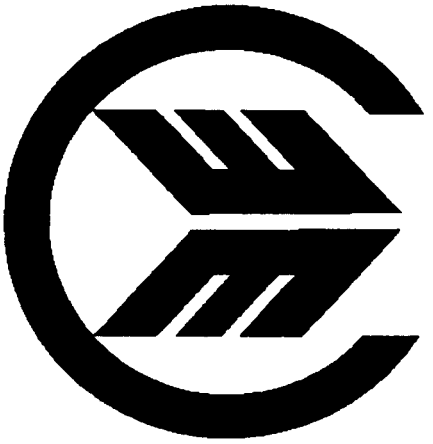
Gaess Inactive Hazardous Waste Disposal Site Harriman, New York

Site Number 336018

Remedial Investigation/ Feasibility Study Work Plan

Prepared For
Chemical Waste Management, Inc.



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Prepared By

SEC DONOHUE
Environment & Infrastructure

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1.0 INTRODUCTION

This Remedial Investigation/Feasibility Study (RI/FS) Workplan for the Gaess Site, Harriman, New York has been developed by SEC Donohue (SECD) for Chemical Waste Management, Inc. (CWM). The RI/FS Workplan is designed to expand existing site data that has been acquired during previous investigations and Interim Remedial Measures (IRMs) activities; and evaluate any additional appropriate remedial action alternatives. The Gaess Site has been identified by the New York State Department of Environmental Conservation (NYSDEC) as a Class II State Superfund Site and identified as site number 336018.

The technical program presented in this document has been prepared in accordance with the following guidance documents:

- NYSDEC Technical and Administrative Guidance Memorandum on Selection of Remedial Actions at Inactive Hazardous Waste Sites (TAGM)
- United States Environmental Protection Agency (USEPA) Office of Solid Waste and Emergency Response (OSWER) Directive 9355.3-01 Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA
- the National Oil and Hazardous Substances Pollution Contingency Plan (NCP)

The RI/FS Work Plan tasks and procedures are grouped into three categories:

- Remedial Investigation (RI)
- Feasibility Study (FS)
- Plans and Management

The RI/FS Work Plan is subject to revision throughout the investigation to accommodate each phase of the RI process, unexpected field conditions and data evaluation. The Work Plan recognizes the interdependency of the RI and the FS. The goal of the study is to develop a site remedial solution which will compliment the IRMs and address all areas of investigation.

2.0 DESCRIPTION OF CURRENT SITE CONDITIONS

2.1 DESCRIPTION

2.1.1 Location

The Gaess Site is located in the Village of Harriman, Orange County, New York. The Regional Location Map is presented on Figure 1 in Appendix A. The site is situated approximately one quarter mile west of New York State Highway 17, off Meadow Road, southwest of the Ramapo River and adjacent to the right of way owned by the Consolidated Rail Corporation (Conrail) The Site Location Map is presented on Figure 2 in Appendix A.

2.1.2 History

In 1962, the site was leased from the Erie-Lackawana Railroad (Conrail predecessor) by John Kalodziejski, who operated the Harriman Sewage Disposal Company at the site until 1972 when he subleased the site to Gaess Environmental Services (Gaess). Gaess and its successor, SCA Chemical Services (SCA), operated a waste handling transfer station on the site until 1978. In June, 1980, wastes were discovered abandoned on the site by a NYSDEC Task Force. These wastes were contained in two industrial tank truck trailers and various other waste containers. Following an investigation of the site an additional tank truck trailer, a vacuum tank truck and four, 55-gallon drums were discovered buried at the site.

In April, 1981 a Consent Agreement was signed between SCA and NYSDEC. This agreement initiated a cleanup of the site under the direction of the NYSDEC. The containers, the wastes contained in them and suspected contaminated soils were removed from the site by SCA in May through July of 1981 under the supervision of the NYSDEC.

SCA retained Geo-Engineering, Inc. (Geo-Engineering) in September, 1984 to perform a site hydrogeological investigation. During the week of October 15, 1984, two piezometers designated as Geo-Engineering, Inc.-1 (GEI-1) and Geo-Engineering, Inc. two (2) (GEI-2), and two groundwater monitoring wells, designated Geo-Engineering, Inc. three (3) (GEI-3) and Geo-Engineering, Inc. four (4) (GEI-4) were constructed on the site. These wells, and the Village of Harriman water supply wells (Mary Harriman Wells MH-1 and MH-3) were sampled on November 29, 1984. The existing monitoring well locations are presented on Figure 3 in

Appendix A. The results of this sampling along with the results of the hydrogeological investigation were documented in a report prepared by Geo-Engineering, Inc. for CWM titled "Hydrogeological Investigation and Monitoring Plan" dated January, 1985. This report was never approved by the NYSDEC. CWM became involved with the site following the purchase of SCA in September, 1984.

In October 1990, CWM was contacted by the NYSDEC regarding contamination found in the Village of Harriman, MH-1 and MH-3. The Harriman wells were sampled by the Village of Harriman on July 19, 1990. The analytical results indicated that in the shallow water supply well, designated MH-1, trichloroethene (TCE) was present at a concentration of 6.7 parts per billion (ppb) and the deep water supply well, designated MH-3, contained TCE at a concentration of 0.76 ppb. The New York State Department of Health (NYSDOH) Drinking Water Standards for Principal Organic Contaminants (POC) is five (5) ppb for TCE.

CWM responded to the NYSDEC notification by performing a Phase I investigation to determine if the Gaess site could be the source of the contamination detected in the Village of Harriman water supply wells. CWM retained Sirrine Environmental Consultants, Inc. (Sirrine) to re-sample MH-1 and MH-3 on January 16, 1991. Sirrine also collected two surface water samples from the adjacent Ramapo River on the same date. The results of the Phase I investigation were documented in a report dated March 1991. The results of the samples collected as part of the Phase I Investigation indicated the presence of 1,1,1-Trichloroethane (1,1,1-TCA) and TCE above the detection limits of 0.5 ppb in three of the seven samples collected. Using USEPA Methods 502.1 and 503.1, EnviroTest Laboratories, Newburgh, New York determined that MH-1 contained 1.2 ppb of 1,1,1-TCA and 14 ppb and 16 ppb (the 16 ppb concentration was determined using USEPA Method 503.1) of TCE and MH-3 contained 0.69 ppb and 1.6 ppb of TCE. The results also indicated the presence of 1,1,1-TCA in monitoring well GEI-4 at a concentration of 4.8 ppb.

An investigation performed by Leggett, Brashears & Grahm (LBG), consultants to the Village of Harriman, determined that a leak formed around the casing in MH-3. Subsequently, this casing was extended further into the subsurface and all contaminants which were present in the water supply well were no longer present. LBG concluded that the contaminants present within MH-3 were migrating from above. Extending the well casing sealed off the contaminant pathway from the upper formation.

Upon completion of the Phase I investigation, the NYSDEC notified CWM of the need to further investigation the Gaess Site. The Phase II investigation was performed to characterize the soils in and around the former Gaess site operations area to determine if residual soil contamination existed. A secondary purpose of the Phase II investigation was to determine if TCE contamination present in the Village of Harriman water supply well (MH-1) was the result of a release from the Gaess site.

River sediment samples collected during the Phase II investigation did not indicate a presence of TCE or 1,1,1-TCA in the Ramapo River or the associated pond. The soil sampling and the soil gas survey (SGS) performed in the area of the former site operations determined the presence of contaminants at concentrations below the NYSDEC levels for human ingestion of soil. The soil gas survey locations are presented on Figure 4 in Appendix A.

The Phase II investigation at the Gaess site found low levels of TCE and 1,1,1-TCA in the groundwater. The groundwater samples contained concentrations of TCE and 1,1,1-TCA above the 5 ppb limit for NYSDOH drinking water standards (GHP-1 and GHP-3 contained 8.2 ppb of 1,1,1-TCA and 8.9 ppb of TCE, respectively). UG-2 did indicate the presence of benzene, toluene, ethylbenzene and m-xylene. Benzene was the only contaminant in UG-2 which was present at a concentration above the NYSDOH limit of 0.5 ppb, at a concentration of 0.53 ppb. This contamination may have been associated with oil staining on the ground surface in the location where sample UG-2 was collected. In addition, monitoring well GEI-4 installed by Geo-Engineering as part of their 1985 hydrogeologic investigation was resampled as part of the Phase I investigation and indicated the presence of 1,1,1-TCA at a concentration of 4.8 ppb. The GHP (Groundwater Hydropunch Sample) and UG (Upgradient Water Sample) locations are presented on Figure 5 in Appendix A.

In December 1991, the NYSDEC and CWM entered into a IRM Order on Consent Agreement which required CWM to develop and construct a treatment system for drinking water pumped from the Village of Harriman water supply well. Similarly, CWM entered into a separate agreement with the Village of Harriman in December, 1991 which covers installation, operation and maintenance of an air stripper unit.

2.2 ENVIRONMENTAL SETTING

2.2.1 Physiography, Topography, and Drainage

The Gaess site consists of approximately 4 acres and is located in the southern highlands of New York State which are associated with the Reading Prong, which trends southwest to northeast through Pennsylvania, New Jersey and New York. The Gaess site is situated on a plateau which drops off rapidly to the northeast toward the Ramapo River. The topography rises rapidly to the southwest on the western side of the railroad right-of-way. The right-of-way, owned by Conrail, is located on the southern most extent of the plateau. It is understood, through past documentation, that previous site operations existed entirely on this plateau. The base of the plateau, north towards the river, is a floodplain.

2.2.2 Geology

2.2.2.1 Soils

The U.S. Department of Agriculture Soil Conservation Service has identified three soil mapping units in the Gaess Site's vicinity. The units are known as Histic Humaquepts, Hoosic and Mardin soil series. These units are described below:

Histic Humaquepts

This unit is commonly called freshwater marsh, is deep, very poorly drained, level, mineral soils capped with a thin layer of organic soil material. Areas are ponded throughout most of the year and commonly border large streams, rivers, ponds and other open bodies of water. Most areas this unit is found in are natural depressions, however a few have been created by man or beaver dams. The areas are generally small and round and not greater than 10 acres in size. The soils form in various kinds of material, including glacial till, lacustrine, outwash and alluvial deposits.

Hoosic gravelly, sandy loam.

This unit is deep somewhat excessively drained and gently sloping. It is generally formed in glacial outwash deposits that have a high content of sand and gravel. It is found on terraces and undulating areas along valley floors and on lowland plains. The appearance of the soil is usually

a dark grayish brown gravelly sandy loam on the surface to approximately six inches. The underlying subsoil is yellowish brown gravelly sandy loam and is 21 inches thick. The substratum to a depth of 60 inches or more is loose, light olive brown very gravelly sand.

Mardin gravelly silt loam.

This unit is a deep, moderately well drained, gently sloping soil formed in glacial till deposits derived from sandstone, shale and slate. It has a dense fragipan in the subsoil. The surface layer is dark brown gravelly silt loam and is 8 inches thick. The subsoil is yellowish brown gravelly silt loam and is up to 12 inches thick. Extending from 20 to 60 inches below the surface, is a firm, olive brown, channery silt loam fragipan.

2.2.2.2 Overburden Geology

The geologic conditions of the site were interpreted from borings by Geo-Engineering, well logs by Layne-New York, Jersey Boring and Drilling Co. and from the borings completed as part of the Phase II investigation. The site geology can be described as fill underlain by sands and gravels, which in turn are underlain by glacial till. The bedrock underlying the site consists of limestone and dolomite.

The bedrock is overlain by 2 to 7 feet of glacial till. Above the till to the ground surface, granular soils are encountered consisting of inter-layered silt and fine sand to layered fine to coarse sand and gravel with occasional silt and clay layers. In some areas, 5 to 10 feet of fill overlies the natural materials. The more permeable soils seem to be more prevalent closer to the river, while the bedrock surface appears to rise sharply to the southwest, mimicking the topography. For example, GEI-4, located upgradient of the former process areas encountered 6 feet of fill and 15 feet of glacial till, before encountering the bedrock surface. No natural granular soils were encountered during the drilling of GEI-4.

2.2.2.3 Bedrock Geology

The approximate depth to bedrock in the area ranges from 25 to 45 feet below the land surface. The bedrock surface appears to slope to the east as determined by the drilling of GHP-1 through GHP-3. In DG-1T (installed in approximately the same location as GHP-1) the bedrock surface was encountered at 37.5 feet. In GHP-2, located approximately 100 feet to the west of GHP-1, bedrock was encountered at a depth of 26 feet. In GHP-3, approximately 110 feet west of GHP-2, bedrock was encountered at 21 feet. Additionally, it was determined by Geo-Engineering that the bedrock also slopes downward to the southeast away from the river.

2.2.3 Hydrogeology

The groundwater in the natural granular soils above the glacial till adjacent to the Ramapo River appears to exist under unconfined conditions, as determined by Geo-Engineering. The soils provide lateral groundwater flow due to stratified layers of coarse and fine grained materials. The horizontal permeability in the coarse grained layers seems to be the controlling factor in the rate and direction of groundwater flow. In this type of hydrogeological environment, groundwater and possible contamination within the interlayered coarse and fine grained strata would tend to flow in a predominantly horizontal direction rather than the vertical.

A grain size distribution curve was completed by Geo-Engineering on the coarser grained materials to determine their horizontal permeability. Due to the stratified nature of the soils, with the presence of low permeability layers, the vertical permeability will be much lower than the horizontal. It was determined that the horizontal permeability of the coarse grained material was on the order of 1×10^{-3} cm/sec and the porosity on the order of 0.30 (Geo-Engineering, 1985).

2.2.4 Surface Water Hydrology

Surface water features identified in the vicinity of the Gaess Site are the Ramapo River, an upgradient pond and a downgradient pond. Both ponds are created by man made weirs located on the river. The Ramapo River flows in a easterly direction where it passes the Gaess Site before altering to a more southerly flow approximately 1000 yards downgradient from the main site area. Approximately 1/4 mile in a northerly direction along River Road, the Harriman Waste Water Treatment Plant is situated. The plant discharges its effluent to the downgradient pond.

2.3 PREVIOUS INVESTIGATIONS

Three previous site investigations were performed at the Gaess Site. The first site investigation was performed in 1984 by Geo-Engineering Inc., who was retained by SCA. As part of the hydrogeologic investigation, the drilling and installation of two piezometers and two groundwater monitoring wells was performed. The piezometers were completed using 3/4" flush joint Polyvinly Chloride (PVC) riser and a one foot porous polyethylene tip. The monitoring wells were completed employing a GEOMON gas-actuated sampler. A schematic of the Geomon sampler is presented on Figure 6 in Appendix A. Upon completion of the installation of the piezometers and monitoring wells, the four well points and the Village water supply wells were surveyed.

Three soil samples collected during the drilling exercises were selected for grain size analysis which was performed by Woodward Clyde Consultants in Clifton, New Jersey.

The two monitoring wells and the Village of Harriman water supply well were sampled for priority pollutant analysis. The analysis was performed by Environmental Testing and Certification of Edison, New Jersey (ETC). Mr. Edward Visconti of the Division of Solid Waste Management NYSDEC was present during the sampling events.

Results of the grain size analysis for the samples selected to be sent to the laboratory presented a mixture of coarser and finer layers. The broad distribution of grain sizes in these soils made application of estimating permeability difficult. However, one sample and visual inspection of others at the site led Geo-Engineering to estimate the permeability of the soil at the site to be 1.0×10^{-3} cm/sec.

The results of the groundwater quality testing indicated no concentrations of any substance exceeding the standards for priority pollutants and other chemicals proposed by the federal government (USEPA) at the time of this investigation. Concentrations of cyanide (33 ppb) and zinc (9 ppb) were detected in well GEI-4 and concentrations of cyanide (190 ppb) and 1,1,1-trichloroethane (19 ppb) in GEI-3.

TCE was detected in the Village of Harriman water supply well at a concentration of 13 ppb , which is slightly above the detection limit of 10 ppb at the time of this study. The concentration of 13 ppb was well below the State of New York "guideline" concentration of 50 ppb at the time of the investigation. Copper was detected at a concentration of 17 ppb. The proposed federal guideline for copper at the time of this investigation was 1,000 ppb. Presently, the New York State Department of Health Drinking Water Standard for TCE is 5 ppb. The federal limit for copper has not changed.

The conclusions derived by Geo-Engineering was based upon a single set of data. Geo-Engineering recommended additional groundwater monitoring at the site. The additional points were recommended to be sampled quarterly for a one-year period. No further monitoring was performed until January 1991 by Sirrine.

The second site investigation conducted at the Gaess Site was performed by Sirrine in January and February 1991. The investigation titled "Phase I Investigation" included the collection of groundwater samples from three Village of Harriman water supply wells (MH-1, MH-3, and the North Main Well), two groundwater monitoring wells (GEI-3 and GEI-4) and two surface water samples collected in the Ramapo River upstream and downstream of the main site area. The results of the Phase I investigation can be found in Appendix B.

All samples collected were sent to EnviroTest Laboratories for Volatile Organic (USEPA Methods 502.1 and 503.1) and Cyanide (USEPA Method 335.2). Both analyses, USEPA Methods 502.1 and 503.1, were run to provide for the list of analytes required by the NYSDEC. There is overlap in some of the analytes that were tested by these two methods.

The results of the analyses indicated the presence of 1,1,1-TCA and TCE above the detection limits of 0.5 ppb in three of the seven samples collected. Using USEPA Method 502.1, EnviroTest determined that MH-1 contained 1.2 ppb of 1,1,1-TCA and 14 ppb of TCE and MH-3 contained 0.69 ppb of TCE. Using USEPA method 503.1, EnviroTest determined that MH-1 did not contain 1,1,1-TCA above the detection limit of 0.5 ppb but, did contain 16 ppb of TCE. Using USEPA method 503.1, Envirotest also indicated that MH-3 contained 1.6 ppb of TCE and GEI-4 contained 4.8 ppb of 1,1,1-TCA. No other compounds were detected above the method detection limits.

The groundwater monitoring well closest to MH-1 and MH-3 is GEI-3 and none of the contaminants that were detected in the MH-1 and MH-3 were detected in GEI-3. Thus, based on the results of the Phase I investigation, there seemed to be no direct correlation between the contamination found in the Village of Harriman water supply wells (MH-1 and MH-3) and the Gaess site groundwater monitoring wells (GEI-3 and GEI-4). 1,1,1-TCA was found in monitoring well GEI-4, however it was at concentrations below the NYSDOH Drinking Water Standard of 5 ppb. This well is located, approximately 1200 feet to the west from MH-1 and MH-3. GEI-3 is approximately 30 feet to the southwest of MH-3.

The third site investigation titled "Phase II Investigation" was performed from April through July 1991. The purpose of the Phase II investigation was to characterize the soils in and around the former Gaess site operations area to determine if residual soil contamination existed. A secondary purpose of the Phase II investigation was to determine if TCE contamination present in the Village of Harriman water supply well (MH-1) was the result of a release from the Gaess site. To meet the goals of the Phase II investigation a Soil Gas Survey (SGS) was completed and soil samples were collected from soil borings drilled around the former operations area. Because TCE was the contaminant of concern, the SGS samples were analyzed for TCE and other volatile organic contaminants which included: 1,1-dichloroethene (1,1-DCE), methylene chloride, trans-1,2-dichloroethene (Trans-1,2-DCE), chloroform, 1,1-dichloroethane (1,1-DCA), carbon tetrachloride, cis-1,2-dichloroethene (CIS-1,2-DCE), 1,1,1-trichloroethane, 1,1,2-trichloroethane (1,1,2-TCA) and tetrachloroethene (PCE). The soil samples were collected for Contract Laboratory Procedure (CLP) metal and volatile organic analysis (USEPA methods 502.1 and 503.1). The soil samples Analytical Detail has been summarized on Table 2 & 3 Apendix D. The results of the Phase II investigation can be found in Appendix C.

In addition to the SGS and soil sampling, groundwater samples were collected on and around the former Gaess site to document area groundwater conditions. Groundwater samples were analyzed for volatile organic compounds and cyanide. The groundwater sample analytical data has been summarized on Table 4 in Appendix D.

Also, as part of the Phase II investigation, sediment samples were collected from the adjacent Ramapo River to document the sediment conditions on the bottom of river. These samples were also analyzed for volatile organic compounds and cyanide. The river sediment sample anlaytical data has been summarized on Table 5. The river sediment sampling locations are presented on Figure 5 in Appendix A. All site investigation work was performed by Sirrine.

SGS and groundwater sampling were performed by Sirrine's subcontractor, Target Environmental Services, Inc. (Target), on April 22 - 24, 1991. Land, Air, Water Environmental Services, Inc. (LAW), another Sirrine subcontractor, performed the soil sampling and groundwater ("Hydropunch") sampling on May 21 - 28, 1991. The river sediment sampling was conducted on April 23, 1991 by Sirrine field personnel.

Sediment samples were collected from the adjacent Ramapo River in three locations to determine if the river could be a source of the contamination in the Harriman water supply wells. The results of analysis of the river sediment samples indicated the presence of toluene as the only constituent identified in the analysis. The toluene was present in the RS-1 river sediment sample at a concentration of 14 ppb. None of the other samples collected within the river sediment detected compounds above the method detection limit. Table 5 presents a summary of the laboratory results of the river sediments.

All of the Soil Gas Survey samples collected during the field activities were analyzed according to USEPA Method 601 on a gas chromatograph equipped with an electron capture detector (GC/ECD), but using direct injection instead of purge and trap. The soil gas survey locations are presented on Figure 4 in Appendix A.

The analytical equipment was calibrated using an instrument response curve and injection of known concentrations of standards for the compounds needing identification. Retention times of the standards were used to identify the peaks in the chromatographs of the field samples and their response factors were used to calculate the analyte concentrations.

GC/ECD analysis revealed levels of 1,1,1-TCA in some samples in the eastern and western portions of the survey area (sample points 11, 12, 23 - 26). TCE was detected in samples collected from the central and northeast survey areas. TCA was present in the same areas, as well as in the western most sample. 1,1-DCE occurred in the western most sample.

TCE, 1,1,1-TCA, PCE and 1,1-DCE were present in the soil gas within the subsurface of the former Gaess operations area.

TCE from sample number 17, was obtained from a sample taken adjacent to the railroad tracks. The Target Soil Gas Report is presented in Appendix E.

The Phase II investigation included the drilling of 21 soil borings with soil samples collected for laboratory analysis. The drilling was performed using a truck mounted Mobile B-61 drill rig using the hollow stem auger drilling method. Soil samples were collected at a depth of 10 feet below the ground surface or when virgin or natural soil was encountered in the borehole. Soil sample locations were agreed upon by CWM and NYSDEC and are presented on Figure 5. Each borehole was drilled to an initial depth of 6 feet. At this depth, two consecutive split spoon samplers were driven to a depth of 10 feet. A soil sample was composited from these spoons if virgin or natural soil was encountered at 10 feet as determined by visual inspection by the Sirrine field hydrogeologist/geologist. If virgin or natural soil was not encountered additional split spoon samplers were driven until virgin or natural soil was encountered.

The results of the soil sample analyses indicated the presence of methylene chloride, chloroform, 1,1,1-TCA, TCE, toluene, PCE, and p-xylene. All of the compounds were detected above the method detection limit.

According to the laboratory results, the highest concentrations of TCE were located in the former main operations area, where most of the handling and storing of waste took place on the Gaess site. Soil borings B-6 through B-12 are located in the center of the site where the former operations were believed to have been performed. Soil boring B-7 was determined to exhibit the highest concentration of total organics with a value of 0.857 parts per million (ppm). This included a concentration of 0.830 ppm of TCE.

The soil samples were also analyzed for metals (USEPA Methods SW846, 6010 and 7470 for mercury). The only compounds detected above the method detection limit were barium, chromium, and cadmium. The highest concentration of metals analyzed were found in the soil from soil boring B-17. The concentration of metals in B-17 was 0.48 ppm. This concentration included 0.45 ppm of barium, 0.008 ppm of cadmium and 0.02 ppm of chromium.

Groundwater samples were obtained by two different methods. The groundwater sampling locations are presented on Figure 5 in Appendix A. Two water samples were collected by Target using the same apparatus to create a borehole that was used in completing the SGS. The remaining groundwater samples were collected by LAW utilizing the QED Environmental "Hydropunch II". The "Hydropunch II" method of groundwater sampling was chosen due to the higher quality of sample which could be obtained and the increased volume of sample which could be collected.

One sample did indicate the presence of benzene, toluene, ethylbenzene and m-xylene. UG-2 contained benzene at 0.53 ppb, toluene at 2.0 ppb, ethylbenzene at 0.54 ppb and m-xylene and 0.74 ppb. The benzene is the only one of these compounds that were present at a concentration above the NYSDOH limit of 0.5 ppb. The remaining groundwater samples did not indicate the presence of volatile organics in the groundwater.

Eight groundwater samples were collected using the "Hydropunch II". These eight samples were collected within three boring locations at varying depths. CWM and the NYSDEC agreed upon the "Hydropunch II" sampling locations. This was completed at the request of the NYSDEC as they felt it was necessary to collect groundwater samples to characterize the entire aquifer. GHP-1 was sampled at depth intervals of 12 - 14 feet, 22.5 - 24 feet and 32 - 34 feet. GHP-2 was sampled at depth intervals of 7 - 9 feet, 12 -14 feet and 22.5 - 24 feet. GHP-3 was sampled at depth intervals of 12.5 - 14 feet and 17.5 - 19 feet. Bedrock was encountered in all of the boreholes. GHP-1 encountered bedrock at 34 feet, GHP-2 encountered bedrock at 26 feet and GHP-3 encountered bedrock at 21 feet. The groundwater samples were collected through boreholes drilled by LAW.

