sampled By: Kuntz Time: 10:30

Sampling Point Identification: SS-11 #10792

Site Name/City/County: SWP-Wilmington

Weather Conditions: Clear 50°

Sample Type: Soil

Sampling Method: Stainless spoon and stainless steel hand auger

Splits/Spikes/Duplicates:

Sampling Containers:(Number/Size/Type) 1/500ml/G;2/250ml/G

Appearance of Sample: Brown Sand

Reason for Sampling: Phase II Assessment Soil Resample

Lab Performing Analysis: EMS Heritage

Respiratory Protection: None

Personnel Present: Kuntz

Soil Sample Laboratory Results and Chain-of-Custody

gw
MAS
G. Kratz

CASE SUMMARY

Client : Southern Wood Piedmont
Project : Wilmington

Date: 1/5/93

SWP SAMPLE ID	HERITAGE SAMPLE NUMBER	DATE SAMPLED
SS-1	B118583	12/9/92
SS-2	B118584	12/9/92
SS-3	B118585	12/9/92
SS-4	B117586	12/9/92
SS-5	B118587	12/9/92
SS-6	B118588	12/9/92
SS-7	B118589	12/9/92
SS-8	B118673	12/14/92
SS-9	B118674	12/14/92
SS-10	B118675	12/14/92
SS-11	B118676	12/14/92

RECEIVED
JAN 0 6 1993
ENVIRONMENTAL AFFAIRS

		SS-6 B118588 09-DEC-92			SS-7 B118589 09-DEC-92			SS-8 B118673 14-DEC-92			SS-9 B118674 14-DEC-92			SS-10 B118675 14-DEC-92		
Semi-volatiles	CAS Number	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units
Acenaphthene	83-32-9	2.9	0.33	mg/kg	**44	0.33	mg/kg	1.0	0.33	mg/kg	***32	0.66	mg/kg	BDL	0.33	mg/kg
Anthracene	120-12-7	*36	0.33	mg/kg	**10	0.33	mg/kg	BDL	0.33	mg/kg	***49	0.66	mg/kg	BDL	0.33	mg/kg
Benz(A)Anthracene	56-55-3	*7.4	0.33	mg/kg	3.2	0.33	mg/kg	BDL	0.33	mg/kg	***26	0.66	mg/kg	730	0.33	mg/kg
Benzo(A)Pyrene	50-32-8	1.9	0.33	mg/kg	0.64	0.33	mg/kg	BDL	0.33	mg/kg	**9.0	0.66	mg/kg	680	0.33	mg/kg
Benzo(B)Fluoranthene	205-99-2	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	***15	0.33	mg/kg	1800	0.33	mg/kg
Benzo(K)Fluoranthene	207-08-9	3.6	0.33	mg/kg	1.2	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg
Bis(2-Chloroethyl)Ether	111-44-4	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	***	0.33	mg/kg	BDL	0.33	mg/kg
Carbazole	86-74-8	4.4	0.33	mg/kg	**17	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg
4-Chloro-3-Methylphenol	59-50-7	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg
2-Chlorophenol	95-57-8	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg
Chrysene	218-01-9	5.5	0.33	mg/kg	1.9	0.33	mg/kg	BDL	0.33	mg/kg	***22	0.66	mg/kg	920	0.33	mg/kg
Dibenz(A,H)Anthracene	53-70-3	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	0.94	0.33	mg/kg	BDL	0.33	mg/kg
2,4-Dimethylphenol	105-67-9	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg
2,4-Dinitrophenol	25550-58-7	BDL	1.6	mg/kg	BDL	1.6	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	1.6	mg/kg
Fluoranthene	206-44-0	*52	0.33	mg/kg	**26	0.33	mg/kg	BDL	0.33	mg/kg	***130	0.66	mg/kg	1300	0.33	mg/kg
Indeno(1,2,3-Cd)Pyrene	193-39-5	0.72	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	3.4	0.33	mg/kg	680	0.33	mg/kg
Naphthalene	91-20-3	BDL	0.33	mg/kg	**44	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg
Pentachlorophenol	87-86-5	BDL	1.6	mg/kg	BDL	1.6	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	1.6	mg/kg
Phenanthrene	85-01-8	*36	0.33	mg/kg	**55	0.33	mg/kg	BDL	0.33	mg/kg	***70	0.66	mg/kg	BDL	0.33	mg/kg
Phenol	108-95-2	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg
Tetrachlorophenol	25167-83-3	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg
2,4,5-Trichlorophenol	95-95-4	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg
2,4,6-Trichlorophenol	88-06-2	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg

* Note: This is a summary report. Please see the Certificate of Analysis for more information. DL = Detection Limit

		SS-11 B118676 14-DEC-92					
Semi-volatiles	CAS Number	Result	DL	Units			
Acenaphthene	83-32-9	BDL	0.33	mg/kg			
Anthracene	120-12-7	BDL	0.33	mg/kg			
Benz(A)Anthracene	56-55-3	BDL	0.33	mg/kg			
Benzo(A)Pyrene	50-32-8	BDL	0.33	mg/kg			
Benzo(B)Fluoranthene	205-99-2	BDL	0.33	mg/kg			
Benzo(K)Fluoranthene	207-08-9	BDL	0.33	mg/kg			
Bis(2-Chloroethyl)Ether	111-44-4	BDL	0.33	mg/kg			
Carbazole	86-74-8	BDL	0.33	mg/kg			
4-Chloro-3-Methylphenol	59-50-7	BDL	0.33	mg/kg			
2-Chlorophenol	95-57-8	BDL	0.33	mg/kg			
Chrysene	218-01-9	BDL	0.33	mg/kg			
Dibenz(A,H)Anthracene	53-70-3	BDL	0.33	mg/kg			
2,4-Dimethylphenol	105-67-9	BDL	0.33	mg/kg			
2,4-Dinitrophenol	25550-58-7	BDL	1.6	mg/kg			
Fluoranthene	206-44-0	BDL	0.33	mg/kg			
Indeno(1,2,3-Cd)Pyrene	193-39-5	BDL	0.33	mg/kg			
Naphthalene	91-20-3	BDL	0.33	mg/kg			
Pentachlorophenol	87-86-5	BDL	1.6	mg/kg			
Phenanthrene	85-01-8	BDL	0.33	mg/kg			
Phenol	108-95-2	BDL	0.33	mg/kg			
Tetrachlorophenol	25167-83-3	BDL	0.33	mg/kg			
2,4,5-Trichlorophenol	95-95-4	BDL	0.33	mg/kg			
2,4,6-Trichlorophenol	88-06-2	BDL	0.33	mg/kg			

* Note: This is a summary report. Please see the Certificate of Analysis for more information. DL = Detection Limit

Heritage Laboratories, Inc -- Parameter Summary Report
SWP Wilmington Project

		SS-1 B118583 09-DEC-92			SS-2 B118584 09-DEC-92			SS-3 B118585 09-DEC-92			SS-4 B118586 09-DEC-92			SS-5 B118587 09-DEC-92		
Metals	CAS Number	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units
Arsenic	7440-38-2	3.5	1.2	mg/kg	5.2	1.2	mg/kg	BDL	1.2	mg/kg	3.6	1.2	mg/kg	1.5	1.2	mg/kg
Chromium	7440-47-32	5.5	0.75	mg/kg	14	0.75	mg/kg	2.1	0.75	mg/kg	11	0.75	mg/kg	5.2	0.75	mg/kg
Copper	7440-50-8	6.1	0.75	mg/kg	46	0.75	mg/kg	8.0	0.75	mg/kg	14	0.75	mg/kg	2.4	0.75	mg/kg
Lead	7439-92-1	14	5	mg/kg	290	5	mg/kg	61	5.0	mg/kg	25	5.0	mg/kg	3.4	1.2	mg/kg

* Note: This is a summary report. Please see the Certificate of Analysis for more information. DL = Detection Limit

		SS-6 B118588 09-DEC-92			SS-7 B118589 09-DEC-92			SS-8 B118673 14-DEC-92			SS-9 B118674 14-DEC-92			SS-10 B118675 14-DEC-92		
Metals	CAS Number	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units
Arsenic	7440-38-2	BDL		1.2mg/kg	2.3		1.2mg/kg	BDL		1.2mg/kg	BDL		1.2mg/kg	BDL		1.2mg/kg
Chromium	7440-47-32	3.1		0.75mg/kg	9.2		0.75mg/kg	4.2		0.75mg/kg	4.1		0.75mg/kg	2.6		0.75mg/kg
Copper	7440-50-8	2.8		0.75mg/kg	5.1		0.75mg/kg	1.9		0.75mg/kg	4.4		0.75mg/kg	3.9		0.75mg/kg
Lead	7439-92-1	3.1		1.1mg/kg	6.3		5.0mg/kg	2.3		1.2mg/kg	6.9		5.0mg/kg	6.2		5.0mg/kg

* Note: This is a summary report. Please see the Certificate of Analysis for more information. DL = Detection Limit

		SS-11 B118676 14-DEC-92					
Metals	CAS Number	Result	DL	Units			
Arsenic	7440-38-2	BDL		1.2mg/kg			
Chromium	7440-47-32	1.3		0.75mg/kg			
Copper	7440-50-8	1.0		0.75mg/kg			
Lead	7439-92-1	1.9		1.2mg/kg			

* Note: This is a summary report. Please see the Certificate of Analysis for more information. DL = Detection Limit

		SS-1 B118583 09-DEC-92			SS-2 B118584 09-DEC-92			SS-3 B118585 09-DEC-92			SS-4 B118586 09-DEC-92			SS-5 B118587 09-DEC-92		
General Organics	CAS Number	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units
Benzene	71-43-2	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg
Bromodichloromethane	75-27-4	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg
Bromomethane	74-83-9	BDL	0.005	mg/kg	BDL	0.005	mg/kg	BDL	0.005	mg/kg	BDL	0.005	mg/kg	BDL	0.005	mg/kg
Carbon Tetrachloride	56-23-5	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg
Chlorobenzene	108-90-7	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg
Chloroethane	75-00-3	BDL	0.005	mg/kg	BDL	0.005	mg/kg	BDL	0.005	mg/kg	BDL	0.005	mg/kg	BDL	0.005	mg/kg
2-Chloroethylvinylether	110-75-8	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg
Chloroform	67-66-3	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg
Chloromethane	74-87-3	BDL	0.005	mg/kg	BDL	0.005	mg/kg	BDL	0.005	mg/kg	BDL	0.005	mg/kg	BDL	0.005	mg/kg
Cis-1,3-Dichloropropene	10061-01-5	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg
Dibromochloromethane	124-48-1	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg
1,2-Dibromoethane (Edb)	106-93-4	BDL	0.005	mg/kg	BDL	0.005	mg/kg	BDL	0.005	mg/kg	BDL	0.005	mg/kg	BDL	0.005	mg/kg
Dichlorodifluoromethane	75-71-8	BDL	0.005	mg/kg	BDL	0.005	mg/kg	BDL	0.005	mg/kg	BDL	0.005	mg/kg	BDL	0.005	mg/kg
1,1-Dichloroethane	75-34-3	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg
1,2-Dichloroethane	107-06-2	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg
1,1-Dichloroethene	75-35-4	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg
Dichloromethane	75-09-2	0.024	0.001	mg/kg	0.0064	0.001	mg/kg	0.015	0.001	mg/kg	0.017	0.001	mg/kg	0.012	0.001	mg/kg
1,2-Dichloropropane	78-87-5	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg
Ethyl Benzene	100-41-4	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg
Fluorotrichloromethane	75-69-4	BDL	0.005	mg/kg	BDL	0.005	mg/kg	BDL	0.005	mg/kg	BDL	0.005	mg/kg	BDL	0.005	mg/kg
M/P-Xylene	NA	0.0025	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg	0.0010	0.001	mg/kg	0.0011	0.001	mg/kg
Methyl-T-Butyl Ether (Mtbe)	1634-04-4	BDL	0.005	mg/kg	BDL	0.005	mg/kg	BDL	0.005	mg/kg	BDL	0.005	mg/kg	BDL	0.005	mg/kg
O-Xylene	95-47-6	0.0011	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg
1,1,2,2-Tetrachloroethane	79-34-5	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg
Toluene	108-88-3	0.0024	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg	0.0013	0.001	mg/kg
Trans-1,2-Dichloroethene	156-60-5	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg
1,1,1-Trichloroethane	78-92-2	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg
1,1,2-Trichloroethane	79-00-5	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg
Trichloroethene	79-01-6	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg	BDL	0.001	mg/kg
Vinyl Chloride	75-01-4	BDL	0.005	mg/kg	BDL	0.005	mg/kg	BDL	0.005	mg/kg	BDL	0.005	mg/kg	BDL	0.005	mg/kg

* Note: This is a summary report. Please see the Certificate of Analysis for more information. DL = Detection Limit

		SS-6 B118588 09-DEC-92			SS-7 B118589 09-DEC-92			SS-8 B118673 14-DEC-92			SS-9 B118674 14-DEC-92			SS-10 B118675 14-DEC-92		
General Organics	CAS Number	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units
Benzene	71-43-2	BDL	0.001	mg/kg	BDL	0.010	mg/kg	BDL	0.001	mg/kg	BDL	0.005	mg/kg	BDL	0.001	mg/kg
Bromodichloromethane	75-27-4	BDL	0.001	mg/kg	BDL	0.010	mg/kg	BDL	0.001	mg/kg	BDL	0.005	mg/kg	BDL	0.001	mg/kg
Bromomethane	74-83-9	BDL	0.005	mg/kg	BDL	0.050	mg/kg	BDL	0.005	mg/kg	BDL	0.025	mg/kg	BDL	0.005	mg/kg
Carbon Tetrachloride	56-23-5	BDL	0.001	mg/kg	BDL	0.010	mg/kg	BDL	0.001	mg/kg	BDL	0.005	mg/kg	BDL	0.001	mg/kg
Chlorobenzene	108-90-7	BDL	0.001	mg/kg	BDL	0.010	mg/kg	BDL	0.001	mg/kg	BDL	0.005	mg/kg	BDL	0.001	mg/kg
Chloroethane	75-00-3	BDL	0.005	mg/kg	BDL	0.050	mg/kg	BDL	0.005	mg/kg	BDL	0.025	mg/kg	BDL	0.005	mg/kg
2-Chloroethylvinylether	110-75-8	BDL	0.001	mg/kg	BDL	0.010	mg/kg	BDL	0.001	mg/kg	BDL	0.005	mg/kg	BDL	0.001	mg/kg
Chloroform	67-66-3	BDL	0.001	mg/kg	BDL	0.010	mg/kg	BDL	0.001	mg/kg	BDL	0.005	mg/kg	BDL	0.001	mg/kg
Chloromethane	74-87-3	BDL	0.005	mg/kg	BDL	0.050	mg/kg	BDL	0.005	mg/kg	BDL	0.025	mg/kg	BDL	0.005	mg/kg
Cis-1,3-Dichloropropene	10061-01-5	BDL	0.001	mg/kg	BDL	0.010	mg/kg	BDL	0.001	mg/kg	BDL	0.005	mg/kg	BDL	0.001	mg/kg
Dibromochloromethane	124-48-1	BDL	0.001	mg/kg	BDL	0.010	mg/kg	BDL	0.001	mg/kg	BDL	0.005	mg/kg	BDL	0.001	mg/kg
1,2-Dibromoethane (Edb)	106-93-4	BDL	0.005	mg/kg	BDL	0.050	mg/kg	BDL	0.005	mg/kg	BDL	0.025	mg/kg	BDL	0.005	mg/kg
Dichlorodifluoromethane	75-71-8	BDL	0.005	mg/kg	BDL	0.050	mg/kg	BDL	0.005	mg/kg	BDL	0.025	mg/kg	BDL	0.005	mg/kg
1,1-Dichloroethane	75-34-3	BDL	0.001	mg/kg	BDL	0.010	mg/kg	BDL	0.001	mg/kg	BDL	0.005	mg/kg	BDL	0.001	mg/kg
1,2-Dichloroethane	107-06-2	BDL	0.001	mg/kg	BDL	0.010	mg/kg	BDL	0.001	mg/kg	BDL	0.005	mg/kg	BDL	0.001	mg/kg
1,1-Dichloroethene	75-35-4	BDL	0.001	mg/kg	BDL	0.010	mg/kg	BDL	0.001	mg/kg	BDL	0.005	mg/kg	BDL	0.001	mg/kg
Dichloromethane	75-09-2	0.014	0.001	mg/kg	0.059	0.010	mg/kg	0.0070	0.001	mg/kg	0.020	0.005	mg/kg	0.0080	0.001	mg/kg
1,2-Dichloropropane	78-87-5	BDL	0.001	mg/kg	BDL	0.010	mg/kg	BDL	0.001	mg/kg	BDL	0.005	mg/kg	BDL	0.001	mg/kg
Ethyl Benzene	100-41-4	BDL	0.001	mg/kg	0.15	0.010	mg/kg	BDL	0.001	mg/kg	BDL	0.005	mg/kg	BDL	0.001	mg/kg
Fluorotrichloromethane	75-69-4	BDL	0.005	mg/kg	BDL	0.050	mg/kg	BDL	0.005	mg/kg	BDL	0.025	mg/kg	BDL	0.005	mg/kg
M/P-Xylene	NA	0.0014	0.001	mg/kg	0.084	0.010	mg/kg	BDL	0.001	mg/kg	0.0071	0.005	mg/kg	BDL	0.001	mg/kg
Methyl-T-Butyl Ether (Mtbe)	1634-04-4	BDL	0.005	mg/kg	BDL	0.050	mg/kg	BDL	0.005	mg/kg	BDL	0.025	mg/kg	BDL	0.005	mg/kg
O-Xylene	95-47-6	BDL	0.001	mg/kg	0.069	0.010	mg/kg	BDL	0.001	mg/kg	0.0075	0.005	mg/kg	BDL	0.001	mg/kg
1,1,2,2-Tetrachloroethane	79-34-5	BDL	0.001	mg/kg	BDL	0.010	mg/kg	BDL	0.001	mg/kg	BDL	0.005	mg/kg	BDL	0.001	mg/kg
Toluene	108-88-3	0.0034	0.001	mg/kg	0.016	0.010	mg/kg	BDL	0.001	mg/kg	BDL	0.005	mg/kg	BDL	0.001	mg/kg
Trans-1,2-Dichloroethene	156-60-5	BDL	0.001	mg/kg	BDL	0.010	mg/kg	BDL	0.001	mg/kg	BDL	0.005	mg/kg	BDL	0.001	mg/kg
1,1,1-Trichloroethane	78-92-2	BDL	0.001	mg/kg	BDL	0.010	mg/kg	BDL	0.001	mg/kg	BDL	0.005	mg/kg	BDL	0.001	mg/kg
1,1,2-Trichloroethane	79-00-5	BDL	0.001	mg/kg	BDL	0.010	mg/kg	BDL	0.001	mg/kg	BDL	0.005	mg/kg	BDL	0.001	mg/kg
Trichloroethene	79-01-6	BDL	0.001	mg/kg	BDL	0.010	mg/kg	BDL	0.001	mg/kg	BDL	0.005	mg/kg	BDL	0.001	mg/kg
Vinyl Chloride	75-01-4	BDL	0.005	mg/kg	BDL	0.050	mg/kg	BDL	0.005	mg/kg	BDL	0.025	mg/kg	BDL	0.005	mg/kg

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		SS-11 B118676 14-DEC-92					
General Organics	CAS Number	Result	DL	Units			
Benzene	71-43-2	BDL	0.001	mg/kg			
Bromodichloromethane	75-27-4	BDL	0.001	mg/kg			
Bromomethane	74-83-9	BDL	0.005	mg/kg			
Carbon Tetrachloride	56-23-5	BDL	0.001	mg/kg			
Chlorobenzene	108-90-7	BDL	0.001	mg/kg			
Chloroethane	75-00-3	BDL	0.005	mg/kg			
2-Chloroethylvinylether	110-75-8	BDL	0.001	mg/kg			
Chloroform	67-66-3	BDL	0.001	mg/kg			
Chloromethane	74-87-3	BDL	0.005	mg/kg			
Cis-1,3-Dichloropropene	10061-01-5	BDL	0.001	mg/kg			
Dibromochloromethane	124-48-1	BDL	0.001	mg/kg			
1,2-Dibromoethane (Edb)	106-93-4	BDL	0.005	mg/kg			
Dichlorodifluoromethane	75-71-8	BDL	0.005	mg/kg			
1,1-Dichloroethane	75-34-3	BDL	0.001	mg/kg			
1,2-Dichloroethane	107-06-2	BDL	0.001	mg/kg			
1,1-Dichloroethene	75-35-4	BDL	0.001	mg/kg			
Dichloromethane	75-09-2	0.0068	0.001	mg/kg			
1,2-Dichloropropane	78-87-5	BDL	0.001	mg/kg			
Ethyl Benzene	100-41-4	BDL	0.001	mg/kg			
Fluorotrichloromethane	75-69-4	BDL	0.005	mg/kg			
M/P-Xylene	NA	BDL	0.001	mg/kg			
Methyl-T-Butyl Ether (Mtbe)	1634-04-4	BDL	0.005	mg/kg			
O-Xylene	95-47-6	BDL	0.001	mg/kg			
1,1,2,2-Tetrachloroethane	79-34-5	BDL	0.001	mg/kg			
Toluene	108-88-3	BDL	0.001	mg/kg			
Trans-1,2-Dichloroethene	156-60-5	BDL	0.001	mg/kg			
1,1,1-Trichloroethane	78-92-2	BDL	0.001	mg/kg			
1,1,2-Trichloroethane	79-00-5	BDL	0.001	mg/kg			
Trichloroethene	79-01-6	BDL	0.001	mg/kg			
Vinyl Chloride	75-01-4	BDL	0.005	mg/kg			

* Note: This is a summary report. Please see the Certificate of Analysis for more information. DL = Detection Limit

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. 4132 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	11-DEC-92	2024	B118583
	Complete	PO Number	
	04-JAN-93	530-06-501	
	Printed	Sampled	
	05-JAN-93	09-DEC-92 14:00	

Report To

SANDRA WATSON
SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Bill To

SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: SS-1
LOG #: 10782

FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Analyst: M. KRASKA Analysis Date: 15-DEC-92 Test: P129.7.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.11		Grams
FINAL WEIGHT OR VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 17-DEC-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
CHROMIUM	5.5	0.75	mg/kg

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 16-DEC-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
COPPER	6.1	0.75	mg/kg

LEAD FAA SW846-7420

Analyst: L. SURRATT Analysis Date: 17-DEC-92 Instrument: FAA Test: M116.1.0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
LEAD	14	5	mg/kg

GFAA ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Analyst: M. KRASKA Analysis Date: 15-DEC-92 Test: P130.7.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.0		Grams
FINAL WEIGHT OR VOLUME	50		mL

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ENVIRONMENTAL AFFAIRS

 (continued on next page)

ARSENIC GFAA SW846-7060

Analyst: M. KRASKA Analysis Date: 18-DEC-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P130.7.0

Parameter	Result	Det. Limit	Units
ARSENIC	3.5	1.2	mg/kg

Note: Analysis performed by 3 point MSA

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: P. WINTERS Analysis Date: 16-DEC-92 Instrument: GC/PID ELCD Test: 0461.1.0

Parameter	Result	Det. Limit	Units
DICHLORODIFLUOROMETHANE	BDL	0.005	mg/kg
CHLOROMETHANE	BDL	0.005	mg/kg
VINYL CHLORIDE	BDL	0.005	mg/kg
BROMOMETHANE	BDL	0.005	mg/kg
CHLOROETHANE	BDL	0.005	mg/kg
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/kg
1,1-DICHLOROETHENE	BDL	0.001	mg/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	0.024	0.001	mg/kg
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/kg
1,1-DICHLOROETHANE	BDL	0.001	mg/kg
CHLOROFORM	BDL	0.001	mg/kg
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/kg
CARBON TETRACHLORIDE	BDL	0.001	mg/kg
BENZENE	BDL	0.001	mg/kg
1,2-DICHLOROETHANE	BDL	0.001	mg/kg
TRICHLOROETHENE	BDL	0.001	mg/kg
1,2-DICHLOROPROPANE	BDL	0.001	mg/kg
BROMODICHLOROMETHANE	BDL	0.001	mg/kg
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/kg
TOLUENE	0.002	0.001	mg/kg
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/kg
DIBROMOCHLOROMETHANE	BDL	0.001	mg/kg
CHLOROBENZENE	BDL	0.001	mg/kg
ETHYLBENZENE	BDL	0.001	mg/kg
M/P-XYLENE	0.002	0.001	mg/kg
O-XYLENE	0.001	0.001	mg/kg
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/kg
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/kg
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/kg
1,2-DIBROMOETHANE (EDB)	BDL	0.005	mg/kg

GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: S. WILLIAMS Analysis Date: 11-DEC-92 Test: P236.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.00		Grams
FINAL VOLUME	1.0		mL

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

Analyst: R. ROBERTS Analysis Date: 28-DEC-92 Instrument: GC/MS SVOA Test: 0505.3.0
Prep: GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	0.51	0.33	mg/kg
ANTHRACENE	BDL	0.33	mg/kg
BENZ(A)ANTHRACENE	1.1	0.33	mg/kg
BENZO(A)PYRENE	0.42	0.33	mg/kg
BENZO(B)FLUORANTHENE	BDL	0.33	mg/kg
BENZO(K)FLUORANTHENE	1.5	0.33	mg/kg

 (continued on next page)

Parameter	Result	Det. Limit	Units
BIS(2-CHLOROETHYL)ETHER	BDL	0.33	mg/kg
CARBAZOLE	BDL	0.33	mg/kg
CHRYSENE	1.1	0.33	mg/kg
DIBENZ(A,H)ANTHRACENE	BDL	0.33	mg/kg
FLUORANTHENE	3.8	0.33	mg/kg
INDENO(1,2,3-CD)PYRENE	BDL	0.33	mg/kg
NAPHTHALENE	BDL	0.33	mg/kg
PHENANTHRENE	1.5	0.33	mg/kg
4-CHLORO-3-METHYLPHENOL	BDL	0.33	mg/kg
2-CHLOROPHENOL	BDL	0.33	mg/kg
2,4-DIMETHYLPHENOL	BDL	0.33	mg/kg
2,4-DINITROPHENOL	BDL	1.6	mg/kg
PENTACHLOROPHENOL	BDL	1.6	mg/kg
PHENOL	BDL	0.33	mg/kg
TETRACHLOROPHENOL	BDL	0.33	mg/kg
2,4,5-TRICHLOROPHENOL	BDL	0.33	mg/kg
2,4,6-TRICHLOROPHENOL	BDL	0.33	mg/kg
SURROGATE RECOVERY			

2-FLUOROPHENOL	54		% Rec
PHENOL-D5	57		% Rec
NITROBENZENE-D5	78		% Rec
2-FLUOROBIPHENYL	101		% Rec
2,4,6-TRIBROMOPHENOL	59		% Rec
TERPHENYL-D14	106		% Rec

Sample reanalyzed with no improvement in internal standard areas.

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 16791.

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Quality Assurance Officer: Helmuth MB Jansen

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. 4132 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	11-DEC-92	2024	B118584
	Complete	PO Number	
	04-JAN-93	530-06-501	
	Printed	Sampled	
	05-JAN-93	09-DEC-92 14:45	

Report To

SANDRA WATSON
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P.O. BOX 5447
SPARTANBURG, SC 29304

Bill To

SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: SS-2
LOG #: 10783

FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Analyst: M. KRASKA Analysis Date: 15-DEC-92 Test: P129.7.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.10		Grams
FINAL WEIGHT OR VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 17-DEC-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
CHROMIUM	14	0.75	mg/kg

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 16-DEC-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
COPPER	46	0.75	mg/kg

LEAD FAA SW846-7420

Analyst: L. SURRATT Analysis Date: 17-DEC-92 Instrument: FAA Test: M116.1.0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
LEAD	290	5	mg/kg

GFAA ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Analyst: M. KRASKA Analysis Date: 15-DEC-92 Test: P130.7.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.09		Grams
FINAL WEIGHT OR VOLUME	50		mL

 (continued on next page)

ARSENIC GFAA SW846-7060

Analyst: M. KRASKA Analysis Date: 18-DEC-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P130.7.0

Parameter	Result	Det. Limit	Units
ARSENIC	5.2	1.2	mg/kg

Note: Analysis performed by 3 point MSA

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: P. WINTERS Analysis Date: 16-DEC-92 Instrument: GC/PID ELCD Test: 0461.1.0

Parameter	Result	Det. Limit	Units
DICHLORODIFLUOROMETHANE	BDL	0.005	mg/kg
CHLOROMETHANE	BDL	0.005	mg/kg
VINYL CHLORIDE	BDL	0.005	mg/kg
BROMOMETHANE	BDL	0.005	mg/kg
CHLOROETHANE	BDL	0.005	mg/kg
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/kg
1,1-DICHLOROETHENE	BDL	0.001	mg/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	0.006	0.001	mg/kg
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/kg
1,1-DICHLOROETHANE	BDL	0.001	mg/kg
CHLOROFORM	BDL	0.001	mg/kg
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/kg
CARBON TETRACHLORIDE	BDL	0.001	mg/kg
BENZENE	BDL	0.001	mg/kg
1,2-DICHLOROETHANE	BDL	0.001	mg/kg
TRICHLOROETHENE	BDL	0.001	mg/kg
1,2-DICHLOROPROPANE	BDL	0.001	mg/kg
BROMODICHLOROMETHANE	BDL	0.001	mg/kg
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/kg
TOLUENE	BDL	0.001	mg/kg
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/kg
DIBROMOCHLOROMETHANE	BDL	0.001	mg/kg
CHLOROBENZENE	BDL	0.001	mg/kg
ETHYLBENZENE	BDL	0.001	mg/kg
M/P-XYLENE	BDL	0.001	mg/kg
O-XYLENE	BDL	0.001	mg/kg
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/kg
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/kg
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/kg
1,2-DIBROMOETHANE (EDB)	BDL	0.005	mg/kg

GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: S. WILLIAMS Analysis Date: 11-DEC-92 Test: P236.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.00		Grams
FINAL VOLUME	1.0		mL

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

Analyst: R. ROBERTS Analysis Date: 28-DEC-92 Instrument: GC/MS SVOA Test: 0505.3.0
Prep: GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	BDL	0.33	mg/kg
ANTHRACENE	BDL	0.33	mg/kg
BENZ(A)ANTHRACENE	0.54	0.33	mg/kg
BENZO(A)PYRENE	BDL	0.33	mg/kg
BENZO(B)FLUORANTHENE	0.75	0.33	mg/kg
BENZO(K)FLUORANTHENE	BDL	0.33	mg/kg

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HERITAGE LABORATORIES, INC. Lab Sample ID: B118584

Parameter	Result	Det. Limit	Units
BIS(2-CHLOROETHYL)ETHER	BDL	0.33	mg/kg
CARBAZOLE	BDL	0.33	mg/kg
CHRYSENE	0.53	0.33	mg/kg
DIBENZ(A,H)ANTHRACENE	BDL	0.33	mg/kg
FLUORANTHENE	0.87	0.33	mg/kg
INDENO(1,2,3-CD)PYRENE	BDL	0.33	mg/kg
NAPHTHALENE	BDL	0.33	mg/kg
PHENANTHRENE	0.56	0.33	mg/kg
4-CHLORO-3-METHYLPHENOL	BDL	0.33	mg/kg
2-CHLOROPHENOL	BDL	0.33	mg/kg
2,4-DIMETHYLPHENOL	BDL	0.33	mg/kg
2,4-DINITROPHENOL	BDL	1.6	mg/kg
PENTACHLOROPHENOL	BDL	1.6	mg/kg
PHENOL	BDL	0.33	mg/kg
TETRACHLOROPHENOL	BDL	0.33	mg/kg
2,4,5-TRICHLOROPHENOL	BDL	0.33	mg/kg
2,4,6-TRICHLOROPHENOL	BDL	0.33	mg/kg
SURROGATE RECOVERY			
2-FLUOROPHENOL	43		% Rec
PHENOL-D5	47		% Rec
NITROBENZENE-D5	55		% Rec
2-FLUOROBIPHENYL	82		% Rec
2,4,6-TRIBROMOPHENOL	47		% Rec
TERPHENYL-D14	99		% Rec

Sample reanalyzed with no improvement in internal standard areas.

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 16791.

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Quality Assurance Officer: chelsmith MB Jamsen

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. 4132 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	11-DEC-92	2024	B118585
	Complete	PO Number	
	04-JAN-93	530-06-501	
	Printed	Sampled	
	05-JAN-93	09-DEC-92 15:15	

Report To

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SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Bill To

SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: SS-3
LOG #: 10784

FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Analyst: M. KRASKA Analysis Date: 15-DEC-92 Test: P129.7.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.12		Grams
FINAL WEIGHT OR VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 17-DEC-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
CHROMIUM	2.1	0.75	mg/kg

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 16-DEC-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
COPPER	8.0	0.75	mg/kg

LEAD FAA SW846-7420

Analyst: L. SURRATT Analysis Date: 17-DEC-92 Instrument: FAA Test: M116.1.0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
LEAD	61	5.0	mg/kg

GFAA ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Analyst: M. KRASKA Analysis Date: 15-DEC-92 Test: P130.7.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.16		Grams
FINAL WEIGHT OR VOLUME	50		mL

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ARSENIC GFAA SW846-7060

Analyst: M. KRASKA Analysis Date: 18-DEC-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P130.7.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	1.2	mg/kg

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: P. WINTERS Analysis Date: 16-DEC-92 Instrument: GC/PID ELCD Test: O461.1.0

Parameter	Result	Det. Limit	Units
DICHLORODIFLUOROMETHANE	BDL	0.005	mg/kg
CHLOROMETHANE	BDL	0.005	mg/kg
VINYL CHLORIDE	BDL	0.005	mg/kg
BROMOMETHANE	BDL	0.005	mg/kg
CHLOROETHANE	BDL	0.005	mg/kg
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/kg
1,1-DICHLOROETHENE	BDL	0.001	mg/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	0.015	0.001	mg/kg
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/kg
1,1-DICHLOROETHANE	BDL	0.001	mg/kg
CHLOROFORM	BDL	0.001	mg/kg
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/kg
CARBON TETRACHLORIDE	BDL	0.001	mg/kg
BENZENE	BDL	0.001	mg/kg
1,2-DICHLOROETHANE	BDL	0.001	mg/kg
TRICHLOROETHENE	BDL	0.001	mg/kg
1,2-DICHLOROPROPANE	BDL	0.001	mg/kg
BROMODICHLOROMETHANE	BDL	0.001	mg/kg
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/kg
TOLUENE	BDL	0.001	mg/kg
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/kg
DIBROMOCHLOROMETHANE	BDL	0.001	mg/kg
CHLOROBENZENE	BDL	0.001	mg/kg
ETHYLBENZENE	BDL	0.001	mg/kg
M/P-XYLENE	BDL	0.001	mg/kg
O-XYLENE	BDL	0.001	mg/kg
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/kg
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/kg
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/kg
1,2-DIBROMOETHANE (EDB)	BDL	0.005	mg/kg

GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: S. WILLIAMS Analysis Date: 11-DEC-92 Test: P236.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.00		Grams
FINAL VOLUME	1.0		mL

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

Analyst: R. ROBERTS Analysis Date: 28-DEC-92 Instrument: GC/MS SVOA Test: O505.3.0
Prep: GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	BDL	0.33	mg/kg
ANTHRACENE	BDL	0.33	mg/kg
BENZ(A)ANTHRACENE	BDL	0.33	mg/kg
BENZO(A)PYRENE	BDL	0.33	mg/kg
BENZO(B)FLUORANTHENE	BDL	0.33	mg/kg
BENZO(K)FLUORANTHENE	BDL	0.33	mg/kg
BIS(2-CHLOROETHYL)ETHER	BDL	0.33	mg/kg
CARBAZOLE	BDL	0.33	mg/kg

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HERITAGE LABORATORIES, INC. Lab Sample ID: B118585

Parameter	Result	Det. Limit	Units
CHRYSENE	BDL	0.33	mg/kg
DIBENZ(A,H)ANTHRACENE	BDL	0.33	mg/kg
FLUORANTHENE	BDL	0.33	mg/kg
INDENO(1,2,3-CD)PYRENE	BDL	0.33	mg/kg
NAPHTHALENE	BDL	0.33	mg/kg
PHENANTHRENE	BDL	0.33	mg/kg
4-CHLORO-3-METHYLPHENOL	BDL	0.33	mg/kg
2-CHLOROPHENOL	BDL	0.33	mg/kg
2,4-DIMETHYLPHENOL	BDL	0.33	mg/kg
2,4-DINITROPHENOL	BDL	1.6	mg/kg
PENTACHLOROPHENOL	BDL	1.6	mg/kg
PHENOL	BDL	0.33	mg/kg
TETRACHLOROPHENOL	BDL	0.33	mg/kg
2,4,5-TRICHLOROPHENOL	BDL	0.33	mg/kg
2,4,6-TRICHLOROPHENOL	BDL	0.33	mg/kg
SURROGATE RECOVERY			
2-FLUOROPHENOL	54		% Rec
PHENOL-D5	56		% Rec
NITROBENZENE-D5	77		% Rec
2-FLUOROBIPHENYL	97		% Rec
2,4,6-TRIBROMOPHENOL	52		% Rec
TERPHENYL-D14	102		% Rec

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 16791.