The results of the analyses indicate the presence of 1,1,1-TCA and TCE above the detection limits of 0.5 ppb in all of the following groundwater samples. The analyses determined that the concentration of 1,1,1-TCA in GHP-1 was 3.5 ppb at a depth interval of 12 - 14 feet, 3.2 ppb at a depth interval of 22.5 - 24 feet and 8.2 ppb at a depth interval of 32 - 34 feet. GHP-2 contained 1,1,1-TCA at concentrations of 1.5 ppb at a depth interval of 7 - 9 feet, 2.6 ppb at a depth interval of 12 - 14 feet and 2.2 ppb at a depth interval of 22.5 - 24 feet. GHP-3 contained TCE at concentrations of 2.9 ppb at a depth interval of 12.5 -14 feet and 8.9 ppb at a depth interval of 17.5 - 19 feet.

Another groundwater sample (DG1T) collected with the Hydropunch II had 1,1,1-TCA present at a concentration of 5.8 ppb at a depth of 24 feet.

The NYSDOH limit for TCE and 1,1,1-TCA in drinking water are each 5 ppb. Therefore, the NYSDOH limits were exceeded in GHP-1 and GHP-3.

The two existing groundwater monitoring wells (GEI-3 and GEI-4) were sampled for priority pollutant metal analysis. This sampling was prompted by the results of the NYSDEC sampling

of the groundwater samples using the "Hydropunch II". Two water samples were collected from each groundwater monitoring well, one sample was field filtered and one was not field filtered.

The results of the analyses indicate the presence of lead and zinc in the non-filtered sample collected from the groundwater monitoring well GEI-3 above the detection limits of 5.0 ppb and 0.01 ppm, respectively. Lead was present at a concentration of 28 ppb and zinc was present in a concentration of 0.02 ppm.

The results of the analyses from groundwater monitoring well (GEI-4) indicated the presence of arsenic, chromium, copper, nickel, lead, and zinc above the detection limits of each of the constituents in the non-filtered sample. Arsenic was present at a concentration of 14 ppb, chromium was present at a concentration of 11 ppb, and lead was present at a concentration of 230 ppb.

Based on the results of the Phase II Investigation and the laboratory analytical data , Sirrine concluded that TCE and 1,1,1-TCA contamination were present in groundwater at the Gaess site at concentrations which exceeded the revised NYSDOH Drinking Water Standards. The groundwater samples GHP-1 and GHP-3 contained concentrations of TCE and 1,1,1-TCA above the 5 ppb limit for drinking water.

2.4 DATA ASSESSMENT SUMMARY

The existing database of information available for the Gaess Site does not conclusively identify the specific source of the contamination. While there are a few localized areas of residual contamination on the Gaess Site, there may also be other areas on the floodplain located below the Gaess site.

Based upon the results of previous investigations, the suspected areas of contamination that remain include the area on the Gaess Site where the former facility's main operations were performed. Sampling in the area of a former buried tank, indicated low levels of residual contamination. Additionally, groundwater samples collected from the flood plain downhill from the site contained levels of TCE and 1,1,1-TCA above the NYSDOH drinking water standards.

SECD proposes additional sampling at the site to identify the source of the contamination. The sampling proposed will include soils, groundwater and soil gas. The soil sampling program is detailed in section 6.0. The information from previous studies has enabled SECD to prepare a sampling program to identify the source of contamination at the site. Results of the proposed sampling will facilitate or verify the selection of the appropriate remedial response.

2.5 INTERIM REMEDIAL MEASURES

The Interim Remedial Measures (IRMs) performed to date include the removal of all tanks and contaminated soil that were removed during the summer of 1981, in compliance with the 1981 Order on Consent Agreement between SCA and NYSDEC.

In December 1991, the NYSDEC and CWM entered into a IRM Order on Consent Agreement which required CWM to develop and construct a treatment system for drinking water pumped from the Village of Harriman water supply well (MH-1). Similarly CWM entered into a separate agreement with the Village of Harriman in December 1991 which covers installation, operation and maintenance of an air stripper unit.

The IRM Order on Consent between the NYSDEC and CWM requires that CWM develop and construct a treatment system for drinking water that would reduce the following contaminants to a "non-detectable" level:

- Trichloroethene
- 1,1,1-Trichloroethane
- and their degradation products

The order further states that "non-detectable" shall mean a concentration for each constituent below 0.5 micrograms per liter (μg/l).

An air stripping tower is presently operating under a conditional approval by the New York Department of Health. The initial sample data of the air stripping tower influent and effluent are presented on Table 1 in Appendix D. The data show satisfactory removal of the contaminants. The data also indicate that the contaminants in the influent may be decreasing, possibly in response to active pumping of the Village of Harriman water supply well (MH-1).

3.0 PRELIMINARY RISK EVALUATION

The media at the site currently identified as contaminated includes subsurface soils and groundwater. The primary risk is related to groundwater, with a few contaminants above NYSDOH Drinking Water Standards entering the public water supply through the community water supply well. The parties who are potentially at risk are the residents of the Village of Harriman who utilize the public water supply system. This risk comes from ingestion, inhalation, and dermal contact.

In order to minimize risk to the residents of the Village, an IRM Order On Consent Agreement was executed. The IRM, (discussed in Section 2.5) included the construction of an air stripping tower at the Village of Harriman water supply well located across Meadow Road from the main site area.

3.1 RESPONSE OBJECTIVES

The preliminary remedial response objectives for the Gaess Site include the following:

Subsurface Soil

- Prevent migration of contaminants to groundwater.

Groundwater

- Prevent ingestion of contaminated groundwater.
- Remove contaminants from groundwater to levels as outlined in the Order on Consent Agreement.

4.0 PRELIMINARY ASSESSMENT OF REMEDIAL TECHNOLOGIES

The IRM's incorporated at the Gaess Site have primarily involved excavation and off-site disposal of contaminated soils and the construction of the air stripping tower at the Village of Harriman water supply well. Any future remedial activities that may be ultimately incorporated at the site will be dependent on information obtained during the RI.

A preliminary assessment of remedial technologies will be performed concurrently with the RI. The preliminary assessment will identify the extent or volume of contamination affecting each media of concern, applicable or relevant New York State Standards, Criteria, and Guidelines (SGCs), and cleanup criteria/standards. Also, the preliminary assessment will screen the remedial technology alternatives to identify those which would be effective for the contaminants identified for the site.

4.1 PERFORMANCE CRITERIA AND STANDARDS

Criteria and standards provide a consistent basis for screening, comparing and evaluating remedial alternatives. These include:

- Technical Criteria: Acceptable and proven technology, effectiveness, service life, etc.
- Implementation Criteria: Constructability, availability, schedule, etc.
- Institutional Criteria: Regulatory agency and public acceptance, permit requirements, operation and maintenance, etc.
- Public Health and Environmental Criteria: Water quality standards, short and long term toxicological effects, wildlife impact, etc.
- Cost Criteria: Based on total cost and cost-benefit analysis to meet objectives.

4.2 EVALUATION FACTORS FOR ALTERNATIVES

Based on the performance criteria, additional factors will be evaluated during the screening of the identified technologies. The factors that will be used for comparing the remedial technologies during the screening process are described below.

4.2.1 Technical Feasibility

- Proven technology- successfully applied in similar situations
- Reliability
- Operability- simple to operate and maintain
- Flexibility- adaptability to variable or changing conditions
- Equipment availability

4.2.2 Cost Effectiveness

- Cost of installation
- Cost of operation
- Cost of maintenance

4.2.3 Institutional

- Acceptability by regulatory agencies and the general public
- Permits, licenses, discharge permits, construction and operating permits.
- Long-term operating requirements- maintenance, monitoring, etc.

4.2.4 Public Health and the Environment

The remedial alternatives must be capable of mitigating or eliminating existing or potential future environmental effects associated with the site. Therefore, the remedial technologies will be evaluated with respect to their ability to:

- Prevent or limit human access or direct contact with contaminated media after the work is completed
- Minimize any further impacts during the actual remediation
- Minimize adverse effects to human health, wildlife, vegetation, adjoining properties and other sensitive populations
- Minimize existing or potential future contamination of media.

4.2.5 Implementation Schedule

The preferred technologies will optimize the implementation schedule and minimize long-term maintenance and monitoring.

4.3 IDENTIFICATION OF SITE SPECIFIC DATA REQUIREMENTS

Additional data are required to provide information regarding the nature and extent of localized soil and groundwater contamination. The RI tasks were developed to provide information to satisfy the data requirements. As the RI progresses, additional data needs may be identified.

5.0 CITIZEN PARTICIPATION PROGRAM

A citizen participation program will be established to provide all interested parties with an understanding of the activities associated with the remediation of the Gaess Site. Community input will be solicited throughout the course of the project.

The citizen participation program will assess the attitudes of the community with respect to the various remedial response activities. The success and shortcomings of the program will be evaluated as the program proceeds with appropriate revisions incorporated as necessary.

The program will include, but may not be limited to, the following:

- Briefings, workshops, and other public and informal meetings.
- A community information center which will contain relevant information for public review.
- Dissemination of news releases and fact sheets.
- Participation in public meetings and progress reports and meetings with community representatives.

The draft Citizen Participation Plan is included in Appendix F.

6.0 SITE SAMPLING PLAN

The RI will further characterize the Gaess Site in order to evaluate the potential risk to human health and the environment from the site. The investigation of the site will concentrate on the known contaminated media that have been assessed and identified during the previous investigations conducted on the site. The data produced from the RI investigation will expand the knowledge of the subsurface conditions that exist on the site and support the development and assessment of any further remedial activities that are required.

The investigation will be conducted in accordance with all approved components of the final work plan. Appendix G contains the Field Sampling Plan which includes sampling equipment and procedures, analytical program, sample handling procedures, and a description of the sampling team. Appendix H contains the Health and Safety Plan which includes site-specific health and safety protocol.

6.1 SURVEYING AND SITE MAPPING

A detailed topographic map for the Gaess Site does not exist. Therefore, a site survey will be conducted in order to provide a detailed topographic map of the site and surrounding area. The topographic map will serve as the site base map upon which all sampling points will be shown. A series of historical aerial photos have already been collected and an evaluation of historical site activities will be performed.

6.2 SOIL BORING SAMPLING

NYSDEC has requested additional soil sampling where previous investigations identified the highest concentrations of residual contamination and/or where previous site activities may have produced contamination. Soil samples will be collected from two distinct areas where main facility operations were performed. Soil borings will be installed between Phase II boring locations B-6 and B-7, and downhill from location B-7 near the former underground tank. Another borehole will be advanced on the top of hill closer to the main site operations area. This soil boring will be installed in the triangular area created by Phase II boring locations B-8, B-9 and B-10. A fourth location will be selected in the field for background samples.

The boreholes will be advanced using hollow stem augers. Continuous samples will be obtained with split spoon samplers driven into the undisturbed soil below the augers. These auger advancement and split spoon sampling techniques will be performed until bedrock or refusal is encountered.

Immediately after removing the split spoon sampler from the ground, the sample will be removed from the sample barrel. Individual samples from each spoon will be placed into two laboratory clean glass jars with teflon lids. The sample collected for possible laboratory analysis will be carefully filled as full as possible to eliminate free air space. The container may be gently tapped during this procedure to assist in filling each jar completely.

One sample will be used for field screening by completing field headspace analysis. If the headspace analysis indicates levels of volatile compounds greater than 5 ppm, the other sample collected will be sent for laboratory analysis of TCL volatiles (SW-846 8240). One sample from each borehole will also be submitted for analyses for the complete Target Compound List (TCL) and Target Analyte List (TAL) parameters. If the head space analysis does not indicate the presences of volatice organic compounds, a sample will be collected from six (6) inches above refusal. All samples below a depth of 6 feet at the boring location in the triangular area formed by the previous sampling points will be submitted for laboratory analysis. Samples obtained below the water table will not be analyzed unless they contain less than 50 percent moisture. The proposed soil boring locations are presented on Figure 7.

6.3 GEOPHYSICAL SURVEY

In order to develop the requested cross-sections and top of bedrock map, a seismic refraction survey will be conducted across the site and flood plain. The additional data will be used with the pre-existing borehole data to develop the cross-sections and top of bedrock map.

6.4 SOIL GAS SURVEY

Soil gas samples will be collected on the floodplain at 50-foot centers. The soil gas survey will be completed using the Petrex passive soil gas survey technology. The survey is completed by installing Petrex samplers into the ground at each point on the grid. The method of sampling over time, enhances the sensitivity and the risk of obtaining false negatives is minimized, even in adverse weather conditions or in low permeability soil.

The sampler consists of two collectors, each a ferromagnetic wire coated with an activated carbon adsorbent in a screw top glass culture tube. Each sampler is typically placed in a shallow hole, 14 - 18 inches deep. The hole is backfilled and the location is marked. The sampler is left in the ground from one to thirty days, then retrieved and sealed for transportation back to the laboratory for analysis of TCL volatiles. Following retrieval, each drill hole is backfilled and patched with cement or asphalt.

When the determination from the time test tubes is favorable for the complete survey, all the tubes are removed and sent to the Northeast Research Institute's (NERI) laboratory for data analysis by Curie-point desorption Mass Spectrometer. The compounds detected at each sampling point are identified and the relative response for a compound or mixture at each sample location is displayed in color coded contour maps. The soil gas map prepared by NERI will indicate the nature and extent of contamination, and can reveal source areas and potential migration pathways.

6.5 GROUNDWATER SAMPLING

To further characterize the groundwater quality in the vicinity of the site, the existing groundwater monitoring wells (GEI-3 and GEI-4) will be resampled. Samples from this latest sampling round will be analyzed for TCL organics and TAL Metals using NYSDEC ASP rev. 91-1 methods. Additionally, the sampling program will include collection of field pH, specific conductance, temperature and groundwater level measurements. MH-1 will have to be taken out of service for several days prior to sampling the existing monitoring wells (GEI-3 and GEI-4) due to the lowering of the water table which causes the monitoring wells to be dry.

Each well will be purged of three well volumes prior to sample collection to remove any stagnant water from the well, thereby ensuring that the samples collected are representative of the water quality surrounding each well. Prior to well evacuation or sample collection, the groundwater depth will be determined by using a water level meter. Following each use, the instrument will be cleaned using deionized water.

For wells that recover relatively quickly, three to five well volumes of water will be removed. Specific conductance, pH and water temperature will be measured periodically during well evacuation. Wells that can be purged to dryness with less than five well volumes being removed

will be sampled as soon as the well has recovered enough to yield sufficient volume for a sample.

Well purging will be accomplished using the previously installed GEOMON samplers activated with an oil-less air compressor or laboratory grade nitrogen gas. Greater than five well volumes will only be removed if the field measure indicator parameters (pH, specific conductance, water temperature, and turbidity) have not stabilized during evacuation. Development will continue until these parameters have stabilized.

All samples will be shipped to the analytical laboratory within 24 hours of sample collection either through laboratory pick-up service or 24-hour delivery service. Prior to shipment, all samples will be stored at 4°C and secured. All holding times will be maintained to ensure sample representativeness.

The analytical results for these samples will be reviewed and evaluated to previous sampling data.

6.6 SURFACE WATER AND SEDIMENT SAMPLING

Surface water and sediment samples from the Ramapo River were collected during the Phase I and II investigations. A second round of confirmatory surface water and sediment sampling will be performed. The samples will be collected from the same locations as those collected in the Phase II investigation. Sediment samples will be collected in still-water areas of the surface water, where sediments have been deposited, using a bucket auger. The bucket auger will be decontaminated between sampling locations using the same procedures as for the boring and water sampling equipment. The surface water samples will be collected at the same locations. The proposed sampling locations are shown on Figure 7 in Appendix A. These samples will be analyzed for volatile organic compounds (NYSDEC ASP rev. 9-1) and cyanide.

6.7 HYDROGEOLOGIC CHARACTERIZATION

If contaminants are detected by the soil gas survey, in samples from the soil borings and/or the geophysical survey indicates unexpected subsurface features, it may be necessary to install additional monitoring wells on the flood plain. The aquifer may also require further characterization to evaluate hydraulic properties estimated by previous investigations to

reevaluate the factors which govern contaminant transport. All of the data will be reviewed with NYSDEC to determine the need for additional monitoring wells and/or other site activities.

6.8 POTENTIAL ADDITIONAL INVESTIGATION

The information derived from the initial RI tasks described above will be evaluated to determine whether or not additional investigation is required.

The soil gas survey data will be reviewed to identify all locations where volatile organic compounds above background concentrations were identified. Soil samples will be obtained at these locations and submitted for laboratory analysis using the decision criteria described above. These data and the data from the designated soil sampling locations will be reviewed to identify potential point source areas of contamination above the NYSDEC preliminary Soil Clean Up Guidelines of 1 ppm for TCE and 1,1,1-TCA. NYSDEC and/or NYSDOH will determine whether or not additional groundwater monitoring wells must be installed downgradient from the contaminant source areas.

6.9 QUALITY ASSURANCE/QUALITY CONTROL

The procedures described in the Quality Assurance Project Plan (QAPP) are designed to obtain PARCC (precision, accuracy, representativeness, completeness, and comparability) data for each analytical method and analysis. To ensure that reliable data continues to be produced, systematic checks must show that test results remain reproducible and that the methodology is actually measuring the quantity in each sample. Quality Assurance/Quality Control QA/QC must begin with sample collection and not end until the resulting data have been reported.

All sampling will be conducted in accordance with the approved final Work Plan and the Field Sampling Plan. Proper sampling documentation, equipment decontamination and Chain-Of-Custody procedures will be followed. QA/QC samples (blanks, duplicates, etc.) will be collected and submitted as needed for laboratory analyses. Appendix I contains the site specific QAPP which must be adhered to by the contract laboratory.

7.0 RISK EVALUATION

The focused risk evaluation for the Gaess Site will include a human health risk assessment and a fish and wildlife impact analysis. These evaluations will consider both baseline and future potential exposure scenarios. Furthermore, the baseline scenarios will consider interim remedial measures that have been implemented recently.

The risk evaluations will use principles and procedures consistent with EPA published guidance documents. These guidance documents are:

- Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual
- Interim Final (December, 1989, EPA 540/1-89/002)
- Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors" (March 1991)
- Risk Assessment Guidance for Superfund, Volume II: Environmental Evaluation Manual, Interim Final (March, 1989; EPA 540/1-89/001)
- Guidance for Data Usability in Risk Assessment, Interim Final (October 1990)
- Superfund Exposure Assessment Manual, (April, 1988; EPA/540/1-88/001)
- Exposure Factors Handbook. (March, 1990; EPA/600/8-89/043)
- New York Department of Environmental Conservation, Division of Fish and Wildlife guidelines for impact analysis.

7.1 HUMAN HEALTH RISK EVALUATION

The human health risk evaluation will include data collection and evaluation, assessment of potential exposures to chemicals of concern, assessment of the toxicity of the chemicals of concern, and characterization of the risks which may result from exposures.

Data Collection and Evaluation

The data collected during previous site investigations and during the Remedial Investigation (RI) for the site will be evaluated. The data collected include representative samples from groundwater, surface waters and sediments and subsurface soils. After completion of the RI sampling program all of the data will evaluated. The goal of data evaluation is to identify a set

of chemicals that are likely site-related and to select those chemical data that are valid for use in the quantitative risk assessment.

The limitations and uncertainties associated with the analytical results will be evaluated as part of the RI. Analytical results will be reviewed in accordance with appropriate USEPA data validation guidance presented in Guidance On Data Usability In Risk Assessment and Risk Assessment Guidance for Superfund; Volume I. In particular, all qualifiers attached to data by the laboratory, and the results of all field and laboratory blanks will be considered. If necessary, background and control samples will be obtained and analyzed in order to identify naturally occurring levels of chemicals and ambient concentrations resulting from non-site sources (anthropogenic levels). The monitoring or water supply well with the highest concentration of contaminants will be used for risk calculation because of the close proximity of the site to the water supply wells. Modeling of chemical fate and transport scenarios can be used in the formulation of the risk assessment, but modeling cannot replace groundwater sampling.

Exposure Assessment

Once the chemicals of concern have been identified, an assessment of the potentials for human exposure will be conducted. This assessment will consist of the following elements:

Identification of potentially exposed populations

For the baseline exposure scenarios these populations include individuals who enter the site and use the public water supply system that includes a water supply well (MH-1) where contamination has been identified.

Identification of exposure pathways

Potential pathways will be evaluated, including groundwater, surface water, sediment and soils. Exposure pathways not developed will be clearly identified along with the rationale for their exclusion.

Estimation of exposure point concentrations

Statistical analysis will be performed and chemical concentrations at the identified exposure points for each exposure pathway will be calculated. Chemical transport modeling for groundwater migration may be required to establish some exposure point concentrations.

Estimation of chemical intakes

Chemical-specific exposures (intakes) will be calculated for each exposure pathway identified. Chemical intakes will be calculated using standard equations where applicable. Values for equation variables will be taken from current USEPA guidance or, if necessary, derived in accordance with that guidance.

Toxicity Assessment

Assessment of the toxicity of chemicals of concern at the site will be based on EPA-derived toxicity factors for carcinogenic and non-carcinogenic effects. Sources of toxicological data will include the USEPA's Integrated Risk Information System (IRIS), Health Effects Assessment Summary Tables (HEAST), the Registry of Toxic Effects of Chemical Substances (RTECS), and the Hazardous Substances Data Bank (HSDB) form the National Library of Medicine;s MEDLARS data base system. Toxicity profiles will be developed for each chemical of concern. Chemical characteristics to be addressed include environmental fate and potential adverse health effects through the inhalation, dermal absorption, and ingestion routes. Furthermore, potential impacts on biota and potential bio-concentration will be summarized for use in the Fish and Wildlife Impact Analysis (discussed below).

Risk Characterization

Information gathered from the exposure assessment and the toxicity assessment will be combined to establish reasonable maximum exposure and risk levels for the site. Carcinogenic and non-carcinogenic risk levels will be aggregated, as appropriate, to determine which, if any, pose a significant risk to human health.

Risk evaluation requires the use of site-specific assumptions regarding exposure and subsequent human health effects, and therefore is not an exact science. A discussion of this uncertainty and resultant effects on the calculated risks for the site will be presented as part of the risk characterization.

The total non-carcinogenic risk for the site will be differentiated by its toxicological basis, as appropriate, to better define potential risks to human health. Identified carcinogenic risks will be qualified in terms of "weight of evidence" carcinogenic classification for each compound. This will indicate the relative significance of the carcinogenic risk at the site. The final output of the human health risk assessment will be a summary of risk by pathway and for the entire site. Results of the human health risk assessment will be used to identify potential areas of remediation, to evaluate the remedial alternatives in the FS and assist in site development plans.

7.2 FISH AND WILDLIFE IMPACT ANALYSIS

The objective of the analysis is to provide an efficient evaluation of impacts on fish and wildlife resources associated with inactive hazardous waste sites and their remediation.

The Impact Analysis is broken down into five different steps. Step I provides an in-depth site description including maps. The contaminant specific impact analysis is performed for Step II. Step III evaluates the ecological effects of the remedial alternatives. Step IV provides for the implementation of the selected alternative in the design while the monitoring program is addressed in Step V. If the impacts to the fish and wildlife resources is found to be minimal in any step, further analysis is not required. The analysis for the Gaess Site is not expected to extend beyond Step II.

7.3 STEP I - SITE DESCRIPTION

An in-depth description of the site and surrounding area will identify if there are aquatic and/or terrestrial resources present that may be affected by site-related contamination. The site description will entail the development of site-specific maps, a description of fish and wildlife resources, a discussion of the value of the fish and wildlife resources and an evaluation of the applicable fish and wildlife regulatory criteria.

7.3.1 Site Maps

Topographic maps and cover type maps will be developed detailing pertinent site-specific information.

7.3.1.1 Topographic Map

The topographic map will cover a two (2) mile radius and will display the following information:

- Location of the site and documented fish and wildlife resources.
- Habitats supporting endangered, threatened or rare species.
- Regulated wetlands
- Wild and scenic rivers.
- Streams, lakes and any other minor resources.
- Any major resource that may be affected by site-related contaminants greater than two (2) miles from the site.

7.3.1.2 Cover type Map

A cover type map depicting the area within 0.5 miles of the perimeter of the site will be developed using aerial photos, ground-level photos, USGS topographic maps, local soil surveys or any other suitable information. A qualified biologist will supervise the cover type identification. Major vegetative communities and areas of special concern will be identified. The NYSDEC Natural Heritage Program descriptions will be used to identify the cover types and, if unique cover types are discovered, they will also be identified and mapped.

7.3.2 Description of Fish and Wildlife Resources

Fish and wildlife resources will be identified and described.

The description of aquatic resources will include:

- A discussion of the chemical and physical parameters such as water chemistry, temperature, dissolved oxygen, depth, substrate composition, discharge, flow rates, gradients, stream-bed morphology and any other relevant characteristics.

- Submergent aquatic vegetation will be identified and its abundance and distribution will be described.

- Wetland and stream classifications.

A description of the cover types will include a discussion of typical vegetative species and their abundance, distribution and densities. The fish and wildlife species expected to be associated with each cover type and aquatic habitat will be determined. Any endangered, threatened, rare species or species of concern will be noted.

Descriptions of obviously contaminated areas and any alterations in biota that may be related to the contaminant will be reported. Types of alteration of the biota may include: reduced vegetative growth and density, wildlife mortality, alterations in expected distribution of species, changes in species assemblages or obvious absence of expected biota. If there are any records of past problems related to the biota, they will be obtained and evaluated.

7.3.3 Value of Fish and Wildlife Resources

The general ability, of the area within a 0.5 mile radius of the site, to provide habitat for terrestrial and aquatic species will be qualitatively assessed. The degree to which the habitats meet the requirements for food, seasonal cover, bedding areas, breeding and roosting sites will be addressed. Population density and species diversity in the habitats within the radius will also be assessed.

An assessment of the current and potential use of fish and wildlife resources within the radius will also be performed. Any documented resources within 2 miles downstream of the site that may potentially be affected by the contaminants will be included in this assessment. However, NYSDEC has indicated that there is an inactive hazardous waste site approximately one mile downstream from the Gaess site. Therefore, potential contributions from this site will also have to be considered. This assessment will include the following potential human uses of resources: hunting, fishing, observation of wildlife, scientific studies, agriculture, forestry and other recreational or economic activities.

7.3.4 Applicable Fish and Wildlife Regulatory Criteria

The site-specific and contaminant-specific criteria applicable to the remediation of fish and wildlife resources will be identified. Contaminant-specific criteria may include water quality standards/guidance values for the protection of aquatic life (6 NYCRR Part 701 and TOGS 1.1.1) and sediment criteria developed by the Division of Fish and Wildlife (Sediment Criteria - December, 1989). Site-specific criteria may include the Freshwater Wetlands Act and implementing regulations (Article 24 ECL, 6 NYCRR Parts 663 and 664) and laws and regulations regulating streams and navigable water bodies (Article 15 ECL, 6NYCRR Part 608).

8.0 REMEDIAL INVESTIGATION REPORT

All of the information developed during the performance of the RI will be presented in a comprehensive report. The report will provide a preliminary site characterization, descriptions of all investigation activities, data presentations (e.g. tables, and graphics) data and QA/QC evaluations, the risk evaluation, and conclusions. All supporting data and information will be included as appendices.

9.0 FEASIBILITY STUDY

9.1 DEVELOPMENT AND SCREENING OF ALTERNATIVES

Remedial alternatives will be developed when the extent and nature of contamination are determined during the RI. The development of remedial alternatives will be performed in accordance with the NYSDEC's TAGM. Remedial action alternatives and associated technologies will be screened to assess their media specific applicability using the following procedures:

1. Contaminated media and exposure pathways will be evaluated to determine remedial action objectives.

2. Remedial action objectives will be used to determine the general response action for each contaminated media.

3. Specific volumes and areas of contaminated media will be identified for application of general response actions.

4. Technologies not feasible for contaminant remediation at the site due to technical inapplicability will be eliminated from the screening process. Remaining alternative technologies will be subject to further detailed screening.

9.2 PRELIMINARY SCREENING OF ALTERNATIVES

Preliminary screening of remedial alternatives for further consideration will be performed on potentially applicable technologies ranging from contaminant destruction to off-site disposal of contaminated media. Prior to screening, technologies will be identified and combined into alternatives. The objective of remedial alternatives screening is to narrow the list of potential alternatives that will be evaluated in detail. In some situations, the number of viable alternatives to address site problems may be limited such that screening may be unnecessary or minimized.

When alternatives are being developed, individual remedial technologies should be screened primarily on their ability to meet medium-specific remedial action objectives, their implementability and their short-term and long-term effectiveness. At this time, cost should not be used to guide the initial development and screen remedial technologies or alternatives. Because the purpose of the screening evaluation is to reduce the number of alternatives that will undergo a more thorough and extensive analysis, alternatives should be evaluated more generally in this phase than during the detailed analysis.

9.2.1. Effectiveness Evaluation

For the preliminary screening, each alternative will be evaluated with respect to the effectiveness in protecting human health and environment. Effectiveness will be determined by the extent to which each alternative will reduce the toxicity, mobility and volume of the contamination in both short-term and long-term periods.

9.2.2. Implementability Evaluation

Implementability refers to both the technical and administrative feasibility of constructing, operating and maintaining a remedial alternative. Technical feasibility of an alternative will be determined by the ability to construct, operate, and maintain the necessary process units. Administrative feasibility of an alternative will be determined by: compliance with applicable rules, regulations and statutes; the ability to obtain approvals required for construction and operation; and the availability of treatment, storage, and disposal services and capacity, as required.

Determinations of an alternative not being technically feasible will preclude it from further consideration unless steps can be taken to change the conditions responsible for the determination. Remedial alternatives which will be difficult to implement administratively should not be eliminated from further consideration for this reason alone.

9.3 DETAILED SCREENING

A detailed analysis will be performed for each remedial alternative to facilitate selection of a specific remedy. A FS report will be prepared and will include discussions and analyses of the following specific requirements:

- Protection of human health and the environment.
- Compliance with New York State Standards and Compliance Guidelines (NYSCGs) or supportive documentation for a NYSCG waiver.
- Satisfactory technical analysis and supportive documentation illustrating permanent reduction of toxicity, mobility, or volume of hazardous site contamination.
- Economic efficiency

The FS prepared addressing the above requirements will be conducted per the following evaluation criteria:

1. Compliance With Applicable NYSCGs
   Each Alternative will be analyzed to assess its compliance with chemical-specific, action-specific, or location specific NYSCGs or Resource Conversation and Recovery Act (RCRA) minimum standards, if more stringent. A summary of applicability of each requirement will be included in this section.

2. Overall Protection of Human Health and the Environment
   This evaluation requirement will be addressed by compositing other evaluation requirement factors such as short-term effectiveness and determining whether human health and the environment will be safeguarded over time.

3. Short-term Impacts and Effectiveness

The implementation of each remedial construction activity may produce temporary environmental impacts such as fugitive dust emissions, worker/community exposure, etc. until remedial construction is complete. Factors that will be considered under this criterion include worker protection, community protection, environmental impacts and project completion time. Appropriate mitigation measures will be addressed for each of the above factors.

4. Long-term Effectiveness and Permanence

Whereas the analysis of short-term impacts and effectiveness will address potential impacts during remedial construction, this section will address the long-term effectiveness of remedial construction and processes. Each alternative will be evaluated considering the following:

a. Permanence of the remedial alternative
b. Magnitude of remaining risk, if any, to human health and the environment will be analyzed quantitatively (cancer risk, etc.)
c. The adequacy of controls used during the life of the remedial alternative will be assessed with respect to residual treatment or containment, i.e., the adequacy of institutional controls or containment systems.
d. The reliability of long-term controls will be considered with respect to on-going protection from residual contaminants. Consideration will be given to potential system repair/replacement, potential routes of exposure, and remedial action related risks.

5. Reduction of Toxicity, Mobility, and Volume

Remedial technologies permanently and significantly reducing toxicity, mobility, or volume of hazardous wastes as their principle element will be evaluated with respect to the amount of hazardous materials destroyed/treated, the degree of reduction of hazard mobility/toxicity/volume, the degree of irreversibility, and residuals characterization.

6. Implementability

This criterion evaluates the technical and administrative feasibility of implementing particular alternatives. In addition to technical and administrative considerations, potential logistical problems including availability of labor, materials, supplies, and ancillary services will be evaluated as a part of this criterion.

7. Cost

Cost estimates used to evaluate the alternatives will reflect direct and indirect capital costs, operation and maintenance costs (if needed), future capital costs (if a significant failure potential exists) and the cost of future land use.

The remedial alternative analyses will be conducted in accordance with the preceding seven criteria. Presentation of the analyses will be in tabular and narrative form, and each criterion will include relative weighing calculations obtained from the TAGM tables 4.1 to 5.7. Comparative analyses will be presented to illustrate the relative strengths and weaknesses of each alternative.

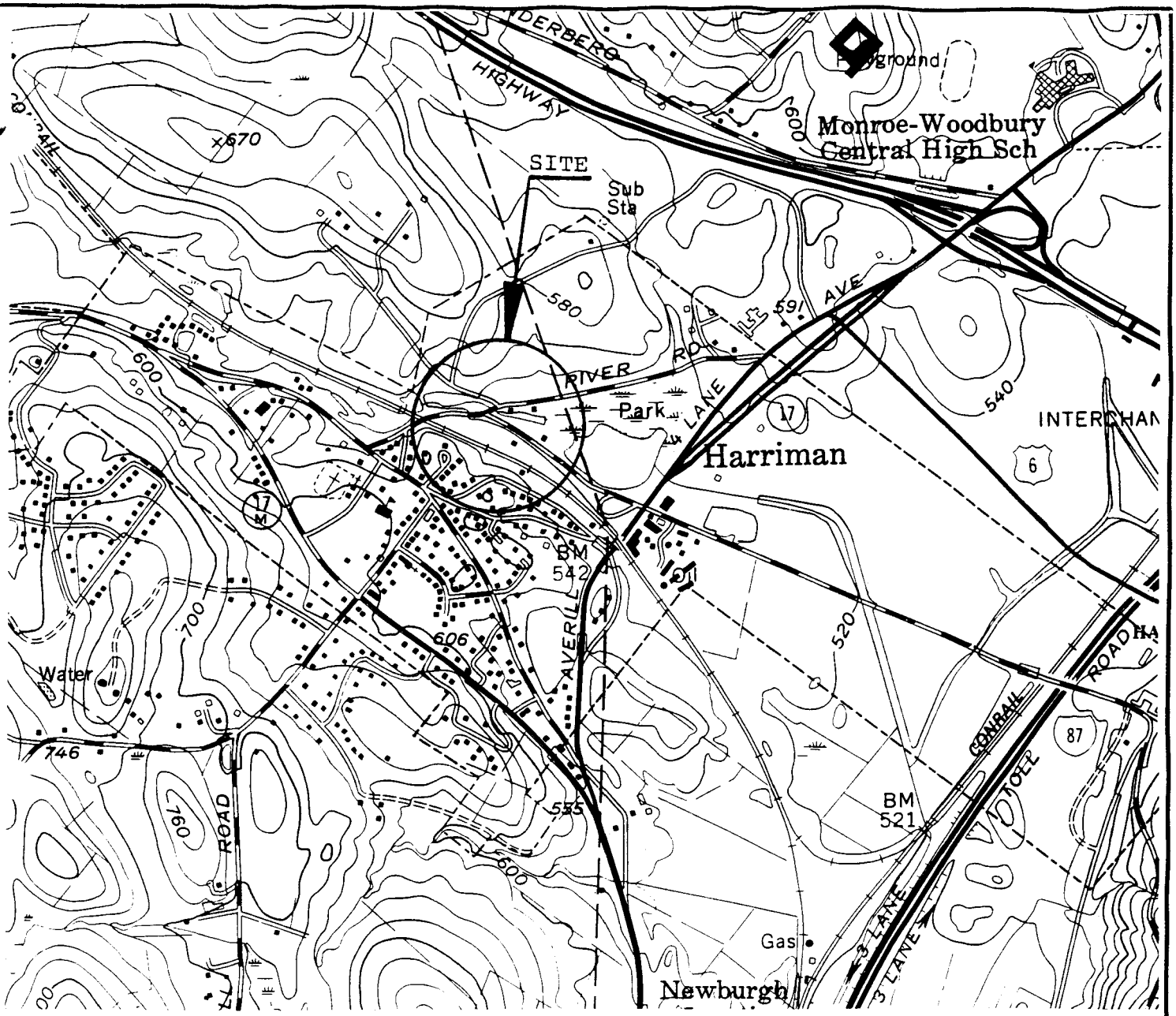
10.0 PROJECT STATUS REPORTS AND SCHEDULE

10.1 PROJECT STATUS REPORTING REQUIREMENTS

During the RI/FS and until the RI/FS reports are completed, monthly progress reports will be submitted to the NYSDEC Project Coordinators summarizing the percentage of the RI that has been completed, rationale for any changes in the work plan, problems or potential problems encountered during that reporting period, changes in personnel, projected work for the next reporting period and all findings to date.

10.2 PROJECT COMPLETION SCHEDULE

The proposed schedule for the RI/FS for the Gaess Site is shown on Figure 9 in Appendix A.



UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

MONROE QUADRANGLE
NEW YORK–ORANGE CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 0 1 KILOMETER

CONTOUR INTERVAL 20 FEET

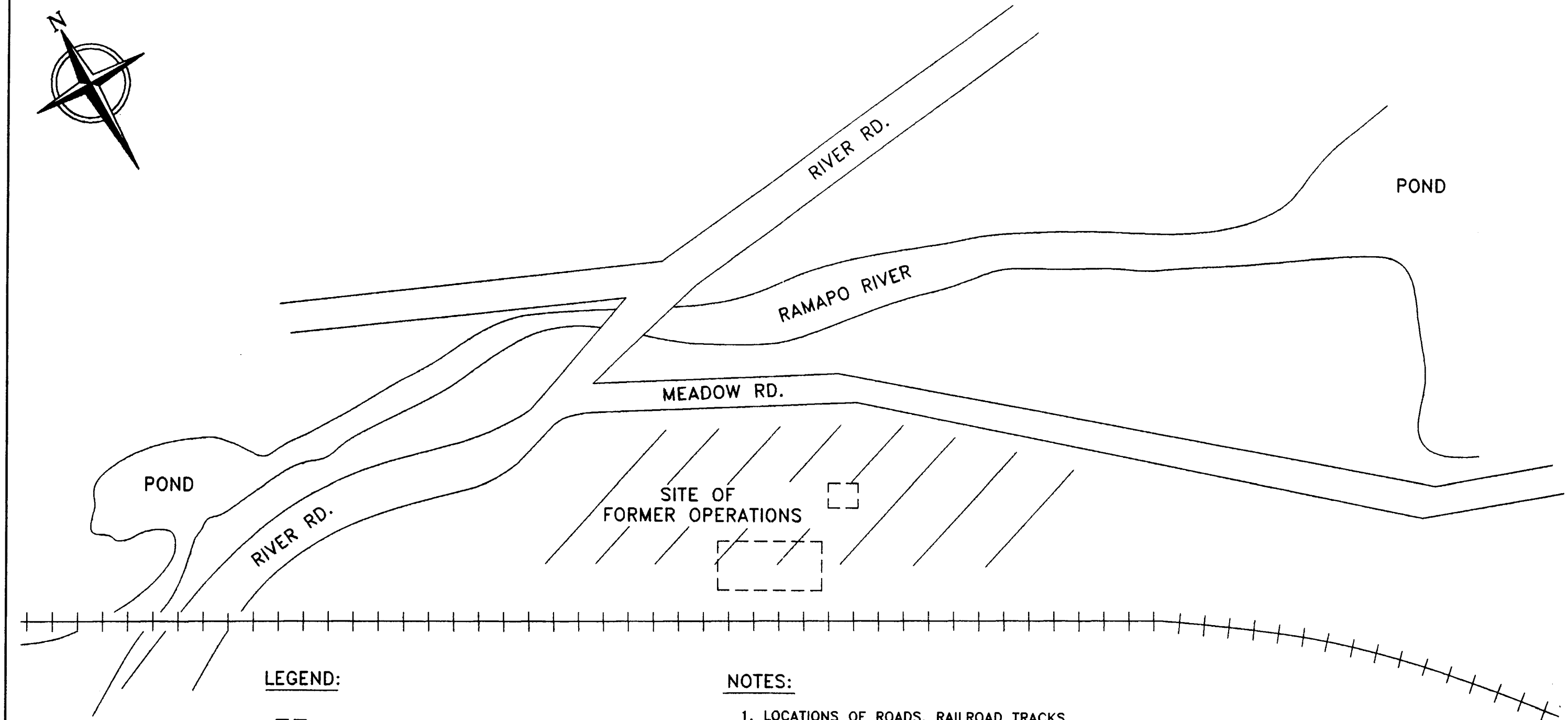
MN GN

12½°
222 MILS

0°32'
9 MILS

SEC DONOHUE
Environment & Infrastructure

FIGURE 1
REGIONAL LOCATION MAP
GAESS INACTIVE HAZARDOUS
WASTE DISPOSAL SITE
HARRIMAN, NY



LEGEND:

APPROXIMATE LOCATION OF FORMER BUILDINGS

CONRAIL RIGHT OF WAY

NOTES:

1. LOCATIONS OF ROADS, RAILROAD TRACKS AND WATERWAYS ARE APPROXIMATE AND ARE DERIVED FROM ORANGE COUNTY TAX MAPS.

SCALE IN FEET

0 100' 200'

NO.	REVISIONS	MADE	CHK	DATE

NAMES	DATE
DRAWN: B.E.M.	1/6/93
DESIGN:	
CHECKED:	
PE:	
APP'D:	
APP'D:	
APP'D:	

CWM
CHEMICAL WASTE
MANAGEMENT INC.

FIGURE 2
SITE LOCATION MAP
GAESS SITE
HARRIMAN, NY

SEC DONOHUE
Environment & Infrastructure

PROJECT NUMBER P1093 DATE

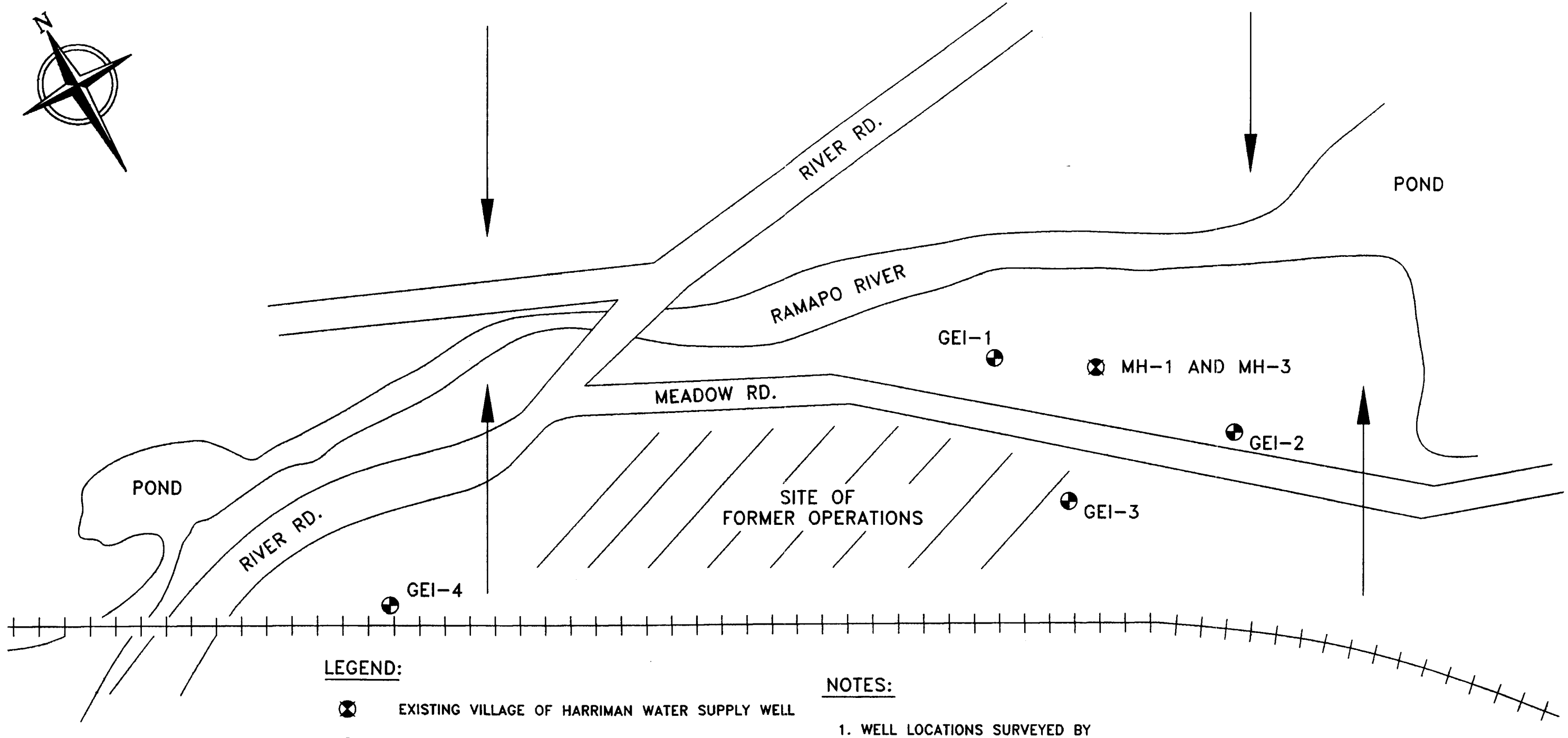
SECD DWG NUMBER P1093P01 FILE NUMBER

CLIENT DWG NUMBER SHEET NUMBER

The drawings, specifications and other documents prepared by the Engineer for this project are instruments of the Engineer's service for use solely with respect to this project and,

PLOT DATE:

CAD FILE NAME: C:\P1093\P1093P01.DWG



LEGEND:

- EXISTING VILLAGE OF HARRIMAN WATER SUPPLY WELL
- MONITORING WELL/PIEZOMETER
- CONRAIL RIGHT OF WAY
- APPROXIMATE DIRECTION OF GROUNDWATER FLOW

NOTES:

1. WELL LOCATIONS SURVEYED BY GEO-ENGINEERING, INC.
2. LOCATIONS OF ROADS, RAILROADS TRACKS AND WATERWAYS ARE APPROXIMATE AND ARE DERIVED FROM ORANGE COUNTY TAX MAPS.

SCALE IN FEET

0 100' 200'

NO.	REVISIONS	MADE	CHK	DATE

NAMES	DATE
DRAWN:	
DESIGN:	
CHECKED:	
PE:	
APP'D:	
APP'D:	
APP'D:	

CWM
CHEMICAL WASTE
MANAGEMENT INC.

FIGURE 3
EXISTING WELL LOCATIONS
GAESS SITE
HARRIMAN, NY

SEC DONOHUE
Environment & Infrastructure

PROJECT NUMBER | DATE

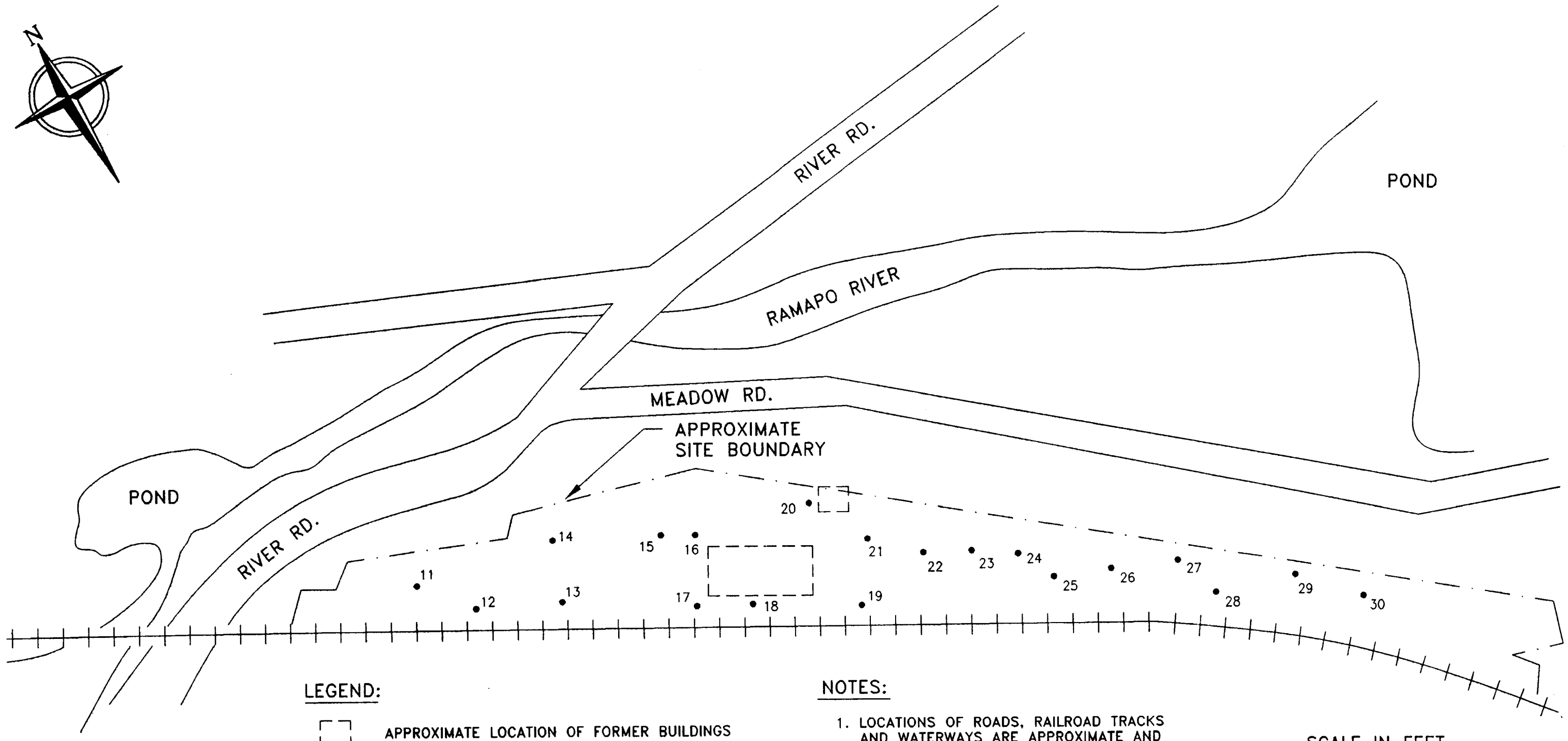
SECD DWG NUMBER | FILE NUMBER

CLIENT DWG NUMBER | SHEET NUMBER

CAD FILE NAME:

PLOT DATE:

The drawings, specifications and other documents prepared by the Engineer for this project are instruments of the Engineer's service for use solely with respect to this project and, unless otherwise provided, the Engineer shall be deemed the author of these documents and shall retain all common law, statutory and other reserved rights, including the copyright.