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Quality Assurance Officer: MB Jansen

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. 4132 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	11-DEC-92	2024	B118586
	Complete	PO Number	
	04-JAN-93	530-06-501	
	Printed	Sampled	
	05-JAN-93	09-DEC-92 16:00	

Report To

SANDRA WATSON
SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Bill To

SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: SS-4
LOG #: 10785

FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Analyst: M. KRASKA Analysis Date: 15-DEC-92 Test: P129.7.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.04		Grams
FINAL WEIGHT OR VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 17-DEC-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
CHROMIUM	11	0.75	mg/kg

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 16-DEC-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
COPPER	14	0.75	mg/kg

LEAD FAA SW846-7420

Analyst: L. SURRATT Analysis Date: 17-DEC-92 Instrument: FAA Test: M116.1.0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
LEAD	25	5.0	mg/kg

GFAA ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Analyst: M. KRASKA Analysis Date: 15-DEC-92 Test: P130.7.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.10		Grams
FINAL WEIGHT OR VOLUME	50		mL

 (continued on next page)

ARSENIC GFAA SW846-7060

Analyst: M. KRASKA Analysis Date: 18-DEC-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P130.7.0

Parameter	Result	Det. Limit	Units
ARSENIC	3.6	1.2	mg/kg

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: P. WINTERS Analysis Date: 16-DEC-92 Instrument: GC/PID ELCD Test: 0461.1.0

Parameter	Result	Det. Limit	Units
DICHLORODIFLUOROMETHANE	BDL	0.005	mg/kg
CHLOROMETHANE	BDL	0.005	mg/kg
VINYL CHLORIDE	BDL	0.005	mg/kg
BROMOMETHANE	BDL	0.005	mg/kg
CHLOROETHANE	BDL	0.005	mg/kg
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/kg
1,1-DICHLOROETHENE	BDL	0.001	mg/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	0.017	0.001	mg/kg
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/kg
1,1-DICHLOROETHANE	BDL	0.001	mg/kg
CHLOROFORM	BDL	0.001	mg/kg
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/kg
CARBON TETRACHLORIDE	BDL	0.001	mg/kg
BENZENE	BDL	0.001	mg/kg
1,2-DICHLOROETHANE	BDL	0.001	mg/kg
TRICHLOROETHENE	BDL	0.001	mg/kg
1,2-DICHLOROPROPANE	BDL	0.001	mg/kg
BROMODICHLOROMETHANE	BDL	0.001	mg/kg
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/kg
TOLUENE	BDL	0.001	mg/kg
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/kg
DIBROMOCHLOROMETHANE	BDL	0.001	mg/kg
CHLOROBENZENE	BDL	0.001	mg/kg
ETHYLBENZENE	BDL	0.001	mg/kg
M/P-XYLENE	0.001	0.001	mg/kg
O-XYLENE	BDL	0.001	mg/kg
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/kg
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/kg
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/kg
1,2-DIBROMOETHANE (EDB)	BDL	0.005	mg/kg

GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: S. WILLIAMS Analysis Date: 11-DEC-92 Test: P236.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.00		Grams
FINAL VOLUME	1.0		mL

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

Analyst: R. ROBERTS Analysis Date: 28-DEC-92 Instrument: GC/MS SVOA Test: 0505.3.0
Prep: GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	0.59	0.33	mg/kg
ANTHRACENE	BDL	0.33	mg/kg
BENZ(A)ANTHRACENE	1.1	0.33	mg/kg
BENZO(A)PYRENE	2.0	0.33	mg/kg
BENZO(B)FLUORANTHENE	BDL	0.33	mg/kg
BENZO(K)FLUORANTHENE	4.9	0.33	mg/kg
BIS(2-CHLOROETHYL)ETHER	BDL	0.33	mg/kg
CARBAZOLE	BDL	0.33	mg/kg

 (continued on next page)

HERITAGE LABORATORIES, INC. Lab Sample ID: B118586

Parameter	Result	Det. Limit	Units
CHRYSENE	1.6	0.33	mg/kg
DIBENZ(A;H)ANTHRACENE	3.7	0.33	mg/kg
FLUORANTHENE	1.8	0.33	mg/kg
INDENO(1,2,3-CD)PYRENE	2.0	0.33	mg/kg
NAPHTHALENE	BDL	0.33	mg/kg
PHENANTHRENE	BDL	0.33	mg/kg
4-CHLORO-3-METHYLPHENOL	BDL	0.33	mg/kg
2-CHLOROPHENOL	BDL	0.33	mg/kg
2,4-DIMETHYLPHENOL	BDL	0.33	mg/kg
2,4-DINITROPHENOL	BDL	1.6	mg/kg
PENTACHLOROPHENOL	BDL	1.6	mg/kg
PHENOL	BDL	0.33	mg/kg
TETRACHLOROPHENOL	BDL	0.33	mg/kg
2,4,5-TRICHLOROPHENOL	BDL	0.33	mg/kg
2,4,6-TRICHLOROPHENOL	BDL	0.33	mg/kg
SURROGATE RECOVERY			
2-FLUOROPHENOL	42		% Rec
PHENOL-D5	46		% Rec
NITROBENZENE-D5	66		% Rec
2-FLUOROBIPHENYL	101		% Rec
2,4,6-TRIBROMOPHENOL	50		% Rec
TERPHENYL-D14	82		% Rec

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 16791.

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Quality Assurance Officer: Shelbmith MB Jarmen

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. 4132 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	11-DEC-92	2024	B118587
	Complete	PO Number	
	04-JAN-93	530-06-501	
	Printed	Sampled	
	05-JAN-93	09-DEC-92 17:30	

Report To

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SPARTANBURG, SC 29304

Bill To

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P.O. BOX 5447
SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: SS-5
LOG #: 10786

FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Analyst: M. KRASKA Analysis Date: 15-DEC-92 Test: P129.7.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.04		Grams
FINAL WEIGHT OR VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 17-DEC-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
CHROMIUM	5.2	0.75	mg/kg

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 16-DEC-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
COPPER	2.4	0.75	mg/kg

GFAA ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Analyst: M. KRASKA Analysis Date: 15-DEC-92 Test: P130.7.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.14		Grams
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: M. KRASKA Analysis Date: 18-DEC-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P130.7.0

Parameter	Result	Det. Limit	Units
ARSENIC	1.5	1.2	mg/kg

 (continued on next page)

LEAD GFAA SW846-7421

Analyst: M. KRASKA Analysis Date: 18-DEC-92 Instrument: GFAA Test: M116.2.0
Prep: GFAA ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P130.7.0

Parameter	Result	Det. Limit	Units
LEAD	3.4	1.2	mg/kg

Note: Analysis performed by 3 point MSA

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: P. WINTERS Analysis Date: 16-DEC-92 Instrument: GC/PID ELCD Test: 0461.1.0

Parameter	Result	Det. Limit	Units
DICHLORODIFLUOROMETHANE	BDL	0.005	mg/kg
CHLOROMETHANE	BDL	0.005	mg/kg
VINYL CHLORIDE	BDL	0.005	mg/kg
BROMOMETHANE	BDL	0.005	mg/kg
CHLOROETHANE	BDL	0.005	mg/kg
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/kg
1,1-DICHLOROETHENE	BDL	0.001	mg/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	0.012	0.001	mg/kg
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/kg
1,1-DICHLOROETHANE	BDL	0.001	mg/kg
CHLOROFORM	BDL	0.001	mg/kg
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/kg
CARBON TETRACHLORIDE	BDL	0.001	mg/kg
BENZENE	BDL	0.001	mg/kg
1,2-DICHLOROETHANE	BDL	0.001	mg/kg
TRICHLOROETHENE	BDL	0.001	mg/kg
1,2-DICHLOROPROPANE	BDL	0.001	mg/kg
BROMODICHLOROMETHANE	BDL	0.001	mg/kg
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/kg
TOLUENE	0.001	0.001	mg/kg
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/kg
DIBROMOCHLOROMETHANE	BDL	0.001	mg/kg
CHLOROBENZENE	BDL	0.001	mg/kg
ETHYLBENZENE	BDL	0.001	mg/kg
M/P-XYLENE	0.001	0.001	mg/kg
O-XYLENE	BDL	0.001	mg/kg
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/kg
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/kg
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/kg
1,2-DIBROMOETHANE (EDB)	BDL	0.005	mg/kg

GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: S. WILLIAMS Analysis Date: 11-DEC-92 Test: P236.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.00		Grams
FINAL VOLUME	1.0		mL

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

Analyst: R. ROBERTS Analysis Date: 16-DEC-92 Instrument: GC/MS SVOA Test: 0505.3.0
Prep: GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	4.4	0.33	mg/kg
ANTHRACENE	* 45	3.3	mg/kg
BENZ(A)ANTHRACENE	5.8	0.33	mg/kg
BENZO(A)PYRENE	3.1	0.33	mg/kg
BENZO(B)FLUORANTHENE	BDL	0.33	mg/kg
BENZO(K)FLUORANTHENE	3.8	0.33	mg/kg

 (continued on next page)

Parameter	Result	Det. Limit	Units
BIS(2-CHLOROETHYL)ETHER	BDL	0.33	mg/kg
CARBAZOLE	* 18	3.3	mg/kg
CHRYSENE	4.5	0.33	mg/kg
DIBENZ(A,H)ANTHRACENE	BDL	0.33	mg/kg
FLUORANTHENE	* 38	3.3	mg/kg
INDENO(1,2,3-CD)PYRENE	0.67	0.33	mg/kg
NAPHTHALENE	1.8	0.33	mg/kg
PHENANTHRENE	* 42	3.3	mg/kg
4-CHLORO-3-METHYLPHENOL	BDL	0.33	mg/kg
2-CHLOROPHENOL	BDL	0.33	mg/kg
2,4-DIMETHYLPHENOL	BDL	0.33	mg/kg
2,4-DINITROPHENOL	BDL	1.6	mg/kg
PENTACHLOROPHENOL	BDL	1.6	mg/kg
PHENOL	BDL	0.33	mg/kg
TETRACHLOROPHENOL	BDL	0.33	mg/kg
2,4,5-TRICHLOROPHENOL	BDL	0.33	mg/kg
2,4,6-TRICHLOROPHENOL	BDL	0.33	mg/kg
SURROGATE RECOVERY			

2-FLUOROPHENOL	45		% Rec
PHENOL-D5	57		% Rec
NITROBENZENE-D5	68		% Rec
2-FLUOROBIPHENYL	87		% Rec
2,4,6-TRIBROMOPHENOL	108		% Rec
TERPHENYL-D14	118		% Rec

*Note: * - Results taken from 1:10 (GB3443.c) Run on 12/29/92*

Sample Comments

** See Note for Parameter*
BDL Below Detection Limit

Sample chain of custody number 16791.

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Quality Assurance Officer: Helmuth MB Jansen

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. 4132 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	11-DEC-92	2024	B118588
	Complete	PO Number	
	04-JAN-93	530-06-501	
	Printed	Sampled	
	05-JAN-93	09-DEC-92 18:15	

Report To

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Bill To

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SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: SS-6
LOG #: 10787

FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Analyst: M. KRASKA Analysis Date: 15-DEC-92 Test: P129.7.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.07		Grams
FINAL WEIGHT OR VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 17-DEC-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
CHROMIUM	3.1	0.75	mg/kg

Note: Matrix interference suspected due to low matrix spike and matrix duplicate spike recovery.

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 16-DEC-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
COPPER	2.8	0.75	mg/kg

GFAA ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Analyst: M. KRASKA Analysis Date: 15-DEC-92 Test: P130.7.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.23		Grams
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: M. KRASKA Analysis Date: 18-DEC-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P130.7.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	1.2	mg/kg

 (continued on next page)

LEAD GFAA SW846-7421

Analyst: M. KRASKA Analysis Date: 18-DEC-92 Instrument: GFAA Test: M116.2.0
Prep: GFAA ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P130.7.0

Parameter	Result	Det. Limit	Units
LEAD	3.1	1.1	mg/kg

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: P. WINTERS Analysis Date: 17-DEC-92 Instrument: GC/PID ELCD Test: 0461.1.0

Parameter	Result	Det. Limit	Units
DICHLORODIFLUOROMETHANE	BDL	0.005	mg/kg
CHLOROMETHANE	BDL	0.005	mg/kg
VINYL CHLORIDE	BDL	0.005	mg/kg
BROMOMETHANE	BDL	0.005	mg/kg
CHLOROETHANE	BDL	0.005	mg/kg
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/kg
1,1-DICHLOROETHENE	BDL	0.001	mg/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	0.014	0.001	mg/kg
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/kg
1,1-DICHLOROETHANE	BDL	0.001	mg/kg
CHLOROFORM	BDL	0.001	mg/kg
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/kg
CARBON TETRACHLORIDE	BDL	0.001	mg/kg
BENZENE	BDL	0.001	mg/kg
1,2-DICHLOROETHANE	BDL	0.001	mg/kg
TRICHLOROETHENE	BDL	0.001	mg/kg
1,2-DICHLOROPROPANE	BDL	0.001	mg/kg
BROMODICHLOROMETHANE	BDL	0.001	mg/kg
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/kg
TOLUENE	0.003	0.001	mg/kg
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/kg
DIBROMOCHLOROMETHANE	BDL	0.001	mg/kg
CHLOROBENZENE	BDL	0.001	mg/kg
ETHYLBENZENE	BDL	0.001	mg/kg
M/P-XYLENE	0.001	0.001	mg/kg
O-XYLENE	BDL	0.001	mg/kg
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/kg
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/kg
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/kg
1,2-DIBROMOETHANE (EDB)	BDL	0.005	mg/kg

GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: S. WILLIAMS Analysis Date: 11-DEC-92 Test: P236.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.00		Grams
FINAL VOLUME	1.0		mL

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

Analyst: R. ROBERTS Analysis Date: 16-DEC-92 Instrument: GC/MS SVOA Test: 0505.3.0
Prep: GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	2.9	0.33	mg/kg
ANTHRACENE	* 36	3.3	mg/kg
BENZ(A)ANTHRACENE	* 7.4	3.3	mg/kg
BENZO(A)PYRENE	1.9	0.33	mg/kg
BENZO(B)FLUORANTHENE	BDL	0.33	mg/kg
BENZO(K)FLUORANTHENE	3.6	0.33	mg/kg
BIS(2-CHLOROETHYL)ETHER	BDL	0.33	mg/kg
CARBAZOLE	4.4	0.33	mg/kg

 (continued on next page)

HERITAGE LABORATORIES, INC. Lab Sample ID: B118588

Parameter	Result	Det. Limit	Units
CHRYSENE	5.5	0.33	mg/kg
DIBENZ(A,H)ANTHRACENE	BDL	0.33	mg/kg
FLUORANTHENE	* 52	3.3	mg/kg
INDENO(1,2,3-CD)PYRENE	0.72	0.33	mg/kg
NAPHTHALENE	BDL	0.33	mg/kg
PHENANTHRENE	* 36	3.3	mg/kg
4-CHLORO-3-METHYLPHENOL	BDL	0.33	mg/kg
2-CHLOROPHENOL	BDL	0.33	mg/kg
2,4-DIMETHYLPHENOL	BDL	0.33	mg/kg
2,4-DINITROPHENOL	BDL	1.6	mg/kg
PENTACHLOROPHENOL	BDL	1.6	mg/kg
PHENOL	BDL	0.33	mg/kg
TETRACHLOROPHENOL	BDL	0.33	mg/kg
2,4,5-TRICHLOROPHENOL	BDL	0.33	mg/kg
2,4,6-TRICHLOROPHENOL	BDL	0.33	mg/kg
SURROGATE RECOVERY			
2-FLUOROPHENOL	38		% Rec
PHENOL-D5	54		% Rec
NITROBENZENE-D5	66		% Rec
2-FLUOROBIPHENYL	90		% Rec
2,4,6-TRIBROMOPHENOL	93		% Rec
TERPHENYL-D14	** 139		% Rec

*Note: * - Result taken from 1:10 dilution (GB3444.c) Run on 12/29/92*
*** - Recovery 85% in dilution*

Sample Comments

** See Note for Parameter*
*** See Note for Parameter*
BDL Below Detection Limit

Sample chain of custody number 16791.

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Quality Assurance Officer: MB Janssen

CERTIFICATE OF ANALYSIS

Service Location -	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. 4132 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	15-DEC-92	2024	B118673
	Complete	PO Number	
	04-JAN-93	530-06-506	
	Printed	Sampled	
	05-JAN-93	14-DEC-92 07:30	

Report To

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P.O. BOX 5447
SPARTANBURG, SC 29304

Bill To

SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: SS-8
LOG #: 10789

FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Analyst: M. KRASKA Analysis Date: 15-DEC-92 Test: P129.7.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.14		Grams
FINAL WEIGHT OR VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 17-DEC-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
CHROMIUM	4.2	0.75	mg/kg

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 17-DEC-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
COPPER	1.9	0.75	mg/kg

GFAA ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Analyst: M. KRASKA Analysis Date: 15-DEC-92 Test: P130.7.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.06		Grams
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: M. KRASKA Analysis Date: 18-DEC-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P130.7.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	1.2	mg/kg

 (continued on next page)

LEAD GFAA SW846-7421

Analyst: M. KRASKA Analysis Date: 18-DEC-92 Instrument: GFAA Test: M116.2.0
Prep: GFAA ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P130.7.0

Parameter	Result	Det. Limit	Units
LEAD	2.3	1.2	mg/kg

Note: Analysis performed by 3 point MSA

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: P. WINTERS Analysis Date: 16-DEC-92 Instrument: GC/PID ELCD Test: O461.1.0

Parameter	Result	Det. Limit	Units
DICHLORODIFLUOROMETHANE	BDL	0.005	mg/kg
CHLOROMETHANE	BDL	0.005	mg/kg
VINYL CHLORIDE	BDL	0.005	mg/kg
BROMOMETHANE	BDL	0.005	mg/kg
CHLOROETHANE	BDL	0.005	mg/kg
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/kg
1,1-DICHLOROETHENE	BDL	0.001	mg/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	* 0.007	0.001	mg/kg
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/kg
1,1-DICHLOROETHANE	BDL	0.001	mg/kg
CHLOROFORM	BDL	0.001	mg/kg
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/kg
CARBON TETRACHLORIDE	BDL	0.001	mg/kg
BENZENE	BDL	0.001	mg/kg
1,2-DICHLOROETHANE	BDL	0.001	mg/kg
TRICHLOROETHENE	BDL	0.001	mg/kg
1,2-DICHLOROPROPANE	BDL	0.001	mg/kg
BROMODICHLOROMETHANE	BDL	0.001	mg/kg
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/kg
TOLUENE	BDL	0.001	mg/kg
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/kg
DIBROMOCHLOROMETHANE	BDL	0.001	mg/kg
CHLOROBENZENE	BDL	0.001	mg/kg
ETHYLBENZENE	BDL	0.001	mg/kg
M/P-XYLENE	BDL	0.001	mg/kg
O-XYLENE	BDL	0.001	mg/kg
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/kg
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/kg
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/kg
1,2-DIBROMOETHANE (EDB)	BDL	0.005	mg/kg

*Note: * - Also found in the blank at 0.006 ppm.*

GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: S. WILLIAMS Analysis Date: 16-DEC-92 Test: P236.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.32		Grams
FINAL VOLUME	1.0		mL

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

Analyst: R. ROBERTS Analysis Date: 21-DEC-92 Instrument: GC/MS SVOA Test: O505.3.0
Prep: GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	1.0	0.33	mg/kg
ANTHRACENE	BDL	0.33	mg/kg
BENZ(A)ANTHRACENE	BDL	0.33	mg/kg
BENZO(A)PYRENE	BDL	0.33	mg/kg

 (continued on next page)

HERITAGE LABORATORIES, INC. Lab Sample ID: B118673

Parameter	Result	Det. Limit	Units
BENZO(B)FLUORANTHENE	BDL	0.33	mg/kg
BENZO(K)FLUORANTHENE	BDL	0.33	mg/kg
BIS(2-CHLOROETHYL)ETHER	BDL	0.33	mg/kg
CARBAZOLE	BDL	0.33	mg/kg
CHRYSENE	BDL	0.33	mg/kg
DIBENZ(A,H)ANTHRACENE	BDL	0.33	mg/kg
FLUORANTHENE	BDL	0.33	mg/kg
INDENO(1,2,3-CD)PYRENE	BDL	0.33	mg/kg
NAPHTHALENE	BDL	0.33	mg/kg
PHENANTHRENE	BDL	0.33	mg/kg
4-CHLORO-3-METHYLPHENOL	BDL	0.33	mg/kg
2-CHLOROPHENOL	BDL	0.33	mg/kg
2,4-DIMETHYLPHENOL	BDL	0.33	mg/kg
2,4-DINITROPHENOL	BDL	0.33	mg/kg
PENTACHLOROPHENOL	BDL	0.33	mg/kg
PHENOL	BDL	0.33	mg/kg
TETRACHLOROPHENOL	BDL	0.33	mg/kg
2,4,5-TRICHLOROPHENOL	BDL	0.33	mg/kg
2,4,6-TRICHLOROPHENOL	BDL	0.33	mg/kg
SURROGATE RECOVERY			
2-FLUOROPHENOL	25		% Rec
PHENOL-D5	27		% Rec
NITROBENZENE-D5	35		% Rec
2-FLUOROBIPHENYL	49		% Rec
2,4,6-TRIBROMOPHENOL	36		% Rec
TERPHENYL-D14	51		% Rec

Sample Comments

* *See Note for Parameter*
BDL Below Detection Limit

Sample chain of custody number 17170.

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Quality Assurance Officer: Helmuth MB Jansen

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. 4132 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	15-DEC-92	2024	B118675
	Complete	PO Number	
	30-DEC-92	530-06-506	
	Printed	Sampled	
	05-JAN-93	14-DEC-92 09:45	

Report To	Bill To
SANDRA WATSON SOUTHERN WOOD PIEDMONT P.O. BOX 5447 SPARTANBURG, SC 29304	SOUTHERN WOOD PIEDMONT P.O. BOX 5447 SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: SS-10
LOG #: 10791

FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Analyst: M. KRASKA Analysis Date: 15-DEC-92 Test: P129.7.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.02		Grams
FINAL WEIGHT OR VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 17-DEC-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
CHROMIUM	2.6	0.75	mg/kg

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 17-DEC-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
COPPER	3.9	0.75	mg/kg

LEAD FAA SW846-7420

Analyst: L. SURRATT Analysis Date: 17-DEC-92 Instrument: FAA Test: M116.1.0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
LEAD	6.2	5.0	mg/kg

GFAA ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Analyst: M. KRASKA Analysis Date: 15-DEC-92 Test: P130.7.0

Parameter.	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.08		Grams
FINAL WEIGHT OR VOLUME	50		mL

 (continued on next page)

ARSENIC GFAA SW846-7060

Analyst: M. KRASKA Analysis Date: 18-DEC-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P130.7.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	1.2	mg/kg

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: P. WINTERS Analysis Date: 16-DEC-92 Instrument: GC/PID ELCD Test: O461.1.0

Parameter	Result	Det. Limit	Units
DICHLORODIFLUOROMETHANE	BDL	0.005	mg/kg
CHLOROMETHANE	BDL	0.005	mg/kg
VINYL CHLORIDE	BDL	0.005	mg/kg
BROMOMETHANE	BDL	0.005	mg/kg
CHLOROETHANE	BDL	0.005	mg/kg
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/kg
1,1-DICHLOROETHENE	BDL	0.001	mg/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	* 0.008	0.001	mg/kg
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/kg
1,1-DICHLOROETHANE	BDL	0.001	mg/kg
CHLOROFORM	BDL	0.001	mg/kg
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/kg
CARBON TETRACHLORIDE	BDL	0.001	mg/kg
BENZENE	BDL	0.001	mg/kg
1,2-DICHLOROETHANE	BDL	0.001	mg/kg
TRICHLOROETHENE	BDL	0.001	mg/kg
1,2-DICHLOROPROPANE	BDL	0.001	mg/kg
BROMODICHLOROMETHANE	BDL	0.001	mg/kg
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/kg
TOLUENE	BDL	0.001	mg/kg
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/kg
DIBROMOCHLOROMETHANE	BDL	0.001	mg/kg
CHLOROBENZENE	BDL	0.001	mg/kg
ETHYLBENZENE	BDL	0.001	mg/kg
M/P-XYLENE	BDL	0.001	mg/kg
O-XYLENE	BDL	0.001	mg/kg
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/kg
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/kg
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/kg
1,2-DIBROMOETHANE (EDB)	BDL	0.005	mg/kg

*Note: * - Also found in the blank at 0.006 ppm*

GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: S. WILLIAMS Analysis Date: 16-DEC-92 Test: P236.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.12		Grams
FINAL VOLUME	1.0		mL

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

Analyst: R. ROBERTS Analysis Date: 29-DEC-92 Instrument: GC/MS SVOA Test: O505.3.0
Prep: GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	BDL	0.33	mg/kg
ANTHRACENE	BDL	0.33	mg/kg
BENZ(A)ANTHRACENE	0.73	0.33	mg/kg
BENZO(A)PYRENE	0.68	0.33	mg/kg
BENZO(B)FLUORANTHENE	1.8	0.33	mg/kg
BENZO(K)FLUORANTHENE	BDL	0.33	mg/kg

 (continued on next page)

Parameter	Result	Det. Limit	Units
BIS(2-CHLOROETHYL)ETHER	BDL	0.33	mg/kg
CARBAZOLE	BDL	0.33	mg/kg
CHRYSENE	0.92	0.33	mg/kg
DIBENZ(A,H)ANTHRACENE	BDL	0.33	mg/kg
FLUORANTHENE	1.3	0.33	mg/kg
INDENO(1,2,3-CD)PYRENE	0.68	0.33	mg/kg
NAPHTHALENE	BDL	0.33	mg/kg
PHENANTHRENE	BDL	0.33	mg/kg
4-CHLORO-3-METHYLPHENOL	BDL	0.33	mg/kg
2-CHLOROPHENOL	BDL	0.33	mg/kg
2,4-DIMETHYLPHENOL	BDL	0.33	mg/kg
2,4-DINITROPHENOL	BDL	1.6	mg/kg
PENTACHLOROPHENOL	BDL	1.6	mg/kg
PHENOL	BDL	0.33	mg/kg
TETRACHLOROPHENOL	BDL	0.33	mg/kg
2,4,5-TRICHLOROPHENOL	BDL	0.33	mg/kg
2,4,6-TRICHLOROPHENOL	BDL	0.33	mg/kg
SURROGATE RECOVERY			
2-FLUOROPHENOL	66		% Rec
PHENOL-D5	78		% Rec
NITROBENZENE-D5	99		% Rec
2-FLUOROBIPHENYL	102		% Rec
2,4,6-TRIBROMOPHENOL	62		% Rec
TERPHENYL-D14	83		% Rec

Sample Comments

* *See Note for Parameter*
BDL Below Detection Limit

Sample chain of custody number 17170.

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Quality Assurance Officer: Helmuth MB Jansen

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. 4132 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	15-DEC-92	2024	B118676
	Complete	PO Number	
	30-DEC-92	530-06-506	
	Printed	Sampled	
	05-JAN-93	14-DEC-92 10:30	

Report To

SANDRA WATSON
SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Bill To

SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: SS-11
LOG #: 10792

FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Analyst: M. KRASKA Analysis Date: 15-DEC-92 Test: P129.7.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.29		Grams
FINAL WEIGHT OR VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 17-DEC-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
CHROMIUM	1.3	0.75	mg/kg

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 17-DEC-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
COPPER	1.0	0.75	mg/kg

GFAA ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Analyst: M. KRASKA Analysis Date: 15-DEC-92 Test: P130.7.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.00		Grams
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: M. KRASKA Analysis Date: 18-DEC-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P130.7.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	1.2	mg/kg

 (continued on next page)

LEAD GFAA SW846-7421

Analyst: M. KRASKA Analysis Date: 18-DEC-92 Instrument: GFAA Test: M116.2.0
Prep: GFAA ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P130.7.0

Parameter	Result	Det. Limit	Units
LEAD	1.9	1.2	mg/kg

Note: Analysis performed by 3 point MSA

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: P. WINTERS Analysis Date: 16-DEC-92 Instrument: GC/PID ELCD Test: 0461.1.0

Parameter	Result	Det. Limit	Units
DICHLORODIFLUOROMETHANE	BDL	0.005	mg/kg
CHLOROMETHANE	BDL	0.005	mg/kg
VINYL CHLORIDE	BDL	0.005	mg/kg
BROMOMETHANE	BDL	0.005	mg/kg
CHLOROETHANE	BDL	0.005	mg/kg
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/kg
1,1-DICHLOROETHENE	BDL	0.001	mg/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	* 0.007	0.001	mg/kg
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/kg
1,1-DICHLOROETHANE	BDL	0.001	mg/kg
CHLOROFORM	BDL	0.001	mg/kg
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/kg
CARBON TETRACHLORIDE	BDL	0.001	mg/kg
BENZENE	BDL	0.001	mg/kg
1,2-DICHLOROETHANE	BDL	0.001	mg/kg
TRICHLOROETHENE	BDL	0.001	mg/kg
1,2-DICHLOROPROPANE	BDL	0.001	mg/kg
BROMODICHLOROMETHANE	BDL	0.001	mg/kg
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/kg
TOLUENE	BDL	0.001	mg/kg
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/kg
DIBROMOCHLOROMETHANE	BDL	0.001	mg/kg
CHLOROBENZENE	BDL	0.001	mg/kg
ETHYLBENZENE	BDL	0.001	mg/kg
M/P-XYLENE	BDL	0.001	mg/kg
O-XYLENE	BDL	0.001	mg/kg
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/kg
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/kg
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/kg
1,2-DIBROMOETHANE (EDB)	BDL	0.005	mg/kg

*Note: * - Also detected in the blank at 0.006 ppm.*

GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: S. WILLIAMS Analysis Date: 16-DEC-92 Test: P236.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.13		Grams
FINAL VOLUME	1.0		mL

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

Analyst: R. ROBERTS Analysis Date: 29-DEC-92 Instrument: GC/MS SVOA Test: 0505.3.0
Prep: GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	BDL	0.33	mg/kg
ANTHRACENE	BDL	0.33	mg/kg
BENZ(A)ANTHRACENE	BDL	0.33	mg/kg
BENZO(A)PYRENE	BDL	0.33	mg/kg

 (continued on next page)

HERITAGE LABORATORIES, INC. Lab Sample ID: B118676

Parameter	Result	Det. Limit	Units
BENZO(B)FLUORANTHENE	BDL	0.33	mg/kg
BENZO(K)FLUORANTHENE	BDL	0.33	mg/kg
BIS(2-CHLOROETHYL)ETHER	BDL	0.33	mg/kg
CARBAZOLE	BDL	0.33	mg/kg
CHRYSENE	BDL	0.33	mg/kg
DIBENZ(A,H)ANTHRACENE	BDL	0.33	mg/kg
FLUORANTHENE	BDL	0.33	mg/kg
INDENO(1,2,3-CD)PYRENE	BDL	0.33	mg/kg
NAPHTHALENE	BDL	0.33	mg/kg
PHENANTHRENE	BDL	0.33	mg/kg
4-CHLORO-3-METHYLPHENOL	BDL	0.33	mg/kg
2-CHLOROPHENOL	BDL	0.33	mg/kg
2,4-DIMETHYLPHENOL	BDL	0.33	mg/kg
2,4-DINITROPHENOL	BDL	1.6	mg/kg
PENTACHLOROPHENOL	BDL	1.6	mg/kg
PHENOL	BDL	0.33	mg/kg
TETRACHLOROPHENOL	BDL	0.33	mg/kg
2,4,5-TRICHLOROPHENOL	BDL	0.33	mg/kg
2,4,6-TRICHLOROPHENOL	BDL	0.33	mg/kg
SURROGATE RECOVERY			
2-FLUOROPHENOL	65		% Rec
PHENOL-D5	77		% Rec
NITROBENZENE-D5	104		% Rec
2-FLUOROBIPHENYL	103		% Rec
2,4,6-TRIBROMOPHENOL	63		% Rec
TERPHENYL-D14	91		% Rec

Sample reanalyzed with no improvement in internal standard areas.

Sample Comments

* *See Note for Parameter*
BDL Below Detection Limit

Sample chain of custody number 17170.

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Quality Assurance Officer: Helmuth MB Jansen

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. 4132 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	11-DEC-92	2024	B118589
	Complete	PO Number	
	04-JAN-93	530-06-501	
	Printed	Sampled	
	05-JAN-93	09-DEC-92 16:30	

Report To

SANDRA WATSON
SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Bill To

SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: SS-7
LOG #: 10788

FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Analyst: M. KRASKA Analysis Date: 15-DEC-92 Test: P129.7.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.05		Grams
FINAL WEIGHT OR VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 17-DEC-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
CHROMIUM	9.2	0.75	mg/kg

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 16-DEC-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
COPPER	5.1	0.75	mg/kg

LEAD FAA SW846-7420

Analyst: L. SURRATT Analysis Date: 17-DEC-92 Instrument: FAA Test: M116.1.0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
LEAD	6.3	5.0	mg/kg

GFAA ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Analyst: M. KRASKA Analysis Date: 15-DEC-92 Test: P130.7.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.00		Grams
FINAL WEIGHT OR VOLUME	50		mL

 (continued on next page)

ARSENIC GFAA SW846-7060

Analyst: M. KRASKA Analysis Date: 18-DEC-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P130.7.0

Parameter	Result	Det. Limit	Units
ARSENIC	2.3	1.2	mg/kg

Note: Analysis performed by 3 point MSA

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: P. WINTERS Analysis Date: 15-DEC-92 Instrument: GC/PID ELCD Test: 0461.1.0

Parameter	Result	Det. Limit	Units
DICHLORODIFLUOROMETHANE	BDL	0.05	mg/kg
CHLOROMETHANE	BDL	0.05	mg/kg
VINYL CHLORIDE	BDL	0.05	mg/kg
BROMOMETHANE	BDL	0.05	mg/kg
CHLOROETHANE	BDL	0.05	mg/kg
TRICHLOROFLUOROMETHANE	BDL	0.05	mg/kg
1,1-DICHLOROETHENE	BDL	0.01	mg/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	0.06	0.01	mg/kg
TRANS-1,2-DICHLOROETHENE	BDL	0.01	mg/kg
1,1-DICHLOROETHANE	BDL	0.01	mg/kg
CHLOROFORM	BDL	0.01	mg/kg
1,1,1-TRICHLOROETHANE	BDL	0.01	mg/kg
CARBON TETRACHLORIDE	BDL	0.01	mg/kg
BENZENE	BDL	0.01	mg/kg
1,2-DICHLOROETHANE	BDL	0.01	mg/kg
TRICHLOROETHENE	BDL	0.01	mg/kg
1,2-DICHLOROPROPANE	BDL	0.01	mg/kg
BROMODICHLOROMETHANE	BDL	0.01	mg/kg
CIS-1,3-DICHLOROPROPENE	BDL	0.01	mg/kg
TOLUENE	0.02	0.01	mg/kg
1,1,2-TRICHLOROETHANE	BDL	0.01	mg/kg
DIBROMOCHLOROMETHANE	BDL	0.01	mg/kg
CHLOROBENZENE	BDL	0.01	mg/kg
ETHYLBENZENE	0.15	0.01	mg/kg
M/P-XYLENE	0.08	0.01	mg/kg
O-XYLENE	0.07	0.01	mg/kg
1,1,2,2-TETRACHLOROETHANE	BDL	0.01	mg/kg
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.05	mg/kg
2-CHLOROETHYLVINYLETHER	BDL	0.01	mg/kg
1,2-DIBROMOETHANE (EDB)	BDL	0.05	mg/kg

Note: Sample was diluted 1:10

GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: S. WILLIAMS Analysis Date: 11-DEC-92 Test: P236.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.00		Grams
FINAL VOLUME	1.0		mL

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

Analyst: R. ROBERTS Analysis Date: 16-DEC-92 Instrument: GC/MS SVOA Test: 0505.3.0
Prep: GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	** 44	3.3	mg/kg
ANTHRACENE	** 10	3.3	mg/kg
BENZ(A)ANTHRACENE	3.2	0.33	mg/kg
BENZO(A)PYRENE	0.64	0.33	mg/kg

 (continued on next page)

Parameter	Result	Det. Limit	Units
BENZO(B)FLUORANTHENE	BDL	0.33	mg/kg
BENZO(K)FLUORANTHENE	1.2	0.33	mg/kg
BIS(2-CHLOROETHYL)ETHER	BDL	0.33	mg/kg
CARBAZOLE	** 17	3.3	mg/kg
CHRYSENE	1.9	0.33	mg/kg
DIBENZ(A,H)ANTHRACENE	BDL	0.33	mg/kg
FLUORANTHENE	** 26	3.3	mg/kg
INDENO(1,2,3-CD)PYRENE	BDL	0.33	mg/kg
NAPHTHALENE	** 44	3.3	mg/kg
PHENANTHRENE	** 55	3.3	mg/kg
4-CHLORO-3-METHYLPHENOL	BDL	0.33	mg/kg
2-CHLOROPHENOL	BDL	0.33	mg/kg
2,4-DIMETHYLPHENOL	BDL	0.33	mg/kg
2,4-DINITROPHENOL	BDL	1.6	mg/kg
PENTACHLOROPHENOL	BDL	1.6	mg/kg
PHENOL	BDL	0.33	mg/kg
TETRACHLOROPHENOL	BDL	0.33	mg/kg
2,4,5-TRICHLOROPHENOL	BDL	0.33	mg/kg
2,4,6-TRICHLOROPHENOL	BDL	0.33	mg/kg
SURROGATE RECOVERY			
2-FLUOROPHENOL	50		% Rec
PHENOL-D5	61		% Rec
NITROBENZENE-D5	* 142		% Rec
2-FLUOROBIPHENYL	104		% Rec
2,4,6-TRIBROMOPHENOL	99		% Rec
TERPHENYL-D14	103		% Rec

*Note: * - Sample reanalyzed with no improvement in surrogate recovery. Results should be regarded as estimates.*
*** - Results taken from 1:10 dilution (GB3445.c) Run on 12/29/92*

Sample Comments

* *See Note for Parameter*
** *See Note for Parameter*
BDL Below Detection Limit

Sample chain of custody number 16791.

This Certificate shall not be reproduced, except in full, without the written approval of the lab.

Quality Assurance Officer: Chelmsith MB Jansen

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. 4132 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	15-DEC-92	2024	B118674
	Complete	PO Number	
	04-JAN-93	530-06-506	
	Printed	Sampled	
	05-JAN-93	14-DEC-92 09:00	

Report To	Bill To
SANDRA WATSON SOUTHERN WOOD PIEDMONT P.O. BOX 5447 SPARTANBURG, SC 29304	SOUTHERN WOOD PIEDMONT P.O. BOX 5447 SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: SS-9
LOG #: 10790

FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Analyst: M. KRASKA Analysis Date: 15-DEC-92 Test: P129.7.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.04		Grams
FINAL WEIGHT OR VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 17-DEC-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
CHROMIUM	4.1	0.75	mg/kg

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 17-DEC-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
COPPER	4.4	0.75	mg/kg

LEAD FAA SW846-7420

Analyst: L. SURRATT Analysis Date: 17-DEC-92 Instrument: FAA Test: M116.1.0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
LEAD	6.9	5.0	mg/kg

GFAA ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Analyst: M. KRASKA Analysis Date: 15-DEC-92 Test: P130.7.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	2.09		Grams
FINAL WEIGHT OR VOLUME	50		mL

 (continued on next page)

ARSENIC GFAA SW846-7060

Analyst: M. KRASKA Analysis Date: 18-DEC-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P130.7.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	1.2	mg/kg

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: P. WINTERS Analysis Date: 16-DEC-92 Instrument: GC/PID ELCD Test: 0461.1.0

Parameter	Result	Det. Limit	Units
DICHLORODIFLUOROMETHANE	BDL	0.025	mg/kg
CHLOROMETHANE	BDL	0.025	mg/kg
VINYL CHLORIDE	BDL	0.025	mg/kg
BROMOMETHANE	BDL	0.025	mg/kg
CHLOROETHANE	BDL	0.025	mg/kg
TRICHLOROFLUOROMETHANE	BDL	0.025	mg/kg
1,1-DICHLOROETHENE	BDL	0.005	mg/kg
DICHLOROMETHANE (METHYLENE CHLORIDE)	0.020	0.005	mg/kg
TRANS-1,2-DICHLOROETHENE	BDL	0.005	mg/kg
1,1-DICHLOROETHANE	BDL	0.005	mg/kg
CHLOROFORM	BDL	0.005	mg/kg
1,1,1-TRICHLOROETHANE	BDL	0.005	mg/kg
CARBON TETRACHLORIDE	BDL	0.005	mg/kg
BENZENE	BDL	0.005	mg/kg
1,2-DICHLOROETHANE	BDL	0.005	mg/kg
TRICHLOROETHENE	BDL	0.005	mg/kg
1,2-DICHLOROPROPANE	BDL	0.005	mg/kg
BROMODICHLOROMETHANE	BDL	0.005	mg/kg
CIS-1,3-DICHLOROPROPENE	BDL	0.005	mg/kg
TOLUENE	BDL	0.005	mg/kg
1,1,2-TRICHLOROETHANE	BDL	0.005	mg/kg
DIBROMOCHLOROMETHANE	BDL	0.005	mg/kg
CHLOROBENZENE	BDL	0.005	mg/kg
ETHYLBENZENE	BDL	0.005	mg/kg
M/P-XYLENE	0.007	0.005	mg/kg
O-XYLENE	0.008	0.005	mg/kg
1,1,2,2-TETRACHLOROETHANE	BDL	0.005	mg/kg
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.025	mg/kg
2-CHLOROETHYLVINYLETHER	BDL	0.005	mg/kg
1,2-DIBROMOETHANE (EDB)	BDL	0.025	mg/kg

Note: Sample diluted 1:5

GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550

Analyst: S. WILLIAMS Analysis Date: 16-DEC-92 Test: P236.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.28		Grams
FINAL VOLUME	1.0		mL

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

Analyst: R. ROBERTS Analysis Date: 21-DEC-92 Instrument: GC/MS SVOA Test: 0505.3.0
Prep: GC/MS SONICATION EXTRACTION FOR ORGANICS SW846-3550 P236.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	*** 32	6.6	mg/kg
ANTHRACENE	*** 49	6.6	mg/kg
BENZ(A)ANTHRACENE	*** 26	6.6	mg/kg
BENZO(A)PYRENE	** 9.0	1.7	mg/kg
BENZO(B)FLUORANTHENE	*** 15	6.6	mg/kg
BENZO(K)FLUORANTHENE	BDL	0.33	mg/kg

 (continued on next page)

HERITAGE LABORATORIES, INC. Lab Sample ID: B118674

Parameter	Result	Det. Limit	Units
BIS(2-CHLOROETHYL)ETHER	BDL	0.33	mg/kg
CARBAZOLE	BDL	0.33	mg/kg
CHRYSENE	*** 22	6.6	mg/kg
DIBENZ(A,H)ANTHRACENE	0.94	0.33	mg/kg
FLUORANTHENE	*** 130	6.6	mg/kg
INDENO(1,2,3-CD)PYRENE	3.4	0.33	mg/kg
NAPHTHALENE	BDL	0.33	mg/kg
PHENANTHRENE	*** 70	6.6	mg/kg
4-CHLORO-3-METHYLPHENOL	BDL	0.33	mg/kg
2-CHLOROPHENOL	BDL	0.33	mg/kg
2,4-DIMETHYLPHENOL	BDL	0.33	mg/kg
2,4-DINITROPHENOL	BDL	1.6	mg/kg
PENTACHLOROPHENOL	BDL	1.6	mg/kg
PHENOL	BDL	0.33	mg/kg
TETRACHLOROPHENOL	BDL	0.33	mg/kg
2,4,5-TRICHLOROPHENOL	BDL	0.33	mg/kg
2,4,6-TRICHLOROPHENOL	BDL	0.33	mg/kg
SURROGATE RECOVERY			
2-FLUOROPHENOL	47		% Rec
PHENOL-D5	51		% Rec
NITROBENZENE-D5	66		% Rec
2-FLUOROBIPHENYL	* 116		% Rec
2,4,6-TRIBROMOPHENOL	100		% Rec
TERPHENYL-D14	107		% Rec

*Note: * - Sample reanalyzed with no improvement in surrogate recovery. Results should be regarded as estimates.*
*** - Result taken from 1:5 dilution (GB3429.c) Run on 12/28/92*
**** - Result taken from 1:20 dilution (GB446.c) Run on 12/29/92*

Sample Comments

* *See Note for Parameter*
** *See Note for Parameter*
*** *See Note for Parameter*
BDL Below Detection Limit

Sample chain of custody number 17170.

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Quality Assurance Officer: Helmuth MB Janssen

TO ENSURE PROPER HANDLING OF SAMPLES PLEASE COMPLETE THIS ENTIRE FORM

HERITAGE LABORATORIES, INC.

4132 POMPANO ROAD
CHARLOTTE, N.C. 28216 (704) 393-1853

16791

Co. Name: ETE, Inc.
Project Name: SWP-Wil
Quote No.:
PO No.: 530-06-506

ENVIRONMENTAL PROGRAM:
CWA NPDES_____ IWP_____ SLUDGE_____
RCRA MW_____ SW_____ DISPOSAL_____
SDWA_____ CERCLA/SUPERFUND_____ OTHER_____

Sampled by:

Analyses Requested (Note special detection limits or methods): Wilmington Site-Specific List

Report To:
Co: ETE, Inc.
Add: 1445 Ryan Church Rd
Lexington SC 29072
Attn: Greg Kurtz
Phone: 803-957-6270

Accelerated Turnaround Requested _____ (Subject to Additional Charge)

Result Request by: ___/___/___ Mo Day Yr (Date must be Accepted and Approved by Lab.)

Sample ID:	Date:	Time:	Comp	Grab	Sample Description:	Sample Type (Matrix): DW, GW, WW, SOIL, SLUDGE, OTHER	No. of Containers	SV & Metals	VOC	Remarks:	EMS Sample No.
SS-1	12/9/92	14:00		X	SWP Log # 10782	So.1	3	1	2		B118583
SS-2		14:45			10783					Due to rain, SS-8	B118584
SS-3		15:15			10784					SS-9 SS-10, & SS-11	B118585
SS-4		16:00			10785					will be collected	B118586
SS-5		17:30			10786					on 12-14-92.	B118587
SS-6		18:15			10787					They will be Fed Ex	B118588
SS-7		16:30			10788					to arrive the morning	B118
~~SS-8~~										of 12-15-92.	
~~SS-9~~										SS-10 and SS-11 are	
~~SS-10~~										additional samples that	
~~SS-11~~										don't duplicate the previous	
										sample event. GBK	

Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Relinquished by: (Signature)	Date /Time	Received by: (Signature)
Gregory B. Kurtz	12/10/92 14:30			/	
Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Relinquished by: (Signature)	Date /Time	Received by: (Signature)
	/			/	
Relinquished by: (Signature)	Date /Time	Received for Lab by: (Signature)	Remarks:		
	12/11/92 1000	Andrew Burke			

Distribution: Original and yellow copies accompany sample to laboratory; Pink copy retained by client; Yellow copy returned to client.

TO ENSURE PROPER HANDLING OF SAMPLES PLEASE COMPLETE THIS ENTIRE FORM

17170

HERITAGE LABORATORIES, INC.

4132 POMPANO ROAD
CHARLOTTE, N.C. 28216 (704) 393-1853

Co. Name: ETE, Inc
Project Name: SWP-Wil
Quote No.: Z113586 PO No.: 530-06-506

ENVIRONMENTAL PROGRAM:
CWA NPDES_____ IWP_____ SLUDGE_____
RCRA MW_____ SW_____ DISPOSAL_____
SDWA_____ CERCLA/SUPERFUND_____ OTHER_____

Sampled by:

Analyses Requested (Note special detection limits or methods): Wilmington Site-Specific List

Report To:
Co: ETE, Inc
Add: 1445 Pisgah Church Rd
Lexington, SC 29072
Attn: Greg Kuntz
Phone: 803-957-6270
Accelerated Turnaround Requested _____ (Subject to Additional Charge)
Result Request by: ___/___/___ Mo Day Yr (Date must be Accepted and Approved by Lab.)

Sample ID:	Date:	Time:	Comp	Grab	Sample Description:	Sample Type (Matrix): DW, GW, WW, SOIL, SLUDGE, OTHER	No. of Containers	SVOMetals	VOC	Remarks:	EMS Sample No.
SS-8	12/14/92	7:30		X	SWP Log# 10789	Soil	3		2	Final samples to	8118673
SS-9	↓	9:00		↓	10790	↓	↓	↓	↓	sample set collected	8118674
SS-10	↓	9:45		↓	10791	↓	↓	↓	↓	on 12/9/92.	8118675
SS-11	↓	10:30		↓	10792	↓	↓	↓	↓		8118676

Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Relinquished by: (Signature)	Date /Time	Received by: (Signature)
Gregory B. Kuntz	12/14/92 12:15			/	
Relinquished by: (Signature) Federal Express	Date /Time 12/15/92 1200	Received by: (Signature) Chris Diggs	Relinquished by: (Signature)	Date /Time /	Received by: (Signature)
Relinquished by: (Signature)	Date /Time /	Received for Lab by: (Signature)	Remarks:		

Distribution: Original and yellow copies accompany sample to laboratory; Pink copy retained by client; Yellow copy returned to client.

		SS-1 B118583 09-DEC-92			SS-2 B118584 09-DEC-92			SS-3 B118585 09-DEC-92			SS-4 B118586 09-DEC-92			SS-5 B118587 09-DEC-92		
Semi-volatiles	CAS Number	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units
Acenaphthene	83-32-9	0.51	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	0.59	0.33	mg/kg	4.4	0.33	mg/kg
Anthracene	120-12-7	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	*45	0.33	mg/kg
Benz(A)Anthracene	56-55-3	1.1	0.33	mg/kg	0.54	0.33	mg/kg	BDL	0.33	mg/kg	1.1	0.33	mg/kg	5.8	0.33	mg/kg
Benzo(A)Pyrene	50-32-8	0.42	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	2.0	0.33	mg/kg	3.1	0.33	mg/kg
Benzo(B)Fluoranthene	205-99-2	BDL	0.33	mg/kg	0.75	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg
Benzo(K)Fluoranthene	207-08-9	1.5	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	4.9	0.33	mg/kg	3.8	0.33	mg/kg
Bis(2-Chloroethyl)Ether	111-44-4	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg
Carbazole	86-74-8	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	*18	0.33	mg/kg
4-Chloro-3-Methylphenol	59-50-7	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg
2-Chlorophenol	95-57-8	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg
Chrysene	218-01-9	1.1	0.33	mg/kg	0.53	0.33	mg/kg	BDL	0.33	mg/kg	1.6	0.33	mg/kg	4.5	0.33	mg/kg
Dibenz(A,H)Anthracene	53-70-3	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	3.7	0.33	mg/kg	BDL	0.33	mg/kg
2,4-Dimethylphenol	105-67-9	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg
2,4-Dinitrophenol	25550-58-7	BDL	1.6	mg/kg	BDL	1.6	mg/kg	BDL	1.6	mg/kg	BDL	1.6	mg/kg	BDL	1.6	mg/kg
Fluoranthene	206-44-0	3.8	0.33	mg/kg	0.87	0.33	mg/kg	BDL	0.33	mg/kg	1.8	0.33	mg/kg	*38	0.33	mg/kg
Indeno(1,2,3-Cd)Pyrene	193-39-5	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	2.0	0.33	mg/kg	0.67	0.33	mg/kg
Naphthalene	91-20-3	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	1.8	0.33	mg/kg
Pentachlorophenol	87-86-5	BDL	1.6	mg/kg	BDL	1.6	mg/kg	BDL	1.6	mg/kg	BDL	1.6	mg/kg	BDL	1.6	mg/kg
Phenanthrene	85-01-8	1.5	0.33	mg/kg	0.56	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	*42	0.33	mg/kg
Phenol	108-95-2	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg
Tetrachlorophenol	25167-83-3	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg
2,4,5-Trichlorophenol	95-95-4	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg
2,4,6-Trichlorophenol	88-06-2	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg	BDL	0.33	mg/kg

* Note: This is a summary report. Please see the Certificate of Analysis for more information. DL = Detection Limit

ATTACHMENT F

Site-Specific Ground Water Sample List

SITE-SPECIFIC GROUND WATER SAMPLE LIST
SOUTHERN WOOD PIEDMONT FACILITY
WILMINGTON, NORTH CAROLINA

METALS

Arsenic
Copper
Chromium
Lead

SEMI-VOLATILES

Acenaphthene
Benzo(a)anthracene
Benzo(b)fluoranthene
Bis(2-chloroethyl)ether
4-chloro-3-methylphenol
Chrysene
2,4-dimethylphenol
Fluoranthene
Naphthalene
Phenanthrene
Tetrachlorophenol
2,4,6-trichlorophenol
Anthracene
Benzo(a)pyrene
Benzo(k)fluoranthene
Carbazole
2-chlorophenol
Dibenzo(a,h)anthracene
2,4-dinitrophenol
Indeno(1,2,3-cd)pyrene
Pentachlorophenol
Phenol
2,4,5-trichlorophenol

VOLATILES

Benzene
Bromomethane
Chlorobenzene
2-chloroethylvinylether
Chloromethane
Dibromochloromethane
Dichlorodifluoromethane
1,2-dichloroethane
Dichloromethane
Ethyl benzene
M/P-Xylene
O-Xylene
Toluene
1,1,1-trichloroethane
Trichloroethene
Bromodichloromethane
Carbon Tetrachloride
Chloroethane
Chloroform
Cis-1,3-dichloropropene
1,2-dibromomethane (Edb)
1,1-dichloroethane
1,1-dichloroethene
1,2-dichloropropane
Fluorotrichloromethane
Methyl-T-Butyl Ether (Mtbe)
1,1,2,2-tetrachloroethane
Trans-1,2-dichloroethene
1,1,2-trichloroethane
Vinyl Chloride

Ground Water Sample Summary Table

GROUNDWATER SAMPLE SUMMARY
SOUTHERN WOOD PIEDMONT FACILITY - WILMINGTON, NORTH CAROLINA

SAMPLE NUMBER	DISSOLVED METALS (mg/L)				TOTAL SEMI-VOLATILE ORGANICS (mg/L)	TOTAL VOLATILE ORGANICS (mg/L)	TOTAL VOLATILE ORGANICS CORRECTED FOR DICHLOROMETHANE* (mg/L)	TOTAL ORGANICS (mg/L)
	ARSENIC	CHROMIUM	COPPER	LEAD				
MW-6	ND	ND	ND	ND	ND	ND	ND	ND
MW-7	ND	ND	ND	ND	ND	ND	ND	ND
MW-8	ND	ND	ND	ND	ND	0.002	0.002	ND
MW-8A	ND	ND	ND	ND	ND	0.002	ND	0.002
MW-9	ND	ND	ND	ND	ND	ND	ND	ND
MW-10	ND	ND	ND	ND	ND	ND	ND	ND
MW-11A	ND	ND	ND	ND	0.18	0.018	ND	0.198
MW-13	ND	ND	ND	ND	7.91	0.220	ND	8.130
MW-14	ND	ND	ND	ND	8.75	0.223	ND	8.973
MW-15	0.023	ND	ND	ND	0.25	0.022	ND	0.272
MW-16	ND	ND	ND	ND	ND	0.001	0.001	ND
MW-17	0.0057	ND	ND	ND	0.17	0.052	0.003	0.219
MW-18	ND	ND	ND	ND	ND	0.002	0.002	ND
MW-19	ND	ND	ND	ND	0.66	0.024	ND	0.684
MW-19A	ND	ND	ND	ND	ND	0.001	ND	0.001
MW-20	ND	ND	ND	ND	0.102	ND	ND	0.102
MW-21	ND	ND	ND	ND	ND	0.001	ND	0.001
MW-22	0.013	ND	ND	ND	13.23	0.130	0.002	13.358
MW-23	ND	ND	ND	ND	ND	0.003	0.003	ND
MW-24	ND	ND	ND	ND	0.16	0.005	ND	0.005
MW-25	ND	ND	ND	ND	0.71	ND	ND	0.71

ND Below Laboratory Detection Limit

* Dichloromethane was detected in the groundwater samples analyzed. Because dichloromethane is used as the solvent in the extraction process, it is suspect, in that it may have been introduced to the groundwater in the laboratory.

Ground Water Sample Parameters Summary Tables

GROUNDWATER SAMPLE PARAMETER SUMMARY TABLE - METALS
SOUTHERN WOOD PIEDMONT FACILITY-WILMINGTON, NORTH CAROLINA

	MW-6			MW-7			MW-8			MW-8A			MW-9			MW-10			MW-11A		
METALS	R*	R**	DL	R*	R**	DL	R*	R**	DL	R*	R**	DL	R*	R**	DL	R*	R**	DL	R*	R**	DL
Arsenic	ND	ND	0.005	ND	ND	0.005	ND	ND	0.005	ND	ND	0.005	ND	ND	0.005	0.048	ND	0.005	ND	ND	0.005
Chromium	ND	ND	0.010	0.014	ND	0.010	0.024	ND	0.010	ND	ND	0.010	ND	ND	0.010	0.019	ND	0.010	0.012	ND	0.010
Copper	ND	ND	0.025	ND	ND	0.025	0.026	ND	0.025	ND	ND	0.025	ND	ND	0.025	ND	ND	0.025	ND	ND	0.025
Lead	ND	ND	0.005	0.0097	ND	0.005	0.038	ND	0.010	ND	ND	0.005	ND	ND	0.005	0.018	ND	0.005	0.0095	ND	0.005

	MW-13			MW-14			MW-15			MW-16			MW-17			MW-18			MW-19		
METALS	R*	R**	DL	R*	R**	DL	R*	R**	DL	R*	R**	DL	R*	R**	DL	R*	R**	DL	R*	R**	DL
Arsenic	0.048	ND	0.005	0.018	ND	0.005	0.110	0.023	0.050	ND	ND	0.005	0.040	0.0057	0.005	0.0058	ND	0.005	ND	ND	0.005
Chromium	0.039	ND	0.010	0.069	ND	0.010	0.031	ND	0.010	ND	ND	0.010	0.035	ND	0.010	0.670	ND	0.010	0.030	ND	0.010
Copper	0.061	ND	0.025	0.059	ND	0.025	0.050	ND	0.025	0.030	ND	0.025	0.054	ND	0.025	0.051	ND	0.025	ND	ND	0.025
Lead	0.120	ND	0.050	0.050	ND	0.015	0.042	ND	0.015	0.012	ND	0.005	0.045	ND	0.010	0.081	ND	0.050	0.005	ND	0.005

	MW-19A			MW-20			MW-21			MW-22			MW-23			MW-24			MW-25		
METALS	R*	R**	DL	R*	R**	DL	R*	R**	DL	R*	R**	DL	R*	R**	DL	R*	R**	DL	R*	R**	DL
Arsenic	0.005	ND	0.005	0.010	ND	0.005	0.028	ND	0.005	0.033	0.013	0.005	ND	ND	0.005	0.0064	ND	0.005	0.012	ND	0.005
Chromium	0.011	ND	0.010	ND	ND	0.010	0.032	ND	0.010	0.200	ND	0.010	ND	ND	0.010	0.018	ND	0.010	0.031	ND	0.010
Copper	ND	ND	0.025	0.032	ND	0.025	0.035	ND	0.025	0.038	ND	0.025	ND	ND	0.025	0.027	ND	0.025	0.041	ND	0.025
Lead	0.011	ND	0.005	0.012	ND	0.005	0.061	ND	0.050	0.037	ND	0.010	ND	ND	0.005	0.071	ND	0.050	0.036	ND	0.010

R*: Total Metals Laboratory Analytical Result
R**: Dissolved Metals Laboratory Analytical Result
DL: Laboratory Detection Limit
Note: The Laboratory Analytical Results and Detection Limits are in mg/L.

GROUNDWATER SAMPLE PARAMETER SUMMARY TABLE - SEMI-VOLATILES
SOUTHERN WOOD PIEDMONT FACILITY - WILMINGTON, NORTH CAROLINA

	MW-6		MW-7		MW-8		MW-8A		MW-9		MW-10		MW-11A	
SEMI-VOLATILES	R*	DL	R*	DL	R*	DL	R*	DL	R*	DL	R*	DL	R*	DL
Acenaphthene	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	0.05	0.01
Anthracene	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	0.02	0.01
Benz(a)Anthracene	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01
Benzo(a)Pyrene	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01
Benzo(b)Fluoranthene	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01
Benzo(k)Fluoranthene	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01
Bis(2-Chloroethyl)Ether	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01
Carbazole	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	0.04	0.01
4-Chloro-3-Methylphenol	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01
2-Chlorophenol	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01
Chrysene	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01
Dibenz(a,h)Anthracene	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01
2,4-Dimethylphenol	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01
2,4-Dinitrophenol	ND	0.05	ND	0.05	ND	0.05	ND	0.05	ND	0.05	ND	0.05	ND	0.05
Fluoranthene	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	0.01	0.01
Indeno(1,2,3-Cd)Pyrene	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01
Naphthalene	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01
Pentachlorophenol	ND	0.05	ND	0.05	ND	0.05	ND	0.05	ND	0.05	ND	0.05	ND	0.05
Phenanthrene	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	0.06	0.01
Phenol	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01
Tetrachlorophenol	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01
2,4,5-Trichlorophenol	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01
2,4,6-Trichlorophenol	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01

R*: Laboratory Analytical Result
DL: Laboratory Detection Limit
Note: The Laboratory Analytical Results and Detection Limits are in mg/L.

GROUNDWATER SAMPLE PARAMETER SUMMARY TABLE - SEMI-VOLATILES
SOUTHERN WOOD PIEDMONT FACILITY - WILMINGTON, NORTH CAROLINA

	MW-13		MW-14		MW-15		MW-16		MW-17		MW-18		MW-19	
SEMI-VOLATILES	R*	DL	R*	DL	R*	DL	R*	DL	R*	DL	R*	DL	R*	DL
Acenaphthene	1.10	0.20	0.81	0.01	0.14	0.01	ND	0.01	ND	0.01	ND	0.01	0.18	0.01
Anthracene	0.26	0.20	0.26	0.01	ND	0.01	ND	0.01	0.02	0.01	ND	0.01	0.01	0.01
Benz(a)Anthracene	0.12	0.01	0.14	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01
Benzo(a)Pyrene	0.04	0.01	0.05	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01
Benzo(b)Fluoranthene	0.08	0.01	0.11	0.01	ND	0.01	ND	0.01	0.01	0.01	ND	0.01	ND	0.01
Benzo(k)Fluoranthene	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01
Bis(2-Chloroethyl)Ether	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01
Carbazole	0.32	0.20	0.19	0.01	0.03	0.01	ND	0.01	ND	0.01	ND	0.01	0.07	0.01
4-Chloro-3-Methylphenol	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01
2-Chlorophenol	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01
Chrysene	0.10	0.01	0.09	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01
Dibenz(a,h)Anthracene	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01
2,4-Dimethylphenol	0.01	0.01	ND	0.01	0.03	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01
2,4-Dinitrophenol	ND	0.05	ND	0.05	ND	0.05	ND	0.05	ND	0.05	ND	0.05	ND	0.05
Fluoranthene	0.76	0.20	0.78	0.01	ND	0.01	ND	0.01	0.08	0.01	ND	0.01	0.02	0.01
Indeno(1,2,3-Cd)Pyrene	0.02	0.01	0.02	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01
Naphthalene	3.50	0.20	4.90	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	0.30	0.10
Pentachlorophenol	ND	0.05	ND	0.05	ND	0.05	ND	0.05	ND	0.05	ND	0.05	ND	0.05
Phenanthrene	1.60	0.20	1.40	0.01	0.05	0.01	ND	0.01	0.06	0.01	ND	0.01	0.08	0.01
Phenol	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01
Tetrachlorophenol	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01
2,4,5-Trichlorophenol	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01
2,4,6-Trichlorophenol	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01

R*: Laboratory Analytical Result
DL: Laboratory Detection Limit
Note: The Laboratory Analytical Results and Detection Limits are in mg/L.

GROUNDWATER SAMPLE PARAMETER SUMMARY TABLE - SEMI-VOLATILES
SOUTHERN WOOD PIEDMONT FACILITY - WILMINGTON, NORTH CAROLINA

	MW-19A		MW-20		MW-21		MW-22		MW-23		MW-24		MW-25	
SEMI-VOLATILES	R*	DL	R*	DL	R*	DL	R*	DL	R*	DL	R*	DL	R*	DL
Acenaphthene	ND	0.01	0.05	0.01	ND	0.01	2.50	0.01	ND	0.01	0.11	0.01	0.12	0.01
Anthracene	ND	0.01	ND	0.01	ND	0.01	0.18	0.01	ND	0.01	ND	0.01	0.07	0.01
Benz(a)Anthracene	ND	0.01	ND	0.01	ND	0.01	0.13	0.01	ND	0.01	ND	0.01	0.05	0.01
Benzo(a)Pyrene	ND	0.01	ND	0.01	ND	0.01	0.06	0.01	ND	0.01	ND	0.01	0.02	0.01
Benzo(b)Fluoranthene	ND	0.01	ND	0.01	ND	0.01	0.12	0.01	ND	0.01	ND	0.01	0.04	0.01
Benzo(k)Fluoranthene	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01
Bis(2-Chloroethyl)Ether	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01
Carbazole	ND	0.01	ND	0.01	ND	0.01	0.19	0.01	ND	0.01	0.03	0.01	0.02	0.01
4-Chloro-3-Methylphenol	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01
2-Chlorophenol	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01
Chrysene	ND	0.01	ND	0.01	ND	0.01	0.10	0.01	ND	0.01	ND	0.01	0.04	0.01
Dibenz(a,h)Anthracene	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01
2,4-Dimethylphenol	ND	0.01	ND	0.01	ND	0.01	0.03	0.01	ND	0.01	ND	0.01	ND	0.01
2,4-Dinitrophenol	ND	0.05	ND	0.05	ND	0.05	ND	0.05	ND	0.05	ND	0.05	ND	0.05
Fluoranthene	ND	0.01	0.012	0.01	ND	0.01	1.70	0.01	ND	0.01	ND	0.01	0.16	0.01
Indeno(1,2,3-Cd)Pyrene	ND	0.01	ND	0.01	ND	0.01	0.02	0.01	ND	0.01	ND	0.01	ND	0.01
Naphthalene	ND	0.01	0.04	0.01	ND	0.01	4.50	0.01	ND	0.01	ND	0.01	ND	0.01
Pentachlorophenol	ND	0.05	ND	0.05	ND	0.05	ND	0.05	ND	0.05	ND	0.05	ND	0.05
Phenanthrene	ND	0.01	0.05	0.01	ND	0.01	3.70	0.01	ND	0.01	0.02	0.01	0.19	0.01
Phenol	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01
Tetrachlorophenol	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01
2,4,5-Trichlorophenol	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01
2,4,6-Trichlorophenol	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01

R*: Laboratory Analytical Result
DL: Laboratory Detection Limit
Note: The Laboratory Analytical Results and Detection Limits are in mg/L.

GROUNDWATER SAMPLE PARAMETER SUMMARY TABLE-VOLATILES
SOUTHERN WOOD PIEDMONT FACILITY - WILMINGTON, NORTH CAROLINA

	MW-6		MW-7		MW-8		MW-8A		MW-9		MW-10		MW-11A	
VOLATILES	R*	DL	R*	DL	R*	DL	R*	DL	R*	DL	R*	DL	R*	DL
Benzene	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	0.003	0.001
Bromodichloromethane	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
Bromomethane	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005
Carbon Tetrachloride	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
Chlorobenzene	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
Chloroethane	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005
2-Chloroethylvinylether	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
Chloroform	ND	0.001	ND	0.001	ND	0.001	0.002	0.001	ND	0.001	ND	0.001	ND	0.001
Chloromethane	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005
Cis-1,3-Dichloropropene	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
Dibromochloromethane	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
1,2-Dibromoethane (Edb)	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005
Dichlorodifluoromethane	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005
1,1-Dichloroethane	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
1,2-Dichloroethane	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
1,1-Dichloroethene	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
Dichloromethane	ND	0.001	ND	0.001	0.002	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
1,2-Dichloropropane	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
Ethyl Benzene	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	0.004	0.001
Fluorotrichloromethane	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005
M/P-Xylene	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	0.007	0.001
Methyl-T-Butyl Ether (Mtbe)	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005
O-Xylene	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	0.003	0.001
1,1,2,2-Tetrachloroethane	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
Toluene	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	0.001	0.001
Trans-1,2-Dichloroethene	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
1,1,1-Trichloroethane	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
1,1,2-Trichloroethane	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
Trichloroethene	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
Vinyl Chloride	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005

R*: Laboratory Analytical Result
DL: Laboratory Detection Limit
Note: The Laboratory Analytical Results and Detection Limits are in mg/L.

GROUNDWATER SAMPLE PARAMETER SUMMARY TABLE-VOLATILES
SOUTHERN WOOD PIEDMONT FACILITY - WILMINGTON, NORTH CAROLINA

	MW-13		MW-14		MW-15		MW-16		MW-17		MW-18		MW-19	
VOLATILES	R*	DL	R*	DL	R*	DL	R*	DL	R*	DL	R*	DL	R*	DL
Benzene	0.100	0.010	0.019	0.005	0.005	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
Bromodichloromethane	ND	0.010	ND	0.005	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
Bromomethane	ND	0.050	ND	0.025	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005
Carbon Tetrachloride	ND	0.010	ND	0.005	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
Chlorobenzene	ND	0.010	ND	0.005	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
Chloroethane	ND	0.050	ND	0.025	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005
2-Chloroethylvinylether	ND	0.010	ND	0.005	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
Chloroform	ND	0.010	ND	0.005	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
Chloromethane	ND	0.050	ND	0.025	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005
Cis-1,3-Dichloropropene	ND	0.010	ND	0.005	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
Dibromochloromethane	ND	0.010	ND	0.005	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
1,2-Dibromoethane (Edb)	ND	0.050	ND	0.025	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005
Dichlorodifluoromethane	ND	0.050	ND	0.025	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005
1,1-Dichloroethane	ND	0.010	ND	0.005	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
1,2-Dichloroethane	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
1,1-Dichloroethene	ND	0.010	ND	0.005	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
Dichloromethane	ND	0.010	ND	0.005	ND	0.001	0.001	0.001	0.003	0.001	0.002	0.001	ND	0.001
1,2-Dichloropropane	ND	0.010	ND	0.005	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
Ethyl Benzene	0.040	0.010	0.060	0.005	0.008	0.001	ND	0.001	0.006	0.001	ND	0.001	0.011	0.001
Fluorotrichloromethane	ND	0.050	ND	0.025	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005
M/P-Xylene	0.050	0.010	0.078	0.005	0.006	0.001	ND	0.001	0.016	0.001	ND	0.001	0.007	0.001
Methyl-T-Butyl Ether (Mtbe)	ND	0.050	ND	0.025	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005
O-Xylene	0.020	0.010	0.038	0.005	0.003	0.001	ND	0.001	0.010	0.001	ND	0.001	0.005	0.001
1,1,2,2-Tetrachloroethane	ND	0.010	ND	0.005	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
Toluene	0.010	0.010	0.028	0.005	ND	0.001	ND	0.001	0.017	0.001	ND	0.001	0.001	0.001
Trans-1,2-Dichloroethene	ND	0.010	ND	0.005	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
1,1,1-Trichloroethane	ND	0.010	ND	0.005	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
1,1,2-Trichloroethane	ND	0.010	ND	0.005	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
Trichloroethene	ND	0.010	ND	0.005	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
Vinyl Chloride	ND	0.050	ND	0.025	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005

R*: Laboratory Analytical Result
DL: Laboratory Detection Limit
Note: The Laboratory Analytical Results and Detection Limits are in mg/l

GROUNDWATER SAMPLE PARAMETER SUMMARY TABLE-VOLATILES
SOUTHERN WOOD PIEDMONT FACILITY-WILMINGTON, NORTH CAROLINA

	MW-19A		MW-20		MW-21		MW-22		MW-23		MW-24		MW-25	
VOLATILES	R*	DL	R*	DL	R*	DL	R*	DL	R*	DL	R*	DL	R*	DL
Benzene	ND	0.001	ND	0.001	ND	0.001	0.005	0.001	ND	0.001	ND	0.001	ND	0.001
Bromodichloromethane	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
Bromomethane	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005
Carbon Tetrachloride	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
Chlorobenzene	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
Chloroethane	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005
2-Chloroethylvinylether	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
Chloroform	0.001	0.001	ND	0.001	0.001	0.001	0.004	0.001	ND	0.001	ND	0.001	ND	0.001
Chloromethane	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005
Cis-1,3-Dichloropropene	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
Dibromochloromethane	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
1,2-Dibromoethane (Edb)	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005
Dichlorodifluoromethane	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005
1,1-Dichloroethane	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
1,2-Dichloroethane	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
1,1-Dichloroethene	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
Dichloromethane	ND	0.001	ND	0.001	ND	0.001	0.002	0.001	0.003	0.001	ND	0.001	ND	0.001
1,2-Dichloropropane	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
Ethyl Benzene	ND	0.001	ND	0.001	ND	0.001	0.037	0.001	ND	0.001	0.002	0.001	ND	0.001
Fluorotrichloromethane	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005
M/P-Xylene	ND	0.001	ND	0.001	ND	0.001	0.048	0.001	ND	0.001	0.002	0.001	ND	0.001
Methyl-T-Butyl Ether (Mtbe)	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005
O-Xylene	ND	0.001	ND	0.001	ND	0.001	0.023	0.001	ND	0.001	0.001	0.001	ND	0.001
1,1,2,2-Tetrachloroethane	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
Toluene	ND	0.001	ND	0.001	ND	0.001	0.011	0.001	ND	0.001	ND	0.001	ND	0.001
Trans-1,2-Dichloroethene	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
1,1,1-Trichloroethane	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
1,1,2-Trichloroethane	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
Trichloroethene	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001
Vinyl Chloride	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005

R*: Laboratory Analytical Result
DL: Laboratory Detection Limit
Note: The Laboratory Analytical Results and Detection Limits are in mg/l.

Ground Water Sample Collection Summary Sheets

ETE, INC.