LEGEND:

- APPROXIMATE LOCATION OF FORMER BUILDINGS
- 14 • SOIL GAS SAMPLE LOCATION
- APPROXIMATE SITE BOUNDARY
- CONRAIL RIGHT OF WAY

NOTES:

1. LOCATIONS OF ROADS, RAILROAD TRACKS AND WATERWAYS ARE APPROXIMATE AND ARE DERIVED FROM ORANGE COUNTY TAX MAPS.

SCALE IN FEET

0 100' 200'

NO.	REVISIONS	MADE	CHK	DATE

	NAMES	DATE
DRAWN:	B.E.M.	1/6/93
DESIGN:		
CHECKED:		
PE:		
APP'D:		
APP'D:		
APP'D:		

CWM
CHEMICAL WASTE
MANAGEMENT INC.

FIGURE 4
SOIL GAS SURVEY LOCATIONS
GAESS SITE
HARRIMAN, NY

SEC DONOHUE
Environment & Infrastructure

PROJECT NUMBER P1093 DATE

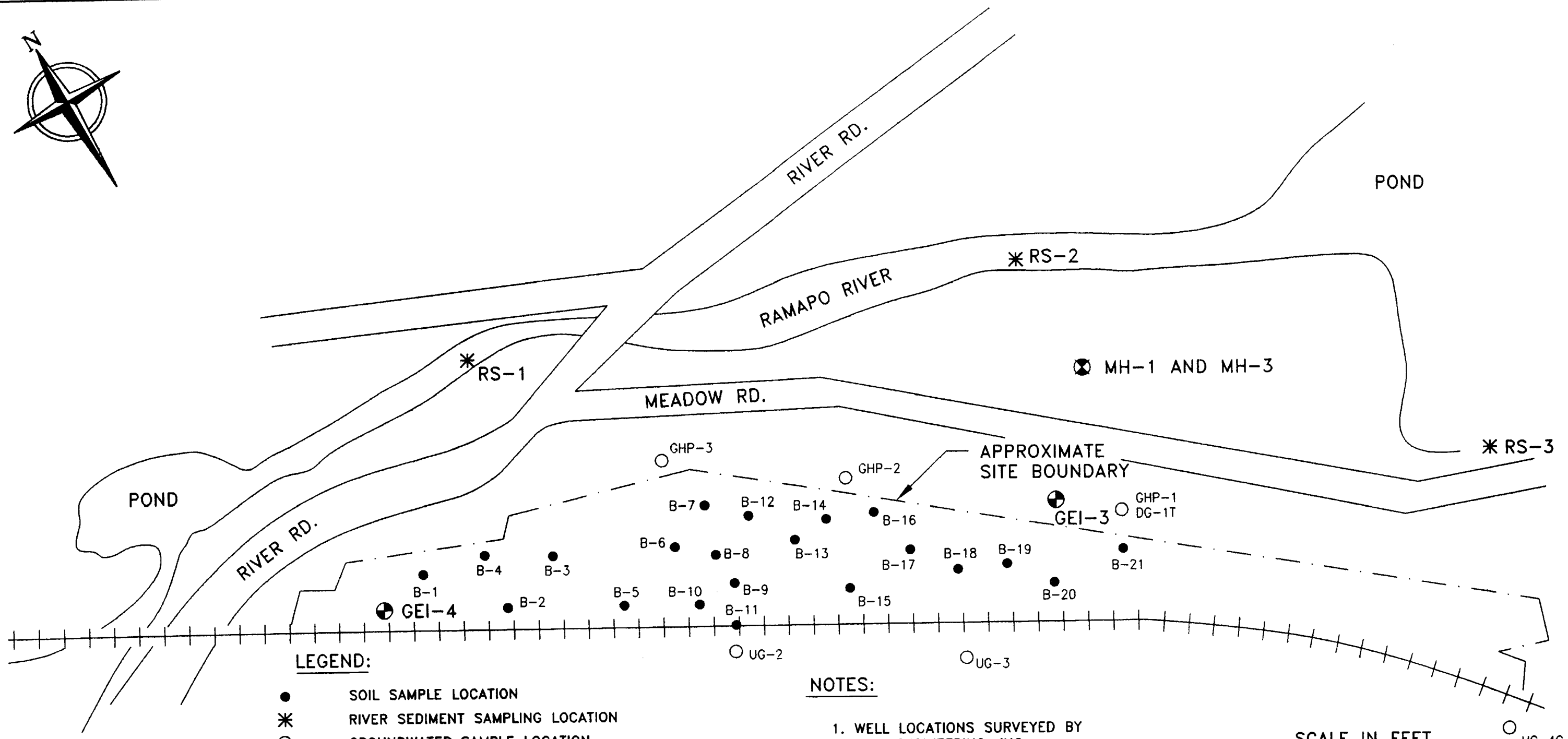
SECD DWG NUMBER P1093P04 FILE NUMBER

CLIENT DWG NUMBER SHEET NUMBER

CAD FILE NAME: C:\P1093\P1093P04.DWG

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PLOT DATE:



LEGEND:

- SOIL SAMPLE LOCATION
- RIVER SEDIMENT SAMPLING LOCATION
- GROUNDWATER SAMPLE LOCATION
- APPROXIMATE SITE BOUNDARY
- MH-1 EXISTING VILLAGE OF HARRIMAN WATER SUPPLY WELLS
- GEI-3 MONITORING WELL/PIEZOMETER
- CONRAIL RIGHT OF WAY

NOTES:

1. WELL LOCATIONS SURVEYED BY GEO-ENGINEERING, INC
2. LOCATIONS OF ROADS, RAILROADS TRACKS AND WATERWAYS ARE APPROXIMATE AND ARE DERIVED FROM ORANGE COUNTY TAX MAPS.

SCALE IN FEET

0 100' 200'

NO.	REVISIONS	MADE	CHK	DATE

	NAMES	DATE
DRAWN:	B.E.M.	1/6/93
DESIGN:		
CHECKED:		
PE:		
APP'D:		
APP'D:		
APP'D:		

CWM
CHEMICAL WASTE
MANAGEMENT INC.

FIGURE 5
SEDIMENT, SOIL & GROUNDWATER
SAMPLE LOCATIONS
GAESS SITE, HARRIMAN, NY

SEC DONOHUE
Environment & Infrastructure

PROJECT NUMBER P1093 DATE

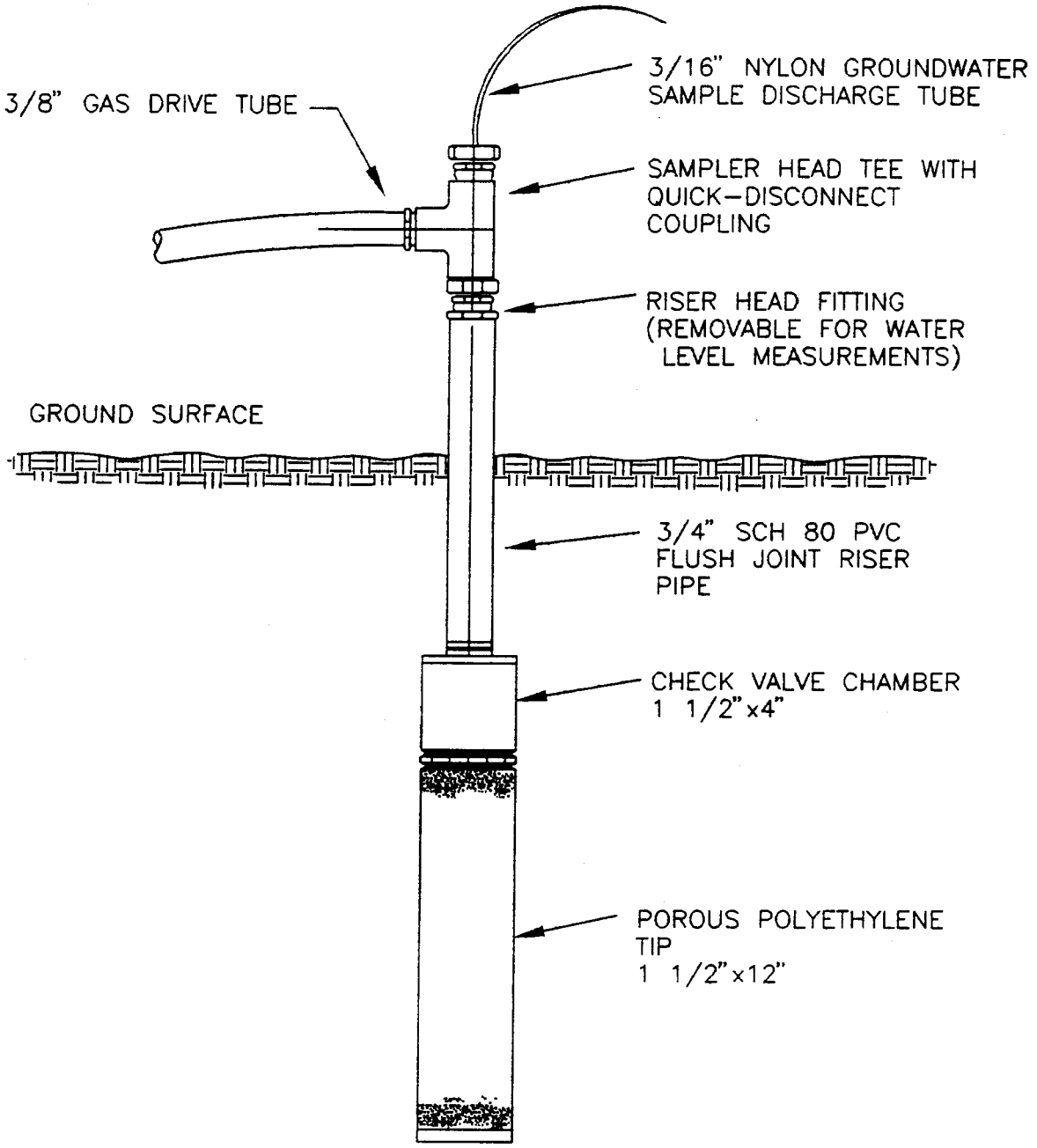
SECD DWG NUMBER P1093P03 FILE NUMBER

CLIENT DWG NUMBER SHEET NUMBER

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PLOT DATE:

CAD FILE NAME: C:\P1093\P1093P03.DWG



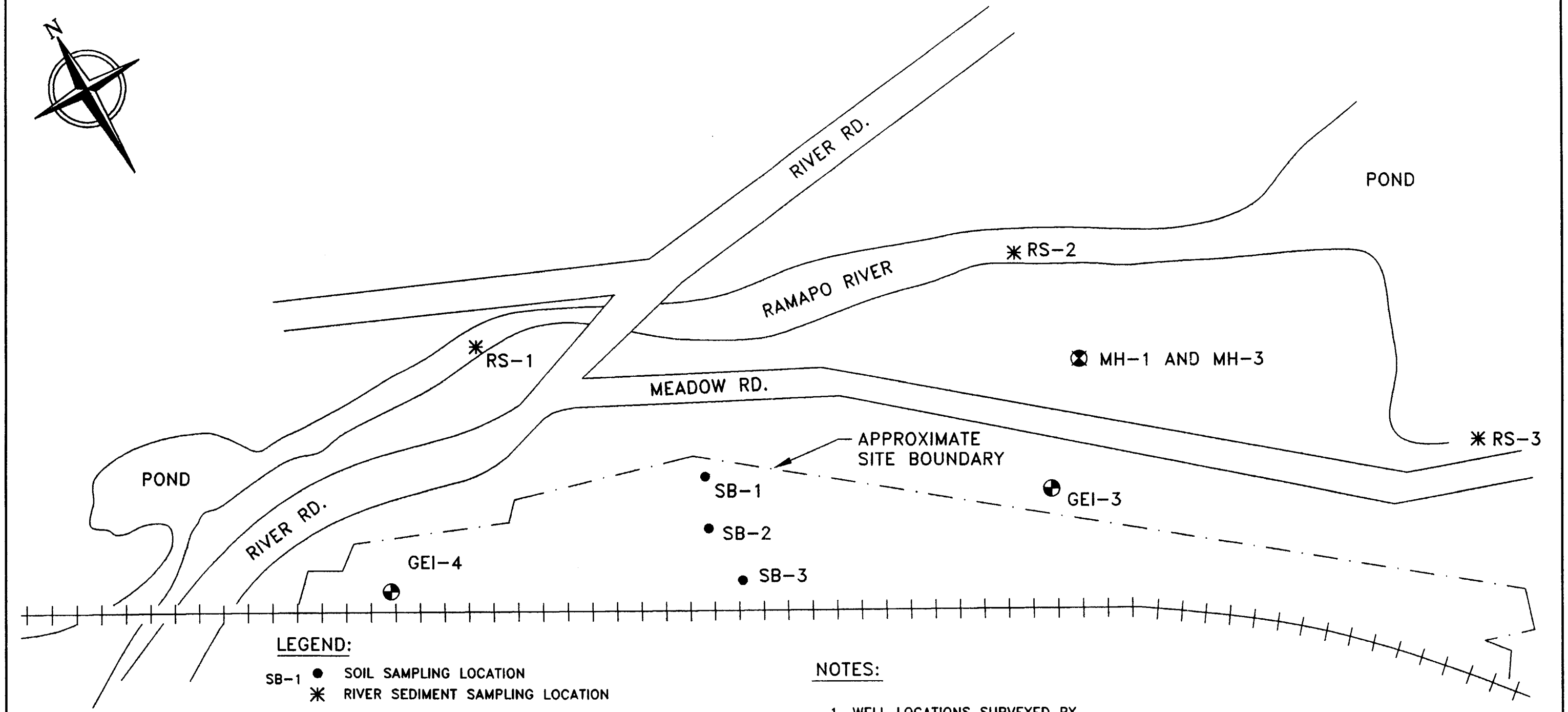
GEOMON™

GROUNDWATER SAMPLER/PIEZOMETER SYSTEM

"NOT TO SCALE"

SEC DONOHUE
Environment & Infrastructure

FIGURE 6
GEOMON SAMPLER
GAESS INACTIVE HAZARDOUS WASTE DISPOSAL SITE
HARRIMAN, NY



LEGEND:

- SB-1 ● SOIL SAMPLING LOCATION
- ✳ RIVER SEDIMENT SAMPLING LOCATION
- ⊠ EXISTING VILLAGE OF HARRIMAN WATER SUPPLY WELLS
- GEI-4 ⊕ MONITORING WELL/PIEZOMETER
- — · — APPROXIMATE SITE BOUNDARY
- +++ CONRAIL RIGHT OF WAY

NOTES:

1. WELL LOCATIONS SURVEYED BY GEO-ENGINEERING, INC
2. LOCATIONS OF ROADS, RAILROADS TRACKS AND WATERWAYS ARE APPROXIMATE AND ARE DERIVED FROM ORANGE COUNTY TAX MAPS.

SCALE IN FEET

0 100' 200'

NO.	REVISIONS	MADE	CHK	DATE

	NAMES	DATE
DRAWN:	B.E.M.	1/6/93
DESIGN:		
CHECKED:		
PE:		
APP'D:		
APP'D:		
APP'D:		

CWM
CHEMICAL WASTE
MANAGEMENT INC.

FIGURE 7
PROPOSED SEDIMENT, SOIL AND
GROUNDWATER SAMPLING LOCATIONS
GAESS SITE HARRIMAN, NY

SEC DONOHUE
Environment & Infrastructure

PROJECT NUMBER P1093 DATE

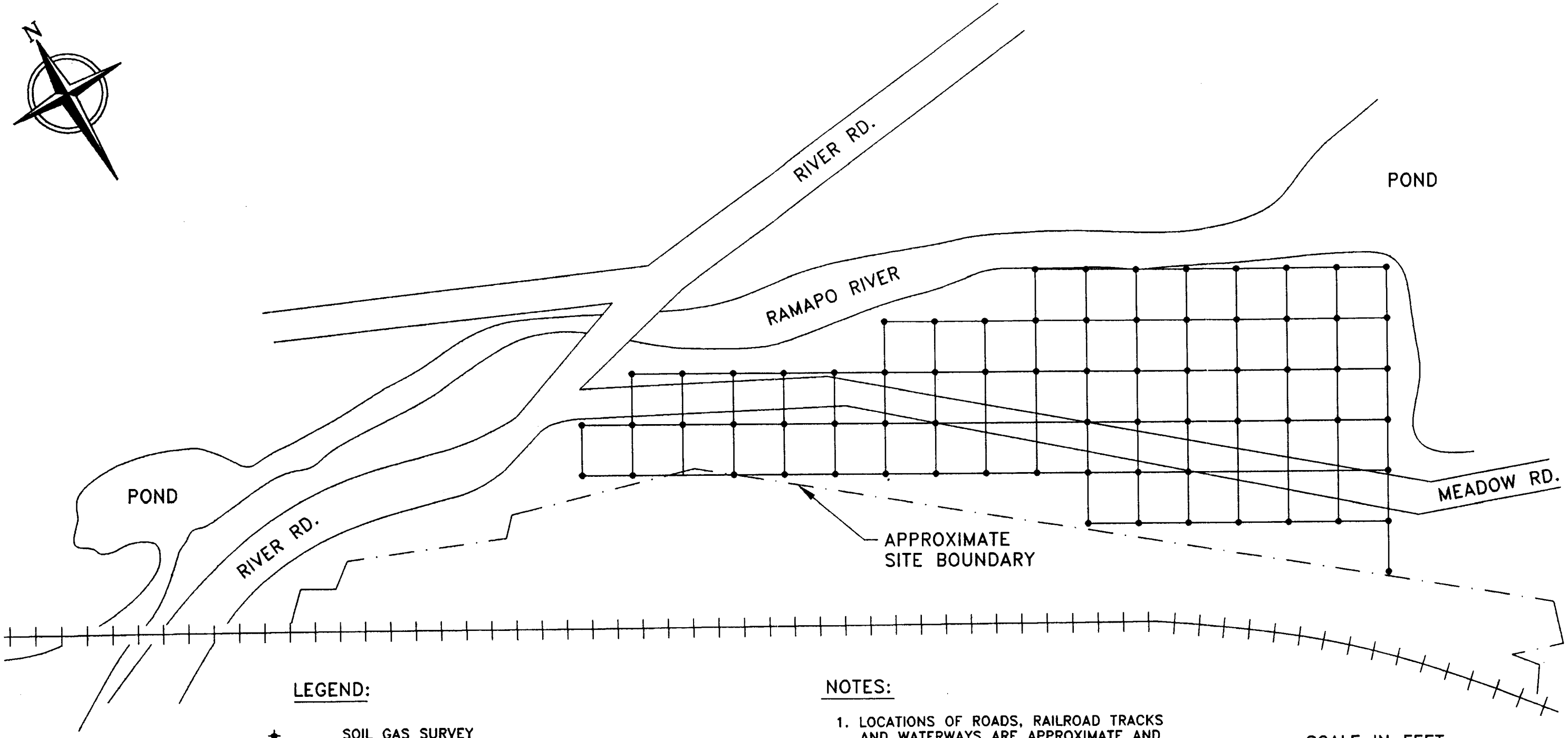
SECD DWG NUMBER P1093P07 FILE NUMBER

CLIENT DWG NUMBER SHEET NUMBER

CAD FILE NAME: C:\P1093\P1093P07.DWG

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PLOT DATE:



LEGEND:

- SOIL GAS SURVEY SAMPLING GRID POINT
- APPROXIMATE SITE BOUNDARY
- CONRAIL RIGHT OF WAY

NOTES:

1. LOCATIONS OF ROADS, RAILROAD TRACKS AND WATERWAYS ARE APPROXIMATE AND ARE DERIVED FROM ORANGE COUNTY TAX MAPS.

SCALE IN FEET

0 100' 200'

NO.	REVISIONS	MADE	CHK	DATE

	NAMES	DATE
DRAWN:	B.E.M.	1/6/93
DESIGN:		
CHECKED:		
PE:		
APP'D:		
APP'D:		
APP'D:		

CWM
CHEMICAL WASTE
MANAGEMENT INC.

FIGURE 8
PROPOSED SOIL GAS SURVEY
GAESS SITE
HARRIMAN, NY

SEC DONOHUE
Environment & Infrastructure

PROJECT NUMBER P1093 DATE

SECD DWG NUMBER P1093P06 FILE NUMBER

CLIENT DWG NUMBER SHEET NUMBER

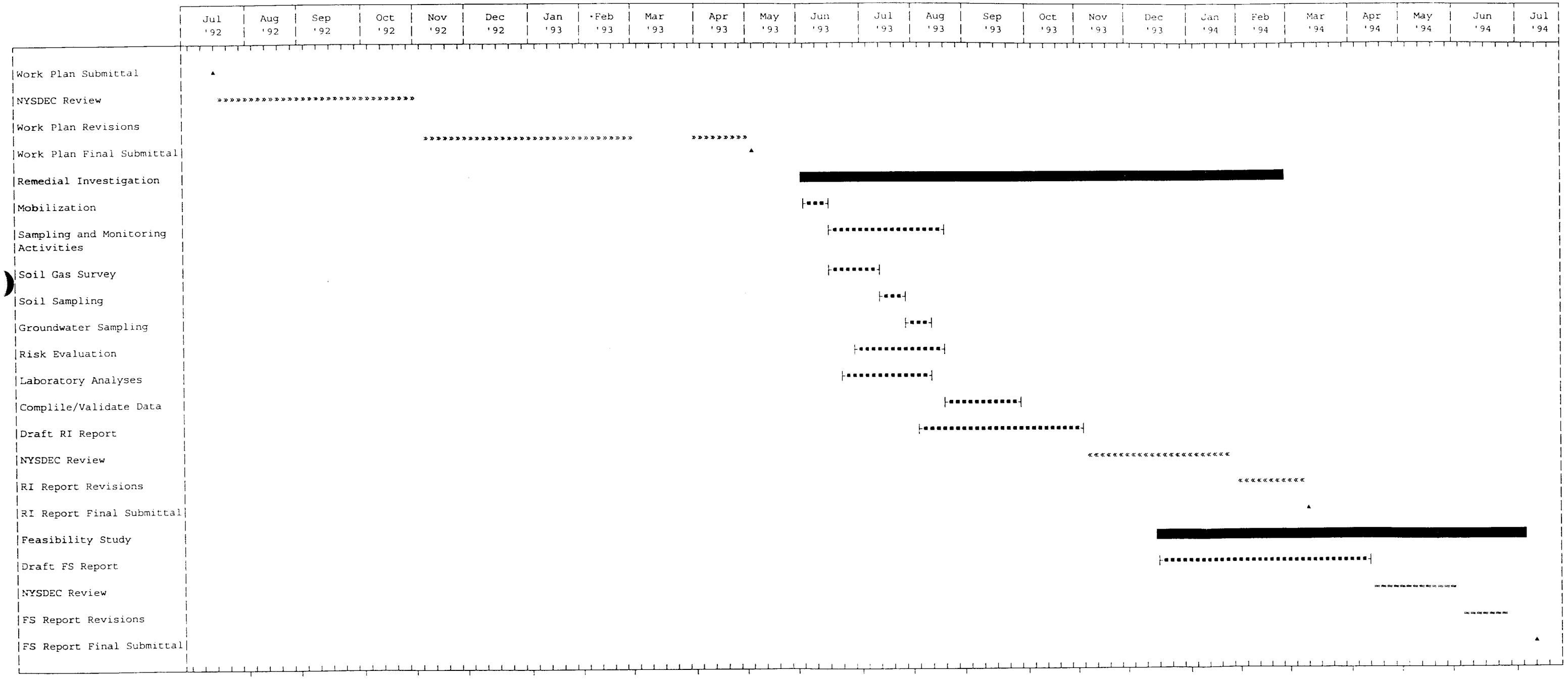
CAD FILE NAME: C:\P1093\P1093P06.DWG

The drawings, specifications and other documents prepared by the Engineer for this project are instruments of the Engineer's service for use solely with respect to this project and, unless otherwise provided, the Engineer shall be deemed the author of these documents and shall retain all common law, statutory and other reserved rights, including the copyright.