PO Box 1867
1445 Pisgah Church Rd.
Lexington, SC 29072
(803) 957-6270

AQUEOUS SAMPLE COLLECTION SUMMARY SHEET

SITE NAME/CITY/COUNTY: SWP - Wilmington

PROJECT NUMBER: 530-06-503

SAMPLED BY: Massey & Kuntz

WEATHER: Overcast 55° to 85°

SAMPLE TYPE: Groundwater

SAMPLING METHOD: Dedicated Bailer

SPLITS/SPIKES/DUPLICATES:

SAMPLING CONTAINERS: (NUMBER/SIZE/TYPE) 2/1L/AG; 3/40ml/G; 2/500ml/P

REASON FOR SAMPLING: Phase II Assessment

PARAMETERS REQUESTED: SV, VOC, and Metals

LAB PERFORMING ANALYSIS: Heritage EMS Labs

RESPIRATORY PROTECTION: None

SAMPLE NUMBER	DATE	TIME	(TOC) WELL DEPTH	(TOC) WATER LEVEL	PURGE METHOD	SAMPLE APPEARANCE	(Gal) VOLUME PURGED	(°C) TEMP.	(uMhos) COND.	pH	REMARKS
MW-6	10-15-92	15:20	21.71	2.55	Bailer	S.T. Tan	4.83	22	750	6.2	
							4.83	22	1120	6.1	
							4.83	22	1220	5.7	
MW-7	10-15-92	13:55	21.43	3.66	"	S.T. Brown	2.90	22	630	5.7	
							2.90	23	>2000	5.8	Dry 1.25 Volumes
							2.90	22	>2000	6.2	
MW-8	10-15-92	12:15	21.69	4.22	"	T. Brown	2.85	21	450	5.2	
							2.85	21	450	5.1	Dry 1.5 Volumes
							2.85	21	530	5.1	

SAMPLE NUMBER	DATE	TIME	(TOC) WELL DEPTH	(TOC) WATER LEVEL	PURGE METHOD	SAMPLE APPEARANCE	(Gal) VOLUME PURGED	(°C) TEMP.	(uMhos) COND.	pH	REMARKS
MW-8A	10-15-92	12:55	33.06	3.43	Bailer	Clear	4.83	21	420	5.9	
							4.83	22	400	5.9	
							4.83	21	470	5.9	
MW-9	10-15-92	11:15	21.45	3.82	"	T. Brown	2.87	21	360	5.8	
							2.87	20	440	5.7	Dry 2 Volumes
							2.87	21	440	5.7	
MW-10	10-14-92	13:00	14.00	4.56	"	S.T. Gray	1.54	26	1060	6.9	
							1.54	24	520	6.9	
							1.54	24	520	6.9	
MW-11	10-16-92	07:10	14.12	5.19							No Sample Collected
											0.02 Feet Heavy Product
MW-12	10-16-92	07:25	14.47	5.46							No Sample Collected
											Trace Heavy Product
MW-13	10-15-92	16:15	14.10	4.49	"	T. Brown	1.57	22	1120	6.1	Sheen on Sample
							1.57	22	1110	6.2	Diesel & Creosote Odor
							1.57	22	1040	6.1	
MW-14	10-16-92	8:30	18.61	4.00	"	V.T. Brown	2.38	19	>2000	6.4	Trace Heavy Product
							2.38	20	>2000	6.2	Sheen on Sample
							2.38	20	>2000	6.1	

SAMPLE NUMBER	DATE	TIME	(TOC) WELL DEPTH	(TOC) WATER LEVEL	PURGE METHOD	SAMPLE APPEARANCE	(Gal) VOLUME PURGED	(°C) TEMP.	(uMhos) COND.	pH	REMARKS
MW-15	10-15-92	17:10	13.90	4.50	Bailer	T. Brown	1.53	23	830	6.6	Very Slight Diesel Odor
							1.53	23	1104	6.1	
							1.53	23	>2000	6.0	
MW-16	10-14-92	15:10	13.97	5.04	"	S.T. Gray	1.46	26	1520	6.6	Sheen on Sample
							1.46	25	1350	6.6	Diesel Odor
							1.46	25	1350	6.6	
MW-17	10-14-92	16:00	14.43	4.99	"	S.T. Gray	1.54	24	1320	6.6	Sheen on Sample
							1.54	23	1220	6.6	Diesel Odor
							1.54	23	1220	6.6	
MW-18	10-15-92	14:45	13.48	4.14	"	S.T. Brown	1.52	24	>2000	5.0	
							1.52	23	>2000	6.0	
							1.52	22	>2000	6.1	
MW-19	10-16-92	10:40	15.12	2.92	"	S.T. Tan	1.98	23	105	6.0	Slight Creosote Odor
							1.98	23	100	6.5	
							1.98	23	105	6.4	
MW-19A	10-16-92	11:15	33.27	2.91	"	S.T.	4.94	21	150	6.8	
							4.94	21	90	6.9	
							4.94	20	100	6.9	
MW-20	10-16-92	12:20	14.57	2.80	"	S.T.	1.91	23	240	5.9	
							1.91	23	235	5.8	
							1.91	23	235	5.9	

SAMPLE NUMBER	DATE	TIME	(TOC) WELL DEPTH	(TOC) WATER LEVEL	PURGE METHOD	SAMPLE APPEARANCE	(Gal) VOLUME PURGED	(°C) TEMP.	(uMhos) COND.	pH	REMARKS
MW-21	10-16-92	12:50	8.96	3.22	Bailer	S.T.	0.94	22	290	6.7	
							0.94	22	280	6.2	
							0.94	22	280	6.9	
MW-22	10-13-92	13:40	13.00	3.02	"	S.T. Brown	1.63	23	500	6.4	Sheen on Sample
							1.63	24	470	6.7	Bailer Stained
							1.63	24	470	6.7	
MW-23	10-13-92	14:15	11.00	4.56	"	S.T. Rust	1.41	23	1440	6.4	
							1.41	22	1760	6.5	
							1.41	22	1760	6.5	
MW-24	10-16-92	7:50	13.81	3.48	"	V.T. Brown	1.68	19	>2000	6.6	Slight Creosote Odor
							1.68	20	>2000	6.0	
							1.68	19	>2000	6.3	
MW-25	10-16-92	8:30	15.23	1.63	"	V.T. Brown	2.21	19	>2000	6.4	
							2.21	19	>2000	6.0	Dry 1 Volume
							2.21				
MW-26	10-16-92	10:05	20.05	4.01	"						0.29 Feet Heavy Product
											No Sample Collected
MW-11A	10-16-92	6:20	36.17	3.89	"	S.T.	5.26	21	830	6.2	Slight Creosote Odor
							5.26	19	140	5.2	
							5.26	19	85	4.9	

Ground Water Sample Laboratory Results and Chain-of-Custody

MAS

HERITAGE

SEMIANNUAL SAMPLING

CASE SUMMARY

Client : Southern Wood Piedmont
Project : Wilmington

Date: 11/24/92

SWP SAMPLE ID	HERITAGE SAMPLE NUMBER	DATE SAMPLED
MW-22	B117577	10/13/92
MW-23	B117578	10/13/92
MW-10	B117579	10/14/92
MW-16	B117580	10/14/92
MW-17	B117581	10/14/92
FIELD BLANK	B117582	10/14/92
SS-1	B117583	10/13/92
SS-2	B117584	10/13/92
SS-3	B117585	10/13/92
SS-4	B117586	10/13/92
SS-5	B117587	10/13/92
SS-6	B117588	10/13/92
SS-7	B117589	10/13/92
SS-8	B117590	10/13/92
SS-9	B117591	10/12/92
TRIP BLANK	B117592	10/14/92
MW-9	B117598	10/15/92
MW-8	B117599	10/15/92
MW-8A	B117600	10/15/92
MW-7	B117601	10/15/92
MW-18	B117602	10/15/92
MW-6	B117603	10/15/92
MW-13	B117604	10/15/92
MW-15	B117605	10/15/92
FIELD BLANK	B117606	10/15/92
TRIP BLANK	B117607	10/15/92
MW-11A	B117638	10/16/92
MW-24	B117639	10/16/92
MW-14	B117640	10/16/92
MW-25	B117641	10/16/92
MW-19	B117642	10/16/92
MW-19A	B117643	10/16/92
MW-20	B117644	10/16/92
MW-21	B117645	10/16/92
FIELD BLANK	B117646	10/16/92
TRIP BLANK	B117647	10/16/92

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HERITAGE

Client : Southern Wood Piedmont
Project : Wilmington

Date: 11/24/92

CASE NARRATIVE

Heritage Sample #s	Analysis/ Method	Remarks
B117583 -> B117591	SW846-8021	Method 8021 for soils requires heated purge and trap conditions. The samples were analyzed using ambient purge conditions. This is a deviation of the method. A method detection limit study supports the ambient purge conditions. Rep 0 represents the original analysis without heated purge and trap, analyzed within holding time. Rep 1 represents the heated purge and trap analysis run outside of holding time.
All Semi-volatiles	SW846-8270	The target compound tetrachlorophenol was not present in the calibration mixture. Response of this compound was checked by a mid-level calibration check standard. No tetrachlorophenol was found in any sample.
All Semi-volatiles	SW846-8270	The relative percent differences show three outliers for the matrix spike/spike dup of sample B117579. The analytical system was in control, as displayed by the Laboratory Control Sample (LCS), which passed QC criteria (also extracted in the analytical batch). B117577 MS/MSD - recoveries for acenaphthene and pyrene are out of control due to high amounts of these compounds in the sample. Recovery for 4-nitrophenol was 0%. The LCS analyzed in the same run was in-control for this compound.
B117580, B117581, B117639, B117640, B117641, B117644	SW846-8270	The samples showed surrogate recoveries of less than 10%. The extracts were re-analyzed, with no improvement in recovery. Samples were not re-extracted, as required by the Heritage Comprehensive Quality Assurance Plan (ComQAP). Matrix interference was confirmed when similiar problems were found during the previous quarter of the project.
B117598 -> B117604, B117639 -> B117641, B117643 -> B117645, B117577 MS/MSD	SW846-8270	During the extraction process, a considerable amount of emulsion formed. Technologies specified by EPA methods were used to enhance extraction efficiency, with little improvement.
B117643 -> B117646	SW846-8270	Surrogate recovery for 2-fluorobiphenyl in the extracted blank was 40%. This recovery is outside of the control limits.

Michele E. Sakwa
Laboratory Director

Helmuth M.B. Janssen
Quality Assurance Officer

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CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. 4132 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	16-OCT-92	1810	B117603
	Complete	PO Number	
	10-NOV-92	530-06-501	
	Printed	Sampled	
	24-NOV-92	15-OCT-92 15:20	

Report To	Bill To
SANDRA WATSON SOUTHERN WOOD PIEDMONT P.O. BOX 5447 SPARTANBURG, SC 29304	SOUTHERN WOOD PIEDMONT P.O. BOX 5447 SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: MW-6
LOG #: 10668
FIELD INFORMATION: WD 21.71, WL 2.55, COND. 750, PH 6.7

FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P130.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.025	mg/L

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: W. GROVES Analysis Date: 20-OCT-92 Test: P130.6.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 29-OCT-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

 (continued on next page)

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 29-OCT-92 Test: P130.6.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 30-OCT-92 Instrument: GFAA Test: M116.2.0

Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.1

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A

Analyst: M. CASHION Analysis Date: 16-OCT-92 Test: P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	500		mL
FINAL VOLUME	500		mL

FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.1

Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.1

Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.025	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P133.6.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 30-OCT-92 Instrument: GFAA Test: M103.2.1

Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

 (continued on next page)

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 29-OCT-92 Instrument: GFAA Test: M116.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: M. KATTNER Analysis Date: 28-OCT-92 Instrument: GC/PID ELCD Test: D461.1.0

Parameter	Result	Det. Limit	Units
DICHLORODIFLUOROMETHANE	BDL	0.005	mg/L
CHLOROMETHANE	BDL	0.005	mg/L
VINYL CHLORIDE	BDL	0.005	mg/L
BROMOMETHANE	BDL	0.005	mg/L
CHLOROETHANE	BDL	0.005	mg/L
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/L
1,1-DICHLOROETHENE	BDL	0.001	mg/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	0.001	mg/L
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/L
1,1-DICHLOROETHANE	BDL	0.001	mg/L
CHLOROFORM	BDL	0.001	mg/L
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/L
CARBON TETRACHLORIDE	BDL	0.001	mg/L
BENZENE	BDL	0.001	mg/L
1,2-DICHLOROETHANE	BDL	0.001	mg/L
TRICHLOROETHENE	BDL	0.001	mg/L
1,2-DICHLOROPROPANE	BDL	0.001	mg/L
BROMODICHLOROMETHANE	BDL	0.001	mg/L
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/L
TOLUENE	BDL	0.001	mg/L
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/L
DIBROMOCHLOROMETHANE	BDL	0.001	mg/L
CHLOROBENZENE	BDL	0.001	mg/L
ETHYLBENZENE	BDL	0.001	mg/L
M/P-XYLENE	BDL	0.001	mg/L
O-XYLENE	BDL	0.001	mg/L
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/L
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/L
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/L
1,2-DIBROMOETHANE (EDB)	BDL	0.005	mg/L

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: S. WILLIAMS Analysis Date: 19-OCT-92 Test: P233.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	990		mL
FINAL VOLUME	1.0		mL

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

Analyst: R. ROBERTS Analysis Date: 04-NOV-92 Instrument: GC/MS SVOA Test: O505.3.0
Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	BDL	0.01	mg/L
ANTHRACENE	BDL	0.01	mg/L
BENZ(A)ANTHRACENE	BDL	0.01	mg/L
BENZO(A)PYRENE	BDL	0.01	mg/L
BENZO(B)FLUORANTHENE	BDL	0.01	mg/L
BENZO(K)FLUORANTHENE	BDL	0.01	mg/L
BIS(2-CHLOROETHYL)ETHER	BDL	0.01	mg/L

 (continued on next page)

HERITAGE LABORATORIES, INC. Lab Sample ID: B117603

Parameter	Result	Det. Limit	Units
CARBAZOLE	BDL	0.01	mg/L
CHRYSENE	BDL	0.01	mg/L
DIBENZ(A,H)ANTHRACENE	BDL	0.01	mg/L
FLUORANTHENE	BDL	0.01	mg/L
INDENO(1,2,3-CD)PYRENE	BDL	0.01	mg/L
NAPHTHALENE	BDL	0.01	mg/L
PHENANTHRENE	BDL	0.01	mg/L
4-CHLORO-3-METHYLPHENOL	BDL	0.01	mg/L
2-CHLOROPHENOL	BDL	0.01	mg/L
2,4-DIMETHYLPHENOL	BDL	0.01	mg/L
2,4-DINITROPHENOL	BDL	0.05	mg/L
PENTACHLOROPHENOL	BDL	0.05	mg/L
PHENOL	BDL	0.01	mg/L
TETRACHLOROPHENOL	BDL	0.01	mg/L
2,4,5-TRICHLOROPHENOL	BDL	0.01	mg/L
2,4,6-TRICHLOROPHENOL	BDL	0.01	mg/L
SURROGATE RECOVERY			
2-FLUOROPHENOL	27		% Rec
PHENOL-D5	21		% Rec
NITROBENZENE-D5	77		% Rec
2-FLUOROBIPHENYL	88		% Rec
2,4,6-TRIBROMOPHENOL	67		% Rec
TERPHENYL-D14	124		% Rec

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 16490.

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Quality Assurance Officer: Helmuth MB Jensen

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. 4132 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	16-OCT-92	1810	B117601
	Complete	PO Number	
	10-NOV-92	530-06-501	
	Printed	Sampled	
	24-NOV-92	15-OCT-92 13:55	

Report To

SANDRA WATSON
SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Bill To

SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: MW-7
LOG #: 10666
FIELD INFORMATION: WD 21.43, WL 3.66, COND. 630, PH 5.70

FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P130.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
CHROMIUM	0.014	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.025	mg/L

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: W. GROVES Analysis Date: 20-OCT-92 Test: P130.6.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 29-OCT-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

 (continued on next page)

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 29-OCT-92 Test: P130.6.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 29-OCT-92 Instrument: GFAA Test: M116.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.1

Parameter	Result	Det. Limit	Units
LEAD	0.0097	0.005	mg/L

0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A

Analyst: M. CASHION Analysis Date: 16-OCT-92 Test: P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	500		mL
FINAL VOLUME	500		mL

FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.025	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 30-OCT-92 Instrument: GFAA Test: M103.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

 (continued on next page)

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 29-OCT-92 Instrument: GFAA Test: M116.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: M. KATTNER Analysis Date: 28-OCT-92 Instrument: GC/PID ELCD Test: O461.1.0

Parameter	Result	Det. Limit	Units
DICHLORODIFLUOROMETHANE	BDL	0.005	mg/L
CHLOROMETHANE	BDL	0.005	mg/L
VINYL CHLORIDE	BDL	0.005	mg/L
BROMOMETHANE	BDL	0.005	mg/L
CHLOROETHANE	BDL	0.005	mg/L
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/L
1,1-DICHLOROETHENE	BDL	0.001	mg/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	0.001	mg/L
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/L
1,1-DICHLOROETHANE	BDL	0.001	mg/L
CHLOROFORM	BDL	0.001	mg/L
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/L
CARBON TETRACHLORIDE	BDL	0.001	mg/L
BENZENE	BDL	0.001	mg/L
1,2-DICHLOROETHANE	BDL	0.001	mg/L
TRICHLOROETHENE	BDL	0.001	mg/L
1,2-DICHLOROPROPANE	BDL	0.001	mg/L
BROMODICHLOROMETHANE	BDL	0.001	mg/L
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/L
TOLUENE	BDL	0.001	mg/L
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/L
DIBROMOCHLOROMETHANE	BDL	0.001	mg/L
CHLOROBENZENE	BDL	0.001	mg/L
ETHYLBENZENE	BDL	0.001	mg/L
M/P-XYLENE	BDL	0.001	mg/L
O-XYLENE	BDL	0.001	mg/L
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/L
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/L
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/L
1,2-DIBROMOETHANE (EDB)	BDL	0.005	mg/L

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: S. WILLIAMS Analysis Date: 19-OCT-92 Test: P233.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	990		mL
FINAL VOLUME	1.0		mL

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

Analyst: R. ROBERTS Analysis Date: 02-NOV-92 Instrument: GC/MS SVOA Test: O505.3.0
Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	BDL	0.01	mg/L
ANTHRACENE	BDL	0.01	mg/L
BENZ(A)ANTHRACENE	BDL	0.01	mg/L
BENZO(A)PYRENE	BDL	0.01	mg/L
BENZO(B)FLUORANTHENE	BDL	0.01	mg/L
BENZO(K)FLUORANTHENE	BDL	0.01	mg/L
BIS(2-CHLOROETHYL)ETHER	BDL	0.01	mg/L

 (continued on next page)

HERITAGE LABORATORIES, INC. Lab Sample ID: B117601

Parameter	Result	Det. Limit	Units
CARBAZOLE	BDL	0.01	mg/L
CHRYSENE	BDL	0.01	mg/L
DIBENZ(A,H)ANTHRACENE	BDL	0.01	mg/L
FLUORANTHENE	BDL	0.01	mg/L
INDENO(1,2,3-CD)PYRENE	BDL	0.01	mg/L
NAPHTHALENE	BDL	0.01	mg/L
PHENANTHRENE	BDL	0.01	mg/L
4-CHLORO-3-METHYLPHENOL	BDL	0.01	mg/L
2-CHLOROPHENOL	BDL	0.01	mg/L
2,4-DIMETHYLPHENOL	BDL	0.01	mg/L
2,4-DINITROPHENOL	BDL	0.05	mg/L
PENTACHLOROPHENOL	BDL	0.05	mg/L
PHENOL	BDL	0.01	mg/L
TETRACHLOROPHENOL	BDL	0.01	mg/L
2,4,5-TRICHLOROPHENOL	BDL	0.01	mg/L
2,4,6-TRICHLOROPHENOL	BDL	0.01	mg/L
SURROGATE RECOVERY			

2-FLUOROPHENOL	30		% Rec
PHENOL-D5	24		% Rec
NITROBENZENE-D5	66		% Rec
2-FLUOROBIPHENYL	87		% Rec
2,4,6-TRIBROMOPHENOL	44		% Rec
TERPHENYL-D14	115		% Rec

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 16490.

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Quality Assurance Officer: Debbie Smith MB Jensen

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. 4132 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	16-OCT-92	1810	B117599
	Complete	PO Number	
	11-NOV-92	530-06-501	
	Printed	Sampled	
	24-NOV-92	15-OCT-92 12:15	

Report To

SANDRA WATSON
SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Bill To

SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: MW-8
LOG #: 10664
FIELD INFORMATION: WD 21.69, WL 4.22, COND. 450, PH 5.2

FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P130.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
CHROMIUM	0.024	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
COPPER	0.026	0.025	mg/L

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: W. GROVES Analysis Date: 20-OCT-92 Test: P130.6.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 29-OCT-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

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GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 29-OCT-92 Test: P130.6.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 30-OCT-92 Instrument: GFAA Test: M116.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.1

Parameter	Result	Det. Limit	Units
LEAD	0.038	0.010	mg/L

Note: Dilution 1:2

0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A

Analyst: M. CASHION Analysis Date: 16-OCT-92 Test: P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	500		mL
FINAL VOLUME	500		mL

FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.025	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 29-OCT-92 Instrument: GFAA Test: M116.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 29-OCT-92 Test: P133.6.1
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 30-OCT-92 Instrument: GFAA Test: M103.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.1
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: M. KATTNER Analysis Date: 29-OCT-92 Instrument: GC/PID ELCD Test: O461.1.0

Parameter	Result	Det. Limit	Units
DICHLORODIFLUOROMETHANE	BDL	0.005	mg/L
CHLOROMETHANE	BDL	0.005	mg/L
VINYL CHLORIDE	BDL	0.005	mg/L
BROMOMETHANE	BDL	0.005	mg/L
CHLOROETHANE	BDL	0.005	mg/L
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/L
1,1-DICHLOROETHENE	BDL	0.001	mg/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	0.002	0.001	mg/L
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/L
1,1-DICHLOROETHANE	BDL	0.001	mg/L
CHLOROFORM	BDL	0.001	mg/L
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/L
CARBON TETRACHLORIDE	BDL	0.001	mg/L
BENZENE	BDL	0.001	mg/L
1,2-DICHLOROETHANE	BDL	0.001	mg/L
TRICHLOROETHENE	BDL	0.001	mg/L
1,2-DICHLOROPROPANE	BDL	0.001	mg/L
BROMODICHLOROMETHANE	BDL	0.001	mg/L
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/L
TOLUENE	BDL	0.001	mg/L
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/L
DIBROMOCHLOROMETHANE	BDL	0.001	mg/L
CHLOROBENZENE	BDL	0.001	mg/L
ETHYLBENZENE	BDL	0.001	mg/L
M/P-XYLENE	BDL	0.001	mg/L
O-XYLENE	BDL	0.001	mg/L
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/L
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/L
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/L
1,2-DIBROMOETHANE (EDB)	BDL	0.005	mg/L

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: S. WILLIAMS Analysis Date: 19-OCT-92 Test: P233.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	990		mL
FINAL VOLUME	1.0		mL

HERITAGE LABORATORIES, INC. Lab Sample ID: B117599

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

Analyst: R. ROBERTS Analysis Date: 05-NOV-92 Instrument: GC/MS SVOA Test: 0505.3.0

Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	BDL	0.01	mg/L
ANTHRACENE	BDL	0.01	mg/L
BENZ(A)ANTHRACENE	BDL	0.01	mg/L
BENZO(A)PYRENE	BDL	0.01	mg/L
BENZO(B)FLUORANTHENE	BDL	0.01	mg/L
BENZO(K)FLUORANTHENE	BDL	0.01	mg/L
BIS(2-CHLOROETHYL)ETHER	BDL	0.01	mg/L
CARBAZOLE	BDL	0.01	mg/L
CHRYSENE	BDL	0.01	mg/L
DIBENZ(A,H)ANTHRACENE	BDL	0.01	mg/L
FLUORANTHENE	BDL	0.01	mg/L
INDENO(1,2,3-CD)PYRENE	BDL	0.01	mg/L
NAPHTHALENE	BDL	0.01	mg/L
PHENANTHRENE	BDL	0.01	mg/L
4-CHLORO-3-METHYLPHENOL	BDL	0.01	mg/L
2-CHLOROPHENOL	BDL	0.01	mg/L
2,4-DIMETHYLPHENOL	BDL	0.01	mg/L
2,4-DINITROPHENOL	BDL	0.05	mg/L
PENTACHLOROPHENOL	BDL	0.05	mg/L
PHENOL	BDL	0.01	mg/L
TETRACHLOROPHENOL	BDL	0.01	mg/L
2,4,5-TRICHLOROPHENOL	BDL	0.01	mg/L
2,4,6-TRICHLOROPHENOL	BDL	0.01	mg/L
SURROGATE RECOVERY			
2-FLUOROPHENOL	36		% Rec
PHENOL-D5	17		% Rec
NITROBENZENE-D5	84		% Rec
2-FLUOROBIPHENYL	98		% Rec
2,4,6-TRIBROMOPHENOL	53		% Rec
TERPHENYL-D14	101		% Rec

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 16490.

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Quality Assurance Officer: Deborah M B Jamison

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. 4132 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	16-OCT-92	1810	B117600
	Complete	PO Number	
	10-NOV-92	530-06-501	
	Printed	Sampled	
	19-NOV-92	15-OCT-92 12:55	

Report To	Bill To
SANDRA WATSON SOUTHERN WOOD PIEDMONT P.O. BOX 5447 SPARTANBURG, SC 29304	SOUTHERN WOOD PIEDMONT P.O. BOX 5447 SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: MW-8A
LOG #: 10665
FIELD INFORMATION: WD 33.06, WL 3.43, COND. 420, PH 5.9

FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P130.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.025	mg/L

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: W. GROVES Analysis Date: 20-OCT-92 Test: P130.6.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 29-OCT-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

 (continued on next page)

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 29-OCT-92 Test: P130.6.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 29-OCT-92 Instrument: GFAA Test: M116.2.0

Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.1

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A

Analyst: M. CASHION Analysis Date: 16-OCT-92 Test: P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	500		mL
FINAL VOLUME	500		mL

FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.1

Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.1

Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.025	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P133.6.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 30-OCT-92 Instrument: GFAA Test: M103.2.1

Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 29-OCT-92 Instrument: GFAA Test: M116.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: M. KATTNER Analysis Date: 29-OCT-92 Instrument: GC/PID ELCD Test: D461.1.0

Parameter	Result	Det. Limit	Units
DICHLORODIFLUOROMETHANE	BDL	0.005	mg/L
CHLOROMETHANE	BDL	0.005	mg/L
VINYL CHLORIDE	BDL	0.005	mg/L
BROMOMETHANE	BDL	0.005	mg/L
CHLOROETHANE	BDL	0.005	mg/L
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/L
1,1-DICHLOROETHENE	BDL	0.001	mg/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	0.001	mg/L
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/L
1,1-DICHLOROETHANE	BDL	0.001	mg/L
CHLOROFORM	0.002	0.001	mg/L
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/L
CARBON TETRACHLORIDE	BDL	0.001	mg/L
BENZENE	BDL	0.001	mg/L
TRICHLOROETHENE	BDL	0.001	mg/L
1,2-DICHLOROPROPANE	BDL	0.001	mg/L
BROMODICHLOROMETHANE	BDL	0.001	mg/L
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/L
TOLUENE	BDL	0.001	mg/L
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/L
DIBROMOCHLOROMETHANE	BDL	0.001	mg/L
CHLOROBENZENE	BDL	0.001	mg/L
ETHYLBENZENE	BDL	0.001	mg/L
M/P-XYLENE	BDL	0.001	mg/L
O-XYLENE	BDL	0.001	mg/L
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/L
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/L
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/L
1,2-DIBROMOETHANE (EDB)	BDL	0.005	mg/L

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: S. WILLIAMS Analysis Date: 19-OCT-92 Test: P233.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1000		mL
FINAL VOLUME	1.0		mL

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

Analyst: R. ROBERTS Analysis Date: 02-NOV-92 Instrument: GC/MS SVOA Test: D505.3.0
Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	BDL	0.01	mg/L
ANTHRACENE	BDL	0.01	mg/L
BENZ(A)ANTHRACENE	BDL	0.01	mg/L
BENZO(A)PYRENE	BDL	0.01	mg/L
BENZO(B)FLUORANTHENE	BDL	0.01	mg/L
BENZO(K)FLUORANTHENE	BDL	0.01	mg/L
BIS(2-CHLOROETHYL)ETHER	BDL	0.01	mg/L
CARBAZOLE	BDL	0.01	mg/L

 (continued on next page)

Parameter	Result	Det. Limit	Units
CHRYSENE	BDL	0.01	mg/L
DIBENZ(A,H)ANTHRACENE	BDL	0.01	mg/L
FLUORANTHENE	BDL	0.01	mg/L
INDENO(1,2,3-CD)PYRENE	BDL	0.01	mg/L
NAPHTHALENE	BDL	0.01	mg/L
PHENANTHRENE	BDL	0.01	mg/L
4-CHLORO-3-METHYLPHENOL	BDL	0.01	mg/L
2-CHLOROPHENOL	BDL	0.01	mg/L
2,4-DIMETHYLPHENOL	BDL	0.01	mg/L
2,4-DINITROPHENOL	BDL	0.05	mg/L
PENTACHLOROPHENOL	BDL	0.05	mg/L
PHENOL	BDL	0.01	mg/L
TETRACHLOROPHENOL	BDL	0.01	mg/L
2,4,5-TRICHLOROPHENOL	BDL	0.01	mg/L
2,4,6-TRICHLOROPHENOL	BDL	0.01	mg/L
SURROGATE RECOVERY			
2-FLUOROPHENOL	38		% Rec
PHENOL-D5	28		% Rec
NITROBENZENE-D5	68		% Rec
2-FLUOROBIPHENYL	92		% Rec
2,4,6-TRIBROMOPHENOL	66		% Rec
TERPHENYL-D14	100		% Rec

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 16490.

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Quality Assurance Officer: Helmuth MB Janssen

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. 4132 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	16-OCT-92	1810	B117598
	Complete	PO Number	
	10-NOV-92	530-06-501	
	Printed	Sampled	
	24-NOV-92	15-OCT-92 11:15	

Report To	Bill To
SANDRA WATSON SOUTHERN WOOD PIEDMONT P.O. BOX 5447 SPARTANBURG, SC 29304	SOUTHERN WOOD PIEDMONT P.O. BOX 5447 SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: MW-9
LOG #: 10663
FIELD INFORMATION: WD 21.45, WL 3.82, COND. 360, PH 5.8

FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P130.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.025	mg/L

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: W. GROVES Analysis Date: 20-OCT-92 Test: P130.6.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 29-OCT-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

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GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 29-OCT-92 Test: P130.6.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 30-OCT-92 Instrument: GFAA Test: M116.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.1

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A

Analyst: M. CASHION Analysis Date: 16-OCT-92 Test: P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	500		mL
FINAL VOLUME	500		mL

FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.025	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 29-OCT-92 Instrument: GFAA Test: M116.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 29-OCT-92 Test: P133.6.1
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 30-OCT-92 Instrument: GFAA Test: M103.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.1
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: M. KATTNER Analysis Date: 28-OCT-92 Instrument: GC/PID ELCD Test: O461.1.0

Parameter	Result	Det. Limit	Units
DICHLORODIFLUOROMETHANE	BDL	0.005	mg/L
CHLOROMETHANE	BDL	0.005	mg/L
VINYL CHLORIDE	BDL	0.005	mg/L
BROMOMETHANE	BDL	0.005	mg/L
CHLOROETHANE	BDL	0.005	mg/L
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/L
1,1-DICHLOROETHENE	BDL	0.001	mg/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	0.001	mg/L
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/L
1,1-DICHLOROETHANE	BDL	0.001	mg/L
CHLOROFORM	BDL	0.001	mg/L
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/L
CARBON TETRACHLORIDE	BDL	0.001	mg/L
BENZENE	BDL	0.001	mg/L
1,2-DICHLOROETHANE	BDL	0.001	mg/L
TRICHLOROETHENE	BDL	0.001	mg/L
1,2-DICHLOROPROPANE	BDL	0.001	mg/L
BROMODICHLOROMETHANE	BDL	0.001	mg/L
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/L
TOLUENE	BDL	0.001	mg/L
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/L
DIBROMOCHLOROMETHANE	BDL	0.001	mg/L
CHLOROBENZENE	BDL	0.001	mg/L
ETHYLBENZENE	BDL	0.001	mg/L
M/P-XYLENE	BDL	0.001	mg/L
O-XYLENE	BDL	0.001	mg/L
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/L
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/L
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/L
1,2-DIBROMOETHANE (EDB)	BDL	0.005	mg/L

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: S. WILLIAMS Analysis Date: 19-OCT-92 Test: P233.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1000		mL
FINAL VOLUME	1.0		mL

HERITAGE LABORATORIES, INC. Lab Sample ID: B117598

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

Analyst: R. ROBERTS Analysis Date: 02-NOV-92 Instrument: GC/MS SVOA Test: 0505.3.0

Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	BDL	0.01	mg/L
ANTHRACENE	BDL	0.01	mg/L
BENZ(A)ANTHRACENE	BDL	0.01	mg/L
BENZO(A)PYRENE	BDL	0.01	mg/L
BENZO(B)FLUORANTHENE	BDL	0.01	mg/L
BENZO(K)FLUORANTHENE	BDL	0.01	mg/L
BIS(2-CHLOROETHYL)ETHER	BDL	0.01	mg/L
CARBAZOLE	BDL	0.01	mg/L
CHRYSENE	BDL	0.01	mg/L
DIBENZ(A,H)ANTHRACENE	BDL	0.01	mg/L
FLUORANTHENE	BDL	0.01	mg/L
INDENO(1,2,3-CD)PYRENE	BDL	0.01	mg/L
NAPHTHALENE	BDL	0.01	mg/L
PHENANTHRENE	BDL	0.01	mg/L
4-CHLORO-3-METHYLPHENOL	BDL	0.01	mg/L
2-CHLOROPHENOL	BDL	0.01	mg/L
2,4-DIMETHYLPHENOL	BDL	0.01	mg/L
2,4-DINITROPHENOL	BDL	0.05	mg/L
PENTACHLOROPHENOL	BDL	0.05	mg/L
PHENOL	BDL	0.01	mg/L
TETRACHLOROPHENOL	BDL	0.01	mg/L
2,4,5-TRICHLOROPHENOL	BDL	0.01	mg/L
2,4,6-TRICHLOROPHENOL	BDL	0.01	mg/L
SURROGATE RECOVERY			
2-FLUOROPHENOL	33		% Rec
PHENOL-D5	25		% Rec
NITROBENZENE-D5	62		% Rec
2-FLUOROBIPHENYL	83		% Rec
2,4,6-TRIBROMOPHENOL	66		% Rec
TERPHENYL-D14	105		% Rec

Sample Comments

All 3 VOA vials contained bubbles.

BDL Below Detection Limit

Sample chain of custody number 16490.

This Certificate shall not be reproduced, except in full, without the written approval of the lab.

Quality Assurance Officer: Helmuth MB Jansen

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. 4132 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	15-OCT-92	1810	B117579
	Complete	PO Number	
	12-NOV-92	530-06-501	
	Printed	Sampled	
	24-NOV-92	14-OCT-92 13:00	

Report To

SANDRA WATSON
SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Bill To

SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: MW-10
LOG #: 10660
FIELD INFORMATION: WD 14.00, WL 4.56, COND. 1060, PH 6.9

FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P130.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
CHROMIUM	0.019	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.025	mg/L

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: W. GROVES Analysis Date: 20-OCT-92 Test: P130.6.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 30-OCT-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
ARSENIC	0.048	0.010	mg/L

Note: Dilution 1:2

 (continued on next page)

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 29-OCT-92 Test: P130.6.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 30-OCT-92 Instrument: GFAA Test: M116.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.1

Parameter	Result	Det. Limit	Units
LEAD	0.018	0.005	mg/L

0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A

Analyst: M. CASHION Analysis Date: 15-OCT-92 Test: P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	500		mL
FINAL VOLUME	500		mL

FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.025	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 29-OCT-92 Instrument: GFAA Test: M103.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 28-OCT-92 Instrument: GFAA Test: M116.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: M. KATTNER Analysis Date: 28-OCT-92 Instrument: GC/PID ELCD Test: O461.1.0

Parameter	Result	Det. Limit	Units
DICHLORODIFLUOROMETHANE	BDL	0.005	mg/L
CHLOROMETHANE	BDL	0.005	mg/L
VINYL CHLORIDE	BDL	0.005	mg/L
BROMOMETHANE	BDL	0.005	mg/L
CHLOROETHANE	BDL	0.005	mg/L
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/L
1,1-DICHLOROETHENE	BDL	0.001	mg/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	0.001	mg/L
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/L
1,1-DICHLOROETHANE	BDL	0.001	mg/L
CHLOROFORM	BDL	0.001	mg/L
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/L
CARBON TETRACHLORIDE	BDL	0.001	mg/L
BENZENE	BDL	0.001	mg/L
1,2-DICHLOROETHANE	BDL	0.001	mg/L
TRICHLOROETHENE	BDL	0.001	mg/L
1,2-DICHLOROPROPANE	BDL	0.001	mg/L
BROMODICHLOROMETHANE	BDL	0.001	mg/L
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/L
TOLUENE	BDL	0.001	mg/L
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/L
DIBROMOCHLOROMETHANE	BDL	0.001	mg/L
CHLOROBENZENE	BDL	0.001	mg/L
ETHYLBENZENE	BDL	0.001	mg/L
M/P-XYLENE	BDL	0.001	mg/L
O-XYLENE	BDL	0.001	mg/L
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/L
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/L
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/L
1,2-DIBROMOETHANE (EDB)	BDL	0.005	mg/L

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: S. WILLIAMS Analysis Date: 16-OCT-92 Test: P233.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	990		mL
FINAL VOLUME	1.0		mL

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

Analyst: R. ROBERTS Analysis Date: 01-NOV-92 Instrument: GC/MS SVOA Test: O505.3.0
Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	BDL	0.01	mg/L
ANTHRACENE	BDL	0.01	mg/L
BENZ(A)ANTHRACENE	BDL	0.01	mg/L
BENZO(A)PYRENE	BDL	0.01	mg/L
BENZO(B)FLUORANTHENE	BDL	0.01	mg/L
BENZO(K)FLUORANTHENE	BDL	0.01	mg/L
BIS(2-CHLOROETHYL)ETHER	BDL	0.01	mg/L

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HERITAGE LABORATORIES, INC. Lab Sample ID: B117579

Parameter	Result	Det. Limit	Units
CARBAZOLE	BDL	0.01	mg/L
CHRYSENE	BDL	0.01	mg/L
DIBENZ(A,H)ANTHRACENE	BDL	0.01	mg/L
FLUORANTHENE	BDL	0.01	mg/L
INDENO(1,2,3-CD)PYRENE	BDL	0.01	mg/L
NAPHTHALENE	BDL	0.01	mg/L
PHENANTHRENE	BDL	0.01	mg/L
4-CHLORO-3-METHYLPHENOL	BDL	0.01	mg/L
2-CHLOROPHENOL	BDL	0.01	mg/L
2,4-DIMETHYLPHENOL	BDL	0.01	mg/L
2,4-DINITROPHENOL	BDL	0.05	mg/L
PENTACHLOROPHENOL	BDL	0.05	mg/L
PHENOL	BDL	0.01	mg/L
TETRACHLOROPHENOL	BDL	0.01	mg/L
2,4,5-TRICHLOROPHENOL	BDL	0.01	mg/L
2,4,6-TRICHLOROPHENOL	BDL	0.01	mg/L
SURROGATE RECOVERY			
2-FLUOROPHENOL	22		% Rec
PHENOL-D5	22		% Rec
NITROBENZENE-D5	38		% Rec
2-FLUOROBIPHENYL	69		% Rec
2,4,6-TRIBROMOPHENOL	83		% Rec
TERPHENYL-D14	104		% Rec

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 16491.

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Quality Assurance Officer: Helmuth MB Janssen

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. 4132 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	17-OCT-92	1810	B117638
	Complete	PO Number	
	10-NOV-92	530-06-501	
	Printed	Sampled	
	24-NOV-92	16-OCT-92 06:20	

Report To

SANDRA WATSON
SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Bill To

SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: MW-11A
LOG #: 10671
FIELD INFORMATION: WD 36.17, WL 3.89, COND. 930, PH 6.2

FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P130.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
CHROMIUM	0.012	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.025	mg/L

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: W. GROVES Analysis Date: 20-OCT-92 Test: P130.6.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 29-OCT-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

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GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 29-OCT-92 Test: P130.6.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 29-OCT-92 Instrument: GFAA Test: M116.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.1

Parameter	Result	Det. Limit	Units
LEAD	0.0095	0.005	mg/L

0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A

Analyst: M. KRASKA Analysis Date: 17-OCT-92 Test: P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	500		mL
FINAL VOLUME	500		mL

FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.025	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 30-OCT-92 Instrument: GFAA Test: M103.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 29-OCT-92 Instrument: GFAA Test: M116.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: M. KATTNER Analysis Date: 29-OCT-92 Instrument: GC/PID ELCD Test: D461.1.0

Parameter	Result	Det. Limit	Units
DICHLORODIFLUOROMETHANE	BDL	0.005	mg/L
CHLOROMETHANE	BDL	0.005	mg/L
VINYL CHLORIDE	BDL	0.005	mg/L
BROMOMETHANE	BDL	0.005	mg/L
CHLOROETHANE	BDL	0.005	mg/L
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/L
1,1-DICHLOROETHENE	BDL	0.001	mg/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	0.001	mg/L
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/L
1,1-DICHLOROETHANE	BDL	0.001	mg/L
CHLOROFORM	BDL	0.001	mg/L
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/L
CARBON TETRACHLORIDE	BDL	0.001	mg/L
BENZENE	0.003	0.001	mg/L
1,2-DICHLOROETHANE	BDL	0.001	mg/L
TRICHLOROETHENE	BDL	0.001	mg/L
1,2-DICHLOROPROPANE	BDL	0.001	mg/L
BROMODICHLOROMETHANE	BDL	0.001	mg/L
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/L
TOLUENE	0.001	0.001	mg/L
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/L
DIBROMOCHLOROMETHANE	BDL	0.001	mg/L
CHLOROBENZENE	BDL	0.001	mg/L
ETHYLBENZENE	0.004	0.001	mg/L
M/P-XYLENE	0.007	0.001	mg/L
O-XYLENE	0.003	0.001	mg/L
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/L
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/L
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/L
1,2-DIBROMOETHANE (EDB)	BDL	0.005	mg/L

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: S. WILLIAMS Analysis Date: 19-OCT-92 Test: P233.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1000		mL
FINAL VOLUME	1.0		mL

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

Analyst: R. ROBERTS Analysis Date: 04-NOV-92 Instrument: GC/MS SVOA Test: 0505.3.0
Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	0.05	0.01	mg/L
ANTHRACENE	0.02	0.01	mg/L
BENZ(A)ANTHRACENE	BDL	0.01	mg/L
BENZO(A)PYRENE	BDL	0.01	mg/L
BENZO(B)FLUORANTHENE	BDL	0.01	mg/L
BENZO(K)FLUORANTHENE	BDL	0.01	mg/L
BIS(2-CHLOROETHYL)ETHER	BDL	0.01	mg/L

 (continued on next page)

Parameter	Result	Det. Limit	Units
CARBAZOLE	0.04	0.01	mg/L
CHRYSENE	BDL	0.01	mg/L
DIBENZ(A,H)ANTHRACENE	BDL	0.01	mg/L
FLUORANTHENE	0.01	0.01	mg/L
INDENO(1,2,3-CD)PYRENE	BDL	0.01	mg/L
NAPHTHALENE	BDL	0.01	mg/L
PHENANTHRENE	0.06	0.01	mg/L
4-CHLORO-3-METHYLPHENOL	BDL	0.01	mg/L
2-CHLOROPHENOL	BDL	0.01	mg/L
2,4-DIMETHYLPHENOL	BDL	0.01	mg/L
2,4-DINITROPHENOL	BDL	0.05	mg/L
PENTACHLOROPHENOL	BDL	0.05	mg/L
PHENOL	BDL	0.01	mg/L
TETRACHLOROPHENOL	BDL	0.01	mg/L
2,4,5-TRICHLOROPHENOL	BDL	0.01	mg/L
2,4,6-TRICHLOROPHENOL	BDL	0.01	mg/L
SURROGATE RECOVERY			
2-FLUOROPHENOL	38		% Rec
PHENOL-D5	29		% Rec
NITROBENZENE-D5	41		% Rec
2-FLUOROBIPHENYL	* 40		% Rec
2,4,6-TRIBROMOPHENOL	55		% Rec
TERPHENYL-D14	87		% Rec

*Note: * - Surrogate recovery outside of the control limits. Extract was reanalyzed with no improvement. Results have to be regarded as estimates.*

Sample Comments

ALL VOA VIALS CONTAINED BUBBLES.

** See Note for Parameter*
BDL Below Detection Limit

Sample chain of custody number 16489.

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Quality Assurance Officer: Diehmuth MB Jansen

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. 4132 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	16-OCT-92	1810	B117604
	Complete	PO Number	
	10-NOV-92	530-06-501	
	Printed	Sampled	
	24-NOV-92	15-OCT-92 16:15	

Report To

SANDRA WATSON
SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Bill To

SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: MW-13
LOG #: 10669
FIELD INFORMATION: WD 14.10 , WL 4.49, COND. 1120, PH 6.1

FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P130.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
CHROMIUM	0.039	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
COPPER	0.061	0.025	mg/L

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: W. GROVES Analysis Date: 20-OCT-92 Test: P130.6.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 30-OCT-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
ARSENIC	0.048	0.005	mg/L

 (continued on next page)

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 29-OCT-92 Test: P130.6.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 30-OCT-92 Instrument: GFAA Test: M116.2.0

Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.1

Parameter	Result	Det. Limit	Units
LEAD	0.12	0.05	mg/L

Note: Dilution 1:10

0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A

Analyst: M. CASHION Analysis Date: 16-OCT-92 Test: P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	500		mL
FINAL VOLUME	500		mL

FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.1

Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.1

Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.025	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P133.6.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 30-OCT-92 Instrument: GFAA Test: M103.2.1

Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 29-OCT-92 Instrument: GFAA Test: M116.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: M. KATTNER Analysis Date: 29-OCT-92 Instrument: GC/PID ELCD Test: O461.1.0

Parameter	Result	Det. Limit	Units
DICHLORODIFLUOROMETHANE	BDL	0.05	ug/L
CHLOROMETHANE	BDL	0.05	ug/L
VINYL CHLORIDE	BDL	0.05	ug/L
BROMOMETHANE	BDL	0.05	ug/L
CHLOROETHANE	BDL	0.05	ug/L
TRICHLOROFLUOROMETHANE	BDL	0.05	ug/L
1,1-DICHLOROETHENE	BDL	0.01	ug/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	0.01	ug/L
TRANS-1,2-DICHLOROETHENE	BDL	0.01	ug/L
1,1-DICHLOROETHANE	BDL	0.01	ug/L
CHLOROFORM	BDL	0.01	ug/L
1,1,1-TRICHLOROETHANE	BDL	0.01	ug/L
CARBON TETRACHLORIDE	BDL	0.01	ug/L
BENZENE	0.10	0.01	ug/L
1,2-DICHLOROETHANE	BDL	0.001	ug/L
TRICHLOROETHENE	BDL	0.01	ug/L
1,2-DICHLOROPROPANE	BDL	0.01	ug/L
BROMODICHLOROMETHANE	BDL	0.01	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	0.01	ug/L
TOLUENE	0.01	0.01	ug/L
1,1,2-TRICHLOROETHANE	BDL	0.01	ug/L
TETRACHLOROETHENE	BDL	0.01	ug/L
DIBROMOCHLOROMETHANE	BDL	0.01	ug/L
1,2-DIBROMOETHANE	BDL	0.05	ug/L
CHLOROBENZENE	BDL	0.01	ug/L
ETHYLBENZENE	0.04	0.01	ug/L
M/P-XYLENE	0.05	0.01	ug/L
O-XYLENE	0.02	0.01	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	0.01	ug/L
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.05	ug/L
2-CHLOROETHYLVINYLETHER	BDL	0.01	ug/L

Note: Sample was diluted 1:10

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: S. WILLIAMS Analysis Date: 19-OCT-92 Test: P233.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	990		mL
FINAL VOLUME	1.0		mL

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

Analyst: R. ROBERTS Analysis Date: 04-NOV-92 Instrument: GC/MS SVOA Test: O505.3.0
Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	* 1.1	0.2	mg/L
ANTHRACENE	* 0.26	0.2	mg/L
BENZ(A)ANTHRACENE	0.12	0.01	mg/L
BENZO(A)PYRENE	0.04	0.01	mg/L

 (continued on next page)

HERITAGE LABORATORIES, INC. Lab Sample ID: B117604

Parameter	Result	Det. Limit	Units
BENZO(B)FLUORANTHENE	0.08	0.01	mg/L
BENZO(K)FLUORANTHENE	BDL	0.01	mg/L
BIS(2-CHLOROETHYL)ETHER	BDL	0.01	mg/L
CARBAZOLE	* 0.32	0.2	mg/L
CHRYSENE	0.10	0.01	mg/L
DIBENZ(A,H)ANTHRACENE	BDL	0.01	mg/L
FLUORANTHENE	* 0.76	0.2	mg/L
INDENO(1,2,3-CD)PYRENE	0.02	0.01	mg/L
NAPHTHALENE	* 3.5	0.2	mg/L
PHENANTHRENE	* 1.6	0.2	mg/L
4-CHLORO-3-METHYLPHENOL	BDL	0.01	mg/L
2-CHLOROPHENOL	BDL	0.01	mg/L
2,4-DIMETHYLPHENOL	0.01	0.01	ug/L
2,4-DINITROPHENOL	BDL	0.05	ug/L
PENTACHLOROPHENOL	BDL	0.05	mg/L
PHENOL	BDL	0.01	mg/L
TETRACHLOROPHENOL	BDL	0.01	mg/L
2,4,5-TRICHLOROPHENOL	BDL	0.01	mg/L
2,4,6-TRICHLOROPHENOL	BDL	0.01	mg/L
SURROGATE RECOVERY			
2-FLUOROPHENOL	46		mg/L
PHENOL-D5	34		mg/L
NITROBENZENE-D5	50		mg/L
2-FLUOROBIPHENYL	78		mg/L
2,4,6-TRIBROMOPHENOL	88		mg/L
TERPHENYL-D14	90		mg/L

*Note: * - Taken from 1:20 dilution (GB2890.c) 11/08/92*

Sample Comments

** See Note for Parameter*
BDL Below Detection Limit

Sample chain of custody number 164902.

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Quality Assurance Officer: deSmith MB Jansen

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. 4132 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	17-OCT-92	1810	B117640
	Complete	PO Number	
	18-NOV-92	530-06-501	
	Printed	Sampled	
	24-NOV-92	16-OCT-92 08:30	

Report To

SANDRA WATSON
SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Bill To

SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: MW-14
LOG #: 10673
FIELD INFORMATION: WD 18.64, WL 4.00, COND. 72000, PH 6.4

FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P130.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
CHROMIUM	0.069	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
COPPER	0.059	0.025	mg/L

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: W. GROVES Analysis Date: 20-OCT-92 Test: P130.6.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 31-OCT-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
ARSENIC	0.018	0.005	mg/L

 (continued on next page)

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 29-OCT-92 Test: P130.6.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 30-OCT-92 Instrument: GFAA Test: M116.2.0

Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.1

Parameter	Result	Det. Limit	Units
LEAD	0.050	0.015	mg/L

0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A

Analyst: H. KRASKA Analysis Date: 17-OCT-92 Test: P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	500		mL
FINAL VOLUME	500		mL

FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.1

Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.1

Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.025	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P133.6.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 29-OCT-92 Instrument: GFAA Test: M103.2.1

Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 29-OCT-92 Instrument: GFAA Test: M116.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: M. KATTNER Analysis Date: 31-OCT-92 Instrument: GC/PID ELCD Test: D461.1.0

Parameter	Result	Det. Limit	Units
DICHLORODIFLUOROMETHANE	BDL	.025	mg/L
CHLOROMETHANE	BDL	.025	mg/L
VINYL CHLORIDE	BDL	.025	mg/L
BROMOMETHANE	BDL	.025	mg/L
CHLOROETHANE	BDL	.025	mg/L
TRICHLOROFLUOROMETHANE	BDL	.025	mg/L
1,1-DICHLOROETHENE	BDL	.005	mg/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	.005	mg/L
TRANS-1,2-DICHLOROETHENE	BDL	.005	mg/L
1,1-DICHLOROETHANE	BDL	.005	mg/L
CHLOROFORM	BDL	.005	mg/L
1,1,1-TRICHLOROETHANE	BDL	.005	mg/L
CARBON TETRACHLORIDE	BDL	.005	mg/L
BENZENE	0.019	.005	mg/L
1,2-DICHLOROETHANE	BDL	0.001	mg/L
TRICHLOROETHENE	BDL	.005	mg/L
1,2-DICHLOROPROPANE	BDL	.005	mg/L
BROMODICHLOROMETHANE	BDL	.005	mg/L
CIS-1,3-DICHLOROPROPENE	BDL	.005	mg/L
TOLUENE	0.028	.005	mg/L
1,1,2-TRICHLOROETHANE	BDL	.005	mg/L
DIBROMOCHLOROMETHANE	BDL	.005	mg/L
CHLOROBENZENE	BDL	.005	mg/L
ETHYLBENZENE	0.060	.005	mg/L
M/P-XYLENE	0.078	.005	mg/L
O-XYLENE	0.038	.005	mg/L
1,1,2,2-TETRACHLOROETHANE	BDL	.005	mg/L
METHYL-T-BUTYL ETHER (MTBE)	BDL	.025	mg/L
2-CHLOROETHYLVINYLETHER	BDL	.005	mg/L
1,2-DIBROMOETHANE (EDB)	BDL	.025	mg/L

Note: Analysis performed outside of the holding time.
Sample was diluted 1:5
Sample was confirmed by GC/MS

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: S. WILLIAMS Analysis Date: 19-OCT-92 Test: P233.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	970		mL
FINAL VOLUME	1.0		mL

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

Analyst: R. ROBERTS Analysis Date: 04-NOV-92 Instrument: GC/MS SVOA Test: D505.3.0
Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	** 0.81	0.01	mg/L
ANTHRACENE	** 0.26	0.01	mg/L
BENZ(A)ANTHRACENE	0.14	0.01	mg/L

 (continued on next page)

HERITAGE LABORATORIES, INC. Lab Sample ID: B117640

Parameter	Result	Det. Limit	Units
BENZO(A)PYRENE	0.05	0.01	mg/L
BENZO(B)FLUORANTHENE	0.11	0.01	mg/L
BENZO(K)FLUORANTHENE	BDL	0.01	mg/L
BIS(2-CHLOROETHYL)ETHER	BDL	0.01	mg/L
CARBAZOLE	0.19	0.01	mg/L
CHRYSENE	0.09	0.01	mg/L
DIBENZ(A,H)ANTHRACENE	BDL	0.01	mg/L
FLUORANTHENE	** 0.78	0.01	mg/L
INDENO(1,2,3-CD)PYRENE	0.02	0.01	mg/L
NAPHTHALENE	*** 4.9	0.01	mg/L
PHENANTHRENE	** 1.4	0.01	mg/L
4-CHLORO-3-METHYLPHENOL	BDL	0.01	mg/L
2-CHLOROPHENOL	BDL	0.01	mg/L
2,4-DIMETHYLPHENOL	BDL	0.01	mg/L
2,4-DINITROPHENOL	BDL	0.05	mg/L
PENTACHLOROPHENOL	BDL	0.05	mg/L
PHENOL	BDL	0.01	mg/L
TETRACHLOROPHENOL	BDL	0.01	mg/L
2,4,5-TRICHLOROPHENOL	BDL	0.01	mg/L
2,4,6-TRICHLOROPHENOL	BDL	0.01	mg/L
SURROGATE RECOVERY			
2-FLUOROPHENOL	43		% Rec
PHENOL-D5	34		% Rec
NITROBENZENE-D5	* 0		% Rec
2-FLUOROBIPHENYL	67		% Rec
2,4,6-TRIBROMOPHENOL	71		% Rec
TERPHENYL-D14	76		% Rec

*Note: * - Surrogate recovery outside of the control limits. Extract was reanalyzed with no improvement. Results have to be regarded as estimates. See case narrative.*
Sample reanalyzed with no improvement in internal standard areas.
*** - Taken from 1:10 dilution (GB2965.c) run on 11/14/92*
**** - Taken from 1:40 dilution (GB3014.c) run on 11/17/92*

Sample Comments

** See Note for Parameter*
*** See Note for Parameter*
**** See Note for Parameter*
BDL Below Detection Limit

Sample chain of custody number 16489.

This Certificate shall not be reproduced, except in full, without the written approval of the lab.

Quality Assurance Officer: Debbrith MB Jensen

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. 4132 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	16-OCT-92	1810	B117605
	Complete	PO Number	
	10-NOV-92	530-06-501	
	Printed	Sampled	
	24-NOV-92	15-OCT-92 17:10	

Report To

SANDRA WATSON
SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Bill To

SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: MW-15
LOG #: 10670
FIELD INFORMATION: WD 13.90, WL 4.50, COND. 830, PH 6.6

FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P130.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
CHROMIUM	0.031	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
COPPER	0.050	0.025	mg/L

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: W. GROVES Analysis Date: 20-OCT-92 Test: P130.6.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 30-OCT-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
ARSENIC	0.11	0.05	mg/L

Note: Dilution 1:10

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 29-OCT-92 Test: P130.6.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 30-OCT-92 Instrument: GFAA Test: M116.2.0

Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.1

Parameter	Result	Det. Limit	Units
LEAD	0.042	0.015	mg/L

Note: Dilution 1:3

0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A

Analyst: M. CASHION Analysis Date: 16-OCT-92 Test: P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	500		mL
FINAL VOLUME	500		mL

FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.1

Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.1

Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.025	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P133.6.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 30-OCT-92 Instrument: GFAA Test: M103.2.1

Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
ARSENIC	0.023	0.005	mg/L

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 29-OCT-92 Instrument: GFAA Test: M116.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: M. KATTNER Analysis Date: 29-OCT-92 Instrument: GC/PID ELCD Test: 0461.1.0

Parameter	Result	Det. Limit	Units
DICHLORODIFLUOROMETHANE	BDL	0.005	mg/L
CHLOROMETHANE	BDL	0.005	mg/L
VINYL CHLORIDE	BDL	0.005	mg/L
BROMOMETHANE	BDL	0.005	mg/L
CHLOROETHANE	BDL	0.005	mg/L
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/L
1,1-DICHLOROETHENE	BDL	0.001	mg/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	0.001	mg/L
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/L
1,1-DICHLOROETHANE	BDL	0.005	mg/L
CHLOROFORM	BDL	0.001	mg/L
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/L
CARBON TETRACHLORIDE	BDL	0.001	mg/L
BENZENE	0.005	0.001	mg/L
1,2-DICHLOROETHANE	BDL	0.001	mg/L
TRICHLOROETHENE	BDL	0.001	mg/L
1,2-DICHLOROPROPANE	BDL	0.001	mg/L
BROMODICHLOROMETHANE	BDL	0.001	mg/L
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/L
TOLUENE	BDL	0.001	mg/L
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/L
DIBROMOCHLOROMETHANE	BDL	0.001	mg/L
CHLOROBENZENE	BDL	0.001	mg/L
ETHYLBENZENE	0.008	0.001	mg/L
M/P-XYLENE	0.006	0.001	mg/L
O-XYLENE	0.003	0.001	mg/L
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/L
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/L
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/L
1,2-DIBROMOETHANE (EDB)	BDL	0.005	mg/L

Note: Sample was confirmed by GC/MS

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: S. WILLIAMS Analysis Date: 19-OCT-92 Test: P233.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	995		mL
FINAL VOLUME	1.0		mL

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

Analyst: R. ROBERTS Analysis Date: 04-NOV-92 Instrument: GC/MS SVOA Test: 0505.3.0
Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	0.14	0.01	mg/L
ANTHRACENE	BDL	0.01	mg/L
BENZ(A)ANTHRACENE	BDL	0.01	mg/L
BENZO(A)PYRENE	BDL	0.01	mg/L
BENZO(B)FLUORANTHENE	BDL	0.01	mg/L

 (continued on next page)

HERITAGE LABORATORIES, INC. Lab Sample ID: B117605

Parameter	Result	Det. Limit	Units
BENZO(K)FLUORANTHENE	BDL	0.01	mg/L
BIS(2-CHLOROETHYL)ETHER	BDL	0.01	mg/L
CARBAZOLE	0.03	0.01	mg/L
CHRYSENE	BDL	0.01	mg/L
DIBENZ(A,H)ANTHRACENE	BDL	0.01	mg/L
FLUORANTHENE	BDL	0.01	mg/L
INDENO(1,2,3-CD)PYRENE	BDL	0.01	mg/L
NAPHTHALENE	BDL	0.01	mg/L
PHENANTHRENE	0.05	0.01	mg/L
4-CHLORO-3-METHYLPHENOL	BDL	0.01	mg/L
2-CHLOROPHENOL	BDL	0.01	mg/L
2,4-DIMETHYLPHENOL	0.03	0.01	mg/L
2,4-DINITROPHENOL	BDL	0.05	mg/L
PENTACHLOROPHENOL	BDL	0.05	mg/L
PHENOL	BDL	0.01	mg/L
TETRACHLOROPHENOL	BDL	0.01	mg/L
2,4,5-TRICHLOROPHENOL	BDL	0.01	mg/L
2,4,6-TRICHLOROPHENOL	BDL	0.01	mg/L
SURROGATE RECOVERY			
2-FLUOROPHENOL	47		% Rec
PHENOL-D5	34		% Rec
NITROBENZENE-D5	86		% Rec
2-FLUOROBIPHENYL	82		% Rec
2,4,6-TRIBROMOPHENOL	90		% Rec
TERPHENYL-D14	81		% Rec

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 16490.

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Quality Assurance Officer: Helmuth MB Janssen

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. 4132 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	15-OCT-92	1810	B117580
	Complete: 16-NOV-92	PO Number: 530-06-501	
	Printed: 23-NOV-92	Sampled: 14-OCT-92 15:10	

Report To

SANDRA WATSON
SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Bill To

SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: MW-16
LOG #: 10661
FIELD INFORMATION: WD 13.97, WL 5.04, COND. 1520, PH 6.5

FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P130.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
COPPER	0.030	0.025	mg/L

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: W. GROVES Analysis Date: 20-OCT-92 Test: P130.6.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 29-OCT-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

 (continued on next page)

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 29-OCT-92 Test: P130.6.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 30-OCT-92 Instrument: GFAA Test: M116.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.1

Parameter	Result	Det. Limit	Units
LEAD	0.012	0.005	mg/L

0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A

Analyst: M. CASHION Analysis Date: 15-OCT-92 Test: P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	500		mL
FINAL VOLUME	500		mL

FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.025	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 28-OCT-92 Instrument: GFAA Test: M116.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 29-OCT-92 Test: P133.6.1
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 30-OCT-92 Instrument: GFAA Test: M103.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.1
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: M. KATTNER Analysis Date: 27-OCT-92 Instrument: GC/PID ELCD Test: O461.1.0

Parameter	Result	Det. Limit	Units
DICHLORODIFLUOROMETHANE	BDL	0.005	mg/L
CHLOROMETHANE	BDL	0.005	mg/L
VINYL CHLORIDE	BDL	0.005	mg/L
BROMOMETHANE	BDL	0.005	mg/L
CHLOROETHANE	BDL	0.005	mg/L
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/L
1,1-DICHLOROETHENE	BDL	0.001	mg/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	0.001	0.001	mg/L
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/L
1,1-DICHLOROETHANE	BDL	0.001	mg/L
CHLOROFORM	BDL	0.001	mg/L
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/L
CARBON TETRACHLORIDE	BDL	0.001	mg/L
BENZENE	BDL	0.001	mg/L
1,2-DICHLOROETHANE	BDL	0.001	mg/L
TRICHLOROETHENE	BDL	0.001	mg/L
1,2-DICHLOROPROPANE	BDL	0.001	mg/L
BROMODICHLOROMETHANE	BDL	0.001	mg/L
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/L
TOLUENE	BDL	0.001	mg/L
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/L
DIBROMOCHLOROMETHANE	BDL	0.001	mg/L
CHLOROBENZENE	BDL	0.001	mg/L
ETHYLBENZENE	BDL	0.001	mg/L
M/P-XYLENE	BDL	0.001	mg/L
O-XYLENE	BDL	0.001	mg/L
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/L
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/L
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/L
1,2-DIBROMOETHANE (EDB)	BDL	0.005	mg/L

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: S. WILLIAMS Analysis Date: 16-OCT-92 Test: P233.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	990		mL
FINAL VOLUME	1.0		mL

 (continued on next page)

HERITAGE LABORATORIES, INC. Lab Sample ID: B117580

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

Analyst: R. ROBERTS Analysis Date: 07-NOV-92 Instrument: GC/MS SVOA Test: 0505.3.0

Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	BDL	0.01	mg/L
ANTHRACENE	BDL	0.01	mg/L
BENZ(A)ANTHRACENE	BDL	0.01	mg/L
BENZO(A)PYRENE	BDL	0.01	mg/L
BENZO(B)FLUORANTHENE	BDL	0.01	mg/L
BENZO(K)FLUORANTHENE	BDL	0.01	mg/L
BIS(2-CHLOROETHYL)ETHER	BDL	0.01	mg/L
CARBAZOLE	BDL	0.01	mg/L
CHRYSENE	BDL	0.01	mg/L
DIBENZ(A,H)ANTHRACENE	BDL	0.01	mg/L
FLUORANTHENE	BDL	0.01	mg/L
INDENO(1,2,3-CD)PYRENE	BDL	0.01	mg/L
NAPHTHALENE	BDL	0.01	mg/L
PHENANTHRENE	BDL	0.01	mg/L
4-CHLORO-3-METHYLPHENOL	BDL	0.01	mg/L
2-CHLOROPHENOL	BDL	0.01	mg/L
2,4-DIMETHYLPHENOL	BDL	0.01	mg/L
2,4-DINITROPHENOL	BDL	0.05	mg/L
PENTACHLOROPHENOL	BDL	0.05	mg/L
PHENOL	BDL	0.01	mg/L
TETRACHLOROPHENOL	BDL	0.01	mg/L
2,4,5-TRICHLOROPHENOL	BDL	0.01	mg/L
2,4,6-TRICHLOROPHENOL	BDL	0.01	mg/L
SURROGATE RECOVERY			
2-FLUOROPHENOL	36		% Rec
PHENOL-D5	27		% Rec
NITROBENZENE-D5	* 8.7		% Rec
2-FLUOROBIPHENYL	80		% Rec
2,4,6-TRIBROMOPHENOL	95		% Rec
TERPHENYL-D14	78		% Rec

*Note: * - Surrogate recovery outside of the control limits. Extract was reanalyzed with no improvement. Results have to be regarded as estimates. See case narrative.*

Sample Comments

** See Note for Parameter*
BDL Below Detection Limit

Sample chain of custody number 16491.

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Quality Assurance Officer: Chelsmith MB Jansen

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. 4132 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	15-OCT-92	1810	B117581
	Complete	PO Number	
	16-NOV-92	530-06-501	
	Printed	Sampled	
	23-NOV-92	14-OCT-92 16:00	

Report To	Bill To
SANDRA WATSON SOUTHERN WOOD PIEDMONT P.O. BOX 5447 SPARTANBURG, SC 29304	SOUTHERN WOOD PIEDMONT P.O. BOX 5447 SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: MW-17
LOG #: 10662
FIELD INFORMATION: WD 14.43, WL 4.99, COND. 1320, PH 6.6

FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P130.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
CHROMIUM	0.035	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
COPPER	0.054	0.025	mg/L

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: W. GROVES Analysis Date: 20-OCT-92 Test: P130.6.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 30-OCT-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
ARSENIC	0.04	0.005	mg/L

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GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 29-OCT-92 Test: P130.6.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 30-OCT-92 Instrument: GFAA Test: M116.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.1

Parameter	Result	Det. Limit	Units
LEAD	0.045	0.010	mg/L

0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A

Analyst: M. CASHION Analysis Date: 15-OCT-92 Test: P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	500		mL
FINAL VOLUME	500		mL

FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.025	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 28-OCT-92 Instrument: GFAA Test: M116.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 29-OCT-92 Test: P133.6.1
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 30-OCT-92 Instrument: GFAA Test: M103.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.1
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
ARSENIC	0.0057	0.005	mg/L

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: M. KATTNER Analysis Date: 27-OCT-92 Instrument: GC/PID ELCD Test: O461.1.0

Parameter	Result	Det. Limit	Units
DICHLORODIFLUOROMETHANE	BDL	0.005	mg/L
CHLOROMETHANE	BDL	0.005	mg/L
VINYL CHLORIDE	BDL	0.005	mg/L
BROMOMETHANE	BDL	0.005	mg/L
CHLOROETHANE	BDL	0.005	mg/L
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/L
1,1-DICHLOROETHENE	BDL	0.001	mg/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	0.003	0.001	mg/L
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/L
1,1-DICHLOROETHANE	BDL	0.001	mg/L
CHLOROFORM	BDL	0.001	mg/L
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/L
CARBON TETRACHLORIDE	BDL	0.001	mg/L
BENZENE	BDL	0.001	mg/L
1,2-DICHLOROETHANE	BDL	0.001	mg/L
TRICHLOROETHENE	BDL	0.001	mg/L
1,2-DICHLOROPROPANE	BDL	0.001	mg/L
BROMODICHLOROMETHANE	BDL	0.001	mg/L
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/L
TOLUENE	0.017	0.001	mg/L
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/L
DIBROMOCHLOROMETHANE	BDL	0.001	mg/L
CHLOROBENZENE	BDL	0.001	mg/L
ETHYLBENZENE	0.006	0.001	mg/L
M/P-XYLENE	0.016	0.001	mg/L
O-XYLENE	0.010	0.001	mg/L
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/L
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/L
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/L
1,2-DIBROMOETHANE (EDB)	BDL	0.005	mg/L

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: S. WILLIAMS Analysis Date: 16-OCT-92 Test: P233.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	995		mL
FINAL VOLUME	1.0		mL

HERITAGE LABORATORIES, INC. Lab Sample ID: B117581

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

Analyst: R. ROBERTS Analysis Date: 07-NOV-92 Instrument: GC/MS SVOA Test: 0505.3.0

Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	BDL	0.01	mg/L
ANTHRACENE	0.02	0.01	mg/L
BENZ(A)ANTHRACENE	BDL	0.01	mg/L
BENZO(A)PYRENE	BDL	0.01	mg/L
BENZO(B)FLUORANTHENE	0.01	0.01	mg/L
BENZO(K)FLUORANTHENE	BDL	0.01	mg/L
BIS(2-CHLOROETHYL)ETHER	BDL	0.01	mg/L
CARBAZOLE	BDL	0.01	mg/L
CHRYSENE	BDL	0.01	mg/L
DIBENZ(A,H)ANTHRACENE	BDL	0.01	mg/L
FLUORANTHENE	0.08	0.01	mg/L
INDENO(1,2,3-CD)PYRENE	BDL	0.01	mg/L
NAPHTHALENE	BDL	0.01	mg/L
PHENANTHRENE	0.06	0.01	mg/L
4-CHLORO-3-METHYLPHENOL	BDL	0.01	mg/L
2-CHLOROPHENOL	BDL	0.01	mg/L
2,4-DIMETHYLPHENOL	BDL	0.01	mg/L
2,4-DINITROPHENOL	BDL	0.05	mg/L
PENTACHLOROPHENOL	BDL	0.05	mg/L
PHENOL	BDL	0.01	mg/L
TETRACHLOROPHENOL	BDL	0.01	mg/L
2,4,5-TRICHLOROPHENOL	BDL	0.01	mg/L
2,4,6-TRICHLOROPHENOL	BDL	0.01	mg/L
SURROGATE RECOVERY			
2-FLUOROPHENOL	33		% Rec
PHENOL-D5	* 2.5		% Rec
NITROBENZENE-D5	104		% Rec
2-FLUOROBIPHENYL	70		% Rec
2,4,6-TRIBROMOPHENOL	75		% Rec
TERPHENYL-D14	81		% Rec

*Note: * - Surrogate recovery outside of the control limits. Extract was reanalyzed with no improvement. Results have to be regarded as estimates. See case narrative.*

Sample Comments

* *See Note for Parameter*

BDL Below Detection Limit

Sample chain of custody number 16491.

This Certificate shall not be reproduced, except in full, without the written approval of the lab.

Quality Assurance Officer: Helmuth MB Jansen

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. 4132 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	16-OCT-92	1810	B117602
	Complete	PO Number	
	10-NOV-92	530-06-501	
	Printed	Sampled	
	24-NOV-92	15-OCT-92 13:55	

Report To

SANDRA WATSON
SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Bill To

SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: MW-18
LOG #: 10667
FIELD INFORMATION: WD 13.48, WL 4.14, COND. 72000, PH 5.0

FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P130.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
CHROMIUM	0.67	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
COPPER	0.051	0.025	mg/L

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: W. GROVES Analysis Date: 20-OCT-92 Test: P130.6.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 29-OCT-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
ARSENIC	0.0058	0.005	mg/L

 (continued on next page)

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 29-OCT-92 Test: P130.6.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 30-OCT-92 Instrument: GFAA Test: M116.2.0

Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.1

Parameter	Result	Det. Limit	Units
LEAD	0.081	0.05	mg/L

Note: Dilution 1:10

0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A

Analyst: M. CASHION Analysis Date: 16-OCT-92 Test: P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	500		mL
FINAL VOLUME	500		mL

FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.1

Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.1

Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.025	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P133.6.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 30-OCT-92 Instrument: GFAA Test: M103.2.1

Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 29-OCT-92 Instrument: GFAA Test: M116.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: M. KATTNER Analysis Date: 28-OCT-92 Instrument: GC/PID ELCD Test: O461.1.0

Parameter	Result	Det. Limit	Units
DICHLORODIFLUOROMETHANE	BDL	0.005	mg/L
CHLOROMETHANE	BDL	0.005	mg/L
VINYL CHLORIDE	BDL	0.005	mg/L
BROMOMETHANE	BDL	0.005	mg/L
CHLOROETHANE	BDL	0.005	mg/L
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/L
1,1-DICHLOROETHENE	BDL	0.001	mg/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	0.002	0.001	mg/L
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/L
1,1-DICHLOROETHANE	BDL	0.001	mg/L
CHLOROFORM	BDL	0.001	mg/L
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/L
CARBON TETRACHLORIDE	BDL	0.001	mg/L
BENZENE	BDL	0.001	mg/L
1,2-DICHLOROETHANE	BDL	0.001	mg/L
TRICHLOROETHENE	BDL	0.001	mg/L
1,2-DICHLOROPROPANE	BDL	0.001	mg/L
BROMODICHLOROMETHANE	BDL	0.001	mg/L
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/L
TOLUENE	BDL	0.001	mg/L
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/L
DIBROMOCHLOROMETHANE	BDL	0.001	mg/L
CHLOROBENZENE	BDL	0.001	mg/L
ETHYLBENZENE	BDL	0.001	mg/L
M/P-XYLENE	BDL	0.001	mg/L
O-XYLENE	BDL	0.001	mg/L
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/L
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/L
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/L
1,2-DIBROMOETHANE (EDB)	BDL	0.005	mg/L

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: S. WILLIAMS Analysis Date: 19-OCT-92 Test: P233.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1000		mL
FINAL VOLUME	1.0		mL

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

Analyst: R. ROBERTS Analysis Date: 02-NOV-92 Instrument: GC/MS SVOA Test: O505.3.0
Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	BDL	0.01	mg/L
ANTHRACENE	BDL	0.01	mg/L
BENZ(A)ANTHRACENE	BDL	0.01	mg/L
BENZO(A)PYRENE	BDL	0.01	mg/L
BENZO(B)FLUORANTHENE	BDL	0.01	mg/L
BENZO(K)FLUORANTHENE	BDL	0.01	mg/L
BIS(2-CHLOROETHYL)ETHER	BDL	0.01	mg/L

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HERITAGE LABORATORIES, INC. Lab Sample ID: B117602

Parameter	Result	Det. Limit	Units
CARBAZOLE	BDL	0.01	mg/L
CHRYSENE	BDL	0.01	mg/L
DIBENZ(A,H)ANTHRACENE	BDL	0.01	mg/L
FLUORANTHENE	BDL	0.01	mg/L
INDENO(1,2,3-CD)PYRENE	BDL	0.01	mg/L
NAPHTHALENE	BDL	0.01	mg/L
PHENANTHRENE	BDL	0.01	mg/L
4-CHLORO-3-METHYLPHENOL	BDL	0.01	mg/L
2-CHLOROPHENOL	BDL	0.01	mg/L
2,4-DIMETHYLPHENOL	BDL	0.01	mg/L
2,4-DINITROPHENOL	BDL	0.05	mg/L
PENTACHLOROPHENOL	BDL	0.05	mg/L
PHENOL	BDL	0.01	mg/L
TETRACHLOROPHENOL	BDL	0.01	mg/L
2,4,5-TRICHLOROPHENOL	BDL	0.01	mg/L
2,4,6-TRICHLOROPHENOL	BDL	0.01	mg/L
.			
SURROGATE RECOVERY			

2-FLUOROPHENOL	25		% Rec
PHENOL-D5	20		% Rec
NITROBENZENE-D5	65		% Rec
2-FLUOROBIPHENYL	84		% Rec
2,4,6-TRIBROMOPHENOL	27		% Rec
TERPHENYL-D14	93		% Rec

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 16490.