PLOT DATE:

FIGURE 9

Gaess Site
Proposed RI/FS Schedule and Tasks



▲ = Milestone

PHASE I INVESTIGATION RESULTS

GAESS SITE

HARRIMAN, NEW YORK
NYSDEC SITE NO. 336018

PREPARED FOR:

CHEMICAL WASTE MANAGEMENT, INC.

100 NASSAU PARK BOULEVARD

PRINCETON, NEW JERSEY

PREPARED BY:

SIRRINE ENVIRONMENTAL CONSULTANTS, INC.

100 NASSAU PARK BOULEVARD

PRINCETON, NEW JERSEY

MARCH 1991

1.0 INTRODUCTION

The Gaess Site is located in the Village of Harriman, Orange County, New York. The site is situated approximately one quarter mile west of New York State Highway 17, off of Meadow Rd, southeast of the Ramapo River and adjacent to the right of way of the Conrail Corporation.

In September, 1984 GeoEngineering, Inc. was retained to perform a site hydrogeological investigation at the Gaess site. As part of this investigation, two piezometers (GEI-1 and GEI-2), and two groundwater monitoring wells (GEI-3 and GEI-4) were installed at the locations shown in Figure 1.

This report presents the results of the Phase I investigation conducted on Gaess Site on January 16, 1991 and February 15, 1991 by Sirrine Environmental Consultants, Inc. (SEC). The Phase I investigation included the collection of groundwater samples from three Village of Harriman water supply wells (MH-1, MH-3 and the N. Main Well) and two groundwater monitoring wells (GEI-3 and GEI-4), and two surface water samples collected in the adjacent Ramapo River (denoted as "UPSTREAM" and "DOWNSTREAM").

2.0 SAMPLING PROCEDURES

On January 16, 1991 SEC arrived on site to collect water samples from the water supply wells, the groundwater monitoring wells, and the Ramapo River. SEC began this sampling exercise with the groundwater monitoring wells (GEI-3 and GEI-4) which were equipped with "Geomon" pumps. This type of pump works by displacing water with a gas, forcing the water up a nylon tube for sample collection. Because SEC did not have Geomon sampling equipment, an attempt was made to extract water from GEI-3 by using a peristaltic pump, which utilizes suction to extract the water. The peristaltic pump failed to extract the water from the well, therefore no sample was collected. An attempt was also made to extract

water from GEI-4, using the same peristaltic pump,but again, this system failed. SEC field personnel decided at this time to continue sampling at the other locations. Samples were collected from the water supply wells by turning on the existing submersible pump and sampling from a spigot in the pump house or a faucet, whichever was available. SEC field personnel also collected samples from the surface of the Ramapo River, in two locations, upstream and downstream, from the Gaess site. The surface water samples were collected by standing at the bank of the river and dipping a wide mouth bottle into the water to obtain the sample. Water levels could not be obtained from the water supply wells because of the sanitary seals capping the wells.

On February 15, 1991 SEC field personnel arrived on the Gaess site to complete the Phase I Investigation sampling. SEC had obtained the "Geomon" fittings and apparatus to collect the water samples from the two Gaess site groundwater monitoring wells. Water samples were collected with the Geomon equipment, using laboratory grade nitrogen and a regulator control unit. The control unit was used to control the pumping rate from the well. Water samples were collected and water levels were recorded by SEC field personnel at both groundwater monitoring wells.

All samples collected were sent to the laboratory for Volatile Organic (EPA Methods 502.1 and 503.1) and Cyanide (EPA Method 335.2). Both analyses, EPA Methods 502.1 and 503.1, were run to provide for the list of analytes required by the NYSDEC under the drinking water standards. There is overlap in some of the analytes that were tested by these two methods. All samples were collected using laboratory clean 40 ml glass vials or 500 ml plastic bottles and preserved, as appropriate. The samples, including trip blanks, were placed in a cooler for transport to the laboratory. The inside temperature of the cooler was maintained at 4° C. Standard Chain of Custody (copies of the Chain-of-Custodies are attached in Appendix A) control procedures were followed. The samples were analyzed by EnviroTest Laboratories, Inc. of Newburgh, New York. EnviroTest is a New York certified laboratory capable of completing the required analyses.

3.0 LABORATORY RESULTS AND CONCLUSIONS

The results of the analyses indicate the presence of 1,1,1, Trichloroethane and Trichloroethene above the detection limits of 0.5 parts per billion (ppb) in three of the seven samples collected. Using EPA 502.1, EnviroTest determined that MH-1 contained 1.2 ppb of 1,1,1 Trichloroethane and 14 ppb of Trichloroethene and MH-3 contained .69 ppb of Trichloroethene. Using EPA method 503.1, EnviroTest determined that MH-1 did not contain 1,1,1 Trichloroethane above the detection limit of 0.5 ppb but, did contain 16 ppb of Trichloroethene. Using EPA method 503.1, Envirotest also indicated that MH-3 contained 1.6 ppb of Trichloroethene and GEI-4 contained 4.8 ppb of 1,1,1 Trichloroethane. No other compounds were detected above the method detection limits. Table 1 presents a summary of the laboratory results. Copies of the laboratory results are presented in Appendix B.

The report titled "Hydrogeologic Investigation and Monitoring Plan, Harriman Site, Harriman, New York" prepared for Chemical Waste Management, Inc, by GeoEngineering dated January 1985 was reviewed to compare past analytical results to the current results and identify any trends in the data that may exist. However, upon review, it was noted that the GeoEngineering water samples were sent for laboratory analysis using EPA method 624 and 625. Both of these EPA methods are used to determine contaminant concentrations in wastewater, not in drinking water. The wastewater and drinking water methods differ with respect to the detection limits for each constituent ie.. the Trichloroethene detection limit is 10 ppb for EPA method 624, compared with .5 ppb for EPA method 502.1. Therefore, if any of the constituents analyzed were present below 10 ppb they would not have been reported.

The groundwater monitoring well closest to MH-1 and MH-3 is GEI-3 and none of the contaminants that were detected in the MH-1 and MH-3 were detected in GEI-3. Thus, based on the results of the Phase I investigation, there seems to be no direct correlation between the contamination found in the Village of Harriman water supply wells (MH-1, MH-3, and N. Main well) and the Gaess site groundwater monitoring wells (GEI-3 and GEI-4).

1,1,1 Trichloroethane was found in monitoring well GEI-4, however it was at concentrations below the NYSDEC 5 ppb limit. This well is located hydraulically upgradient (determined in the GeoEngineering Report), approximately 1200 feet to the west from MH-1 and MH-3, however it is also upgradient of the Gaess site. GEI-3 is approximately 30 feet to the southwest of MH-1 and MH-3. Well locations are shown in Figure 1.

A Phase II Investigation has been proposed for this site which was documented in a submittal for the NYSDEC dated February 12, 1991. This investigation will consist of a soil gas survey, groundwater sampling and river sediment sampling. This additional sampling should provide the additional information required to assess the hydrogeological conditions, nature of contaminants and probable source of the contaminants in the area of the Gaess site.

APPENDIX A

CHAIN OF CUSTODY CONTROL SHEETS

CHAIN OF CUSTODY RECORD

Enviro-Test Laboratories Inc.
315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890

100 Nassau Park Blvd.
Princeton, NJ 08540
ATTN: RICH ZWEIG

Company Name, Location: Sirrine
Project Name/P.O. Number: HARRIMAN SITE Job # P0521
Project Site Location: HARRIMAN NY
Project Coordinator/Contact: RICHARD ZWEIG

SAMPLING DATE	SAMPLING TIME AM PM	COMP	GRAB	SAMPLE ID No	Total Number of Containers	40ml Glass HCL	1 Liter Amber Sulfuric Acid	1 Liter Amber Organic Washed	1 Liter Plastic Nitric Acid	1 Liter Plastic Sodium Hydroxide	1 Liter Plastic	1 Liter Plastic Sulfuric Acid	250ml Plastic	125ml Plastic Sterile	250 ml Amber	2 oz Glass	ANALYSIS
1/16/91	1236		✓	MH-1 - 50-60'	4	3				1							502 | 503 CN
1/16/91	1245		✓	MH-3 - 5301	4	3				1							502 | 503 CN
1/16/91	1310		✓	MAIN WELL	4	3				1							502 | 503 CN
1/16/91	1320		✓	UPstream Sample	4	3				1							502 | 503 CN
1/16/91	1340		✓	Down Stream Sample	4	3				1							502 | 503 CN
1/16/91	-		✓	TRIP BLANK	1	1											502 | 503
					4	3				1							~~502 | 503 CN~~
					4	3				1							~~502 | 503 CN~~

Relinquished by: EnviroTest Laboratories Print: Richard Bayer Signature: Richard Bayer	Custody Shipping Number	Date: 1/15/91 Time: 415 pm	Received by Print: Richard Zweig Signature: Richard Zweig	Date: 1/16/91 Time: 1115	
Relinquished by Print: Richard Zweig Signature: Richard Zweig	Date: 1/16/91 Time: 1530	Received by	Date Time	Relinquished by Print Signature	Date Time
Received by ETL 1.0 Cold 1.0 eCO	Date: 1/16/91 Time: 3:37				

REMARKS

CHAIN OF CUSTODY RECORD

Enviro Test Laboratories Inc.

315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890

Company Name, Location	Project Name/P.O. Number	Project Site Location	Project Coordinator/Contact
Clarence (Old Mill)	Cumharman E	Hartman	

SAMPLE BOTTLES

SAMPLING DATE	SAMPLING TIME AM PM	COMP	GRAB	SAMPLE I.D. No.	Total Number of Containers	40ml Glass HCL	Liter Amber Sulfuric Acid	Liter Amber Organic Washed	Liter Plastic Nitric Acid	Liter Plastic Sodium Hydroxide	Liter Plastic	Liter Plastic Sulfuric Acid	250ml Plastic	125ml Plastic Sterile	250 ml Amber	2 oz. Ocrpak	ANALYSIS
1/15/91	1025		✓	GL1-3	4				1			1					502.1, 503.1, Cyanide
↓	415		✓	GL1-4													
					4				1			1					502.1, 503.1, Cyanide
																	Trip blank

Relinquished by EnviroTest Laboratories
Print Karen Kromberg
Signature Karen Kromberg

Custody Shipping Number

Date 2/12/91
Time 3:46

Received by
Print Richard Zweig
Signature Richard Zweig

Date 2/15/91
Time 930

Relinquished by
Print Richard Zweig
Signature Richard Zweig

Date 2/15/91
Time 1245

Received by

Date

Time

Relinquished by
Print
Signature

Date

Time

Received by ETL
Joyce Oldt
Joyce Oldt

Date 2/15/91
Time 1300

REMARKS

Do not complete volume in bottle #5.

APPENDIX B

LABORATORY ANALYTICAL RESULTS

ANALYTICAL REPORT

Company:

SIRRINE
ATTN:RICH ZWEIG
100 NASSAU PARK BLVD.
PRINCETON NJ 08540

Report Summary

Report Date:	28-JAN-91
Project:	STANDARD
Lab Number:	95317
Sample Number(s):	95317-001 to 95317-006

Ronald A. Bayer
Laboratory Director

Inorganics Analysis Data Sheet

Client Name: SIRRINE

Sample Number: 95317-001 Project Name: STANDARD

Date Collected: 16-JAN-91 Matrix: 2 GW/WW

Date Received: 16-JAN-91

Sample Location: MH-1

Comments: PROJ:HARRIMAN SITE #P0521

Analysis	Result	Units	Method	Analyzed
CN	<0.01	MG/L	EPA 335.2	18-JAN-91

Remarks:

EnviroTest Laboratories Inc.

[illegible] Delaware Avenue
[illegible], NY 13550
(9[illegible] 562 0890
FAX (9[illegible] 562 0841

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE

Sample Number: 95317-001 Project Name: STANDARD

Date Collected: 16-JAN-91 Matrix: 2 GW/WW

Date Received: 16-JAN-91 Method: VOA-502.1

Analyzed Date: 21-JAN-91

Sampl Location: MH-1

Comments: PROJ:HARRIMAN SITE #P0521

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5	1.2	
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5	14	
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34	1,1,2,2-Tetrachloroethane	.5		U

Con

Samplenum: 95317-001

Method: VOA-502.1 continued

CAS NO.	Compound	ug/l	ug/l	Qualifier
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE

Sample Number: 95317-001 Project Name: STANDARD

Date Collected: 16-JAN-91 Matrix: 2 GW/WW

Date Received: 16-JAN-91 Method: VOA-503.1

Analyzed Date: 21-JAN-91

Sample Location: MH-1

Comments: PROJ:HARRIMAN SITE #P0521

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5	16	
108-88-3	Toluene	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-92-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

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Inorganics Analysis Data Sheet

Client Name: SIRRINE

Sample Number: 95317-002 Project Name: STANDARD

Date Collected: 16-JAN-91 Matrix: 2 GW/WW

Date Received: 16-JAN-91

Sample Location: MH-3

Comments: PROJ:HARRIMAN SITE #P0521

Analysis	Result	Units	Method	Analyzed
CN	<0.01	MG/L	EPA 335.2	18-JAN-91

Remarks:

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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE

Sample Number: 95317-002 Project Name: STANDARD

Date Collected: 16-JAN-91 Matrix: 2 GW/WW

Date Received: 16-JAN-91 Method: VOA-502.1

Analyzed Date: 21-JAN-91

Sample Location: MH-3

Comments: PROJ:HARRIMAN SITE #P0521

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5	.69	
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

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Samplenum: 95317-002

Method: VOA-502.1 continued

CAS NO.	Compound	ug/l	ug/l	Qualifier
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE

Sample Number: 95317-002 Project Name: STANDARD

Date Collected: 16-JAN-91 Matrix: 2 GW/WW

Date Received: 16-JAN-91 Method: VOA-503.1

Analyzed Date: 21-JAN-91

Sample Location: MH-3

Comments: PROJ:HARRIMAN SITE #P0521

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5	1.6	
108-88-3	Toluene	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

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Inorganics Analysis Data Sheet

Client Name: SIRRINE

Sample Number: 95317-003 Project Name: STANDARD

Date Collected: 16-JAN-91 Matrix: 2 GW/WW

Date Received: 16-JAN-91

Sample Location: N.MAIN WELL

Comments: PROJ:HARRIMAN SITE #P0521

Analysis	Result	Units	Method	Analyzed
CN	<0.01	MG/L	EPA 335.2	18-JAN-91

Remarks:

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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE

Sample Number: 95317-003 Project Name: STANDARD

Date Collected: 16-JAN-91 Matrix: 2 GW/WW

Date Received: 16-JAN-91 Method: VOA-502.1

Analyzed Date: 21-JAN-91

Sample Location: N.MAIN WELL

Comments: PROJ:HARRIMAN SITE #P0521

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

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Samplenum: 95317-003

Method: VOA-502.1 continued

CAS NO.	Compound	ug/l	ug/l	Qualifier
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE

Sample Number: 95317-003 Project Name: STANDARD

Date Collected: 16-JAN-91 Matrix: 2 GW/WW

Date Received: 16-JAN-91 Method: VOA-503.1

Analyzed Date: 21-JAN-91

Sample Location: N.MAIN WELL

Comments: PROJ:HARRIMAN SITE #P0521

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5		U
108-88-3	Toluene	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

Inorganics Analysis Data Sheet

Client Name: SIRRINE

Sample Number: 95317-004 Project Name: STANDARD

Date Collected: 16-JAN-91 Matrix: 2 GW/WW

Date Received: 16-JAN-91

Sample Location: UPSTREAM SAMPLE

Comments: PROJ:HARRIMAN SITE #P0521

Analysis	Result	Units	Method	Analyzed
CN	<0.01	MG/L	EPA 335.2	18-JAN-91

Remarks:

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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE

Sample Number: 95317-004 Project Name: STANDARD

Date Collected: 16-JAN-91 Matrix: 2 GW/WW

Date Received: 16-JAN-91 Method: VOA-502.1

Analyzed Date: 21-JAN-91

Sample Location: UPSTREAM SAMPLE

Comments: PROJ:HARRIMAN SITE #P0521

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

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Samplenum: 95317-004

Method: VOA-502.1 continued

CAS NO.	Compound	ug/l	ug/l	Qualifier
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE

Sample Number: 95317-004 Project Name: STANDARD

Date Collected: 16-JAN-91 Matrix: 2 GW/WW

Date Received: 16-JAN-91 Method: VOA-503.1

Analyzed Date: 21-JAN-91

Sample Location: UPSTREAM SAMPLE

Comments: PROJ:HARRIMAN SITE #P0521

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5		U
108-88-3	Toluene	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

Inorganics Analysis Data Sheet

Client Name: SIRRINE

Sample Number: 95317-005 Project Name: STANDARD

Date Collected: 16-JAN-91 Matrix: 2 GW/WW

Date Received: 16-JAN-91

Sample Location: DOWNSTREAM SAMPLE

Comments: PROJ:HARRIMAN SITE #P0521

Analysis	Result	Units	Method	Analyzed
CN	<0.01	MG/L	EPA 335.2	18-JAN-91

Remarks:

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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE

Sample Number: 95317-005 Project Name: STANDARD

Date Collected: 16-JAN-91 Matrix: 2 GW/WW

Date Received: 16-JAN-91 Method: VOA-502.1

Analyzed Date: 21-JAN-91

Sample Location: DOWNSTREAM SAMPLE

Comments: PROJ:HARRIMAN SITE #P0521

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

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Samplenum: 95317-005

Method: VOA-502.1 continued

CAS NO.	Compound	ug/l	ug/l	Qualifier
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE

Sample Number: 95317-005 Project Name: STANDARD

Date Collected: 16-JAN-91 Matrix: 2 GW/WW

Date Received: 16-JAN-91 Method: VOA-503.1

Analyzed Date: 21-JAN-91

Sample Location: DOWNSTREAM SAMPLE

Comments: PROJ:HARRIMAN SITE #P0521

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5		U
108-88-3	Toluene	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE

Sample Number: 95317-006 Project Name: STANDARD

Date Collected: 16-JAN-91 Matrix: 2 GW/WW

Date Received: 16-JAN-91 Method: VOA-502.1

Analyzed Date: 21-JAN-91

Sample Location: TRIP BLANK

Comments: PROJ:HARRIMAN SITE #P0521

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

Samplenum: 95317-006

Method: VOA-502.1 continued

CAS NO.	Compound	ug/l	ug/l	Qualifier
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE

Sample Number: 95317-006 Project Name: STANDARD

Date Collected: 16-JAN-91 Matrix: 2 GW/WW

Date Received: 16-JAN-91 Method: VOA-503.1

Analyzed Date: 21-JAN-91

Sample Location: TRIP BLANK

Comments: PROJ:HARRIMAN SITE #P0521

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5		U
108-88-3	Toluene	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

ORGANIC DATA REPORTING QUALIFIERS

VALUE - A value is reported if the result is greater than or equal to the detection limit.

U - Indicates that the compound was analyzed for but not detected. The value followed by the U (e.g. 10U) is the minimum detection limit for the sample based on necessary concentration or dilution action. This is not necessarily the instrument detection limit.

J - Indicates an estimated value. This qualifier is used when mass spectral data indicates the presence of a compound that meets the identification criteria and the result is < than the specified detection limit but > than zero.

B - This qualifier is used when the analyte is found in the blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

C - This qualifier applies to pesticide parameters where the identification has been confirmed by gas chromatography/mass spectrometry.

ANALYTICAL REPORT

Company:

SIRRINE ENVIRONMENTAL CONS.
MR. ZWEIG
100 NASSAU PK. BLVD.
PRINCETON NJ 08540

Report Summary

Report Date: 14-MAR-91

Project: STANDARD

Lab Number: 96283

Sample Number(s): 96283-001
to
96283-003

Ronald A. Bayer
Laboratory Director

EnviroTest Laboratories Inc.
315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0690
FAX (914) 562-0841

Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL CONSULTING

Sample Number: 90283-001 **Project Name:** STANDARD

Date Collected: 13-FEB-91 **Matrix:** 2 GW/WW

Date Received: 15-FEB-91

Sample Location: GEI-1

Comments: HARRIMAN SITE

Analysis	Result	Units	Method	Analyzed
CN	<0.01	MG/L	EPA 335.2	21-FEB-91

Remarks:

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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL CONSULTING

Sample Number: 36383-001 Project Name: STANDARD

Date Collected: 15-FEB-91 Matrix: 2 GW/WW

Date Received: 15-FEB-91 Method: VOA-502.1

Analyzed Date: 24-FEB-91

Sample Location: GEI-3

Comments: HARRIMAN SITE

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

Samplenum: 96283-001

Method: VOA-502.1 continued

CAS NO.	Compound	ug/l	ug/l	Qualifier
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL CONSULTING

Sample Number: 96283-001 **Project Name:** STANDARD

Date Collected: 15-FEB-91 **Matrix:** 2 GW/WW

Date Received: 15-FEB-91 **Method:** VOA-503.1

Analyzed Date: 19-FEB-91

Sample Location: GEI-3

Comments: HARRIMAN SITE

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5		U
108-88-3	Toluene	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

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Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL CONSULTING

Sample Number: 98283-002 Project Name: STANDARD

Date Collected: 15-FEB-91 Matrix: 2 GW/WW

Date Received: 15-FEB-91

Sample Location: GEI-4

Comments: HARRIMAN SITE

Analysis	Result	Units	Method	Analyzed
CN	<0.01	MG/L	EPA 335.2	21-FEB-91

Remarks:

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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL CONSULTING

Sample Number: 96283-002 Project Name: STANDARD

Date Collected: 15-FEB-91 Matrix: 2 GW/WW

Date Received: 15-FEB-91 Method: VOA-502.1

Analyzed Date: 24-FEB-91

Sample Location: GEI-4

Comments: HARRIMAN SITE

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5	4.8	
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

Samplenum: 96283-002

Method: VOA-502.1 continued

CAS NO.	Compound	ug/l	ug/l	Qualifier
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL CONSULTING

Sample Number: 96283-002 **Project Name:** STANDARD

Date Collected: 15-FEB-91 **Matrix:** 2 GW/WW

Date Received: 15-FEB-91 **Method:** VOA-503.1

Analyzed Data: 19-FEB-91

Sample Location: GEI-4

Comments: HARRIMAN SITE

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5		U
108-88-3	Toluene	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL CONSULTING

Sample Number: 96183-003 Project Name: STANDARD

Date Collected: 15-FEB-91 Matrix: 2 GW/WW

Date Received: 15-FEB-91 Method: VOA-502.1

Analyzed Date: 01-MAR-91

Sample Location: TRIP BLANK

Comments: HARRIMAN SITE

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

Samplenum: 96283-003

Method: VOA-502.1 continued

CAS NO.	Compound	ug/l	ug/l	Qualifier
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloroprepene	.5		U

315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890
FAX (914) 562-0841

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL CONSULTING

Sample Number: 96233-003 Project Name: STANDARD

Date Collected: 15-FEB-91 Matrix: 2 GW/WW

Date Received: 15-FEB-91 Method: VOA-503.1

Analyzed Date: 19-FEB-91

Sample Location: TRIP BLANK

Comments: HARRIMAN SITE

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5		U
108-88-3	Toluene	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

EnviroTest Laboratories Inc.
315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890
FAX (914) 562-0841

ORGANIC DATA REPORTING QUALIFIERS

VALUE - A value is reported if the result is greater than or equal to the detection limit.

U - Indicates that the compound was analyzed for but not detected. The value followed by the U (e.g. 10U) is the minimum detection limit for the sample based on necessary concentration or dilution action. This is not necessarily the instrument detection limit.

J - Indicates an estimated value. This qualifier is used when mass spectral data indicates the presence of a compound that meets the identification criteria and the result is < than the specified detection limit but > than zero.

B - This qualifier is used when the analyte is found in the blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

C - This qualifier applies to pesticide parameters where the identification has been confirmed by gas chromatography/mass spectrometry.

SIRRINE
ENVIRONMENTAL
CONSULTANTS

100 Nassau Park Boulevard
Princeton, New Jersey 08540
(609) 243-7847

August 26, 1991

Mr. Thomas P. Frazer
Chemical Waste Management, Inc.
Eastern Region
100 Nassau Park Boulevard
Princeton, New Jersey 08540

RE: Phase II Investigation Results
Gaess Site, Harriman, New York
Sirrine Project No. P-1093

Dear Tom:

Enclosed is a copy of Sirrine Environmental Consultant's (SEC) Phase II Investigation Results Report for your review and forwarding to the New York State Department of Environmental Conservation (NYSDEC). It documents the results of the Phase II sampling effort as well as the sampling and analysis methods used and SEC's conclusions based on review of the results.

If you have any questions regarding the enclosed documents, please do not hesitate to contact Richard Zweig, Roy Peterson or myself.

Very truly yours,

SIRRINE ENVIRONMENTAL CONSULTANTS, INC.

Richard G. Habrukowich, Ph.D., P.E.
Acting Division Manager, Eastern Region

encl/as

cc: Bob Heitman, CWM
Brent Brower, SEC
Richard Zweig, SEC
Roy Peterson, SEC

DRAFT

PHASE II INVESTIGATION RESULTS

GAESS SITE

HARRIMAN, NEW YORK
NYSDEC SITE NO. 336018

PREPARED FOR:

CHEMICAL WASTE MANAGEMENT, INC.