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Quality Assurance Officer: Deborah MB Jensen

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. 4132 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	17-OCT-92	1810	B117642
	Complete	PO Number	
	16-NOV-92	530-06-501	
	Printed	Sampled	
	24-NOV-92	16-OCT-92 10:40	

Report To

SANDRA WATSON
SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Bill To

SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: MW-19
LOG #: 10675
FIELD INFORMATION: WD 15.12, WL 2.92, COND. 105, PH 6.0

FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P130.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
CHROMIUM	0.030	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.025	mg/L

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: W. GROVES Analysis Date: 20-OCT-92 Test: P130.6.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 03-NOV-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

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GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 29-OCT-92 Test: P130.6.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 30-OCT-92 Instrument: GFAA Test: M116.2.0

Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.1

Parameter	Result	Det. Limit	Units
LEAD	0.0050	0.005	mg/L

0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A

Analyst: M. KRASKA Analysis Date: 17-OCT-92 Test: P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	500		mL
FINAL VOLUME	500		mL

FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.1

Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.1

Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.025	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P133.6.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 29-OCT-92 Instrument: GFAA Test: M116.2.1

Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 29-OCT-92 Test: P133.6.1
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 31-OCT-92 Instrument: GFAA Test: M103.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.1
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: M. KATTNER Analysis Date: 29-OCT-92 Instrument: GC/PID ELCD Test: D461.1.0

Parameter	Result	Det. Limit	Units
DICHLORODIFLUOROMETHANE	BDL	0.005	mg/L
CHLOROMETHANE	BDL	0.005	mg/L
VINYL CHLORIDE	BDL	0.005	mg/L
BROMOMETHANE	BDL	0.005	mg/L
CHLOROETHANE	BDL	0.005	mg/L
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/L
1,1-DICHLOROETHENE	BDL	0.001	mg/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	0.001	mg/L
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/L
1,1-DICHLOROETHANE	BDL	0.001	mg/L
CHLOROFORM	BDL	0.001	mg/L
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/L
CARBON TETRACHLORIDE	BDL	0.001	mg/L
BENZENE	BDL	0.001	mg/L
1,2-DICHLOROETHANE	BDL	0.001	mg/L
TRICHLOROETHENE	BDL	0.001	mg/L
1,2-DICHLOROPROPANE	BDL	0.001	mg/L
BROMODICHLOROMETHANE	BDL	0.001	mg/L
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/L
TOLUENE	0.001	0.001	mg/L
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/L
DIBROMOCHLOROMETHANE	BDL	0.001	mg/L
CHLOROBENZENE	BDL	0.001	mg/L
ETHYLBENZENE	0.011	0.001	mg/L
M/P-XYLENE	0.007	0.001	mg/L
O-XYLENE	0.005	0.001	mg/L
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/L
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/L
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/L
1,2-DIBROMOETHANE (EDB)	BDL	0.005	mg/L

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: S. WILLIAMS Analysis Date: 19-OCT-92 Test: P233.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1000		mL
FINAL VOLUME	1.0		mL

HERITAGE LABORATORIES, INC. Lab Sample ID: B117642

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

Analyst: R. ROBERTS Analysis Date: 05-NOV-92 Instrument: GC/MS SVOA Test: 0505.3.0

Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	0.18	0.01	mg/L
ANTHRACENE	0.01	0.01	mg/L
BENZ(A)ANTHRACENE	BDL	0.01	mg/L
BENZO(A)PYRENE	BDL	0.01	mg/L
BENZO(B)FLUORANTHENE	BDL	0.01	mg/L
BENZO(K)FLUORANTHENE	BDL	0.01	mg/L
BIS(2-CHLOROETHYL)ETHER	BDL	0.01	mg/L
CARBAZOLE	0.07	0.01	mg/L
CHRYSENE	BDL	0.01	mg/L
DIBENZ(A,H)ANTHRACENE	BDL	0.01	mg/L
FLUORANTHENE	0.02	0.01	mg/L
INDENO(1,2,3-CD)PYRENE	BDL	0.01	mg/L
NAPHTHALENE	** 0.30	0.10	mg/L
PHENANTHRENE	0.08	0.01	mg/L
4-CHLORO-3-METHYLPHENOL	BDL	0.01	mg/L
2-CHLOROPHENOL	BDL	0.01	mg/L
2,4-DIMETHYLPHENOL	BDL	0.01	mg/L
2,4-DINITROPHENOL	BDL	0.05	mg/L
PENTACHLOROPHENOL	BDL	0.05	mg/L
PHENOL	BDL	0.01	mg/L
TETRACHLOROPHENOL	BDL	0.01	mg/L
2,4,5-TRICHLOROPHENOL	BDL	0.01	mg/L
2,4,6-TRICHLOROPHENOL	BDL	0.01	mg/L
SURROGATE RECOVERY			
2-FLUOROPHENOL	37		% Rec
PHENOL-D5	30		% Rec
NITROBENZENE-D5	56		% Rec
2-FLUOROBIPHENYL	68		% Rec
2,4,6-TRIBROMOPHENOL	95		% Rec
TERPHENYL-D14	106		% Rec

*Note: ** - Taken from 1:10 dilution (GB2966.c) on 11/14/92*

Sample Comments

ALL VOA VIALS CONTAINED BUBBLES.

*** See Note for Parameter*
BDL Below Detection Limit

Sample chain of custody number 16489.

This Certificate shall not be reproduced, except in full, without the written approval of the lab.

Quality Assurance Officer: Helmuth MB Jansen

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. 4132 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	17-OCT-92	1810	B117643.
	Complete	PO Number	
	11-NOV-92	530-06-501	
	Printed	Sampled	
	24-NOV-92	16-OCT-92 11:15	

Report To

SANDRA WATSON
SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Bill To

SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: MW-19A
LOG #: 10676
FIELD INFORMATION: WD 33.27, WL 2.91, COND. 150, PH 6.8

FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P130.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
CHROMIUM	0.011	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.025	mg/L

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: W. GROVES Analysis Date: 20-OCT-92 Test: P130.6.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 31-OCT-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
ARSENIC	0.0050	0.005	mg/L

 (continued on next page)

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 29-OCT-92 Test: P130.6.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 30-OCT-92 Instrument: GFAA Test: M116.2.0

Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.1

Parameter	Result	Det. Limit	Units
LEAD	0.011	0.005	mg/L

0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A

Analyst: M. KRASKA Analysis Date: 17-OCT-92 Test: P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	500		mL
FINAL VOLUME	500		mL

FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.1

Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.1

Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.025	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P133.6.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 29-OCT-92 Instrument: GFAA Test: M116.2.1

Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 29-OCT-92 Test: P133.6.1
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 31-OCT-92 Instrument: GFAA Test: M103.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.1
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: M. KATTNER Analysis Date: 31-OCT-92 Instrument: GC/PID ELCD Test: O461.1.0

Parameter	Result	Det. Limit	Units
DICHLORODIFLUOROMETHANE	BDL	0.005	mg/L
CHLOROMETHANE	BDL	0.005	mg/L
VINYL CHLORIDE	BDL	0.005	mg/L
BROMOMETHANE	BDL	0.005	mg/L
CHLOROETHANE	BDL	0.005	mg/L
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/L
1,1-DICHLOROETHENE	BDL	0.001	mg/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	0.001	mg/L
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/L
1,1-DICHLOROETHANE	BDL	0.001	mg/L
CHLOROFORM	0.001	0.001	mg/L
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/L
CARBON TETRACHLORIDE	BDL	0.001	mg/L
BENZENE	BDL	0.001	mg/L
1,2-DICHLOROETHANE	BDL	0.001	mg/L
TRICHLOROETHENE	BDL	0.001	mg/L
1,2-DICHLOROPROPANE	BDL	0.001	mg/L
BROMODICHLOROMETHANE	BDL	0.001	mg/L
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/L
TOLUENE	BDL	0.001	mg/L
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/L
DIBROMOCHLOROMETHANE	BDL	0.001	mg/L
CHLOROBENZENE	BDL	0.001	mg/L
ETHYLBENZENE	BDL	0.001	mg/L
M/P-XYLENE	BDL	0.001	mg/L
O-XYLENE	BDL	0.001	mg/L
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/L
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/L
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/L
1,2-DIBROMOETHANE (EDB)	BDL	0.005	mg/L

Note: Analysis performed outside of the holding time.

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: S. WILLIAMS Analysis Date: 20-OCT-92 Test: P233.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	975		mL
FINAL VOLUME	1.0		mL

HERITAGE LABORATORIES, INC. Lab Sample ID: B117643

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

Analyst: R. ROBERTS Analysis Date: 05-NOV-92 Instrument: GC/MS SVOA Test: 0505.3.0

Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	BDL	0.01	mg/L
ANTHRACENE	BDL	0.01	mg/L
BENZ(A)ANTHRACENE	BDL	0.01	mg/L
BENZO(A)PYRENE	BDL	0.01	mg/L
BENZO(B)FLUORANTHENE	BDL	0.01	mg/L
BENZO(K)FLUORANTHENE	BDL	0.01	mg/L
BIS(2-CHLOROETHYL)ETHER	BDL	0.01	mg/L
CARBAZOLE	BDL	0.01	mg/L
CHRYSENE	BDL	0.01	mg/L
DIBENZ(A,H)ANTHRACENE	BDL	0.01	mg/L
FLUORANTHENE	BDL	0.01	mg/L
INDENO(1,2,3-CD)PYRENE	BDL	0.01	mg/L
NAPHTHALENE	BDL	0.01	mg/L
PHENANTHRENE	BDL	0.01	mg/L
4-CHLORO-3-METHYLPHENOL	BDL	0.01	mg/L
2-CHLOROPHENOL	BDL	0.01	mg/L
2,4-DIMETHYLPHENOL	BDL	0.01	mg/L
2,4-DINITROPHENOL	BDL	0.05	mg/L
PENTACHLOROPHENOL	BDL	0.05	mg/L
PHENOL	BDL	0.01	mg/L
TETRACHLOROPHENOL	BDL	0.01	mg/L
2,4,5-TRICHLOROPHENOL	BDL	0.01	mg/L
2,4,6-TRICHLOROPHENOL	BDL	0.01	mg/L
SURROGATE RECOVERY			
2-FLUOROPHENOL	36		% Rec
PHENOL-D5	26		% Rec
NITROBENZENE-D5	59		% Rec
2-FLUOROBIPHENYL	73		% Rec
2,4,6-TRIBROMOPHENOL	96		% Rec
TERPHENYL-D14	107		% Rec

Note: See case narrative.

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 16489.

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Quality Assurance Officer: Helmuth MB Janssen

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. 4132 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	17-OCT-92	1810	B117644
	Complete	PO Number	
	16-NOV-92	530-06-501	
	Printed	Sampled	
	24-NOV-92	16-OCT-92 12:20	

Report To	Bill To
SANDRA WATSON SOUTHERN WOOD PIEDMONT P.O. BOX 5447 SPARTANBURG, SC 29304	SOUTHERN WOOD PIEDMONT P.O. BOX 5447 SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: MW-20
LOG #: 10687
FIELD INFORMATION: WD 14.57, WL 2.80, COND. 240, PH 5.9

FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P130.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
COPPER	0.032	0.025	mg/L

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: W. GROVES Analysis Date: 20-OCT-92 Test: P130.6.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 31-OCT-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
ARSENIC	0.010	0.005	mg/L

 (continued on next page)

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 29-OCT-92 Test: P130.6.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 29-OCT-92 Instrument: GFAA Test: M116.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.1

Parameter	Result	Det. Limit	Units
LEAD	0.012	0.005	mg/L

0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A

Analyst: M. KRASKA Analysis Date: 17-OCT-92 Test: P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	500		mL
FINAL VOLUME	500		mL

FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.025	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 29-OCT-92 Instrument: GFAA Test: M116.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 29-OCT-92 Test: P133.6.1
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 31-OCT-92 Instrument: GFAA Test: M103.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.1
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: M. KATTNER Analysis Date: 31-OCT-92 Instrument: GC/PID ELCD Test: O461.1.0

Parameter	Result	Det. Limit	Units
DICHLORODIFLUOROMETHANE	BDL	0.005	mg/L
CHLOROMETHANE	BDL	0.005	mg/L
VINYL CHLORIDE	BDL	0.005	mg/L
BROMOMETHANE	BDL	0.005	mg/L
CHLOROETHANE	BDL	0.005	mg/L
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/L
1,1-DICHLOROETHENE	BDL	0.001	mg/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	0.001	mg/L
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/L
1,1-DICHLOROETHANE	BDL	0.001	mg/L
CHLOROFORM	BDL	0.001	mg/L
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/L
CARBON TETRACHLORIDE	BDL	0.001	mg/L
BENZENE	BDL	0.001	mg/L
1,2-DICHLOROETHANE	BDL	0.001	mg/L
TRICHLOROETHENE	BDL	0.001	mg/L
1,2-DICHLOROPROPANE	BDL	0.001	mg/L
BROMODICHLOROMETHANE	BDL	0.001	mg/L
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/L
TOLUENE	BDL	0.001	mg/L
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/L
DIBROMOCHLOROMETHANE	BDL	0.001	mg/L
CHLOROBENZENE	BDL	0.001	mg/L
ETHYLBENZENE	BDL	0.001	mg/L
M/P-XYLENE	BDL	0.001	mg/L
O-XYLENE	BDL	0.001	mg/L
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/L
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/L
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/L
1,2-DIBROMOETHANE (EDB)	BDL	0.005	mg/L

Note: Analysis performed outside of the holding time.

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: S. WILLIAMS Analysis Date: 20-OCT-92 Test: P233.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	990		mL
FINAL VOLUME	1.0		mL

HERITAGE LABORATORIES, INC. Lab Sample ID: B117644

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

Analyst: R. ROBERTS Analysis Date: 05-NOV-92 Instrument: GC/MS SVOA Test: 0505.3.0

Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	0.05	0.01	mg/L
ANTHRACENE	BDL	0.01	mg/L
BENZ(A)ANTHRACENE	BDL	0.01	mg/L
BENZO(A)PYRENE	BDL	0.01	mg/L
BENZO(B)FLUORANTHENE	BDL	0.01	mg/L
BENZO(K)FLUORANTHENE	BDL	0.01	mg/L
BIS(2-CHLOROETHYL)ETHER	BDL	0.01	mg/L
CARBAZOLE	BDL	0.01	mg/L
CHRYSENE	BDL	0.01	mg/L
DIBENZ(A,H)ANTHRACENE	BDL	0.01	mg/L
FLUORANTHENE	0.01	0.01	mg/L
INDENO(1,2,3-CD)PYRENE	BDL	0.01	mg/L
NAPHTHALENE	0.04	0.01	mg/L
PHENANTHRENE	0.05	0.01	mg/L
4-CHLORO-3-METHYLPHENOL	BDL	0.01	mg/L
2-CHLOROPHENOL	BDL	0.01	mg/L
2,4-DIMETHYLPHENOL	BDL	0.01	mg/L
2,4-DINITROPHENOL	BDL	0.05	mg/L
PENTACHLOROPHENOL	BDL	0.05	mg/L
PHENOL	BDL	0.01	mg/L
TETRACHLOROPHENOL	BDL	0.01	mg/L
2,4,5-TRICHLOROPHENOL	BDL	0.01	mg/L
2,4,6-TRICHLOROPHENOL	BDL	0.01	mg/L
SURROGATE RECOVERY			
2-FLUOROPHENOL	33		% Rec
PHENOL-D5	26		% Rec
NITROBENZENE-D5	* 0		% Rec
2-FLUOROBIPHENYL	75		% Rec
2,4,6-TRIBROMOPHENOL	93		% Rec
TERPHENYL-D14	113		% Rec

*Note: * - Surrogate recovery outside of the control limits. Extract was reanalyzed with no improvement. Results have to be regarded as estimates. See case narrative.*

Sample Comments

** See Note for Parameter*
BDL Below Detection Limit

Sample chain of custody number 16489.

This Certificate shall not be reproduced, except in full, without the written approval of the lab.

Quality Assurance Officer: Diebsmith MB Jansen

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. 4132 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	17-OCT-92	1810	B117645
	Complete	PO Number	
	16-NOV-92	530-06-501	
	Printed	Sampled	
	24-NOV-92	16-OCT-92 12:50	

Report To	Bill To
SANDRA WATSON SOUTHERN WOOD PIEDMONT P.O. BOX 5447 SPARTANBURG, SC 29304	SOUTHERN WOOD PIEDMONT P.O. BOX 5447 SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: MW-21
LOG #: 10678
FIELD INFORMATION: WD 8.96, WL 3.22, COND. 290, PH 6.7

FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P130.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
CHROMIUM	0.032	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
COPPER	0.035	0.025	mg/L

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: W. GROVES Analysis Date: 20-OCT-92 Test: P130.6.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 31-OCT-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
ARSENIC	0.028	0.005	mg/L

 (continued on next page)

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 29-OCT-92 Test: P130.6.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 29-OCT-92 Instrument: GFAA Test: M116.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.1

Parameter	Result	Det. Limit	Units
LEAD	0.061	0.050	mg/L

NOTE: DILUTION 1:10

0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A

Analyst: M. KRASKA Analysis Date: 17-OCT-92 Test: P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	500		mL
FINAL VOLUME	500		mL

FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.025	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 29-OCT-92 Instrument: GFAA Test: M116.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

FAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 29-OCT-92 Test: P133.6.1
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
NITIAL WEIGHT OR VOLUME	50		mL
INAL VOLUME	50		mL

RSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 31-OCT-92 Instrument: GFAA Test: M103.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.1
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
RSENIC	BDL	0.005	mg/L

ALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: M. KATTNER Analysis Date: 31-OCT-92 Instrument: GC/PID ELCD Test: O461.1.0

Parameter	Result	Det. Limit	Units
DICHLORODIFLUOROMETHANE	BDL	0.005	mg/L
CHLOROMETHANE	BDL	0.005	mg/L
VINYL CHLORIDE	BDL	0.005	mg/L
BROMOMETHANE	BDL	0.005	mg/L
CHLOROETHANE	BDL	0.005	mg/L
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/L
1,1-DICHLOROETHENE	BDL	0.001	mg/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	0.001	mg/L
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/L
1,1-DICHLOROETHANE	BDL	0.001	mg/L
CHLOROFORM	0.001	0.001	mg/L
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/L
CARBON TETRACHLORIDE	BDL	0.001	mg/L
BENZENE	BDL	0.001	mg/L
1,2-DICHLOROETHANE	BDL	0.001	mg/L
TRICHLOROETHENE	BDL	0.001	mg/L
1,2-DICHLOROPROPANE	BDL	0.001	mg/L
BROMODICHLOROMETHANE	BDL	0.001	mg/L
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/L
TOLUENE	BDL	0.001	mg/L
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/L
DIBROMOCHLOROMETHANE	BDL	0.001	mg/L
CHLOROBENZENE	BDL	0.001	mg/L
ETHYLBENZENE	BDL	0.001	mg/L
M/P-XYLENE	BDL	0.001	mg/L
O-XYLENE	BDL	0.001	mg/L
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/L
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/L
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/L
1,2-DIBROMOETHANE (EDB)	BDL	0.005	mg/L

Note: Analysis performed outside of the holding time.

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: S. WILLIAMS Analysis Date: 20-OCT-92 Test: P233.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	985		mL
FINAL VOLUME	1.0		mL

:RITAGE LABORATORIES, INC. Lab Sample ID: B117645

:MI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

.nalyst: R. ROBERTS Analysis Date: 12-NOV-92 Instrument: GC/MS SVOA Test: 0505.3.0

Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.0

Parameter	Result	Det. Limit	Units
:ENAPHTHENE	BDL	0.01	mg/L
NTHRACENE	BDL	0.01	mg/L
ENZ(A)ANTHRACENE	BDL	0.01	mg/L
ENZO(A)PYRENE	BDL	0.01	mg/L
ENZO(B)FLUORANTHENE	BDL	0.01	mg/L
ENZO(K)FLUORANTHENE	BDL	0.01	mg/L
IS(2-CHLOROETHYL)ETHER	BDL	0.01	mg/L
ARBAZOLE	BDL	0.01	mg/L
:HRYSENE	BDL	0.01	mg/L
)IBENZ(A,H)ANTHRACENE	BDL	0.01	mg/L
:LUORANTHENE	BDL	0.01	mg/L
[NDENO(1,2,3-CD)PYRENE	BDL	0.01	mg/L
NAPHTHALENE	BDL	0.01	mg/L
:HENANTHRENE	BDL	0.01	mg/L
4-CHLORO-3-METHYLPHENOL	BDL	0.01	mg/L
2-CHLOROPHENOL	BDL	0.01	mg/L
2,4-DIMETHYLPHENOL	BDL	0.01	mg/L
2,4-DINITROPHENOL	BDL	0.05	mg/L
PENTACHLOROPHENOL	BDL	0.05	mg/L
PHENOL	BDL	0.01	mg/L
TETRACHLOROPHENOL	BDL	0.01	mg/L
2,4,5-TRICHLOROPHENOL	BDL	0.01	mg/L
2,4,6-TRICHLOROPHENOL	BDL	0.01	mg/L
SURROGATE RECOVERY			

2-FLUOROPHENOL	25		% Rec
PHENOL-D5	20		% Rec
NITROBENZENE-D5	51		% Rec
2-FLUOROBIPHENYL	60		% Rec
2,4,6-TRIBROMOPHENOL	46		% Rec
:TERPHENYL-D14	118		% Rec

Note: See case narrative.

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 16489.

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Quality Assurance Officer: Helmuth MB Janssen

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. 4132 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	15-OCT-92	1810	B117577
	Complete	PO Number	
	13-NOV-92	530-06-501	
	Printed	Sampled	
	19-NOV-92	13-OCT-92 13:40	

Report To	Bill To
SANDRA WATSON SOUTHERN WOOD PIEDMONT P.O. BOX 5447 SPARTANBURG, SC 29304	SOUTHERN WOOD PIEDMONT P.O. BOX 5447 SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: MW-22
LOG #: 10658
FIELD INFORMATION: WD 13.00, WL 3.02, COND. 500, PH 6.4

FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P130.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
CHROMIUM	0.20	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
COPPER	0.038	0.025	mg/L

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: W. GROVES Analysis Date: 20-OCT-92 Test: P130.6.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 29-OCT-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
ARSENIC	0.033	0.005	mg/L

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 (continued on next page)

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 29-OCT-92 Test: P130.6.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 30-OCT-92 Instrument: GFAA Test: M116.2.0

Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.1

Parameter	Result	Det. Limit	Units
LEAD	0.037	0.010	mg/L

NOTE: DILUTION 1:2

0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A

Analyst: M. CASHION Analysis Date: 15-OCT-92 Test: P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	500		mL
FINAL VOLUME	500		mL

FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.1

Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.1

Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.025	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P133.6.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 29-OCT-92 Instrument: GFAA Test: M103.2.1

Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
ARSENIC	0.013	0.005	mg/L

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 28-OCT-92 Instrument: GFAA Test: M116.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: M. KATTNER Analysis Date: 27-OCT-92 Instrument: GC/PID ELCD Test: D461.1.0

Parameter	Result	Det. Limit	Units
DICHLORODIFLUOROMETHANE	BDL	0.005	mg/L
CHLOROMETHANE	BDL	0.005	mg/L
VINYL CHLORIDE	BDL	0.005	mg/L
BROMOMETHANE	BDL	0.005	mg/L
CHLOROETHANE	BDL	0.005	mg/L
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/L
1,1-DICHLOROETHENE	BDL	0.001	mg/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	0.002	0.001	mg/L
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/L
1,1-DICHLOROETHANE	BDL	0.001	mg/L
CHLOROFORM	0.004	0.001	mg/L
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/L
CARBON TETRACHLORIDE	BDL	0.001	mg/L
BENZENE	0.005	0.001	mg/L
1,2-DICHLOROETHANE	BDL	0.001	mg/L
TRICHLOROETHENE	BDL	0.001	mg/L
1,2-DICHLOROPROPANE	BDL	0.001	mg/L
BROMODICHLOROMETHANE	BDL	0.001	mg/L
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/L
TOLUENE	0.011	0.001	mg/L
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/L
1,3-DICHLOROPROPANE	BDL	0.001	mg/L
DIBROMOCHLOROMETHANE	BDL	0.001	mg/L
CHLOROBENZENE	BDL	0.001	mg/L
ETHYLBENZENE	0.037	0.001	mg/L
M/P-XYLENE	0.048	0.001	mg/L
O-XYLENE	0.023	0.001	mg/L
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/L
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/L
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/L
1,2-DIBROMOETHANE (EDB)	BDL	0.005	mg/L

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: S. WILLIAMS Analysis Date: 16-OCT-92 Test: P233.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	950		mL
FINAL VOLUME	1.0		mL

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

Analyst: R. ROBERTS Analysis Date: 01-NOV-92 Instrument: GC/MS SVOA Test: O505.3.0
Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	* 2.5	0.01	mg/L
ANTHRACENE	0.18	0.01	mg/L
BENZ(A)ANTHRACENE	0.13	0.01	mg/L
BENZO(A)PYRENE	0.06	0.01	mg/L
BENZO(B)FLUORANTHENE	0.12	0.01	mg/L
BENZO(K)FLUORANTHENE	BDL	0.01	mg/L

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Parameter	Result	Det. Limit	Units
BIS(2-CHLOROETHYL)ETHER	BDL	0.01	mg/L
CARBAZOLE	0.19	0.01	mg/L
CHRYSENE	0.10	0.01	mg/L
DIBENZ(A,H)ANTHRACENE	BDL	0.01	mg/L
FLUORANTHENE	* 1.7	0.01	mg/L
INDENO(1,2,3-CD)PYRENE	0.02	0.01	mg/L
NAPHTHALENE	** 4.5	0.01	mg/L
PHENANTHRENE	* 3.7	0.01	mg/L
4-CHLORO-3-METHYLPHENOL	BDL	0.01	mg/L
2-CHLOROPHENOL	BDL	0.01	mg/L
2,4-DIMETHYLPHENOL	0.03	0.01	mg/L
2,4-DINITROPHENOL	BDL	0.05	mg/L
PENTACHLOROPHENOL	BDL	0.05	mg/L
PHENOL	BDL	0.01	mg/L
TETRACHLOROPHENOL	BDL	0.01	mg/L
2,4,5-TRICHLOROPHENOL	BDL	0.01	mg/L
2,4,6-TRICHLOROPHENOL	BDL	0.01	mg/L
SURROGATE RECOVERY			

2-FLUOROPHENOL	41		% Rec
PHENOL-D5	34		% Rec
NITROBENZENE-D5	*** 159		% Rec
2-FLUOROBIPHENYL	92		% Rec
2,4,6-TRIBROMOPHENOL	94		% Rec
TERPHENYL-D14	128		% Rec

*Note: * - Taken from 1:20 dilution (GB2889.c) on 11/8/92*
*** - Taken from 1:40 dilution (GB2917.c) on 11/10/92*
**** - Surrogate recovery outside of the control limits. Extract was reanalyzed with no improvement. Results have to be regarded as estimates.*

Sample Comments

** See Note for Parameter*
*** See Note for Parameter*
**** See Note for Parameter*
BDL Below Detection Limit

Sample chain of custody number 16491.

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Quality Assurance Officer: Chelsmith MB Jansen

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. 4132 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	15-OCT-92	1810	B117578
	Complete	PO Number	
	12-NOV-92	530-06-501	
	Printed	Sampled	
	24-NOV-92	13-OCT-92 14:15	

Report To

SANDRA WATSON
SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Bill To

SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: MW-23
LOG #: 10659
FIELD INFORMATION: WD 11.00, WL 2.34, COND. 1440, PH 6.4

FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P130.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.025	mg/L

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: W. GROVES Analysis Date: 20-OCT-92 Test: P130.6.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 29-OCT-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

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GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 29-OCT-92 Test: P130.6.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 30-OCT-92 Instrument: GFAA Test: M116.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.1

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A

Analyst: M. CASHION Analysis Date: 15-OCT-92 Test: P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	500		mL
FINAL VOLUME	500		mL

FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.025	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 29-OCT-92 Instrument: GFAA Test: M103.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 28-OCT-92 Instrument: GFAA Test: M116.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: M. KATTNER Analysis Date: 28-OCT-92 Instrument: GC/PID ELCD Test: 0461.1.0

Parameter	Result	Det. Limit	Units
DICHLORODIFLUOROMETHANE	BDL	0.005	mg/L
CHLOROMETHANE	BDL	0.005	mg/L
VINYL CHLORIDE	BDL	0.005	mg/L
BROMOMETHANE	BDL	0.005	mg/L
CHLOROETHANE	BDL	0.005	mg/L
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/L
1,1-DICHLOROETHENE	BDL	0.001	mg/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	0.003	0.001	mg/L
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/L
1,1-DICHLOROETHANE	BDL	0.001	mg/L
CHLOROFORM	BDL	0.001	mg/L
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/L
CARBON TETRACHLORIDE	BDL	0.001	mg/L
BENZENE	BDL	0.001	mg/L
1,2-DICHLOROETHANE	BDL	0.001	mg/L
TRICHLOROETHENE	BDL	0.001	mg/L
1,2-DICHLOROPROPANE	BDL	0.001	mg/L
BROMODICHLOROMETHANE	BDL	0.001	mg/L
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/L
TOLUENE	BDL	0.001	mg/L
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/L
DIBROMOCHLOROMETHANE	BDL	0.001	mg/L
CHLOROBENZENE	BDL	0.001	mg/L
ETHYLBENZENE	BDL	0.001	mg/L
M/P-XYLENE	BDL	0.001	mg/L
O-XYLENE	BDL	0.001	mg/L
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/L
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/L
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/L
1,2-DIBROMOETHANE (EDB)	BDL	0.005	mg/L

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: S. WILLIAMS Analysis Date: 16-OCT-92 Test: P233.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	985		mL
FINAL VOLUME	1.0		mL

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

Analyst: R. ROBERTS Analysis Date: 01-NOV-92 Instrument: GC/MS SVOA Test: 0505.3.0
Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	BDL	0.01	mg/L
ANTHRACENE	BDL	0.01	mg/L
BENZ(A)ANTHRACENE	BDL	0.01	mg/L
BENZO(A)PYRENE	BDL	0.01	mg/L
BENZO(B)FLUORANTHENE	BDL	0.01	mg/L
BENZO(K)FLUORANTHENE	BDL	0.01	mg/L
BIS(2-CHLOROETHYL)ETHER	BDL	0.01	mg/L

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HERITAGE LABORATORIES, INC. Lab Sample ID: B117578

Parameter	Result	Det. Limit	Units
CARBAZOLE	BDL	0.01	mg/L
CHRYSENE	BDL	0.01	mg/L
DIBENZ(A,H)ANTHRACENE	BDL	0.01	mg/L
FLUORANTHENE	BDL	0.01	mg/L
INDENO(1,2,3-CD)PYRENE	BDL	0.01	mg/L
NAPHTHALENE	BDL	0.01	mg/L
PHENANTHRENE	BDL	0.01	mg/L
4-CHLORO-3-METHYLPHENOL	BDL	0.01	mg/L
2-CHLOROPHENOL	BDL	0.01	mg/L
2,4-DIMETHYLPHENOL	BDL	0.01	mg/L
2,4-DINITROPHENOL	BDL	0.05	mg/L
PENTACHLOROPHENOL	BDL	0.05	mg/L
PHENOL	BDL	0.01	mg/L
TETRACHLOROPHENOL	BDL	0.01	mg/L
2,4,5-TRICHLOROPHENOL	BDL	0.01	mg/L
2,4,6-TRICHLOROPHENOL	BDL	0.01	mg/L
SURROGATE RECOVERY			
2-FLUOROPHENOL	33		% Rec
PHENOL-D5	29		% Rec
NITROBENZENE-D5	* 10		% Rec
2-FLUOROBIPHENYL	85		% Rec
2,4,6-TRIBROMOPHENOL	70		% Rec
TERPHENYL-D14	112		% Rec

*Note: * - Surrogate recovery outside of the control limits. Extract was reanalyzed with no improvement. Results have to be regarded as estimates.*

Sample Comments

** See Note for Parameter*
BDL Below Detection Limit

Sample chain of custody number 16491.

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Quality Assurance Officer: Deborah M B Jansen

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. 4132 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	17-OCT-92	1810	B117639
	Complete	PO Number	
	16-NOV-92	530-06-501	
	Printed	Sampled	
	24-NOV-92	16-OCT-92 07:50	

Report To	Bill To
SANDRA WATSON SOUTHERN WOOD PIEDMONT P.O. BOX 5447 SPARTANBURG, SC 29304	SOUTHERN WOOD PIEDMONT P.O. BOX 5447 SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: MW-24
LOG #: 10672
FIELD INFORMATION: WD 13.81, WL 3.48, COND. 7200, PH 6.6

FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P130.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
CHROMIUM	0.018	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
COPPER	0.027	0.025	mg/L

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: W. GROVES Analysis Date: 20-OCT-92 Test: P130.6.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 31-OCT-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
ARSENIC	0.0064	0.005	mg/L

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GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 29-OCT-92 Test: P130.6.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 30-OCT-92 Instrument: GFAA Test: M116.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.1

Parameter	Result	Det. Limit	Units
LEAD	0.071	0.050	mg/L

0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A

Analyst: M. KRASKA Analysis Date: 17-OCT-92 Test: P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	500		mL
FINAL VOLUME	500		mL

FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.025	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 29-OCT-92 Instrument: GFAA Test: M116.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 29-OCT-92 Test: P133.6.1
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 31-OCT-92 Instrument: GFAA Test: M103.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.1
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: M. KATTNER Analysis Date: 29-OCT-92 Instrument: GC/PID ELCD Test: O461.1.0

Parameter	Result	Det. Limit	Units
DICHLORODIFLUOROMETHANE	BDL	0.005	mg/L
CHLOROMETHANE	BDL	0.005	mg/L
VINYL CHLORIDE	BDL	0.005	mg/L
BROMOMETHANE	BDL	0.005	mg/L
CHLOROETHANE	BDL	0.005	mg/L
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/L
1,1-DICHLOROETHENE	BDL	0.001	mg/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	0.001	mg/L
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/L
1,1-DICHLOROETHANE	BDL	0.001	mg/L
CHLOROFORM	BDL	0.001	mg/L
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/L
CARBON TETRACHLORIDE	BDL	0.001	mg/L
BENZENE	BDL	0.001	mg/L
1,2-DICHLOROETHANE	BDL	0.001	mg/L
TRICHLOROETHENE	BDL	0.001	mg/L
1,2-DICHLOROPROPANE	BDL	0.001	mg/L
BROMODICHLOROMETHANE	BDL	0.001	mg/L
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/L
TOLUENE	BDL	0.001	mg/L
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/L
DIBROMOCHLOROMETHANE	BDL	0.001	mg/L
CHLOROBENZENE	BDL	0.001	mg/L
ETHYLBENZENE	0.002	0.001	mg/L
M/P-XYLENE	0.002	0.001	mg/L
O-XYLENE	0.001	0.001	mg/L
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/L
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/L
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/L
1,2-DIBROMOETHANE (EDB)	BDL	0.005	mg/L

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: S. WILLIAMS Analysis Date: 19-OCT-92 Test: P233.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	990		mL
FINAL VOLUME	1.0		mL

HERITAGE LABORATORIES, INC. Lab Sample ID: B117639

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

Analyst: R. ROBERTS Analysis Date: 04-NOV-92 Instrument: GC/MS SVOA Test: 0505.3.0

Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	0.11	0.01	mg/L
ANTHRACENE	BDL	0.01	mg/L
BENZ(A)ANTHRACENE	BDL	0.01	mg/L
BENZO(A)PYRENE	BDL	0.01	mg/L
BENZO(B)FLUORANTHENE	BDL	0.01	mg/L
BENZO(K)FLUORANTHENE	BDL	0.01	mg/L
BIS(2-CHLOROETHYL)ETHER	BDL	0.01	mg/L
CARBAZOLE	0.03	0.01	mg/L
CHRYSENE	BDL	0.01	mg/L
DIBENZ(A,H)ANTHRACENE	BDL	0.01	mg/L
FLUORANTHENE	BDL	0.01	mg/L
INDENO(1,2,3-CD)PYRENE	BDL	0.01	mg/L
NAPHTHALENE	BDL	0.01	mg/L
PHENANTHRENE	0.02	0.01	mg/L
4-CHLORO-3-METHYLPHENOL	BDL	0.01	mg/L
2-CHLOROPHENOL	BDL	0.01	mg/L
2,4-DIMETHYLPHENOL	BDL	0.01	mg/L
2,4-DINITROPHENOL	BDL	0.05	mg/L
PENTACHLOROPHENOL	BDL	0.05	mg/L
PHENOL	BDL	0.01	mg/L
TETRACHLOROPHENOL	BDL	0.01	mg/L
2,4,5-TRICHLOROPHENOL	BDL	0.01	mg/L
2,4,6-TRICHLOROPHENOL	BDL	0.01	mg/L
SURROGATE RECOVERY			
2-FLUOROPHENOL	38		% Rec
PHENOL-D5	30		% Rec
NITROBENZENE-D5	* 0		% Rec
2-FLUOROBIPHENYL	55		% Rec
2,4,6-TRIBROMOPHENOL	69		% Rec
TERPHENYL-D14	61		% Rec

*Note: * - Surrogate recovery outside of the control limits. Extract was reanalyzed with no improvement. Results have to be regarded as estimates. See case narrative.*

Sample Comments

** See Note for Parameter*
BDL Below Detection Limit

Sample chain of custody number 16489.

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Quality Assurance Officer: Delmarth MB Jones

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. 4132 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	17-OCT-92	1810	B117641
	Complete	PO Number	
	16-NOV-92	530-06-501	
	Printed	Sampled	
	24-NOV-92	16-OCT-92 09:20	

Report To

SANDRA WATSON
SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Bill To

SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: MW-25
LOG #: 10674
FIELD INFORMATION: WD 15.23, WL 1.63, COND. 72000, PH 6.4

FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P130.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
CHROMIUM	0.031	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
COPPER	0.041	0.025	mg/L

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: W. GROVES Analysis Date: 20-OCT-92 Test: P130.6.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 31-OCT-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
ARSENIC	0.012	0.005	mg/L

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GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 29-OCT-92 Test: P130.6.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 30-OCT-92 Instrument: GFAA Test: M116.2.0

Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.1

Parameter	Result	Det. Limit	Units
LEAD	0.036	0.010	mg/L

0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A

Analyst: M. KRASKA Analysis Date: 17-OCT-92 Test: P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	500		mL
FINAL VOLUME	500		mL

FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.1

Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.1

Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.025	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P133.6.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 29-OCT-92 Instrument: GFAA Test: M116.2.1

Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 29-OCT-92 Test: P133.6.1
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 31-OCT-92 Instrument: GFAA Test: M103.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.1
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: M. KATTNER Analysis Date: 29-OCT-92 Instrument: GC/PID ELCD Test: D461.1.0

Parameter	Result	Det. Limit	Units
DICHLORODIFLUOROMETHANE	BDL	0.005	mg/L
CHLOROMETHANE	BDL	0.005	mg/L
VINYL CHLORIDE	BDL	0.005	mg/L
BROMOMETHANE	BDL	0.005	mg/L
CHLOROETHANE	BDL	0.005	mg/L
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/L
1,1-DICHLOROETHENE	BDL	0.001	mg/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	0.001	mg/L
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/L
1,1-DICHLOROETHANE	BDL	0.001	mg/L
CHLOROFORM	BDL	0.001	mg/L
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/L
CARBON TETRACHLORIDE	BDL	0.001	mg/L
BENZENE	BDL	0.001	mg/L
1,2-DICHLOROETHANE	BDL	0.001	mg/L
TRICHLOROETHENE	BDL	0.001	mg/L
1,2-DICHLOROPROPANE	BDL	0.001	mg/L
BROMODICHLOROMETHANE	BDL	0.001	mg/L
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/L
TOLUENE	BDL	0.001	mg/L
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/L
DIBROMOCHLOROMETHANE	BDL	0.001	mg/L
CHLOROBENZENE	BDL	0.001	mg/L
ETHYLBENZENE	BDL	0.001	mg/L
M/P-XYLENE	BDL	0.001	mg/L
O-XYLENE	BDL	0.001	mg/L
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/L
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/L
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/L
1,2-DIBROMOETHANE (EDB)	BDL	0.005	mg/L

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: S. WILLIAMS Analysis Date: 19-OCT-92 Test: P233.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	950		mL
FINAL VOLUME	1.0		mL

 (continued on next page)

HERITAGE LABORATORIES, INC. Lab Sample ID: B117641

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

Analyst: R. ROBERTS Analysis Date: 05-NOV-92 Instrument: GC/MS SVOA Test: 0505.3.0

Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	0.120	0.01	mg/L
ANTHRACENE	0.070	0.01	mg/L
BENZ(A)ANTHRACENE	0.05	0.01	mg/L
BENZO(A)PYRENE	0.02	0.01	mg/L
BENZO(B)FLUORANTHENE	0.04	0.01	mg/L
BENZO(K)FLUORANTHENE	BDL	0.01	mg/L
BIS(2-CHLOROETHYL)ETHER	BDL	0.01	mg/L
CARBAZOLE	0.02	0.01	mg/L
CHRYSENE	0.04	0.01	mg/L
DIBENZ(A,H)ANTHRACENE	BDL	0.01	mg/L
FLUORANTHENE	0.16	0.01	mg/L
INDENO(1,2,3-CD)PYRENE	BDL	0.01	mg/L
NAPHTHALENE	BDL	0.01	mg/L
PHENANTHRENE	0.190	0.01	mg/L
4-CHLORO-3-METHYLPHENOL	BDL	0.01	mg/L
2-CHLOROPHENOL	BDL	0.01	mg/L
2,4-DIMETHYLPHENOL	BDL	0.01	mg/L
2,4-DINITROPHENOL	BDL	0.05	mg/L
PENTACHLOROPHENOL	BDL	0.05	mg/L
PHENOL	BDL	0.01	mg/L
TETRACHLOROPHENOL	BDL	0.01	mg/L
2,4,5-TRICHLOROPHENOL	BDL	0.01	mg/L
2,4,6-TRICHLOROPHENOL	BDL	0.01	mg/L
SURROGATE RECOVERY			
2-FLUOROPHENOL	30		% Rec
PHENOL-D5	27		% Rec
NITROBENZENE-D5	* 0		% Rec
2-FLUOROBIPHENYL	60		% Rec
2,4,6-TRIBROMOPHENOL	83		% Rec
TERPHENYL-D14	70		% Rec

*Note: * - Surrogate recovery outside of the control limits. Extract was reanalyzed with no improvement. Results have to be regarded as estimates. See case narrative.*

Sample Comments

** See Note for Parameter*
BDL Below Detection Limit

Sample chain of custody number 16489.