100 NASSAU PARK BOULEVARD

PRINCETON, NEW JERSEY

PREPARED BY:

SIRRINE ENVIRONMENTAL CONSULTANTS, INC.

100 NASSAU PARK BOULEVARD

PRINCETON, NEW JERSEY

AUGUST 1991

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1.0 EXECUTIVE SUMMARY

The purpose of the Phase II investigation was to characterize the soils in and around the former Gaess site operations area to determine if residual soil contamination exists. A secondary purpose of the Phase II investigation was to determine if trichloroethene (TCE) contamination present in the Village of Harriman water supply well (Mary Harriman #1) has resulted from a release from the Gaess site.

River sediment samples collected during the Phase II investigation did not indicate a presence of TCE or 1,1,1-Trichloroethane (1,1,1-TCA) in the Ramapo River or the associated pond. The soil sampling and the soil gas survey (SGS) performed in the area of the former site operations determined the presence of contaminants at concentrations below the NYSDEC action levels. This confirms that soil contamination may have been present on-site appears to have been removed as documented by CWM and Geo-Engineering in 1985. Therefore no other sampling or remediation activities are warranted for site soils.

The Phase II investigation at the Gaess site found low levels of TCE and (1,1,1-TCA) in the groundwater. The downgradient groundwater samples contained concentrations of TCE and 1,1,1-TCA above the 5 ppb limit for New York State drinking water standards (GHP-1 and GHP-3 contained 8.2 ppm of 1,1,1-TCA and 8.9 ppb of TCE, respectively).

Although the upgradient groundwater samples did not indicate a presence of either TCE or 1,1,1-TCA, UG-2 did indicate the presence of benzene, toluene, ethylbenzene and m-xylene. Benzene was the only contaminant in UG-2 which was present at a concentration above the NYSDEC limit of 0.5 ppb, at a concentration if 0.53 ppb. Sirrine believes this contamination may be associated with oil staining on the ground surface in the location where sample UG-2 was collected. None of the other upgradient groundwater samples indicated the presence of volatile organic contamination.

In addition, the on-site "upgradient" monitoring well (GEI-4) installed by Geo-Engineering as part of their 1985 hydrogeologic investigation was resampled as part of the Phase I

investigation and indicated the presence of 1,1,1-TCA at a concentration of 4.8 ppb.

Based on the results of the site investigation, the specific source of the contamination in the Village of Harriman wells remains undetermined. The presence of contamination in the downgradient groundwater samples appears to be related to the Gaess site and levels found are of the same order of magnitude as those found in the Village of Harriman wells. However, those levels should be diluted when the Village of Harriman wells are pumping due to inflow from the Ramapo River. The Village of Harriman wells were developed prior to sampling and this dilution effect did not occur. Based on this situation, it can only be concluded that there is another source of contamination, or the constituents from the Gaess site has migrated beyond the downgradient groundwater sampling points. Additionally, Geo-Engineering documented as part of the 1985 hydrogeological investigation that an upward gradient exists from the bedrock aquifer and as a result will negate the possibility that contaminants could migrate to the bedrock.

As a result, Sirrine recommends that additional groundwater samples be collected from the existing on-site monitoring wells. Additionally, further investigation of the downgradient groundwater may be needed to accurately determine the contaminant source.

2.0 PURPOSE

The purpose of the Phase II investigation was to characterize the soils in and around the former Gaess site operations area to determine if residual soil contamination exists. A secondary purpose of the Phase II investigation was to determine if trichloroethene (TCE) contamination present in the Village of Harriman water supply well (Mary Harriman #1) has resulted from a release from the Gaess site. To meet the goals of the Phase II investigation a Soil Gas Survey (SGS) was completed and soil samples were collected from soil borings drilled around the former operations area. Because TCE was the contaminant of concern, the SGS samples were analyzed for TCE and other volatile organic contaminants which include: 1,1-dichloroethene, methylene chloride, trans-1,2-dichloroethene, chloroform, 1,1-dichloroethene, carbon tetrachloride, cis-1,2-dichloroethene, 1,1,1-trichlorethane, 1,1,2-

trichloroethane and tetrachloroethene. The soil samples were collected for Contract Laboratory Procedure (CLP) metal and volatile organic analysis (U.S. EPA methods 502.1 and 503.1).

In addition to the SGS and soil sampling, groundwater samples were collected up and downgradient of the former Gaess site operation to document area groundwater conditions. Groundwater samples were analyzed for volatile organic compounds, cyanide and CLP metals.

Also, as part of the Phase II investigation, sediment samples were collected from the adjacent Ramapo River to document the sediment conditions on the bottom of river. These samples were also analyzed for volatile organic compounds and cyanide.

All site investigation work was performed by Sirrine Environmental Consultants, Inc. (Sirrine), Chemical Waste Management's (CWM's) Environmental Consultant.

3.0 SCOPE OF WORK

On April 18, 22 - 24, May 21 - 28, and July 26, 1991 Sirrine conducted field activities at the Gaess site located in Harriman, New York.

SGS and upgradient groundwater sampling were performed by Sirrine's subcontractor, Target Environmental Services, Inc. (Target), on April 22 - 24, 1991. Land, Air, Water Environmental Services, Inc. (LAW), another Sirrine subcontractor, performed the soil sampling and downgradient groundwater ("Hydropunch") sampling on May 21 - 28, 1991. The river sediment sampling was conducted on April 23, 1991 by Sirrine field personnel. Each individual field activity is discussed in detail below and NYSDEC representatives were present for all field activities.

3.1 River Sediment Samples

Sediment samples were collected from the adjacent Ramapo River in three locations to determine if the river could be a source of the contamination in the Harriman water

supply wells. This sampling effort was prompted by information from the investigation performed by Geo-Engineering, Inc. for CWM in their report titled "Hydrogeologic Investigation and Monitoring Plan" dated January, 1985. It was determined by Geo-Engineering that water may be drawn from the adjacent Ramapo River, and the pond created by a dam on the river, to the Harriman water supply wells while the wells were pumping. As a result, it was concluded that the source of the TCE contamination in the well could be from the river.

Figure 3-1 presents the river sediment sample locations. The samples were collected using a bucket auger. The samples were collected in areas where the river flow was still in order to get a representative sample of the sediment. The sample was taken just below the surface of the sediment. The bucket auger was decontaminated between samples by washing with phosphate-free detergent (Alconox^{R}), followed by a distilled water rinse and a methanol rinse and allowed to air dry. The samples were sent to EnviroTest Laboratories, Inc.(EnviroTest) of Newburgh, New York, Sirrine's laboratory subcontractor for analysis. The samples were sent for volatile organic analysis by U.S. EPA methods 502.1 and 503.1. Different methods were originally proposed in the workplan (U.S. EPA methods 8010 and 8020). This change in analytical methods was done because the groundwater samples were to be analyzed using U.S. EPA methods 502.1 and 503.1. The use of the same analytical methods provided for direct comparison of the data and also for a lower detection limit on the constituents analyzed.

3.2 Soil Gas Survey (SGS)

The SGS sampling locations are shown on Figure 3-2. The sample depths were 6 to 10 feet depending on the subsurface conditions encountered. If refusal was encountered above the 6 foot depth, the sampling personnel moved the sampling point approximately 1 foot and a sample was taken. The samples were collected in glass vial containers for storage and transport to an off-site laboratory for extraction and analysis of total volatile organic analysis and TCE.

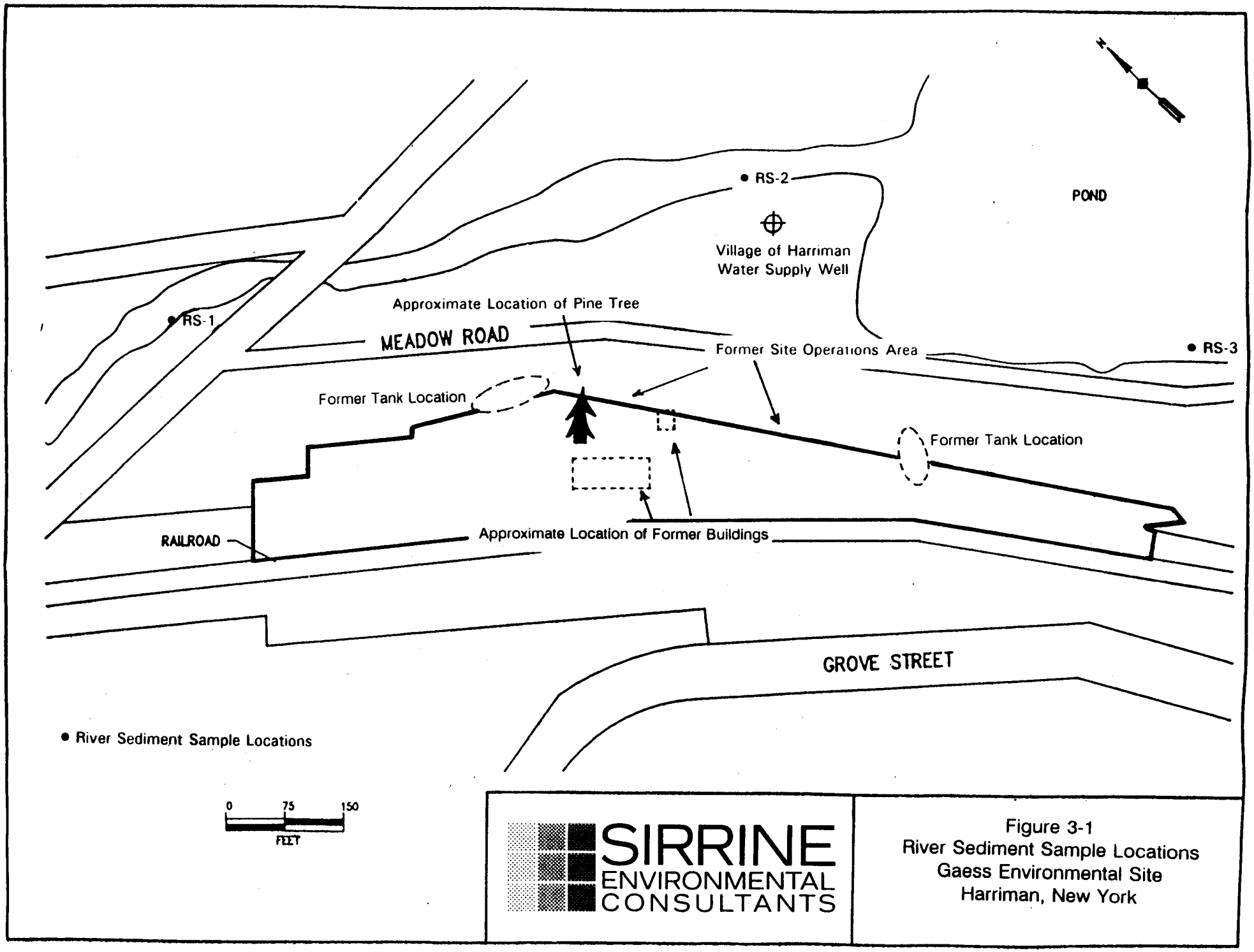
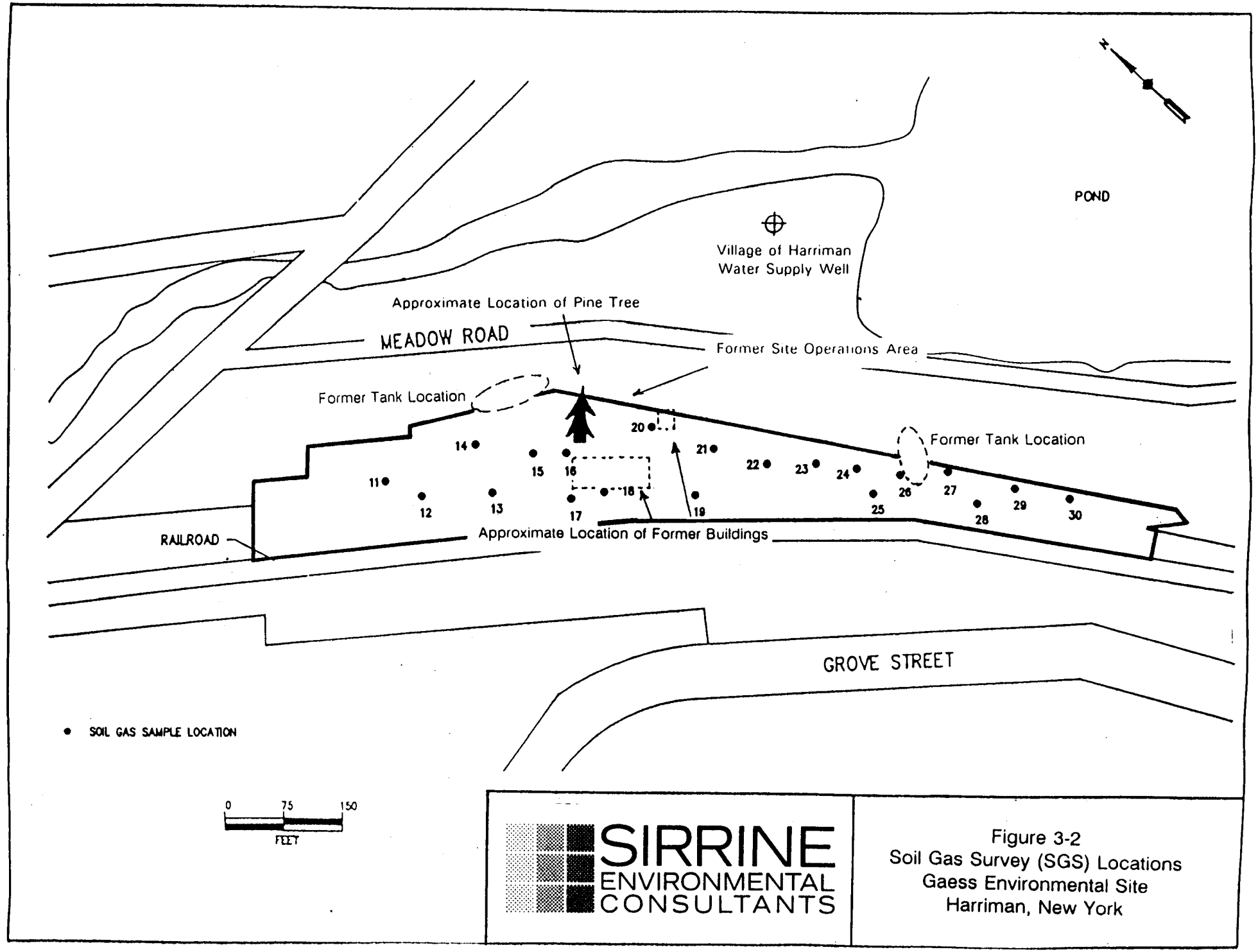


Figure 3-1
River Sediment Sample Locations
Gaess Environmental Site
Harriman, New York



SIRRINE ENVIRONMENTAL CONSULTANTS

Figure 3-2
Soil Gas Survey (SGS) Locations
Gaess Environmental Site
Harriman, New York

The SGS and laboratory analyses were performed by Target. To collect the samples, a van-mounted hydraulic probe was used to advance connected 3 foot sections of 1 inch diameter threaded steel casing down to the required sampling depth. Prior to sample collection, the entire sampling system was purged with ambient air drawn through an organic vapor filter cartridge. A teflon line was then inserted into the casing to the bottom of the hole, and the teflon line on the bottom of the hole, which contained line perforations was isolated from the remaining up-hole annulus by an inflatable packer. A sample of in-situ soil gas was then withdrawn through the probe and used to purge atmospheric air from the sampling system. A second sample of soil gas was withdrawn through the probe and encapsulated in a pre-evacuated glass vial at two atmospheres of pressure (15 psig). The self-sealing vial was detached from the sampling system, packaged, labeled, and stored for laboratory analysis.

Prior to the start of each day's field activities all sampling equipment and probes were decontaminated by washing with soapy water and rinsing thoroughly. Internal surfaces were flushed dry using purified nitrogen or filtered ambient air, and external surfaces were wiped clean using clean paper towels. Wash water and any other waste generated from the cleaning operation were collected in drums and stored on-site until analytical data was obtained. Contents of these drums will be properly disposed of upon NYDEC approval of the site investigation results.

Field control samples were collected at the beginning and end of each day's activities. These QA/QC samples were obtained by filtering ambient air through a dust and organic vapor filter cartridge and collecting samples in the same manner as described above.

3.3 Soil Sampling Procedures

The Phase II investigation included the drilling of 21 soil borings with soil samples collected for laboratory analysis. The drilling was performed using a truck mounted Mobile B-61 drill rig using the hollow stem auger drilling method. Drilling was completed using a $2^1/_4$-inch inside diameter (I.D.) hollow stem augers. Soil samples

were collected at a depth of 10 feet below land surface or when virgin or natural soil was encountered in the borehole. Soil sample locations were agreed upon by CWM and NYSDEC and are presented in Figure 3-3. The borehole was drilled to a depth of 6 feet. At this depth, two consecutive split spoon samplers were driven to a depth of 10 feet. A soil sample was composited from these spoons if virgin or natural soil was encountered at 10 feet as determined by visual inspection by the Sirrine field hydrogeologist/geologist. If virgin or natural soil was not encountered additional split spoon samplers were driven until virgin or natural soil was encountered.

The soil sampling was completed by driving 24-inch long $1^1/_2$-inch I.D. split spoon samplers into the subsurface using a 140-pound hammer with a 30-inch drop. Boring information was logged by the Sirrine field hydrogeologist/geologist and is presented in Appendix A. Soil was collected from the inner core of the sampler, to the extent possible, to gain a representative sample of the formation and minimize the potential for cross-contamination of the samples. The samples were placed in pre-cleaned containers.

Soil samples were also collected from the auger cuttings in two foot intervals from the ground surface to a depth of six feet for headspace analysis. The soil samples were placed in a glass sampling jar with a teflon cap and stored in a warm dark place until the end of the day. The sample jars were then punctured and the soil vapors within were screened using a HNu to determine the presence of volatile organics in the headspace of the sample container. The results of the headspace analysis performed on the upper most soils collected from the augers while drilling the soil borings detected the presence of volatiles using the HNu. Soil boring B-1 at a depth interval of 0-2 feet, detected volatiles at a concentration of 125 ppm. Soil boring B-9 at a depth interval of 0-2 feet detected the presence of total volatiles at a concentration of 150 ppm. Soil borings B-7 and B-8 detected total volatiles at a concentration above 20 ppm. All of the other headspace analysis samples detected slight total volatile organics at a concentration of $\leq$5 ppm. The HNu photoionization detector is used to detect total volatile organics include water vapor, so the concentrations detected by

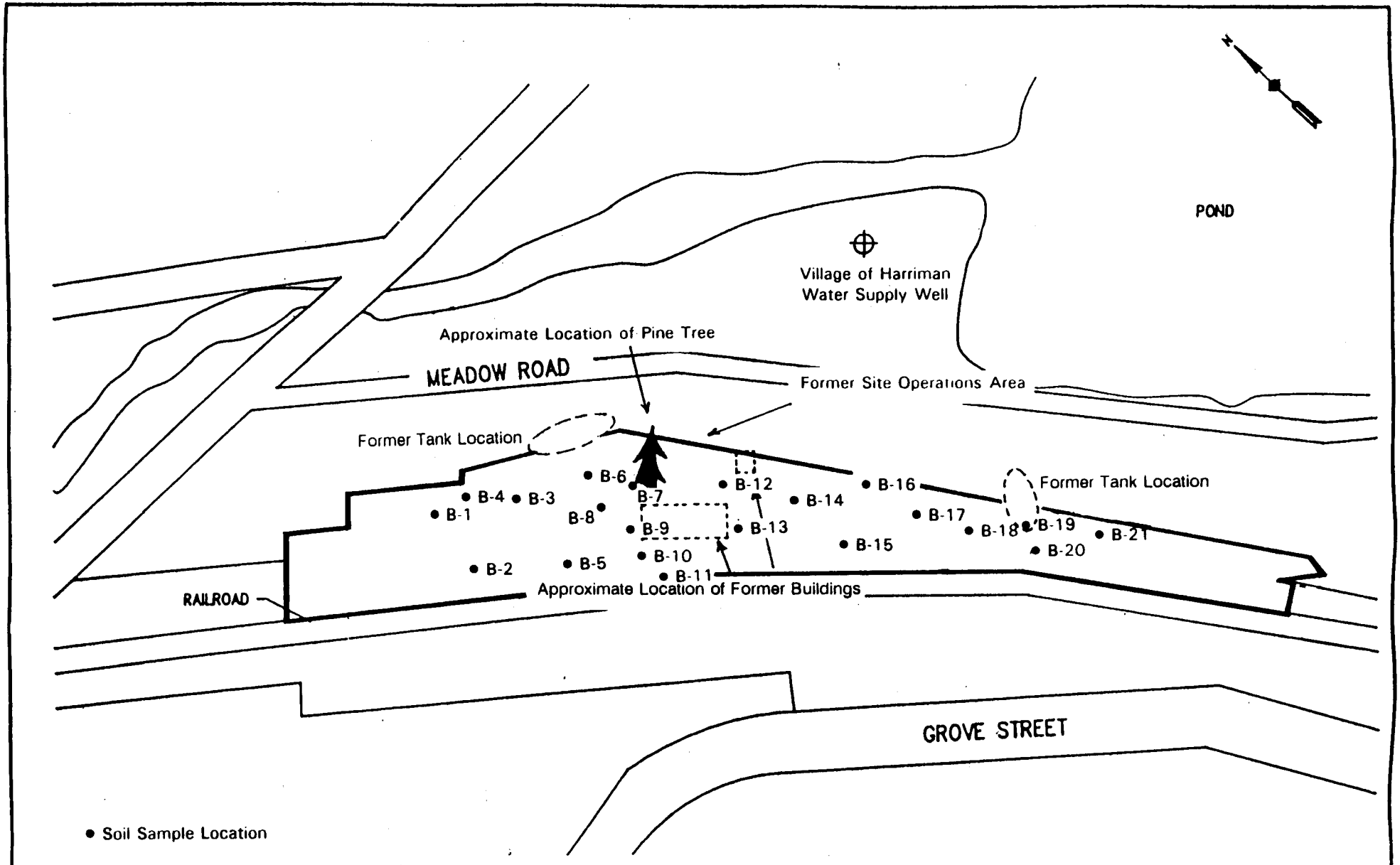


Figure 3-3
Soil Sample Locations
Gaess Environmental Site
Harriman, New York

the HNU may not be a true representation of contamination in the soils.

All soil samples were placed in sample coolers, with the internal temperature maintained at approximately 4^{o} Celsius (C) and transported to EnviroTest for analysis. All samples were numbered, with the same number cross-referenced on the Chain-of-Custody form. The Chain-of-Custody and Request for Analysis forms are provided in Appendix B. All soil samples were analyzed for volatile organic analysis (U.S. EPA Methods 502.1 and 503.1) and CLP Metals. All laboratory analyses were performed by EnviroTest which is a New York certified laboratory. All boreholes were sealed by backfilling and sealing with a bentonite grout slurry.

The drill rig was decontaminated prior to mobilization to the Gaess site. All drill tools and the drilling equipment were also decontaminated prior to use at each borehole. The drill rig, drill rods, augers and tools were steam cleaned until all visible signs of contamination were removed. The split spoon samplers were decontaminated by steam cleaning between borings, washing with Alconox^{R} and rinsing with tap water. Field blanks were collected on the drilling/sampling equipment as part of a quality control program. A sample was collected by rinsing a randomly chosen piece of equipment with deionized water after decontamination. The water was then collected in the appropriate sample containers and analyzed for the same constituents as the soil samples.