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Quality Assurance Officer: Deborah M.B. Jansen

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. 4132 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	17-OCT-92	1810	B117646
	Complete	PO Number	
	16-NOV-92	530-06-501	
	Printed	Sampled	
	24-NOV-92	16-OCT-92 13:20	

Report To	Bill To
SANDRA WATSON SOUTHERN WOOD PIEDMONT P.O. BOX 5447 SPARTANBURG, SC 29304	SOUTHERN WOOD PIEDMONT P.O. BOX 5447 SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: FIELD BLANK

FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P130.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.025	mg/L

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: W. GROVES Analysis Date: 20-OCT-92 Test: P130.6.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 31-OCT-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 29-OCT-92 Test: P130.6.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

 (continued on next page)

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 30-OCT-92 Instrument: GFAA Test: M116.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.1

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A

Analyst: M. KRASKA Analysis Date: 17-OCT-92 Test: P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	500		mL
FINAL VOLUME	500		mL

FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.025	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 29-OCT-92 Instrument: GFAA Test: M116.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 29-OCT-92 Test: P133.6.1
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 31-OCT-92 Instrument: GFAA Test: M103.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.1
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: M. KATTNER Analysis Date: 31-OCT-92 Instrument: GC/PID ELCD Test: O461.1.0

Parameter	Result	Det. Limit	Units
DICHLORODIFLUOROMETHANE	BDL	0.005	ug/L
CHLOROMETHANE	BDL	0.005	ug/L
VINYL CHLORIDE	BDL	0.005	ug/L
BROMOMETHANE	BDL	0.005	ug/L
CHLOROETHANE	BDL	0.005	ug/L
TRICHLOROFLUOROMETHANE	BDL	0.005	ug/L
1,1-DICHLOROETHENE	BDL	0.001	ug/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	0.001	ug/L
TRANS-1,2-DICHLOROETHENE	BDL	0.001	ug/L
1,1-DICHLOROETHANE	BDL	0.001	ug/L
CHLOROFORM	BDL	0.001	ug/L
1,1,1-TRICHLOROETHANE	BDL	0.001	ug/L
CARBON TETRACHLORIDE	BDL	0.001	ug/L
BENZENE	BDL	0.001	ug/L
1,2-DICHLOROETHANE	BDL	0.001	ug/L
TRICHLOROETHENE	BDL	0.001	ug/L
1,2-DICHLOROPROPANE	BDL	0.001	ug/L
BROMODICHLOROMETHANE	BDL	0.001	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	0.001	ug/L
TOLUENE	BDL	0.001	ug/L
1,1,2-TRICHLOROETHANE	BDL	0.001	ug/L
DIBROMOCHLOROMETHANE	BDL	0.001	ug/L
CHLOROBENZENE	BDL	0.001	ug/L
ETHYLBENZENE	BDL	0.001	ug/L
M/P-XYLENE	BDL	0.001	ug/L
O-XYLENE	BDL	0.001	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	ug/L
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	ug/L
2-CHLOROETHYLVINYLETHER	BDL	0.001	ug/L
1,2-DIBROMOETHANE (EDB)	BDL	0.005	ug/L

Note: Analysis performed outside of the holding time.

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: S. WILLIAMS Analysis Date: 20-OCT-92 Test: P233.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	985		mL
FINAL VOLUME	1.0		mL

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

Analyst: R. ROBERTS Analysis Date: 12-NOV-92 Instrument: GC/MS SVOA Test: O505.3.0
Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	BDL	0.01	mg/L
ANTHRACENE	BDL	0.01	mg/L
BENZ(A)ANTHRACENE	BDL	0.01	mg/L
BENZO(A)PYRENE	BDL	0.01	mg/L
BENZO(B)FLUORANTHENE	BDL	0.01	mg/L

 (continued on next page)

HERITAGE LABORATORIES, INC. Lab Sample ID: B117646

Parameter	Result	Det. Limit	Units
BENZO(K)FLUORANTHENE	BDL	0.01	mg/L
BIS(2-CHLOROETHYL)ETHER	BDL	0.01	mg/L
CARBAZOLE	BDL	0.01	mg/L
CHRYSENE	BDL	0.01	mg/L
DIBENZ(A,H)ANTHRACENE	BDL	0.01	mg/L
FLUORANTHENE	BDL	0.01	mg/L
INDENO(1,2,3-CD)PYRENE	BDL	0.01	mg/L
NAPHTHALENE	BDL	0.01	mg/L
PHENANTHRENE	BDL	0.01	mg/L
4-CHLORO-3-METHYLPHENOL	BDL	0.01	mg/L
2-CHLOROPHENOL	BDL	0.01	mg/L
2,4-DIMETHYLPHENOL	BDL	0.01	mg/L
2,4-DINITROPHENOL	BDL	0.05	mg/L
PENTACHLOROPHENOL	BDL	0.05	mg/L
PHENOL	BDL	0.01	mg/L
TETRACHLOROPHENOL	BDL	0.01	mg/L
2,4,5-TRICHLOROPHENOL	BDL	0.01	mg/L
2,4,6-TRICHLOROPHENOL	BDL	0.01	mg/L
SURROGATE RECOVERY			

2-FLUOROPHENOL	35		% Rec
PHENOL-D5	24		% Rec
NITROBENZENE-D5	71		% Rec
2-FLUOROBIPHENYL	74		% Rec
2,4,6-TRIBROMOPHENOL	74		% Rec
TERPHENYL-D14	113		% Rec

Note: See case narrative.

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 16489.

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Quality Assurance Officer: Chelmuth MB Janssen

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. 4132 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	17-OCT-92	1810	B117647
	Complete	PO Number	
	02-NOV-92	530-06-501	
	Printed	Sampled	
	24-NOV-92	16-OCT-92	

Report To	Bill To
SANDRA WATSON SOUTHERN WOOD PIEDMONT P.O. BOX 5447 SPARTANBURG, SC 29304	SOUTHERN WOOD PIEDMONT P.O. BOX 5447 SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: TRIP BLANK

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: M. KATTNER Analysis Date: 31-OCT-92 Instrument: GC/PID ELCD Test: 0461.1.0

Parameter	Result	Det. Limit	Units
DICHLORODIFLUOROMETHANE	BDL	0.005	mg/L
CHLOROMETHANE	BDL	0.005	mg/L
VINYL CHLORIDE	BDL	0.005	mg/L
BROMOMETHANE	BDL	0.005	mg/L
CHLOROETHANE	BDL	0.005	mg/L
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/L
1,1-DICHLOROETHENE	BDL	0.001	mg/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	0.005	mg/L
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/L
1,1-DICHLOROETHANE	BDL	0.001	mg/L
CHLOROFORM	BDL	0.001	mg/L
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/L
CARBON TETRACHLORIDE	BDL	0.001	mg/L
BENZENE	BDL	0.001	mg/L
1,2-DICHLOROETHANE	BDL	0.001	mg/L
TRICHLOROETHENE	BDL	0.001	mg/L
1,2-DICHLOROPROPANE	BDL	0.001	mg/L
BROMODICHLOROMETHANE	BDL	0.001	mg/L
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/L
TOLUENE	BDL	0.001	mg/L
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/L
DIBROMOCHLOROMETHANE	BDL	0.001	mg/L
CHLOROBENZENE	BDL	0.001	mg/L
ETHYLBENZENE	BDL	0.001	mg/L
M/P-XYLENE	BDL	0.001	mg/L
O-XYLENE	BDL	0.001	mg/L
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/L
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/L
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/L
1,2-DIBROMOETHANE (EDB)	BDL	0.005	mg/L

Note: Analysis performed outside of the holding time.

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 16489.

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Quality Assurance Officer: Helmuth MB Jansen

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. 4132 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	16-OCT-92	1810	B117607
	Complete	PO Number	
	02-NOV-92	530-06-501	
	Printed	Sampled	
	24-NOV-92	15-OCT-92 17:45	

Report To	Bill To
SANDRA WATSON SOUTHERN WOOD PIEDMONT P.O. BOX 5447 SPARTANBURG, SC 29304	SOUTHERN WOOD PIEDMONT P.O. BOX 5447 SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: TRIP BLANK

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: M. KATTNER Analysis Date: 29-OCT-92 Instrument: GC/PID ELCD Test: 0461.1.0

Parameter	Result	Det. Limit	Units
DICHLORODIFLUOROMETHANE	BDL	0.005	mg/L
CHLOROMETHANE	BDL	0.005	mg/L
VINYL CHLORIDE	BDL	0.005	mg/L
BROMOMETHANE	BDL	0.005	mg/L
CHLOROETHANE	BDL	0.005	mg/L
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/L
1,1-DICHLOROETHENE	BDL	0.001	mg/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	0.005	mg/L
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/L
1,1-DICHLOROETHANE	BDL	0.001	mg/L
CHLOROFORM	BDL	0.001	mg/L
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/L
CARBON TETRACHLORIDE	BDL	0.001	mg/L
BENZENE	BDL	0.001	mg/L
1,2-DICHLOROETHANE	BDL	0.001	mg/L
TRICHLOROETHENE	BDL	0.001	mg/L
1,2-DICHLOROPROPANE	BDL	0.001	mg/L
BROMODICHLOROMETHANE	BDL	0.001	mg/L
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/L
TOLUENE	BDL	0.001	mg/L
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/L
DIBROMOCHLOROMETHANE	BDL	0.001	mg/L
CHLOROBENZENE	BDL	0.001	mg/L
ETHYLBENZENE	BDL	0.001	mg/L
M/P-XYLENE	BDL	0.001	mg/L
O-XYLENE	BDL	0.001	mg/L
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/L
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/L
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/L
1,2-DIBROMOETHANE (EDB)	BDL	0.005	mg/L

 (continued on next page)

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 16490.

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Quality Assurance Officer: Kenneth M B Jensen

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. 4132 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	16-OCT-92	1810	B117606
	Complete	PO Number	
	10-NOV-92	530-06-501	
	Printed	Sampled	
	24-NOV-92	15-OCT-92 17:45	

Report To	Bill To
SANDRA WATSON SOUTHERN WOOD PIEDMONT P.O. BOX 5447 SPARTANBURG, SC 29304	SOUTHERN WOOD PIEDMONT P.O. BOX 5447 SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: FIELD BLANK

FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P130.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.025	mg/L

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: W. GROVES Analysis Date: 20-OCT-92 Test: P130.6.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 29-OCT-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 29-OCT-92 Test: P130.6.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

 (continued on next page)

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 30-OCT-92 Instrument: GFAA Test: M116.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.1

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A

Analyst: M. CASHION Analysis Date: 16-OCT-92 Test: P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	500		mL
FINAL VOLUME	500		mL

FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.025	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 30-OCT-92 Instrument: GFAA Test: M103.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 29-OCT-92 Instrument: GFAA Test: M116.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: M. KATTNER Analysis Date: 29-OCT-92 Instrument: GC/PID ELCD Test: 0461.1.0

Parameter	Result	Det. Limit	Units
DICHLORODIFLUOROMETHANE	BDL	0.005	mg/L
CHLOROMETHANE	BDL	0.005	mg/L
VINYL CHLORIDE	BDL	0.005	mg/L
BROMOMETHANE	BDL	0.005	mg/L
CHLOROETHANE	BDL	0.005	mg/L
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/L
1,1-DICHLOROETHENE	BDL	0.001	mg/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	0.002	0.001	mg/L
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/L
1,1-DICHLOROETHANE	BDL	0.001	mg/L
CHLOROFORM	BDL	0.001	mg/L
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/L
CARBON TETRACHLORIDE	BDL	0.001	mg/L
BENZENE	BDL	0.001	mg/L
1,2-DICHLOROETHANE	BDL	0.001	mg/L
TRICHLOROETHENE	BDL	0.001	mg/L
1,2-DICHLOROPROPANE	BDL	0.001	mg/L
BROMODICHLOROMETHANE	BDL	0.001	mg/L
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/L
TOLUENE	BDL	0.001	mg/L
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/L
DIBROMOCHLOROMETHANE	BDL	0.001	mg/L
CHLOROBENZENE	BDL	0.001	mg/L
ETHYLBENZENE	BDL	0.001	mg/L
M/P-XYLENE	BDL	0.001	mg/L
O-XYLENE	BDL	0.001	mg/L
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/L
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/L
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/L
1,2-DIBROMOETHANE (EDB)	BDL	0.005	mg/L

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: S. WILLIAMS Analysis Date: 19-OCT-92 Test: P233.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1000		mL
FINAL VOLUME	1.0		mL

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

Analyst: R. ROBERTS Analysis Date: 04-NOV-92 Instrument: GC/MS SVOA Test: 0505.3.0

Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	BDL	0.01	mg/L
ANTHRACENE	BDL	0.01	mg/L
BENZ(A)ANTHRACENE	BDL	0.01	mg/L
BENZO(A)PYRENE	BDL	0.01	mg/L
BENZO(B)FLUORANTHENE	BDL	0.01	mg/L
BENZO(K)FLUORANTHENE	BDL	0.01	mg/L
BIS(2-CHLOROETHYL)ETHER	BDL	0.01	mg/L
CARBAZOLE	BDL	0.01	mg/L
CHRYSENE	BDL	0.01	mg/L
DIBENZ(A,H)ANTHRACENE	BDL	0.01	mg/L
FLUORANTHENE	BDL	0.01	mg/L
INDENO(1,2,3-CD)PYRENE	BDL	0.01	mg/L
NAPHTHALENE	BDL	0.01	mg/L
PHENANTHRENE	BDL	0.01	mg/L

 (continued on next page)

HERITAGE LABORATORIES, INC. Lab Sample ID: B117606

Parameter	Result	Det. Limit	Units
4-CHLORO-3-METHYLPHENOL	BDL	0.01	mg/L
2-CHLOROPHENOL	BDL	0.01	mg/L
2,4-DIMETHYLPHENOL	BDL	0.01	mg/L
2,4-DINITROPHENOL	BDL	0.05	mg/L
PENTACHLOROPHENOL	BDL	0.05	mg/L
PHENOL	BDL	0.01	mg/L
TETRACHLOROPHENOL	BDL	0.01	mg/L
2,4,5-TRICHLOROPHENOL	BDL	0.01	mg/L
2,4,6-TRICHLOROPHENOL	BDL	0.01	mg/L
SURROGATE RECOVERY			

2-FLUOROPHENOL	31		% Rec
PHENOL-D5	23		% Rec
NITROBENZENE-D5	70		% Rec
2-FLUORDBIPHENYL	79		% Rec
2,4,6-TRIBROMOPHENOL	59		% Rec
TERPHENYL-D14	* 206		% Rec

Note: Surrogate recovery outside of the control limits. Extract was reanalyzed with no improvement. Results have to be regarded as estimates.

Sample Comments

* *See Note for Parameter*
BDL Below Detection Limit

Sample chain of custody number 16490.

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Quality Assurance Officer: dubsmith MB Janssen

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. 4132 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	15-OCT-92	1810	B117592
	Complete	PO Number	
	30-OCT-92	530-06-501	
	Printed	Sampled	
	24-NOV-92	14-OCT-92	

Report To

SANDRA WATSON
SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Bill To

SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: TRIP BLANK

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: M. KATTNER Analysis Date: 28-OCT-92 Instrument: GC/PID ELCD Test: 0461.1.0

Parameter	Result	Det. Limit	Units
DICHLORODIFLUOROMETHANE	BDL	0.005	mg/L
CHLOROMETHANE	BDL	0.005	mg/L
VINYL CHLORIDE	BDL	0.005	mg/L
BROMOMETHANE	BDL	0.005	mg/L
CHLOROETHANE	BDL	0.005	mg/L
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/L
1,1-DICHLOROETHENE	BDL	0.001	mg/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	0.005	mg/L
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/L
1,1-DICHLOROETHANE	BDL	0.001	mg/L
CHLOROFORM	BDL	0.001	mg/L
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/L
CARBON TETRACHLORIDE	BDL	0.001	mg/L
BENZENE	BDL	0.001	mg/L
1,2-DICHLOROETHANE	BDL	0.001	mg/L
TRICHLOROETHENE	BDL	0.001	mg/L
1,2-DICHLOROPROPANE	BDL	0.001	mg/L
BROMODICHLOROMETHANE	BDL	0.001	mg/L
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/L
TOLUENE	BDL	0.001	mg/L
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/L
1,3-DICHLOROPROPANE	BDL	0.001	mg/L
DIBROMOCHLOROMETHANE	BDL	0.001	mg/L
CHLOROBENZENE	BDL	0.001	mg/L
ETHYLBENZENE	BDL	0.001	mg/L
M/P-XYLENE	BDL	0.001	mg/L
O-XYLENE	BDL	0.001	mg/L
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/L
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/L
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/L
1,2-DIBROMOETHANE (EDB)	BDL	0.005	mg/L

 (continued on next page)

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 16491.

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Quality Assurance Officer: Helmuth MB Jansen

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. 4132 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	15-OCT-92	1810	B117582
	Complete	PO Number	
	10-NOV-92	530-06-501	
	Printed	Sampled	
	23-NOV-92	14-OCT-92 16:30	

Report To

SANDRA WATSON
SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Bill To

SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: FIELD BLANK

FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P130.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.025	mg/L

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: W. GROVES Analysis Date: 20-OCT-92 Test: P130.6.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 29-OCT-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 29-OCT-92 Test: P130.6.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

 (continued on next page)

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 29-OCT-92 Instrument: GFAA Test: M116.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.1

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A

Analyst: M. CASHION Analysis Date: 15-OCT-92 Test: P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	500		mL
FINAL VOLUME	500		mL

FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

CHROMIUM FAA SW846-7190

Analyst: M. CASHION Analysis Date: 28-OCT-92 Instrument: FAA Test: M110.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.010	mg/L

COPPER FAA SW846-7210

Analyst: M. CASHION Analysis Date: 30-OCT-92 Instrument: FAA Test: M112.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.025	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 21-OCT-92 Test: P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 28-OCT-92 Instrument: GFAA Test: M116.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 29-OCT-92 Test: P133.6.1
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 30-OCT-92 Instrument: GFAA Test: M103.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.1
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: M. KATTNER Analysis Date: 27-OCT-92 Instrument: GC/PID ELCD Test: 0461.1.0

Parameter	Result	Det. Limit	Units
DICHLORODIFLUOROMETHANE	BDL	0.005	mg/L
CHLOROMETHANE	BDL	0.005	mg/L
VINYL CHLORIDE	BDL	0.005	mg/L
BROMOMETHANE	BDL	0.005	mg/L
CHLOROETHANE	BDL	0.005	mg/L
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/L
1,1-DICHLOROETHENE	BDL	0.001	mg/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	0.002	0.001	mg/L
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/L
1,1-DICHLOROETHANE	BDL	0.001	mg/L
CHLOROFORM	BDL	0.001	mg/L
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/L
CARBON TETRACHLORIDE	BDL	0.001	mg/L
BENZENE	BDL	0.001	mg/L
1,2-DICHLOROETHANE	BDL	0.001	mg/L
TRICHLOROETHENE	BDL	0.001	mg/L
1,2-DICHLOROPROPANE	BDL	0.001	mg/L
BROMODICHLOROMETHANE	BDL	0.001	mg/L
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/L
TOLUENE	BDL	0.001	mg/L
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/L
DIBROMOCHLOROMETHANE	BDL	0.001	mg/L
CHLOROBENZENE	BDL	0.001	mg/L
ETHYLBENZENE	BDL	0.001	mg/L
M/P-XYLENE	BDL	0.001	mg/L
O-XYLENE	BDL	0.001	mg/L
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/L
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/L
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/L
1,2-DIBROMOETHANE (EDB)	BDL	0.005	mg/L

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: S. WILLIAMS Analysis Date: 16-OCT-92 Test: P233.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	900		mL
FINAL VOLUME	1.0		mL

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

Analyst: R. ROBERTS Analysis Date: 02-NOV-92 Instrument: GC/MS SVOA Test: 0505.3.0
Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	BDL	0.01	mg/L
ANTHRACENE	BDL	0.01	mg/L
BENZ(A)ANTHRACENE	BDL	0.01	mg/L
BENZO(A)PYRENE	BDL	0.01	mg/L
BENZO(B)FLUORANTHENE	BDL	0.01	mg/L
BENZO(K)FLUORANTHENE	BDL	0.01	mg/L
BIS(2-CHLOROETHYL)ETHER	BDL	0.01	mg/L

 (continued on next page)

Parameter	Result	Det. Limit	Units
CARBAZOLE	BDL	0.01	mg/L
CHRYSENE	BDL	0.01	mg/L
DIBENZ(A,H)ANTHRACENE	BDL	0.01	mg/L
FLUORANTHENE	BDL	0.01	mg/L
INDENO(1,2,3-CD)PYRENE	BDL	0.01	mg/L
NAPHTHALENE	BDL	0.01	mg/L
PHENANTHRENE	BDL	0.01	mg/L
4-CHLORO-3-METHYLPHENOL	BDL	0.01	mg/L
2-CHLOROPHENOL	BDL	0.01	mg/L
2,4-DIMETHYLPHENOL	BDL	0.01	mg/L
2,4-DINITROPHENOL	BDL	0.05	mg/L
PENTACHLOROPHENOL	BDL	0.05	mg/L
PHENOL	BDL	0.01	mg/L
TETRACHLOROPHENOL	BDL	0.01	mg/L
2,4,5-TRICHLOROPHENOL	BDL	0.01	mg/L
2,4,6-TRICHLOROPHENOL	BDL	0.01	mg/L
SURROGATE RECOVERY			
2-FLUOROPHENOL	* 20		% Rec
PHENOL-D5	21		% Rec
NITROBENZENE-D5	46		% Rec
2-FLUOROBIPHENYL	53		% Rec
2,4,6-TRIBROMOPHENOL	37		% Rec
TERPHENYL-D14	106		% Rec

*Note: * - Surrogate recovery outside of the control limits. Extract was reanalyzed with no improvement. Results have to be regarded as estimates.*

Sample Comments

** See Note for Parameter*
BDL Below Detection Limit

Sample chain of custody number 16491.

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Quality Assurance Officer: Chelsmith MB Jansen

Waters

Rep 0 - Total

Rep 1 - Dissolved

METALS

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Heritage Laboratories, Inc -- Parameter Summary Report
SWP Wilmington Project

		MW-22 B117577 13-OCT-92			MW-22 REP1 B117577 13-OCT-92			MW-23 B117578 13-OCT-92			MW-23 REP1 B117578 13-OCT-92			MW-10 B117579 14-OCT-92		
Metals	CAS Number	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units
Arsenic	7440-38-2	0.033	0.005	mg/L	0.013	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	0.048	0.010	mg/L
Chromium	7440-47-32	0.20	0.010	mg/L	BDL	0.010	mg/L	BDL	0.010	mg/L	BDL	0.010	mg/L	0.019	0.010	mg/L
Copper	7440-50-8	0.038	0.025	mg/L	BDL	0.025	mg/L	BDL	0.025	mg/L	BDL	0.025	mg/L	BDL	0.025	mg/L
Lead	7439-92-1	0.037	0.010	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	0.018	0.005	mg/L

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* Note: This is a summary report. Please see the Certificate of Analysis for more information. DL = Detection Limit

		MW-10 REP1 B117579 14-OCT-92			MW-16 B117580 14-OCT-92			MW-16 REP1 B117580 14-OCT-92			MW-17 B117581 14-OCT-92			MW-17 REP1 B117581 14-OCT-92		
Metals	CAS Number	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units
Arsenic	7440-38-2	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	0.04	0.005	mg/L	0.0057	0.005	mg/L
Chromium	7440-47-32	BDL	0.010	mg/L	BDL	0.010	mg/L	BDL	0.010	mg/L	0.035	0.010	mg/L	BDL	0.010	mg/L
Copper	7440-50-8	BDL	0.025	mg/L	0.030	0.025	mg/L	BDL	0.025	mg/L	0.054	0.025	mg/L	BDL	0.025	mg/L
Lead	7439-92-1	BDL	0.005	mg/L	0.012	0.005	mg/L	BDL	0.005	mg/L	0.045	0.010	mg/L	BDL	0.005	mg/L

RECEIVED
NOV 25 1992
ENVIRONMENTAL

* Note: This is a summary report. Please see the Certificate of Analysis for more information. DL = Detection Limit

		FIELD BLANK B117582 14-OCT-92			FIELD BLANK REP1 B117582 14-OCT-92			TRIP BLANK B117592 14-OCT-92			TRIP BLANK REP1 B117592 14-OCT-92			MW-9 B117598 15-OCT-92		
Metals	CAS Number	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units
Arsenic	7440-38-2	BDL	0.005	mg/L	BDL	0.005	mg/L	NA			NA			BDL	0.005	mg/L
Chromium	7440-47-32	BDL	0.010	mg/L	BDL	0.010	mg/L	NA			NA			BDL	0.010	mg/L
Copper	7440-50-8	BDL	0.025	mg/L	BDL	0.025	mg/L	NA			NA			BDL	0.025	mg/L
Lead	7439-92-1	BDL	0.005	mg/L	BDL	0.005	mg/L	NA			NA			BDL	0.005	mg/L

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* Note: This is a summary report. Please see the Certificate of Analysis for more information. DL = Detection Limit

		MW-9 REP1 B117598 15-OCT-92			MW-8 B117599 15-OCT-92			MW-8 REP1 B117599 15-OCT-92			MW-8A B117600 15-OCT-92			MW-8A REP1 B117600 15-OCT-92		
Metals	CAS Number	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units
Arsenic	7440-38-2	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
Chromium	7440-47-32	BDL	0.010	mg/L	0.024	0.010	mg/L	BDL	0.010	mg/L	BDL	0.010	mg/L	BDL	0.010	mg/L
Copper	7440-50-8	BDL	0.025	mg/L	0.026	0.025	mg/L	BDL	0.025	mg/L	BDL	0.025	mg/L	BDL	0.025	mg/L
Lead	7439-92-1	BDL	0.005	mg/L	0.038	0.010	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L

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		MW-7 B117601 15-OCT-92			MW-7 REP1 B117601 15-OCT-92			MW-18 B117602 15-OCT-92			MW-18 REP1 B117602 15-OCT-92			MW-6 B117603 15-OCT-92		
Metals	CAS Number	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units
Arsenic	7440-38-2	BDL	0.005	mg/L	BDL	0.005	mg/L	0.0058	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
Chromium	7440-47-32	0.014	0.010	mg/L	BDL	0.010	mg/L	0.67	0.010	mg/L	BDL	0.010	mg/L	BDL	0.010	mg/L
Copper	7440-50-8	BDL	0.025	mg/L	BDL	0.025	mg/L	0.051	0.025	mg/L	BDL	0.025	mg/L	BDL	0.025	mg/L
Lead	7439-92-1	0.0097	0.005	mg/L	BDL	0.005	mg/L	0.081	0.05	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L

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* Note: This is a summary report. Please see the Certificate of Analysis for more information. DL = Detection Limit

		MW-6 REP1 B117603 15-OCT-92			MW-13 B117604 15-OCT-92			MW-13 REP1 B117604 15-OCT-92			MW-15 B117605 15-OCT-92			MW-15 REP1 B117605 15-OCT-92		
Metals	CAS Number	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units
Arsenic	7440-38-2	BDL	0.005	mg/L	0.048	0.005	mg/L	BDL	0.005	mg/L	0.11	0.05	mg/L	0.023	0.005	mg/L
Chromium	7440-47-32	BDL	0.010	mg/L	0.039	0.010	mg/L	BDL	0.010	mg/L	0.031	0.010	mg/L	BDL	0.010	mg/L
Copper	7440-50-8	BDL	0.025	mg/L	0.061	0.025	mg/L	BDL	0.025	mg/L	0.050	0.025	mg/L	BDL	0.025	mg/L
Lead	7439-92-1	BDL	0.005	mg/L	0.12	0.05	mg/L	BDL	0.005	mg/L	0.042	0.015	mg/L	BDL	0.005	mg/L

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		FIELD BLANK B117606 15-OCT-92			FIELD BLANK REP1 B117606 15-OCT-92			TRIP BLANK B117607 15-OCT-92			TRIP BLANK REP1 B117607 15-OCT-92			MW-11A B117638 16-OCT-92		
Metals	CAS Number	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units
Arsenic	7440-38-2	BDL	0.005	mg/L	BDL	0.005	mg/L	NA			NA			BDL	0.005	mg/L
Chromium	7440-47-32	BDL	0.010	mg/L	BDL	0.010	mg/L	NA			NA			0.012	0.010	mg/L
Copper	7440-50-8	BDL	0.025	mg/L	BDL	0.025	mg/L	NA			NA			BDL	0.025	mg/L
Lead	7439-92-1	BDL	0.005	mg/L	BDL	0.005	mg/L	NA			NA			0.0095	0.005	mg/L

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		MW-11A REP1 B117638 16-OCT-92			MW-24 B117639 16-OCT-92			MW-24 REP1 B117639 16-OCT-92			MW-14 B117640 16-OCT-92			MW-14 REP1 B117640 16-OCT-92		
Metals	CAS Number	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units
Arsenic	7440-38-2	BDL	0.005	mg/L	0.0064	0.005	mg/L	BDL	0.005	mg/L	0.018	0.005	mg/L	BDL	0.005	mg/L
Chromium	7440-47-32	BDL	0.010	mg/L	0.018	0.010	mg/L	BDL	0.010	mg/L	0.069	0.010	mg/L	BDL	0.010	mg/L
Copper	7440-50-8	BDL	0.025	mg/L	0.027	0.025	mg/L	BDL	0.025	mg/L	0.059	0.025	mg/L	BDL	0.025	mg/L
Lead	7439-92-1	BDL	0.005	mg/L	0.071	0.050	mg/L	BDL	0.005	mg/L	0.050	0.015	mg/L	BDL	0.005	mg/L

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		MW-25 B117641 16-OCT-92			MW-25 REP1 B117641 16-OCT-92			MW-19 B117642 16-OCT-92			MW-19 REP1 B117642 16-OCT-92			MW-19A B117643 16-OCT-92		
Metals	CAS Number	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units
Arsenic	7440-38-2	0.012	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	0.0050	0.005	mg/L
Chromium	7440-47-32	0.031	0.010	mg/L	BDL	0.010	mg/L	0.030	0.010	mg/L	BDL	0.010	mg/L	0.011	0.010	mg/L
Copper	7440-50-8	0.041	0.025	mg/L	BDL	0.025	mg/L	BDL	0.025	mg/L	BDL	0.025	mg/L	BDL	0.025	mg/L
Lead	7439-92-1	0.036	0.010	mg/L	BDL	0.005	mg/L	0.0050	0.005	mg/L	BDL	0.005	mg/L	0.011	0.005	mg/L

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		MW-19A REP1 B117643 16-OCT-92			MW-20 B117644 16-OCT-92			MW-20 REP1 B117644 16-OCT-92			MW-21 B117645 16-OCT-92			MW-21 REP1 B117645 16-OCT-92		
Metals	CAS Number	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units
Arsenic	7440-38-2	BDL	0.005	mg/L	0.010	0.005	mg/L	BDL	0.005	mg/L	0.028	0.005	mg/L	BDL	0.005	mg/L
Chromium	7440-47-32	BDL	0.010	mg/L	BDL	0.010	mg/L	BDL	0.010	mg/L	0.032	0.010	mg/L	BDL	0.010	mg/L
Copper	7440-50-8	BDL	0.025	mg/L	0.032	0.025	mg/L	BDL	0.025	mg/L	0.035	0.025	mg/L	BDL	0.025	mg/L
Lead	7439-92-1	BDL	0.005	mg/L	0.012	0.005	mg/L	BDL	0.005	mg/L	0.061	0.050	mg/L	BDL	0.005	mg/L

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		FIELD BLANK B117646 16-OCT-92			FIELD BLANK REP1 B117646 16-OCT-92			TRIP BLANK B117647 16-OCT-92			TRIP BLANK REP1 B117647 16-OCT-92		
Metals	CAS Number	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units
Arsenic	7440-38-2	BDL	0.005	mg/L	BDL	0.005	mg/L	NA			NA		
Chromium	7440-47-32	BDL	0.010	mg/L	BDL	0.010	mg/L	NA			NA		
Copper	7440-50-8	BDL	0.025	mg/L	BDL	0.025	mg/L	NA			NA		
Lead	7439-92-1	BDL	0.005	mg/L	BDL	0.005	mg/L	NA			NA		

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Waters

Semi-Volatiles

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		MW-22 B117577 13-OCT-92			MW-23 B117578 13-OCT-92			MW-10 B117579 14-OCT-92			MW-16 B117580 14-OCT-92			MW-17 B117581 14-OCT-92		
Semi-volatiles	CAS Number	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units
Acenaphthene	83-32-9	*2.5	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Anthracene	120-12-7	0.18	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	0.02	0.01	mg/L
Benz(A)Anthracene	56-55-3	0.13	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Benzo(A)Pyrene	50-32-8	0.06	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Benzo(B)Fluoranthene	205-99-2	0.12	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	0.01	0.01	mg/L
Benzo(K)Fluoranthene	207-08-9	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Bis(2-Chloroethyl)Ether	111-44-4	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Carbazole	86-74-8	0.19	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
4-Chloro-3-Methylphenol	59-50-7	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
2-Chlorophenol	95-57-8	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Chrysene	218-01-9	0.10	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Dibenz(A,H)Anthracene	53-70-3	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
2,4-Dimethylphenol	105-67-9	0.03	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
2,4-Dinitrophenol	25550-58-7	BDL	0.05	mg/L	BDL	0.05	mg/L	BDL	0.05	mg/L	BDL	0.05	mg/L	BDL	0.05	mg/L
Fluoranthene	206-44-0	*1.7	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	0.08	0.01	mg/L
Indeno(1,2,3-Cd)Pyrene	193-39-5	0.02	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Naphthalene	91-20-3	**4.5	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Pentachlorophenol	87-86-5	BDL	0.05	mg/L	BDL	0.05	mg/L	BDL	0.05	mg/L	BDL	0.05	mg/L	BDL	0.05	mg/L
Phenanthrene	85-01-8	*3.7	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	0.06	0.01	mg/L
Phenol	108-95-2	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Tetrachlorophenol	25167-83-3	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
2,4,5-Trichlorophenol	95-95-4	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
2,4,6-Trichlorophenol	88-06-2	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L

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		FIELD BLANK B117582 14-OCT-92			TRIP BLANK B117592 14-OCT-92			MW-9 B117598 15-OCT-92			MW-8 B117599 15-OCT-92			MW-8A B117600 15-OCT-92		
Semi-volatiles	CAS Number	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units
Acenaphthene	83-32-9	BDL	0.01	mg/L	NA			BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Anthracene	120-12-7	BDL	0.01	mg/L	NA			BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Benz(A)Anthracene	56-55-3	BDL	0.01	mg/L	NA			BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Benzo(A)Pyrene	50-32-8	BDL	0.01	mg/L	NA			BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Benzo(B)Fluoranthene	205-99-2	BDL	0.01	mg/L	NA			BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Benzo(K)Fluoranthene	207-08-9	BDL	0.01	mg/L	NA			BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Bis(2-Chloroethyl)Ether	111-44-4	BDL	0.01	mg/L	NA			BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Carbazole	86-74-8	BDL	0.01	mg/L	NA			BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
4-Chloro-3-Methylphenol	59-50-7	BDL	0.01	mg/L	NA			BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
2-Chlorophenol	95-57-8	BDL	0.01	mg/L	NA			BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Chrysene	218-01-9	BDL	0.01	mg/L	NA			BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Dibenz(A,H)Anthracene	53-70-3	BDL	0.01	mg/L	NA			BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
2,4-Dimethylphenol	105-67-9	BDL	0.01	mg/L	NA			BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
2,4-Dinitrophenol	25550-58-7	BDL	0.05	mg/L	NA			BDL	0.05	mg/L	BDL	0.05	mg/L	BDL	0.05	mg/L
Fluoranthene	206-44-0	BDL	0.01	mg/L	NA			BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Indeno(1,2,3-Cd)Pyrene	193-39-5	BDL	0.01	mg/L	NA			BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Naphthalene	91-20-3	BDL	0.01	mg/L	NA			BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Pentachlorophenol	87-86-5	BDL	0.05	mg/L	NA			BDL	0.05	mg/L	BDL	0.05	mg/L	BDL	0.05	mg/L
Phenanthrene	85-01-8	BDL	0.01	mg/L	NA			BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Phenol	108-95-2	BDL	0.01	mg/L	NA			BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Tetrachlorophenol	25167-83-3	BDL	0.01	mg/L	NA			BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
2,4,5-Trichlorophenol	95-95-4	BDL	0.01	mg/L	NA			BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
2,4,6-Trichlorophenol	88-06-2	BDL	0.01	mg/L	NA			BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L