3.4 Groundwater Samples

The groundwater samples were obtained by two different methods. The upgradient water samples were collected by Target using the same apparatus to create a borehole as used in completing the SGS. Additionally, one downgradient groundwater sample was collected using this same procedure. The remaining downgradient groundwater samples were collected by LAW utilizing the QED Environmental "Hydropunch II". The "Hydropunch" method of groundwater sampling was chosen due to the higher quality of sample which can be obtained and the increased volume of sample which could be collected. These methods are detailed in the following

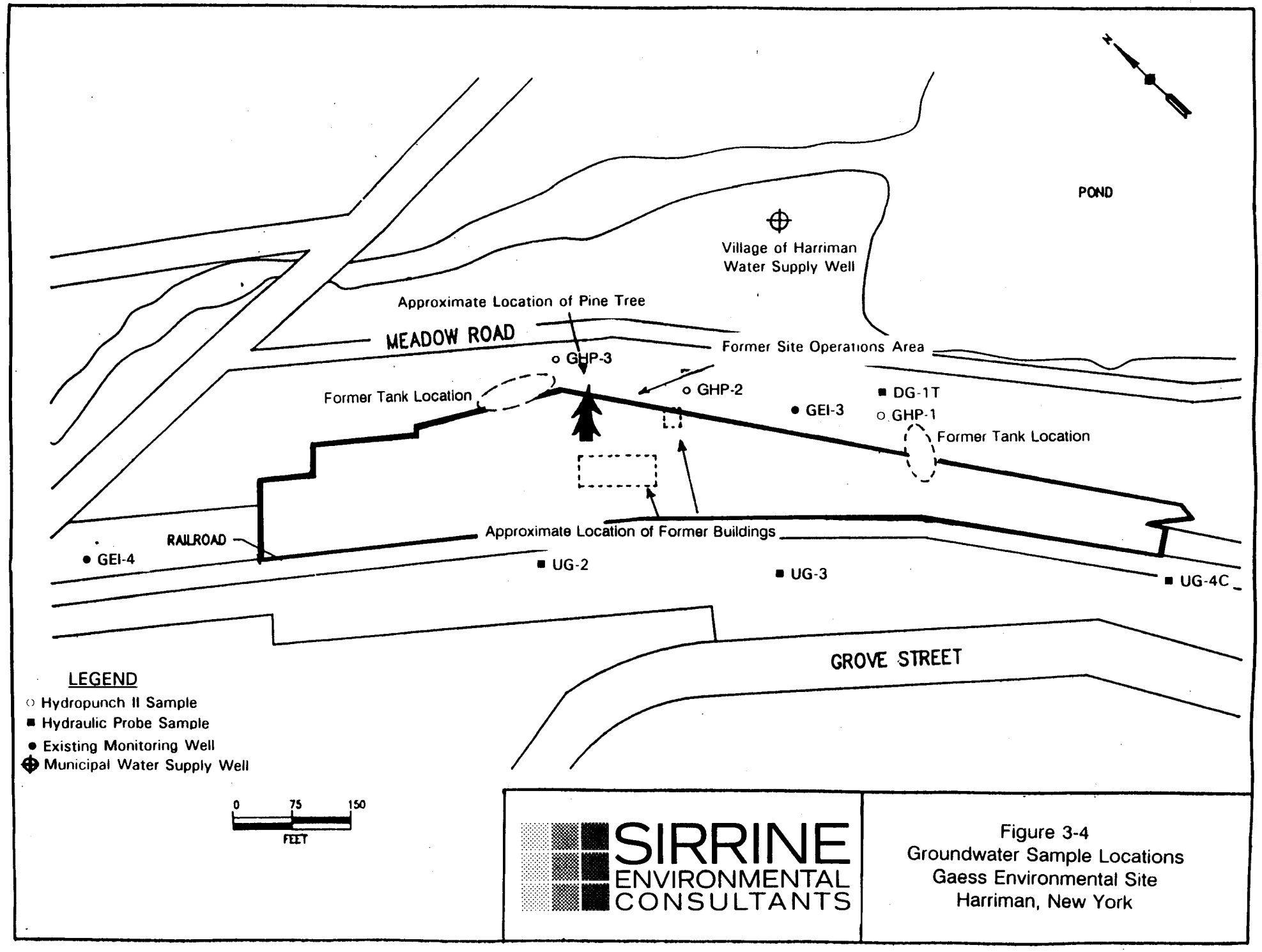
paragraphs.

3.4.1 Upgradient Groundwater Sampling

Three upgradient and one downgradient groundwater samples were collected by Target. The groundwater sampling locations are presented in Figure 3-4. To collect the samples the same van-mounted hydraulic probe used for the SGS was utilized to advance a steel casing. Sample location UG-2 (UG-1 was not sampled due to an obstruction which was encountered by the hydraulic probe) was driven to a depth of 21 feet. Sample locations UG-3, and UG-4C were driven to a depth of 24 feet.

Once the steel casing was in place, water was allowed to fill the casing . A water level sensor was used to detect the surface of the groundwater table and to ensure that a sufficient amount of water was present to collect a sample. The water level sensor was removed and a stainless steel bailer was used to collect 40 milliliters (ml) of groundwater. Samples were placed in glass vials for transport to EnviroTest for analysis. Groundwater samples were analyzed for volatile organic constituents (U.S. EPA Method 502.1 and 503.1). The NYSDEC originally requested that CWM to use U.S. EPA Methods 502.2 and 503.1, but according to Rick Bayer, Vice President of EnviroTest, the constituents analyzed in U.S. EPA Method 502.2 are the same as U.S. EPA Methods 502.1 and 503.1 combined. Thus U.S. EPA methods 502.1 and 503.1 were used.

One downgradient groundwater sample was collected using the van-mounted hydraulic probe. DG-1T was collected at an approximate depth of 24 feet. This groundwater sample was very turbid when it was extracted. One of the requirements by the NYSDEC was for the groundwater samples to be below a value of 50 nephelometric turbidity units (NTU). Because the Target method was not achieving this goal, It was decided at this point in the investigation by both the NYSDEC and CWM, that the van-mounted hydraulic probe was not


POND
Village of Harriman
Water Supply Well
Approximate Location of Pine Tree
MEADOW ROAD
Former Site Operations Area
GHP-3
GHP-2
Former Tank Location
DG-1T
GEI-3
GHP-1
Former Tank Location
RAILROAD
Approximate Location of Former Buildings
GEI-4
UG-2
UG-3
UG-4C
GROVE STREET
LEGEND
Hydropunch II Sample
Hydraulic Probe Sample
Existing Monitoring Well
Municipal Water Supply Well
0
75
150
FEET
SIRRINE
ENVIRONMENTAL
CONSULTANTS
Figure 3-4
Groundwater Sample Locations
Gaess Environmental Site
Harriman, New York

an efficient method to collect the groundwater samples. The investigation was then terminated and the procedure to collect the remaining groundwater samples was changed to include the "Hydropunch II" .

3.4.2 Downgradient Groundwater Samples

Eight downgradient groundwater samples were collected using the "Hydropunch II". These eight samples were collected within three boring locations at varying depths. CWM and NYSDEC agreed upon the "Hydropunch II" sampling locations. This was completed at the request of the NYSDEC as they felt it was necessary to collect groundwater samples to characterize the entire aquifer. GHP-1 was sampled at depth intervals of 12 - 14 feet, 22.5 - 24 feet and 32 - 34 feet. GHP-2 was sampled at depth intervals of 7 - 9 feet, 12 - 14 feet and 22.5 - 24 feet. GHP-3 was sampled at depth intervals of 12.5 - 14 feet and 17.5 - 19 feet. Bedrock was encountered in all of the boreholes. GHP-1 encountered bedrock at 34 feet, GHP-2 encountered bedrock at 26 feet and GHP-3 encountered bedrock at 21 feet. The groundwater samples were collected through boreholes drilled by LAW.

The "Hydropunch II" sampling equipment is designed to collect a representative one liter groundwater sample without the need for construction of a monitoring well. A drill rig was used to advance the boring to the appropriate depth. At the depth chosen, the "Hydropunch II" sampling apparatus was driven into the soil to a depth five feet below the drilled depth. The "Hydropunch II" was then partially withdrawn for one and one-half to two feet and a groundwater sample was collected using a teflon bailer. It was still observed that the groundwater sample collected through the "Hydropunch II" was still over the turbidity requirements set forth by the NYSDEC. It was agreed upon between the NYSDEC and the CWM representative on site, that the water samples would be allowed to settle and the sample would be taken from the top of the settled containers. The NYSDEC sampled in the same manner. The "Hydropunch II" groundwater samples were also analyzed by EnviroTest for volatile organic

compounds (U.S. EPA Methods 502.1 and 503.1).

The teflon bailer was cleaned between each use by removing all visible signs of contamination, washing with detergent (Alconox^{R} and water) and rinsing with tap water. The "Hydropunch II" sampling apparatus was steam cleaned between boreholes. All boring equipment and tools were steamed cleaned between uses. Wash water and other wastes generated at the site were collected in 55-gal. drums and stored on-site. The contents of the drums will be properly disposed of upon approval of the investigation results. All bore holes were sealed by backfilling and sealing with a bentonite grout slurry.

3.4.3 Existing Monitoring Well Samples

The two existing groundwater monitoring wells (GEI-3 and GEI-4) were sampled for priority pollutant metal analysis. This sampling was prompted by the results of the NYSDEC sampling of the downgradient groundwater samples using the "Hydropunch II". Two water samples were collected from each groundwater monitoring well, one sample was field filtered and one was not field filtered.

4.0 SITE ASSESSMENT

4.1 Site History

The Gaess site is located in the Village of Harriman, Orange County, New York. In 1962, the site was leased from the Erie-Lackawana Railroad (Conrail predecessor) by John Kalodziejski, who operated the Harriman Sewage Disposal Company at the site until 1972 when he subleased the site to Gaess Environmental Services (Gaess). Gaess and its successor, SCA Chemical Services (SCA), operated a waste handling transfer station on the site until 1978. In June, 1980 industrial wastes were discovered abandoned on the site by a NYSDEC Task Force. These wastes were contained in two industrial tank truck trailers and various other waste containers. Following an investigation of the site an additional tank truck trailer, a vacuum tank truck and four, 55-gallon drums were discovered buried at the site.

In April, 1981 a Consent Agreement was signed between SCA and NYSDEC. This agreement initiated a cleanup of the site under the direction of the NYSDEC. The containers, the wastes contained in them and suspected contaminated soils were removed from the site by SCA in May through July of 1981 under the supervision of the NYSDEC.

SCA retained GeoEngineering Inc. in September, 1984 to perform a site hydrogeological investigation. During the week of October 15,1984, two piezometers designated as GEI-1 and GEI-2, and two groundwater monitoring wells, designated GEI-3 and GEI-4 were constructed on the site at the locations shown on Figure 3-4. These wells, and the Village of Harriman water supply wells (Mary Harriman Wells 1 and 3) were sampled on November 29, 1984. The results of this sampling along with the results of the hydrogeological investigation were documented in a report prepared by GeoEngineering for CWM entitled "Hydrogeological Investigation and Monitoring Plan" dated January, 1985. CWM became involved with the site following the purchase of SCA in September, 1984.

In October 1990, CWM was contacted by the NYSDEC regarding contamination found in the Village of Harriman Mary Harriman wells 1 and 3. The Harriman backup wells were sampled by the Village of Harriman on July 19,1990. The analytical results indicated that in the shallow water supply well, designated MH-1, trichloroethene (TCE) was present at a concentration of 6.7 parts per billion (ppb) and the deep water supply well, designated MH-3, contained TCE at a concentration of 0.76 ppb. The NYSDEC Drinking Water Standards for Principal Organic Contaminants (POC) is five (5) ppb for TCE.

CWM responded to the NYSDEC notification by performing a Phase I investigation to determine if the Gaess site could be the source of the contamination detected in the Village of Harriman water supply wells. CWM retained Sirrine to re-sample MH-1 and MH-3 as well as the upgradient Village of Harriman main water supply well on January 16, 1991. Sirrine also collected two surface water samples from the adjacent Ramapo

River on the same date. The results of the Phase I investigation were documented in a report dated March 1991. The results of the samples collected as part of the Phase I investigation indicated the presence of 1,1,1-TCA and TCE above the detection limits of 0.5 ppb in three of the seven samples collected. Using U.S. EPA Methods 502.1 and 503.1, EnviroTest Laboratories determined that MH-1 contained 1.2 ppb of 1,1,1 TCA and 14 ppb and 16 ppb (the 16 ppb concentration was determined using U.S. EPA Method 503.1) of TCE and MH-3 contained 0.69 ppb and 1.6 ppb of TCE. The results also indicated the presence of 1,1,1-TCA in the upgradient monitoring well (GEI-4) in a concentration of 4.8 ppb.

4.2 Topography

The Gaess site consists of approximately 4 acres and is located in the southern highlands of New York State which are associated with the Reading Prong, which trends southwest to northeast through Pennsylvania, New Jersey and New York. The Gaess site is situated on a plateau which drops off rapidly to the northeast toward the Ramapo River. The topography rises rapidly to the southwest on the western side of the railroad right-of-way. The right-of-way, owned by Conrail, is located on the northern most extent of the plateau. It is understood, through past documentation, that previous site operations exited entirely on this plateau. The base of the plateau, north towards the river, is a floodplain.

4.3 Geology

The geologic conditions of the site were interpreted from borings by Geo-Engineering, well logs by Layne-New York and Jersey Boring and Drilling Co. and from the borings completed as part of the Phase II investigation. The site geology can be described as fill underlain by sands and gravels, which in turn are underlain by glacial till. The bedrock underlying the site consists of limestone and dolomite.

The approximate depth to bedrock in the area ranges from 25 to 45 feet below the land surface. The bedrock surface appears to slope to the east as determined by the drilling of GHP-1 through GHP-3. In DG-1T (installed in approximately the same

location as GHP-1) the bedrock surface was encountered at 37.5 feet. In GHP-2, located approximately 100 feet to the west of GHP-1, bedrock was encountered at a depth of 26 feet. In GHP-3, approximately 110 feet west of GHP-2, bedrock was encountered at 21 feet. Additionally, it was determined by Geo-Engineering that the bedrock also slopes downward to the southeast away from the river. The bedrock is overlain by 2 - 7 feet of glacial till. Above the till to the ground surface, granular soils are encountered consisting of inter-layered silt and fine sand to layered fine to coarse sand and gravel with occasional silt and clay layers. In some areas, 5 to 10 feet of fill overlies the natural materials. The more permeable soils seem to be more prevalent closer to the river, while the bedrock surface appears to rise sharply to the south west, mimicking the topography. For example, GEI-4, located upgradient of the former process areas, encountered 6 feet of fill and 15 feet of glacial till, before encountering the bedrock surface. No natural granular soils were encountered during the drilling of GEI-4.

4.4 Hydrogeology

The groundwater in the natural granular soils above the glacial till adjacent to the Ramapo River appears to exist under unconfined conditions, as determined by Geo-Engineering. The soils provide lateral groundwater flow due to stratified layers of coarse and fine grained materials. The horizontal permeability in the coarse grained layers seems to be the controlling factor in the rate of groundwater flow. In this type of hydrogeological environment, groundwater and any associated contamination within the interlayered coarse and fine grained strata tends to flow in a predominantly horizontal direction rather than the vertical.

A grain size distribution curve was completed by Geo-Engineering on the coarser grained materials to determine their horizontal permeability. It was determined that the horizontal permeability of the coarse grained material was on the order of 1×10^{-3} cm/sec and the porosity on the order of 0.30 (Geo-Engineering, 1985).

The upgradient well (GEI-4) was determined by Geo-Engineering to be installed in the glacial till. The groundwater occurring within the sandy zone, in which the well is screened, appears to again exist under unconfined conditions. GEI-4 may not be upgradient of the Gaess site former operations area.

Geo-Engineering determined that during the drilling of the Village of Harriman's main well (which is drilled into the bedrock), the well "produced artesian flow at the rate of 35 gallons per minute". Therefore, there would appear to be an upward vertical flow gradient that exists in the bedrock aquifer. This would severely limit the vertical migration of contaminants to the bedrock aquifer.

4.5 Laboratory Analytical Results

The complete laboratory analytical results are presented in Appendix C.

4.5.1 River Sediment Samples

The results of analysis of the river sediment samples indicated the presence of toluene as the only constituent identified in the analysis. The toluene was present in the upgradient river sediment sample at a concentration of 14 ppb. None of the other samples collected within the river sediment detected compounds above the method detection limit. Table 1 presents a summary of the laboratory results of the river sediments. Figure 4-1 presents the analytical results of the river sediment samples

4.5.2 SGS

All of the SGS samples collected during the field activities were analyzed according to EPA Method 601 on a gas chromatograph equipped with an electron capture detector (ECD), but using direct injection instead of purge and trap.

The analytical equipment was calibrated using an instrument response curve and injection of known concentrations of standards for the compounds

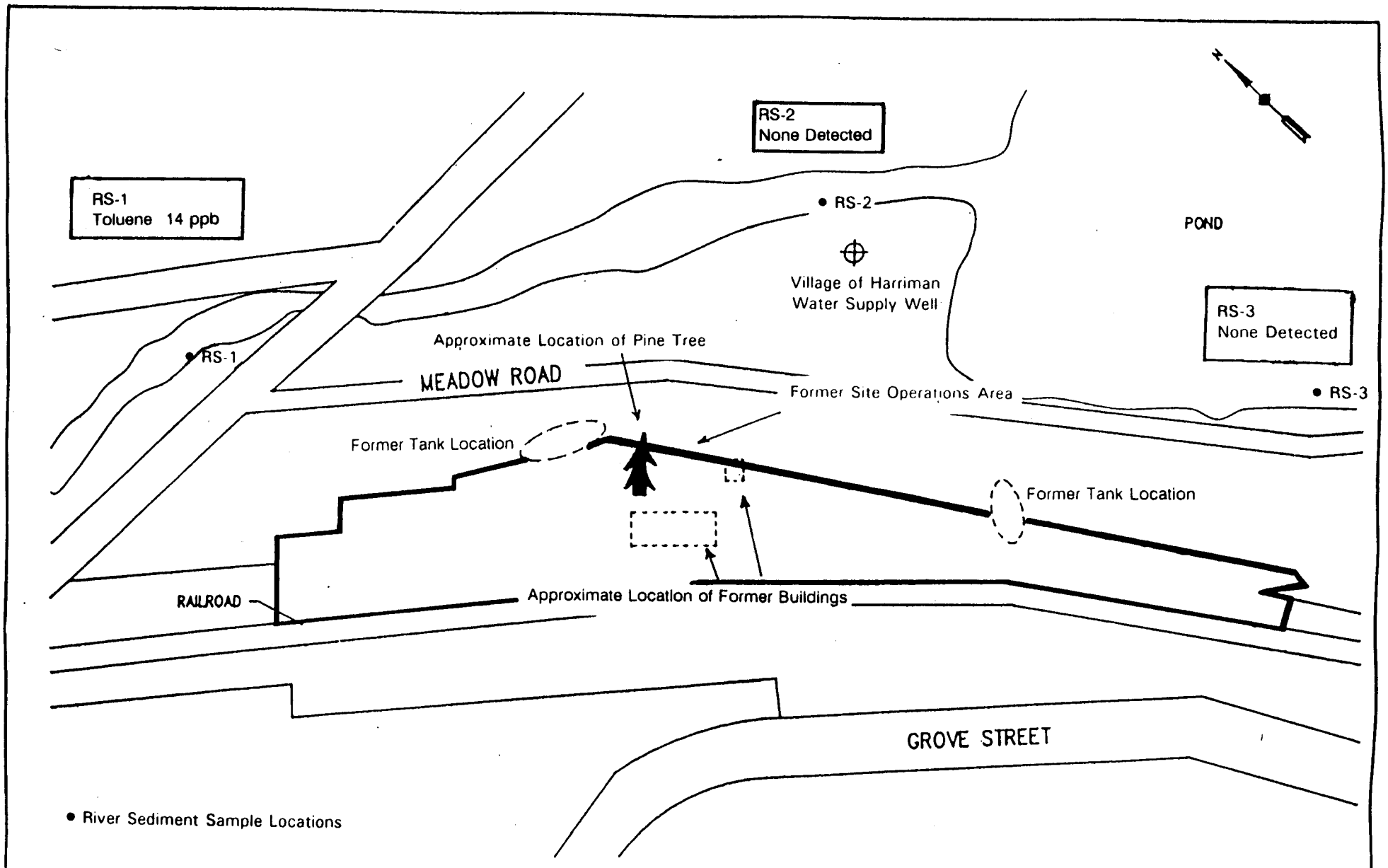
TABLE 1
LABORATORY ANALYTICAL SUMMARY
GAESS SITE
RIVER SEDIMENT SAMPLES
HARRIMAN, NEW YORK

PARAMETER	SAMPLE NO. LAB NO. DATE SAMPLED	MINIMUM DETECTION LIMIT	RS-1 98569-001 4/24/91	MINIMUM DETECTION LIMIT	RS-2 Q 98569-002 Q 4/24/91	MINIMUM DETECTION LIMIT	RS-3 98569-003 Q
EPA METHOD 9010 (MG/KG)	NYSDEC LEVELS						
CYANIDE	2,000 PPM	3.2	<3.2	1.4	<1.4	2.3	<2.3
EPA METHOD 502.1 (ug/l)							
CHLOROMETHANE	540 ppm	0.50	ND	1.40	ND	2.30	ND
BROMOMETHANE	80 PPM	0.50	ND	1.40	ND	2.30	ND
DICHLORODIFLUOROMETHANE	20,000 ppm	0.50	ND	1.40	ND	2.30	ND
VINYL CHLORIDE	.35 ppm	0.50	ND	1.40	ND	2.30	ND
METHYLENE CHLORIDE	93 ppm	0.50	ND	1.40	ND	2.30	ND
TRICHLOROFLUOROMETHANE	20,000 ppm	0.50	ND	1.40	ND	2.30	ND
1,1-DICHLOROETHENE	12 ppm	0.50	ND	1.40	ND	2.30	ND
TRANS-1,2-DICHLOROETHENE	2,000 ppm	0.50	ND	1.40	ND	2.30	ND
CIS-1,2-DICHLOROETHENE	800 ppm	0.50	ND	1.40	ND	2.30	ND
CHLOROFORM	110 ppm	0.50	ND	1.40	ND	2.30	ND
1,2-DICHLOROETHANE	7.7 ppm	0.50	ND	1.40	ND	2.30	ND
2,2-DICHLOROPROPANE	NL	0.50	ND	1.40	ND	2.30	ND
DIBROMOMETHANE	800 ppm	0.50	ND	1.40	ND	2.30	ND
1,1,1-TRICHLOROETHANE	700 ppm	0.50	ND	1.40	ND	2.30	ND
CARBON TETRACHLORIDE	5.4 ppm	0.50	ND	1.40	ND	2.30	ND
BROMODICHLOROMETHANE	5.4 ppm	0.50	ND	1.40	ND	2.30	ND
1,2-DICHLOROPROPANE	10 ppm	0.50	ND	1.40	ND	2.30	ND
1,1-DICHLOROPROPENE	NL	0.50	ND	1.40	ND	2.30	ND
TRICHLORETHENE	64 ppm	0.50	ND	1.40	ND	2.30	ND
1,3-DICHLOROPROPANE	NL	0.50	ND	1.40	ND	2.30	ND
DIBROMOCHLOROMETHANE	8.3 ppm	0.50	ND	1.40	ND	2.30	ND
1,1,2-TRICHLOROETHANE	120 ppm	0.50	ND	1.40	ND	2.30	ND
1,2-DIBROMOETHANE	8,200 ppm	0.50	ND	1.40	ND	2.30	ND
BROMOFORM	89 ppm	0.50	ND	1.40	ND	2.30	ND
1,1,1,2-TETRACHLOROETHANE	270 ppm	0.50	ND	1.40	ND	2.30	ND
1,2,3-TRICHLOROPROPANE	500 ppm	0.50	ND	1.40	ND	2.30	ND
1,1,2,2-TETRACHLOROETHANE	35 ppm	0.50	ND	1.40	ND	2.30	ND
TETRACHLOROETHENE	14 ppm	0.50	ND	1.40	ND	2.30	ND
CHLOROBENZENE	2,000 ppm	0.50	ND	1.40	ND	2.30	ND
BROMOBENZENE	NL	0.50	ND	1.40	ND	2.30	ND
2-CHLOROTOLUENE	2,000 ppm	0.50	ND	1.40	ND	2.30	ND
4-CHLOROTOLUENE	NL	0.50	ND	1.40	ND	2.30	ND
1,3-DICHLOROBENZENE	29 ppm	0.50	ND	1.40	ND	2.30	ND
1,2-DICHLOROBENZENE	7,000 ppm	0.50	ND	1.40	ND	2.30	ND

TABLE 1
LABORATORY ANALYTICAL SUMMARY
GAESS SITE
RIVER SEDIMENT SAMPLES
HARRIMAN, NEW YORK

PARAMETER	SAMPLE NO. LAB NO. DATE SAMPLED	MINIMUM DETECTION LIMIT	RS-1 98569-001 4/24/91	MINIMUM DETECTION LIMIT	RS-2 Q 98569-002 Q 4/24/91	MINIMUM DETECTION LIMIT	RS-3 98569-003 Q 4/24/91
1,4-DICHLOROBENZENE	1.6 ppm	0.50	ND	1.40	ND	2.30	ND
CIS-1,3-DICHLOROPROPENE	NL	0.50	ND	1.40	ND	2.30	ND
TRANS-1,3-DICHLOROPROPENE	NL	0.50	ND	1.40	ND	2.30	ND
EPA METHOD 503.1 (ug/l)							
BENZENE	24 ppm	0.50	ND	1.40	ND	2.30	ND
TRICHLOROETHENE	64 ppm	0.50	ND	1.40	ND	2.30	ND
TOLUENE	20,000 ppm	0.50	14	1.40	ND	2.30	ND
TETRACHLOROETHENE	14 ppm	0.50	ND	1.40	ND	2.30	ND
CHLOROBENZENE	2,000 ppm	0.50	ND	1.40	ND	2.30	ND
ETHYLBENZENE	8,000 ppm	0.50	ND	1.40	ND	2.30	ND
P-XYLENE	NL	0.50	ND	1.40	ND	2.30	ND
M-XYLENE	200,000 ppm	0.50	ND	1.40	ND	2.30	ND
O-XYLENE	200,000 ppm	0.50	ND	1.40	ND	2.30	ND
ISOPROPYLBENZENE	3,000 ppm	0.50	ND	1.40	ND	2.30	ND
STYRENE	NL	0.50	ND	1.40	ND	2.30	ND
N-PROPYLBENZENE	NL	0.50	ND	1.40	ND	2.30	ND
TERT-BUTYLBENZEN	NL	0.50	ND	1.40	ND	2.30	ND
2,CHLOROTOLUENE	2,000 ppm	0.50	ND	1.40	ND	2.30	ND
4-CHLOROTOLUENE	NL	0.50	ND	1.40	ND	2.30	ND
BROMOBENZENE	NL	0.50	ND	1.40	ND	2.30	ND
SEC-BUTYLBENZENE	NL	0.50	ND	1.40	ND	2.30	ND
1,3,5-TRIMETHYLBENZENE	NL	0.50	ND	1.40	ND	2.30	ND
4-ISOPROPROPYLTOLUENE	NL	0.50	ND	1.40	ND	2.30	ND
1,2,4-TRIMETHYLBENZENE	NL	0.50	ND	1.40	ND	2.30	ND
1,4-DICHLOROBENZENE	1.6 ppm	0.50	ND	1.40	ND	2.30	ND
1,3-DICHLOROBENZENE	29 ppm	0.50	ND	1.40	ND	2.30	ND
N-BUTYLBENZENE	NL	0.50	ND	1.40	ND	2.30	ND
1,2-DICHLOROBENZENE	7,000 ppm	0.50	ND	1.40	ND	2.30	ND
HEXACHLOROBUTADIENE	91 ppm	0.50	ND	1.40	ND	2.30	ND
NAPHTHALENE	300 ppm	0.50	ND	1.40	ND	2.30	ND
1,2,4-TRICHLOROBENZENE	2,000 ppm	0.50	ND	1.40	ND	2.30	ND
1,2,3-TRICHLOROBENZENE	NL	0.50	ND	1.40	ND	2.30	ND
	TOTAL ORGANICS		14.00		0.00		0.00

NOTES: A - DUE TO OVERLAP IN THE TWO METHODS, THESE VALUES ARE TREATED AS DUPLICATES AND ONLY THE HIGHEST VALUE WAS USED IN CALCULATING.
ALL ANALYSES COMPLETED BY ENVIROTEST LABORATORIES, INC. NA - NOT ANALYZED NL - NO LEVEL AVAILABLE



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Figure 4-1
River Sediment Analytical Results
Gaess Environmental Site
Harriman, New York

needing identification. Retention times of the standards were used to identify the peaks in the chromatographs of the field samples and their response factors were used to calculate the analyte concentrations.