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* Note: This is a summary report. Please see the Certificate of Analysis for more information. DL = Detection Limit

		MW-7 B117601 15-OCT-92			MW-18 B117602 15-OCT-92			MW-6 B117603 15-OCT-92			MW-13 B117604 15-OCT-92			MW-15 B117605 15-OCT-92		
Semi-volatiles	CAS Number	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units
Acenaphthene	83-32-9	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	*1.1	0.2	mg/L	0.14	0.01	mg/L
Anthracene	120-12-7	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	*0.26	0.2	mg/L	BDL	0.01	mg/L
Benz(A)Anthracene	56-55-3	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	0.12	0.01	mg/L	BDL	0.01	mg/L
Benzo(A)Pyrene	50-32-8	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	0.04	0.01	mg/L	BDL	0.01	mg/L
Benzo(B)Fluoranthene	205-99-2	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	0.08	0.01	mg/L	BDL	0.01	mg/L
Benzo(K)Fluoranthene	207-08-9	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Bis(2-Chloroethyl)Ether	111-44-4	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Carbazole	86-74-8	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	*0.32	0.2	mg/L	0.03	0.01	mg/L
4-Chloro-3-Methylphenol	59-50-7	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
2-Chlorophenol	95-57-8	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Chrysene	218-01-9	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	0.10	0.01	mg/L	BDL	0.01	mg/L
Dibenz(A,H)Anthracene	53-70-3	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
2,4-Dimethylphenol	105-67-9	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	0.01	0.01	ug/L	0.03	0.01	mg/L
2,4-Dinitrophenol	25550-58-7	BDL	0.05	mg/L	BDL	0.05	mg/L	BDL	0.05	mg/L	BDL	0.05	ug/L	BDL	0.05	mg/L
Fluoranthene	206-44-0	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	*0.76	0.2	mg/L	BDL	0.01	mg/L
Indeno(1,2,3-Cd)Pyrene	193-39-5	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	0.02	0.01	mg/L	BDL	0.01	mg/L
Naphthalene	91-20-3	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	*3.5	0.2	mg/L	BDL	0.01	mg/L
Pentachlorophenol	87-86-5	BDL	0.05	mg/L	BDL	0.05	mg/L	BDL	0.05	mg/L	BDL	0.05	mg/L	BDL	0.05	mg/L
Phenanthrene	85-01-8	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	*1.6	0.2	mg/L	0.05	0.01	mg/L
Phenol	108-95-2	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Tetrachlorophenol	25167-83-3	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
2,4,5-Trichlorophenol	95-95-4	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
2,4,6-Trichlorophenol	88-06-2	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L

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* Note: This is a summary report. Please see the Certificate of Analysis for more information. DL = Detection Limit

		FIELD BLANK B117606 15-OCT-92			TRIP BLANK B117607 15-OCT-92			MW-11A B117638 16-OCT-92			MW-24 B117639 16-OCT-92			MW-14 B117640 16-OCT-92		
Semi-volatiles	CAS Number	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units
Acenaphthene	83-32-9	BDL	0.01	mg/L	NA			0.05	0.01	mg/L	0.11	0.01	mg/L	**0.81	0.01	mg/L
Anthracene	120-12-7	BDL	0.01	mg/L	NA			0.02	0.01	mg/L	BDL	0.01	mg/L	**0.26	0.01	mg/L
Benz(A)Anthracene	56-55-3	BDL	0.01	mg/L	NA			BDL	0.01	mg/L	BDL	0.01	mg/L	0.14	0.01	mg/L
Benzo(A)Pyrene	50-32-8	BDL	0.01	mg/L	NA			BDL	0.01	mg/L	BDL	0.01	mg/L	0.05	0.01	mg/L
Benzo(B)Fluoranthene	205-99-2	BDL	0.01	mg/L	NA			BDL	0.01	mg/L	BDL	0.01	mg/L	0.11	0.01	mg/L
Benzo(K)Fluoranthene	207-08-9	BDL	0.01	mg/L	NA			BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Bis(2-Chloroethyl)Ether	111-44-4	BDL	0.01	mg/L	NA			BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Carbazole	86-74-8	BDL	0.01	mg/L	NA			0.04	0.01	mg/L	0.03	0.01	mg/L	0.19	0.01	mg/L
4-Chloro-3-Methylphenol	59-50-7	BDL	0.01	mg/L	NA			BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
2-Chlorophenol	95-57-8	BDL	0.01	mg/L	NA			BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Chrysene	218-01-9	BDL	0.01	mg/L	NA			BDL	0.01	mg/L	BDL	0.01	mg/L	0.09	0.01	mg/L
Dibenz(A,H)Anthracene	53-70-3	BDL	0.01	mg/L	NA			BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
2,4-Dimethylphenol	105-67-9	BDL	0.01	mg/L	NA			BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
2,4-Dinitrophenol	25550-58-7	BDL	0.05	mg/L	NA			BDL	0.05	mg/L	BDL	0.05	mg/L	BDL	0.05	mg/L
Fluoranthene	206-44-0	BDL	0.01	mg/L	NA			0.01	0.01	mg/L	BDL	0.01	mg/L	**0.78	0.01	mg/L
Indeno(1,2,3-Cd)Pyrene	193-39-5	BDL	0.01	mg/L	NA			BDL	0.01	mg/L	BDL	0.01	mg/L	0.02	0.01	mg/L
Naphthalene	91-20-3	BDL	0.01	mg/L	NA			BDL	0.01	mg/L	BDL	0.01	mg/L	***4.9	0.01	mg/L
Pentachlorophenol	87-86-5	BDL	0.05	mg/L	NA			BDL	0.05	mg/L	BDL	0.05	mg/L	BDL	0.05	mg/L
Phenanthrene	85-01-8	BDL	0.01	mg/L	NA			0.06	0.01	mg/L	0.02	0.01	mg/L	**1.4	0.01	mg/L
Phenol	108-95-2	BDL	0.01	mg/L	NA			BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Tetrachlorophenol	25167-83-3	BDL	0.01	mg/L	NA			BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
2,4,5-Trichlorophenol	95-95-4	BDL	0.01	mg/L	NA			BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
2,4,6-Trichlorophenol	88-06-2	BDL	0.01	mg/L	NA			BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L

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		MW-25 B117641 16-OCT-92			MW-19 B117642 16-OCT-92			MW-19A B117643 16-OCT-92			MW-20 B117644 16-OCT-92			MW-21 B117645 16-OCT-92		
Semi-volatiles	CAS Number	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units
Acenaphthene	83-32-9	0.120	0.01	mg/L	0.18	0.01	mg/L	BDL	0.01	mg/L	0.05	0.01	mg/L	BDL	0.01	mg/L
Anthracene	120-12-7	0.070	0.01	mg/L	0.01	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Benz(A)Anthracene	56-55-3	0.05	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Benzo(A)Pyrene	50-32-8	0.02	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Benzo(B)Fluoranthene	205-99-2	0.04	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Benzo(K)Fluoranthene	207-08-9	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Bis(2-Chloroethyl)Ether	111-44-4	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Carbazole	86-74-8	0.02	0.01	mg/L	0.07	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
4-Chloro-3-Methylphenol	59-50-7	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
2-Chlorophenol	95-57-8	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Chrysene	218-01-9	0.04	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Dibenz(A,H)Anthracene	53-70-3	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
2,4-Dimethylphenol	105-67-9	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
2,4-Dinitrophenol	25550-58-7	BDL	0.05	mg/L	BDL	0.05	mg/L	BDL	0.05	mg/L	BDL	0.05	mg/L	BDL	0.05	mg/L
Fluoranthene	206-44-0	0.16	0.01	mg/L	0.02	0.01	mg/L	BDL	0.01	mg/L	0.012	0.01	mg/L	BDL	0.01	mg/L
Indeno(1,2,3-Cd)Pyrene	193-39-5	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Naphthalene	91-20-3	BDL	0.01	mg/L	**0.30	0.10	mg/L	BDL	0.01	mg/L	0.04	0.01	mg/L	BDL	0.01	mg/L
Pentachlorophenol	87-86-5	BDL	0.05	mg/L	BDL	0.05	mg/L	BDL	0.05	mg/L	BDL	0.05	mg/L	BDL	0.05	mg/L
Phenanthrene	85-01-8	0.190	0.01	mg/L	0.08	0.01	mg/L	BDL	0.01	mg/L	0.05	0.01	mg/L	BDL	0.01	mg/L
Phenol	108-95-2	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Tetrachlorophenol	25167-83-3	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
2,4,5-Trichlorophenol	95-95-4	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
2,4,6-Trichlorophenol	88-06-2	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L

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		FIELD BLANK B117646 16-OCT-92			TRIP BLANK B117647 16-OCT-92		
Semi-volatiles	CAS Number	Result	DL	Units	Result	DL	Units
Acenaphthene	83-32-9	BDL	0.01	mg/L	NA		
Anthracene	120-12-7	BDL	0.01	mg/L	NA		
Benz(A)Anthracene	56-55-3	BDL	0.01	mg/L	NA		
Benzo(A)Pyrene	50-32-8	BDL	0.01	mg/L	NA		
Benzo(B)Fluoranthene	205-99-2	BDL	0.01	mg/L	NA		
Benzo(K)Fluoranthene	207-08-9	BDL	0.01	mg/L	NA		
Bis(2-Chloroethyl)Ether	111-44-4	BDL	0.01	mg/L	NA		
Carbazole	86-74-8	BDL	0.01	mg/L	NA		
4-Chloro-3-Methylphenol	59-50-7	BDL	0.01	mg/L	NA		
2-Chlorophenol	95-57-8	BDL	0.01	mg/L	NA		
Chrysene	218-01-9	BDL	0.01	mg/L	NA		
Dibenz(A,H)Anthracene	53-70-3	BDL	0.01	mg/L	NA		
2,4-Dimethylphenol	105-67-9	BDL	0.01	mg/L	NA		
2,4-Dinitrophenol	25550-58-7	BDL	0.05	mg/L	NA		
Fluoranthene	206-44-0	BDL	0.01	mg/L	NA		
Indeno(1,2,3-Cd)Pyrene	193-39-5	BDL	0.01	mg/L	NA		
Naphthalene	91-20-3	BDL	0.01	mg/L	NA		
Pentachlorophenol	87-86-5	BDL	0.05	mg/L	NA		
Phenanthrene	85-01-8	BDL	0.01	mg/L	NA		
Phenol	108-95-2	BDL	0.01	mg/L	NA		
Tetrachlorophenol	25167-83-3	BDL	0.01	mg/L	NA		
2,4,5-Trichlorophenol	95-95-4	BDL	0.01	mg/L	NA		
2,4,6-Trichlorophenol	88-06-2	BDL	0.01	mg/L	NA		

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Heritage Laboratories, Inc -- Parameter Summary Report
SWP Wilmington Project

		MW-22 B117577 13-OCT-92			MW-23 B117578 13-OCT-92			MW-10 B117579 14-OCT-92			MW-16 B117580 14-OCT-92			MW-17 B117581 14-OCT-92		
General Organics	CAS Number	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units
Benzene	71-43-2	0.005	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Bromodichloromethane	75-27-4	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Bromomethane	74-83-9	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
Carbon Tetrachloride	56-23-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Chlorobenzene	108-90-7	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Chloroethane	75-00-3	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
2-Chloroethylvinylether	110-75-8	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Chloroform	67-66-3	0.004	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Chloromethane	74-87-3	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
Cis-1,3-Dichloropropene	10061-01-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Dibromochloromethane	124-48-1	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
1,2-Dibromoethane (Edb)	106-93-4	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
Dichlorodifluoromethane	75-71-8	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
1,1-Dichloroethane	75-34-3	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
1,2-Dichloroethane	107-06-2	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
1,1-Dichloroethene	75-35-4	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Dichloromethane	75-09-2	0.002	0.001	mg/L	0.003	0.001	mg/L	BDL	0.001	mg/L	0.001	0.001	mg/L	0.003	0.001	mg/L
1,2-Dichloropropane	78-87-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Ethyl Benzene	100-41-4	0.037	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	0.006	0.001	mg/L
Fluorotrichloromethane	75-69-4	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
M/P-Xylene	NA	0.048	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	0.016	0.001	mg/L
Methyl-T-Butyl Ether (Mtbe)	1634-04-4	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
O-Xylene	95-47-6	0.023	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	0.010	0.001	mg/L
1,1,2,2-Tetrachloroethane	79-34-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Toluene	108-88-3	0.011	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	0.017	0.001	mg/L
Trans-1,2-Dichloroethene	156-60-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
1,1,1-Trichloroethane	78-92-2	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
1,1,2-Trichloroethane	79-00-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Trichloroethene	79-01-6	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Vinyl Chloride	75-01-4	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L

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		FIELD BLANK B117582 14-OCT-92			TRIP BLANK B117592 14-OCT-92			MW-9 B117598 15-OCT-92			MW-8 B117599 15-OCT-92			MW-8A B117600 15-OCT-92		
General Organics	CAS Number	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units
Benzene	71-43-2	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Bromodichloromethane	75-27-4	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Bromomethane	74-83-9	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
Carbon Tetrachloride	56-23-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Chlorobenzene	108-90-7	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Chloroethane	75-00-3	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
2-Chloroethylvinylether	110-75-8	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Chloroform	67-66-3	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	0.002	0.001	mg/L
Chloromethane	74-87-3	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
Cis-1,3-Dichloropropene	10061-01-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Dibromochloromethane	124-48-1	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
1,2-Dibromoethane (Edb)	106-93-4	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
Dichlorodifluoromethane	75-71-8	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
1,1-Dichloroethane	75-34-3	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
1,2-Dichloroethane	107-06-2	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
1,1-Dichloroethene	75-35-4	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Dichloromethane	75-09-2	0.002	0.001	mg/L	BDL	0.005	mg/L	BDL	0.001	mg/L	0.002	0.001	mg/L	BDL	0.001	mg/L
1,2-Dichloropropane	78-87-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Ethyl Benzene	100-41-4	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Fluorotrichloromethane	75-69-4	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
M/P-Xylene	NA	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Methyl-T-Butyl Ether (Mtbe)	1634-04-4	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
O-Xylene	95-47-6	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
1,1,2,2-Tetrachloroethane	79-34-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Toluene	108-88-3	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Trans-1,2-Dichloroethene	156-60-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
1,1,1-Trichloroethane	78-92-2	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
1,1,2-Trichloroethane	79-00-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Trichloroethene	79-01-6	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Vinyl Chloride	75-01-4	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L

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		MW-7 B117601 15-OCT-92			MW-18 B117602 15-OCT-92			MW-6 B117603 15-OCT-92			MW-13 B117604 15-OCT-92			MW-15 B117605 15-OCT-92		
General Organics	CAS Number	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units
Benzene	71-43-2	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	0.10	0.01	ug/L	0.005	0.001	mg/L
Bromodichloromethane	75-27-4	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.01	ug/L	BDL	0.001	mg/L
Bromomethane	74-83-9	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.05	ug/L	BDL	0.005	mg/L
Carbon Tetrachloride	56-23-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.01	ug/L	BDL	0.001	mg/L
Chlorobenzene	108-90-7	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.01	ug/L	BDL	0.001	mg/L
Chloroethane	75-00-3	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.05	ug/L	BDL	0.005	mg/L
2-Chloroethylvinylether	110-75-8	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.01	ug/L	BDL	0.001	mg/L
Chloroform	67-66-3	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.01	ug/L	BDL	0.001	mg/L
Chloromethane	74-87-3	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.05	ug/L	BDL	0.005	mg/L
Cis-1,3-Dichloropropene	10061-01-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.01	ug/L	BDL	0.001	mg/L
Dibromochloromethane	124-48-1	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.01	ug/L	BDL	0.001	mg/L
1,2-Dibromoethane (Edb)	106-93-4	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.05	ug/L	BDL	0.005	mg/L
Dichlorodifluoromethane	75-71-8	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.05	ug/L	BDL	0.005	mg/L
1,1-Dichloroethane	75-34-3	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.01	ug/L	BDL	0.005	mg/L
1,2-Dichloroethane	107-06-2	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	ug/L	BDL	0.001	mg/L
1,1-Dichloroethene	75-35-4	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.01	ug/L	BDL	0.001	mg/L
Dichloromethane	75-09-2	BDL	0.001	mg/L	0.002	0.001	mg/L	BDL	0.001	mg/L	BDL	0.01	ug/L	BDL	0.001	mg/L
1,2-Dichloropropane	78-87-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.01	ug/L	BDL	0.001	mg/L
Ethyl Benzene	100-41-4	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	0.04	0.01	ug/L	0.008	0.001	mg/L
Fluorotrichloromethane	75-69-4	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.05	ug/L	BDL	0.005	mg/L
M/P-Xylene	NA	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	0.05	0.01	ug/L	0.006	0.001	mg/L
Methyl-T-Butyl Ether (Mtbe)	1634-04-4	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.05	ug/L	BDL	0.005	mg/L
O-Xylene	95-47-6	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	0.02	0.01	ug/L	0.003	0.001	mg/L
1,1,2,2-Tetrachloroethane	79-34-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.01	ug/L	BDL	0.001	mg/L
Toluene	108-88-3	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	0.01	0.01	ug/L	BDL	0.001	mg/L
Trans-1,2-Dichloroethene	156-60-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.01	ug/L	BDL	0.001	mg/L
1,1,1-Trichloroethane	78-92-2	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.01	ug/L	BDL	0.001	mg/L
1,1,2-Trichloroethane	79-00-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.01	ug/L	BDL	0.001	mg/L
Trichloroethene	79-01-6	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.01	ug/L	BDL	0.001	mg/L
Vinyl Chloride	75-01-4	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.05	ug/L	BDL	0.005	mg/L

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		FIELD BLANK B117606 15-OCT-92			TRIP BLANK B117607 15-OCT-92			MW-11A B117638 16-OCT-92			MW-24 B117639 16-OCT-92			MW-14 B117640 16-OCT-92		
General Organics	CAS Number	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units
Benzene	71-43-2	BDL	0.001	mg/L	BDL	0.001	mg/L	0.003	0.001	mg/L	BDL	0.001	mg/L	0.019	.005	mg/L
Bromodichloromethane	75-27-4	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	.005	mg/L
Bromomethane	74-83-9	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	.025	mg/L
Carbon Tetrachloride	56-23-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	.005	mg/L
Chlorobenzene	108-90-7	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	.005	mg/L
Chloroethane	75-00-3	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	.025	mg/L
2-Chloroethylvinylether	110-75-8	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	.005	mg/L
Chloroform	67-66-3	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	.005	mg/L
Chloromethane	74-87-3	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	.025	mg/L
Cis-1,3-Dichloropropene	10061-01-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	.005	mg/L
Dibromochloromethane	124-48-1	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	.005	mg/L
1,2-Dibromoethane (Edb)	106-93-4	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	.025	mg/L
Dichlorodifluoromethane	75-71-8	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	.025	mg/L
1,1-Dichloroethane	75-34-3	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	.005	mg/L
1,2-Dichloroethane	107-06-2	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
1,1-Dichloroethene	75-35-4	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	.005	mg/L
Dichloromethane	75-09-2	0.002	0.001	mg/L	BDL	0.005	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	.005	mg/L
1,2-Dichloropropane	78-87-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	.005	mg/L
Ethyl Benzene	100-41-4	BDL	0.001	mg/L	BDL	0.001	mg/L	0.004	0.001	mg/L	0.002	0.001	mg/L	0.060	.005	mg/L
Fluorotrichloromethane	75-69-4	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	.025	mg/L
M/P-Xylene	NA	BDL	0.001	mg/L	BDL	0.001	mg/L	0.007	0.001	mg/L	0.002	0.001	mg/L	0.078	.005	mg/L
Methyl-T-Butyl Ether (Mtbe)	1634-04-4	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	.025	mg/L
O-Xylene	95-47-6	BDL	0.001	mg/L	BDL	0.001	mg/L	0.003	0.001	mg/L	0.001	0.001	mg/L	0.038	.005	mg/L
1,1,2,2-Tetrachloroethane	79-34-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	.005	mg/L
Toluene	108-88-3	BDL	0.001	mg/L	BDL	0.001	mg/L	0.001	0.001	mg/L	BDL	0.001	mg/L	0.028	.005	mg/L
Trans-1,2-Dichloroethene	156-60-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	.005	mg/L
1,1,1-Trichloroethane	78-92-2	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	.005	mg/L
1,1,2-Trichloroethane	79-00-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	.005	mg/L
Trichloroethene	79-01-6	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	.005	mg/L
Vinyl Chloride	75-01-4	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	.025	mg/L

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		MW-25 B117641 16-OCT-92			MW-19 B117642 16-OCT-92			MW-19A B117643 16-OCT-92			MW-20 B117644 16-OCT-92			MW-21 B117645 16-OCT-92		
General Organics	CAS Number	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units
Benzene	71-43-2	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Bromodichloromethane	75-27-4	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Bromomethane	74-83-9	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
Carbon Tetrachloride	56-23-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Chlorobenzene	108-90-7	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Chloroethane	75-00-3	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
2-Chloroethylvinylether	110-75-8	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Chloroform	67-66-3	BDL	0.001	mg/L	BDL	0.001	mg/L	0.001	0.001	mg/L	BDL	0.001	mg/L	0.001	0.001	mg/L
Chloromethane	74-87-3	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
Cis-1,3-Dichloropropene	10061-01-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Dibromochloromethane	124-48-1	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
1,2-Dibromoethane (Edb)	106-93-4	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
Dichlorodifluoromethane	75-71-8	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
1,1-Dichloroethane	75-34-3	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
1,2-Dichloroethane	107-06-2	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
1,1-Dichloroethene	75-35-4	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Dichloromethane	75-09-2	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
1,2-Dichloropropane	78-87-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Ethyl Benzene	100-41-4	BDL	0.001	mg/L	0.011	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Fluorotrichloromethane	75-69-4	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
M/P-Xylene	NA	BDL	0.001	mg/L	0.007	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Methyl-T-Butyl Ether (Mtbe)	1634-04-4	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
O-Xylene	95-47-6	BDL	0.001	mg/L	0.005	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
1,1,2,2-Tetrachloroethane	79-34-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Toluene	108-88-3	BDL	0.001	mg/L	0.001	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Trans-1,2-Dichloroethene	156-60-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
1,1,1-Trichloroethane	78-92-2	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
1,1,2-Trichloroethane	79-00-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Trichloroethene	79-01-6	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Vinyl Chloride	75-01-4	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L

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* Note: This is a summary report. Please see the Certificate of Analysis for more information. DL = Detection Limit

		FIELD BLANK B117646 16-OCT-92			TRIP BLANK B117647 16-OCT-92		
General Organics	CAS Number	Result	DL	Units	Result	DL	Units
Benzene	71-43-2	BDL	0.001	ug/L	BDL	0.001	mg/L
Bromodichloromethane	75-27-4	BDL	0.001	ug/L	BDL	0.001	mg/L
Bromomethane	74-83-9	BDL	0.005	ug/L	BDL	0.005	mg/L
Carbon Tetrachloride	56-23-5	BDL	0.001	ug/L	BDL	0.001	mg/L
Chlorobenzene	108-90-7	BDL	0.001	ug/L	BDL	0.001	mg/L
Chloroethane	75-00-3	BDL	0.005	ug/L	BDL	0.005	mg/L
2-Chloroethylvinylether	110-75-8	BDL	0.001	ug/L	BDL	0.001	mg/L
Chloroform	67-66-3	BDL	0.001	ug/L	BDL	0.001	mg/L
Chloromethane	74-87-3	BDL	0.005	ug/L	BDL	0.005	mg/L
Cis-1,3-Dichloropropene	10061-01-5	BDL	0.001	ug/L	BDL	0.001	mg/L
Dibromochloromethane	124-48-1	BDL	0.001	ug/L	BDL	0.001	mg/L
1,2-Dibromoethane (Edb)	106-93-4	BDL	0.005	ug/L	BDL	0.005	mg/L
Dichlorodifluoromethane	75-71-8	BDL	0.005	ug/L	BDL	0.005	mg/L
1,1-Dichloroethane	75-34-3	BDL	0.001	ug/L	BDL	0.001	mg/L
1,2-Dichloroethane	107-06-2	BDL	0.001	ug/L	BDL	0.001	mg/L
1,1-Dichloroethene	75-35-4	BDL	0.001	ug/L	BDL	0.001	mg/L
Dichloromethane	75-09-2	BDL	0.001	ug/L	BDL	0.005	mg/L
1,2-Dichloropropane	78-87-5	BDL	0.001	ug/L	BDL	0.001	mg/L
Ethyl Benzene	100-41-4	BDL	0.001	ug/L	BDL	0.001	mg/L
Fluorotrichloromethane	75-69-4	BDL	0.005	ug/L	BDL	0.005	mg/L
M/P-Xylene	NA	BDL	0.001	ug/L	BDL	0.001	mg/L
Methyl-T-Butyl Ether (Mtbe)	1634-04-4	BDL	0.005	ug/L	BDL	0.005	mg/L
O-Xylene	95-47-6	BDL	0.001	ug/L	BDL	0.001	mg/L
1,1,2,2-Tetrachloroethane	79-34-5	BDL	0.001	ug/L	BDL	0.001	mg/L
Toluene	108-88-3	BDL	0.001	ug/L	BDL	0.001	mg/L
Trans-1,2-Dichloroethene	156-60-5	BDL	0.001	ug/L	BDL	0.001	mg/L
1,1,1-Trichloroethane	78-92-2	BDL	0.001	ug/L	BDL	0.001	mg/L
1,1,2-Trichloroethane	79-00-5	BDL	0.001	ug/L	BDL	0.001	mg/L
Trichloroethene	79-01-6	BDL	0.001	ug/L	BDL	0.001	mg/L
Vinyl Chloride	75-01-4	BDL	0.005	ug/L	BDL	0.005	mg/L

RECEIVED
NOV 25 1992
ENVIRONMENTAL AFFAIRS

* Note: This is a summary report. Please see the Certificate of Analysis for more information. DL = Detection Limit

TO ENSURE PROPER HANDLING OF SAMPLES PLEASE COMPLETE THIS ENTIRE FORM

HERITAGE LABORATORIES, INC.

4132 POMPANO ROAD
CHARLOTTE, N.C. 28216 (704) 393-1853

16489

Co. Name: SWP ETE
Project Name: SWP - Wilmington
Quote No.: PO No.:

ENVIRONMENTAL PROGRAM:
CWA NPDES_____ IWP_____ SLUDGE_____
RCRA MW_____ SW_____ DISPOSAL_____
SDWA_____ CERCLA/SUPERFUND_____ OTHER_____

Sampled by: Greg Kuntz

Analyses Requested (Note special detection limits or methods)

Report To:
Co: Greg Kuntz
Add: ETE, Inc
1445 Pisgah Church Rd
Lexington, SC 29072
Attn:
Phone: 800-786-0654

Accelerated Turnaround Requested _____ (Subject to Additional Charge)

Result Request by: ___/___/___ Mo Day Yr
(Date must be Accepted and Approved by Lab.)

Sample ID:	Date:	Time:	Comp	Grab	Sample Description:	Sample Type (Matrix): DW, GW, WW, SOIL, SLUDGE, OTHER	No. of Containers	VOC	8250	Metals	Metals Dissolved	Remarks:	EMS Sample No.
MW-11A	10/16/92	6:20		X	10671	GW	7	3	2	1	1		117638
MW-24		7:50			10672								117639
MW-14		8:30			10673								117640
MW-25		9:20			10674								117641
MW-19		10:40			10675								117642
MW-9A		11:15			10676								117643
MW-20		12:20			10677								117644
MW-21		12:50			10678								117645
Field Blank		13:20											117646

Wilmington Site Specific

Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Relinquished by: (Signature)	Date /Time	Received by: (Signature)
Gregory B Kuntz	10/16/92 13:50			10/16/92 1350	S. Kuk
Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Relinquished by: (Signature)	Date /Time	Received by: (Signature)
	/			/	
Relinquished by: (Signature)	Date /Time	Received for Lab by: (Signature)	Remarks: Trip Blank arrived in cooler 8021 VOC → B117647		
	10/17/92 1200	Steven H. Gupta			

Distribution: Original and yellow copies accompany sample to laboratory; Pink copy retained by client; Yellow copy returned to client.

TO ENSURE PROPER HANDLING OF SAMPLES PLEASE COMPLETE THIS ENTIRE FORM

HERITAGE LABORATORIES, INC.

4132 POMPANO ROAD
CHARLOTTE, N.C. 28216 (704) 393-1853

16490

Co. Name: SWP ETE
Project Name: SWP Wilmington
Quote No.: PO No.:

ENVIRONMENTAL PROGRAM:
CWA NPDES_____ IWP_____ SLUDGE_____
RCRA MW_____ SW_____ DISPOSAL_____
SDWA_____ CERCLA/SUPERFUND_____ OTHER_____

Sampled by: Greg Kuntz

Analyses Requested (Note special detection limits or methods)

Report To:
Co: Greg Kuntz
Add: ETE, Inc
1445 Pisgah Church Rd
Lexington, SC 29072
Attn:
Phone: 800-786-0659

Accelerated Turnaround Requested _____ (Subject to Additional Charge)

Result Request by: ___/___/___ (Mo Day Yr) (Date must be Accepted and Approved by Lab.)

Sample ID:	Date:	Time:	Comp	Grab	Sample Description:	Sample Type (Matrix): DW, GW, WW, SOIL, SLUDGE, OTHER	No. of Containers	VOC	SV	Metals	Metals Dissolved	Remarks:	EMS Sample No.
MW-9	10/15	11:15		X	10663	GW	11	3	2	1	1	Wilmington Site Specific List	117598
MW-8		12:15			10664								117599
MW-8A		12:55			10665								117600
MW-7		13:55			10666								117601
MW-18		14:45			10667								117602
MW-6		15:20			10668								117603
MW-13		16:15			10669								117604
MW-15		17:10			10670								117605
FB		17:45											117606

Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Relinquished by: (Signature)	Date /Time	Received by: (Signature)
Gregory B. Kuntz	10/15/92			10/15/92 1815	
Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Relinquished by: (Signature)	Date /Time	Received by: (Signature)
	/			/	
Relinquished by: (Signature)	Date /Time	Received for Lab by: (Signature)	Remarks:		
	10/16/92 1000	Stan H. Gupta	Trip Blank arrived in cooler → ~~VOC~~ VOC ONLY → B117607		

SHG 10/16/92

Distribution: Original and yellow copies accompany sample to laboratory; Pink copy retained by client; Yellow copy returned to client.

TO ENSURE PROPER HANDLING OF SAMPLES PLEASE COMPLETE THIS ENTIRE FORM

HERITAGE LABORATORIES, INC.

4132 POMPANO ROAD
CHARLOTTE, N.C. 28216 (704) 393-1853

16491

Co. Name: SWP ETE
Project Name: SWP Wilmington
Quote No.: PO No.: 0

ENVIRONMENTAL PROGRAM:
CWA NPDES_____ IWP_____ SLUDGE_____
RCRA MW_____ SW_____ DISPOSAL_____
SDWA_____ CERCLA/SUPERFUND_____ OTHER_____

Sampled by:

Report To:
Co: Greg Kuntz
Add: ETE
1445 Pissah Ch. Rd.
Lexington SC 29072
Attn:
Phone: (800) 786-0654

Accelerated Turnaround Requested _____
(Subject to Additional Charge)

Result Request by: ___/___/___ (Mo Day Yr)
(Date must be Accepted and Approved by Lab.)

Analyses Requested (Note special detection limits or methods)

Sample ID:	Date:	Time:	Comp	Grab	Sample Description:	Sample Type (Matrix): DW, GW, WW, SOIL, SLUDGE, OTHER	No. of Containers	VOC	SV	Metals	Metals Dissolved							Remarks:	EMS Sample No.
MW-22	10/13	1340		X	10658	SW	7	3	2	1	1								B117577
MW-23	10/13	1415		X	10659		7	3	2	1	1								B117578
MW-10	10/14	1300		X	10660		7	3	2	1	1								B117579
MW-16	10/14	1510		X	10661		7	3	2	1	1								B117580
MW-17	10/14	1600		X	10662		7	3	2	1	1							1 Liter Broken SHL 10/15/92	B117581
FB	10/14	1630		X			7	3	2	1	1								B117582

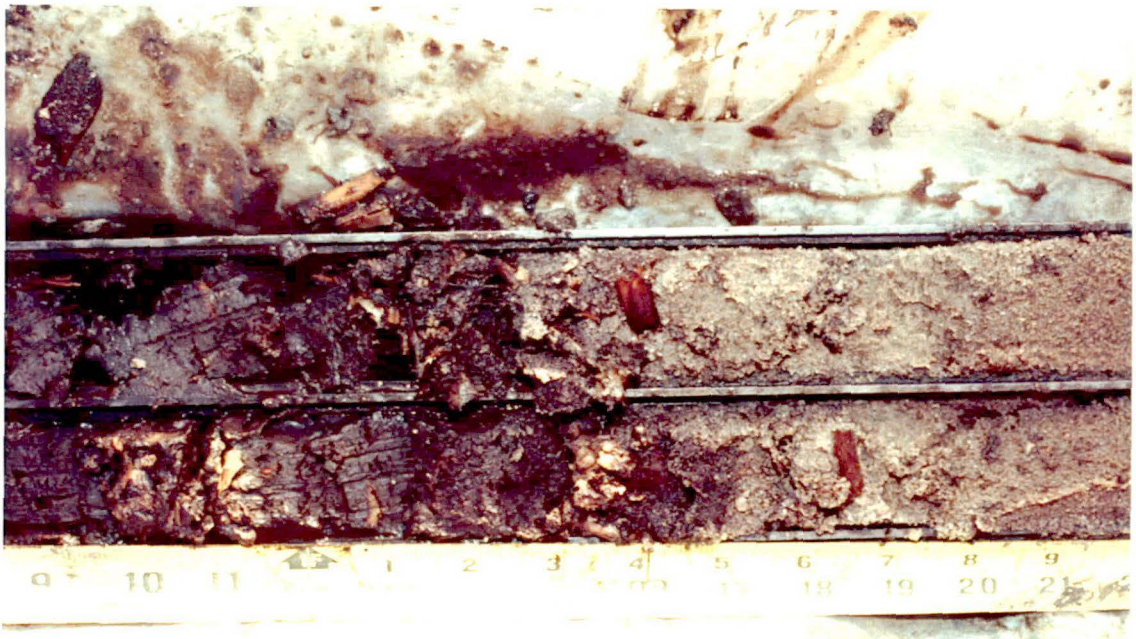
Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Relinquished by: (Signature)	Date /Time	Received by: (Signature)
[signature]	10/14/92 1730			10/14 1800	[signature]
Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Relinquished by: (Signature)	Date /Time	Received by: (Signature)
	/			/	
Relinquished by: (Signature)	Date /Time	Received for Lab by: (Signature)	Remarks:		
	10/15/92 1415	[signature]	Trip Blank also in cooler → VOC → B117592		SHL 10/15/92

Distribution: Original and yellow copies accompany sample to laboratory; Pink copy retained by client; Yellow copy returned to client.

PHOTOGRAPH A
UPPER SAND

PHOTOGRAPH B
PEAT

PHOTOGRAPH C
UPPER SAND AND PEAT CONTACT



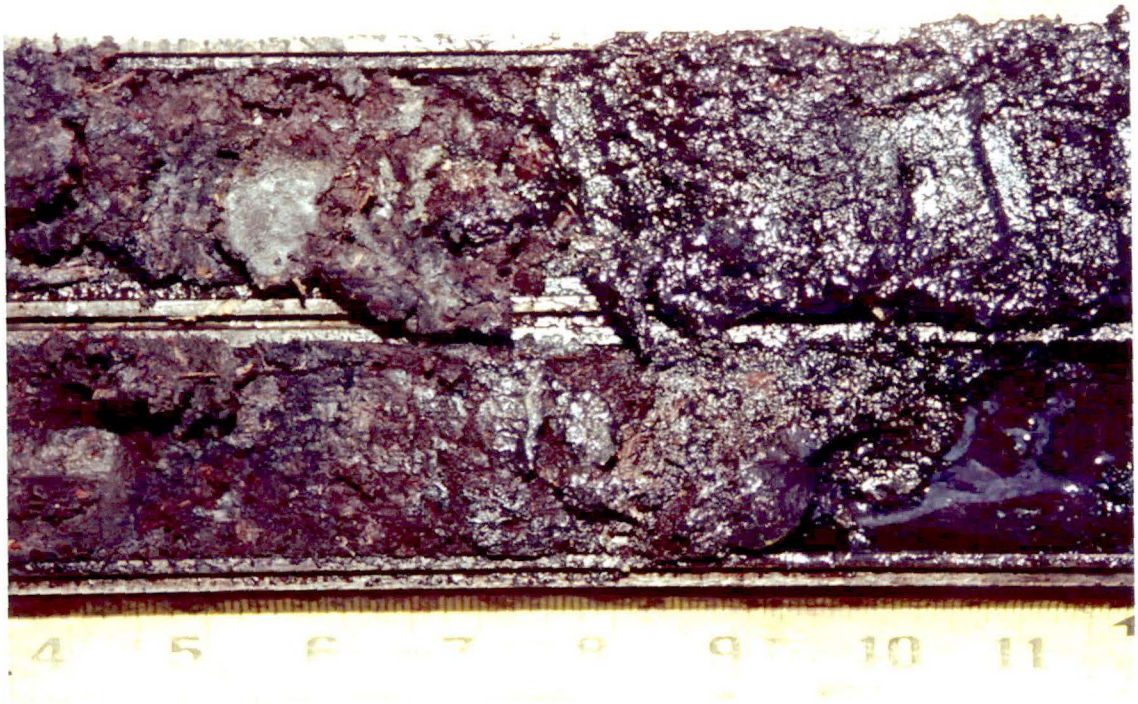
PHOTOGRAPH D
LOWER SAND AND PEAT CONTACT

PHOTOGRAPH E
OLIVE GRAY CLAY

PHOTOGRAPH F
LOWER SAND AND OLIVE GRAY CLAY CONTACT

PHOTOGRAPH G
SANDY SHELL MOLD LIMESTONE

PHOTOGRAPH H
WOOD PRESERVING CONSTITUENTS ON TOP OF PEAT



PHOTOGRAPH I
WOOD PRESERVING CONSTITUENTS ON TOP OF PEAT