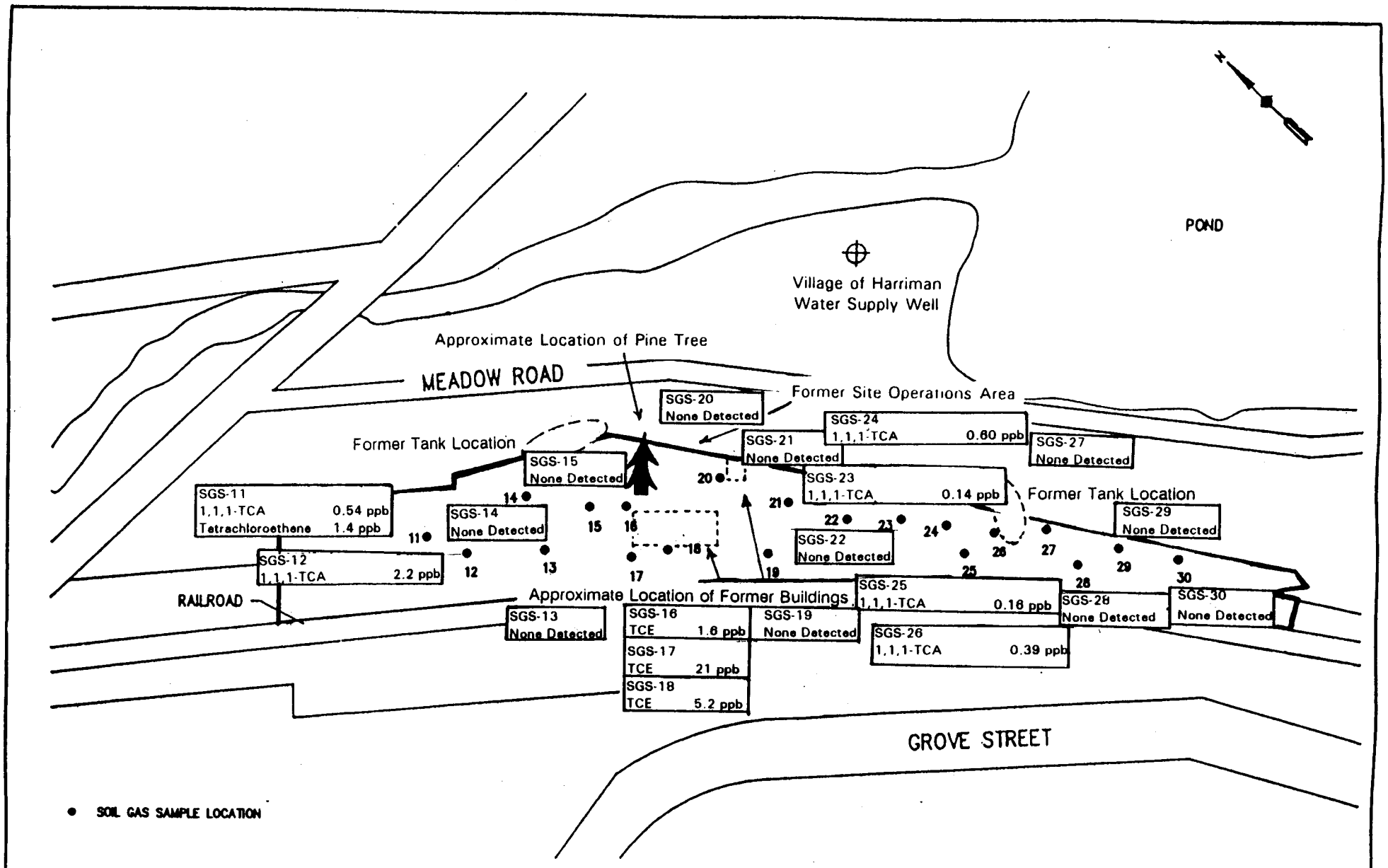
To provide graphic presentation of the data, maps have been prepared and contoured by Target and are included in Appendix D and the analytical results are presented in Figure 4-2. GC/ECD analysis revealed low levels of 1,1,1-trichloroethane (1,1,1-TCA) in some samples in the eastern and western portions of the survey area (sample points 11, 12, 23 - 26). A moderate level of TCE was present in the central survey area, with lower levels to the northeast. Very low levels of tetrachloroethene (PCE) were present in the same area, as well as in the westernmost sample. A very low level of 1,1-dichloroethene (1,1-DCE) occurred in the westernmost sample.

A moderate level of TCE and low to very low levels of 1,1,1-TCA, PCE and 1,1-DCE are present in the soil gas within the subsurface of the former Gaess operations area.

The moderate level of TCE, from sample number 17, was obtained from a sample taken adjacent to the railroad tracks.

4.5.3 Soil Samples

The results of the soil sample analyses indicate the presence of methylene chloride, chloroform, 1,1,1-TCA, TCE, toluene, PCE, and p-xylene. All of the compounds were detected above the method detection limit in very low concentrations. According to the levels documented on the draft document titled "New York State Action Level Report for Groundwater and Soil Ingestion" submitted to CWM as clean-up levels by the NYSDEC, contaminant concentrations in the soil samples are well below the NYSDEC "action" level guidelines.



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Figure 4-2
Soil Gas Survey (SGS) Analytical Results
Gaess Environmental Site
Harriman, New York

According to the laboratory results the highest concentrations of TCE are located in the former main operations area, where most of the handling and storing of waste on the site took place on the Gaess site. Soil borings B-6 through B-12 are located in the center of the site where the former operations were believed to have been performed. Soil boring B-7 was determined to exhibit the highest concentration of total organics with a value of 0.857 ppm. This included a concentration of 0.830 ppm of TCE. This concentration is below the NYSDEC action level of 64 ppm. A summary of the laboratory analysis for the soil samples analyzed for volatile organic compounds and CLP metals is presented in Table 2.

The soil samples were also analyzed for CLP metals (U.S. EPA Methods SW846 6010 and 7470 for mercury). The only compounds detected above the method detection limit were barium, chromium, and cadmium. All of the analytical results in excess of the method detection limit were below the NYSDEC action level. The highest concentration of metals analyzed were found in the soil was from soil boring B-17. The concentration of metals in B-17 was 0.48 ppm. This concentration included 0.45 ppm of barium, 0.008 ppm of cadmium and 0.02 ppm of chromium. The NYSDEC action levels for these compounds are as follows: barium 4000 ppm, cadmium 8 ppm and chromium 400 ppm. As indicated above, the boring with the highest metal content on site is far below the NYSDEC action level. Figure 4-3 presents the analytical results of the soil sampling.

4.5.4 Groundwater Samples

4.5.4.1 Downgradient Groundwater Samples

The results of the analyses indicate the presence of 1,1,1-TCA and TCE above the detection limits of 0.5 ppb in all of the downgradient groundwater samples. The analyses determined that the concentration of 1,1,1-TCA in GHP-1 was 3.5 ppb at a depth interval of 12 - 14 feet, 3.2 ppb at a depth interval of 22.5 - 24 feet and 8.2 ppb at a depth

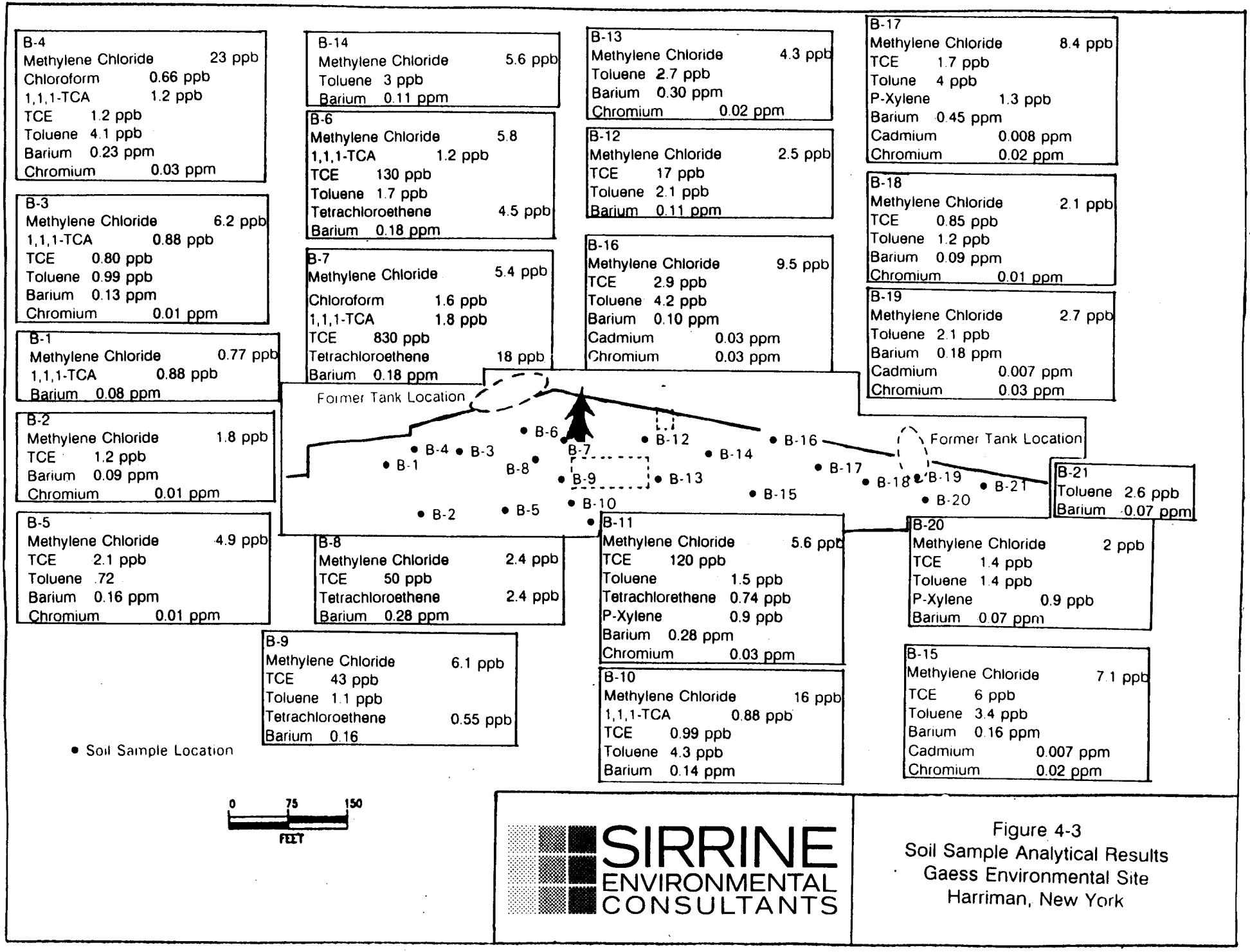


Figure 4-3
Soil Sample Analytical Results
Gaess Environmental Site
Harriman, New York

TABLE 2
LABORATORY ANALYTICAL SUMMARY
GAESS SITE
SOIL SAMPLING DATA
HARRIMAN, NEW YORK

PARAMETER	SAMPLE NO. LAB NO. DATE SAMPLED		B-1 SS-1 99589-001 Q 5/23/91	B-2 SS-2 99589-002 Q 5/23/91	B-3 SS-3 99589-003 Q 5/23/91	B-4 SS-4 99589-004 Q 5/24/91	B-5 SS-5 99589-005 Q 5/24/91	B-6 SS-6 99589-006 Q 5/24/91	B-7 SS-7 99589-007 Q 5/24/91	B-8 SS-8 99589-008 Q 5/24/91	B-9 SS-9 99589-009 Q 5/24/91
EPA METHOD 502.1 (ug/l)	MDL (ppb)	NYSDEC LEVELS									
CHLOROMETHANE	0.50	540 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
BROMOMETHANE	0.50	80 PPM	ND	ND	ND	ND	ND	ND	ND	ND	ND
DICHLORODIFLUOROMETHANE	0.50	20,000 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
VINYL CHLORIDE	0.50	.35 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
METHYLENE CHLORIDE	0.50	93 ppm	0.77	1.8	6.2	23	4.9	5.8	5.4	2.4	6.1
TRICHLOROFLUOROMETHANE	0.50	20,000 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-DICHLOROETHENE	0.50	12 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRANS-1,2-DICHLOROETHENE	0.50	2,000 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
CIS-1,2-DICHLOROETHENE	0.50	800 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
CHLOROFORM	0.50	110 ppm	ND	ND	ND	0.66	ND	ND	1.6	ND	ND
1,2-DICHLOROETHANE	0.50	7.7 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,2-DICHLOROPROPANE	0.50	NL	ND	ND	ND	ND	ND	ND	ND	ND	ND
DIBROMOMETHANE	0.50	800 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-TRICHLOROETHANE	0.50	700 ppm	0.88	ND	0.88	1.2	ND	1.2	1.8	ND	ND
CARBON TETRACHLORIDE	0.50	5.4 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
BROMODICHLOROMETHANE	0.50	5.4 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-DICHLOROPROPANE	0.50	10 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-DICHLOROPROPENE	0.50	NL	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRICHLOROETHENE	0.50	64 ppm	ND	1.2 A	0.77	1.1	2.1 A	120	760	42	43 A
1,3-DICHLOROPROPANE	0.50	NL	ND	ND	ND	ND	ND	ND	ND	ND	ND
DIBROMOCHLOROMETHANE	0.50	8.3 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-TRICHLOROETHANE	0.50	120 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-DIBROMOETHANE	0.50	8,200 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
BROMOFORM	0.50	89 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-TETRACHLOROETHANE	0.50	270 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-TRICHLOROPROPANE	0.50	500 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-TETRACHLOROETHANE	0.50	35 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
TETRACHLOROETHENE	0.50	14 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
CHLOROBENZENE	0.50	2,000 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
BROMOBENZENE	0.50	NL	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-CHLOROTOLUENE	0.50	2,000 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-CHLOROTOLUENE	0.50	NL	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-DICHLOROBENZENE	0.50	29 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-DICHLOROBENZENE	0.50	7,000 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-DICHLOROBENZENE	0.50	1.6 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
CIS-1,3-DICHLOROPROPENE	0.50	NL	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRANS-1,3-DICHLOROPROPENE	0.50	NL	ND	ND	ND	ND	ND	ND	ND	ND	ND

TABLE 2
LABORATORY ANALYTICAL SUMMARY
GAESS SITE
SOIL SAMPLING DATA
HARRIMAN, NEW YORK

PARAMETER			SAMPLE NO. LAB NO. DATE SAMPLED	B-1 SS-1 99589-001 Q 5/23/91	B-2 SS-2 99589-002 Q 5/23/91	B-3 SS-3 99589-003 Q 5/23/91	B-4 SS-4 99589-004 Q 5/24/91	B-5 SS-5 99589-005 Q 5/24/91	B-6 SS-6 99589-006 Q 5/24/91	B-7 SS-7 99589-007 Q 5/24/91	B-8 SS-8 99589-008 Q 5/24/91	B-9 SS-9 99589-009 Q 5/24/91
EPA METHOD 503.1 (ug/l)												
BENZENE	0.50	24 ppm		ND	ND	ND	ND	ND	ND	ND	ND	ND
TRICHLOROETHENE	0.50	64 ppm		ND	1.1	0.8 A	1.2 A	2.1	130 A	830 A	50 A	39
TOLUENE	0.50	20,000 ppm		ND	ND	0.99	4.1	0.72	1.7	ND	ND	1.1
TETRACHLOROETHENE	0.50	14 ppm		ND	ND	ND	ND	ND	4.5	18	2.4	0.55
CHLOROBENZENE	0.50	2,000 ppm		ND	ND	ND	ND	ND	ND	ND	ND	ND
ETHYLBENZENE	0.50	8,000 ppm		ND	ND	ND	ND	ND	ND	ND	ND	ND
P-XYLENE	0.50	NL		ND	ND	ND	ND	ND	ND	ND	ND	ND
M-XYLENE	0.50	200,000 ppm		ND	ND	ND	ND	ND	ND	ND	ND	ND
O-XYLENE	0.50	200,000 ppm		ND	ND	ND	ND	ND	ND	ND	ND	ND
ISOPROPYLBENZENE	0.50	3,000 ppm		ND	ND	ND	ND	ND	ND	ND	ND	ND
STYRENE	0.50	NL		ND	ND	ND	ND	ND	ND	ND	ND	ND
N-PROPYLBENZENE	0.50	NL		ND	ND	ND	ND	ND	ND	ND	ND	ND
TERT-BUTYLBENZENE	0.50	NL		ND	ND	ND	ND	ND	ND	ND	ND	ND
2-CHLOROTOLUENE	0.50	2,000 ppm		ND	ND	ND	ND	ND	ND	ND	ND	ND
4-CHLOROTOLUENE	0.50	NL		ND	ND	ND	ND	ND	ND	ND	ND	ND
BROMOBENZENE	0.50	NL		ND	ND	ND	ND	ND	ND	ND	ND	ND
SEC-BUTYLBENZENE	0.50	NL		ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-TRIMETHYLBENZENE	0.50	NL		ND	ND	ND	ND	ND	ND	ND	ND	ND
4-ISOPROPROPYLTOLUENE	0.50	NL		ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-TRIMETHYLBENZENE	0.50	NL		ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-DICHLOROBENZENE	0.50	1.6 ppm		ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-DICHLOROBENZENE	0.50	29 ppm		ND	ND	ND	ND	ND	ND	ND	ND	ND
N-BUTYLBENZENE	0.50	NL		ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-DICHLOROBENZENE	0.50	7,000 ppm		ND	ND	ND	ND	ND	ND	ND	ND	ND
HEXACHLOROBUTADIENE	0.50	91 ppm		ND	ND	ND	ND	ND	ND	ND	ND	ND
NAPHTHALENE	0.50	300 ppm		ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-TRICHLOROBENZENE	0.50	2,000 ppm		ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-TRICHLOROBENZENE	0.50	NL		ND	ND	ND	ND	ND	ND	ND	ND	ND
	TOTAL ORGANICS			1.65	3.00	8.87	30.16	7.72	143.20	856.80	54.80	50.75

NOTES: A - DUE TO OVERLAP IN THE TWO METHODS, THESE VALUES ARE TREATED AS DUPLICATES AND ONLY THE HIGHEST VALUE WAS USED IN CALCULATING.
ALL ANALYSES COMPLETED BY ENVIROTEST LABORATORIES, INC. NA - NOT ANALYZED NL - NO LEVEL AVAILABLE

TABLE 2
LABORATORY ANALYTICAL SUMMARY
GAESS SITE
SOIL SAMPLING DATA
HARRIMAN, NEW YORK

PARAMETER	SAMPLE NO. LAB NO. DATE SAMPLED	MDL (ppb)	NYSDEC LEVELS	B-10 SS-10 99589-010 Q 5/24/91	B-11 SS-11 99647-001 Q 5/28/91	B-12 SS-12 99647-002 Q 5/28/91	B-13 SS-13 99647-003 Q 5/28/91	B-14 SS-14 99647-004 5/28/91	B-15 SS-15 Q 99647-005 Q 5/28/91	B-16 SS-16 99647-006 Q 5/28/91	B-17 SS-17 99647-007 Q 5/28/91	B-18 SS-18 99647-008 Q 5/28/91
EPA METHOD 502.1 (ug/l)												
CHLOROMETHANE		0.50	540 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
BROMOMETHANE		0.50	80 PPM	ND	ND	ND	ND	ND	ND	ND	ND	ND
DICHLORODIFLUOROMETHANE		0.50	20,000 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
VINYL CHLORIDE		0.50	.35 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
METHYLENE CHLORIDE		0.50	93 ppm	16	5.6	2.5	4.3	5.6	7.1	9.5	8.4	2.1
TRICHLOROFLUOROMETHANE		0.50	20,000 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-DICHLOROETHENE		0.50	12 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRANS-1,2-DICHLOROETHENE		0.50	2,000 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
CIS-1,2-DICHLOROETHENE		0.50	800 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
CHLOROFORM		0.50	110 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-DICHLOROETHANE		0.50	7.7 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,2-DICHLOROPROPANE		0.50	NL	ND	ND	ND	ND	ND	ND	ND	ND	ND
DIBROMOMETHANE		0.50	800 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-TRICHLOROETHANE		0.50	700 ppm	0.88	ND	ND	ND	ND	ND	ND	ND	ND
CARBON TETRACHLORIDE		0.50	5.4 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
BROMODICHLOROMETHANE		0.50	5.4 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-DICHLOROPROPANE		0.50	10 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-DICHLOROPROPENE		0.50	NL	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRICHLOROETHENE		0.50	64 ppm	0.99 A	110	16	ND	ND	6 A	2.9 A	1.7 A	0.85 A
1,3-DICHLOROPROPANE		0.50	NL	ND	ND	ND	ND	ND	ND	ND	ND	ND
DIBROMOCHLOROMETHANE		0.50	8.3 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-TRICHLOROETHANE		0.50	120 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-DIBROMOETHANE		0.50	8,200 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
BROMOFORM		0.50	89 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-TETRACHLOROETHANE		0.50	270 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-TRICHLOROPROPANE		0.50	500 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-TETRACHLOROETHANE		0.50	35 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
TETRACHLOROETHENE		0.50	14 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
CHLOROBENZENE		0.50	2,000 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
BROMOBENZENE		0.50	NL	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-CHLOROTOLUENE		0.50	2,000 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-CHLOROTOLUENE		0.50	NL	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-DICHLOROBENZENE		0.50	29 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-DICHLOROBENZENE		0.50	7,000 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-DICHLOROBENZENE		0.50	1.6 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND
CIS-1,3-DICHLOROPROPENE		0.50	NL	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRANS-1,3-DICHLOROPROPENE		0.50	NL	ND	ND	ND	ND	ND	ND	ND	ND	ND

TABLE 2
LABORATORY ANALYTICAL SUMMARY
GAESS SITE
SOIL SAMPLING DATA
HARRIMAN, NEW YORK

PARAMETER			SAMPLE NO. / LAB NO. / DATE SAMPLED	B-10 SS-10 99589-010 Q 5/24/91	B-11 SS-11 99647-001 Q 5/28/91	B-12 SS-12 99647-002 Q 5/28/91	B-13 SS-13 99647-003 Q 5/28/91	B-14 SS-14 99647-004 Q 5/28/91	B-15 SS-15 99647-005 Q 5/28/91	B-16 SS-16 99647-006 Q 5/28/91	B-17 SS-17 99647-007 Q 5/28/91	B-18 SS-18 99647-008 Q 5/28/91
EPA METHOD 503.1 (ug/l)												
BENZENE	0.50	24 ppm		ND	ND	ND	ND	ND	ND	ND	ND	ND
TRICHLOROETHENE	0.50	64 ppm		0.76	120 A	17 A	ND	ND	5.4	2.4	1.4	.85
TOLUENE	0.50	20,000 ppm		4.3	1.5	2.1	2.7	3	3.4	4.2	4	1.2
TETRACHLOROETHENE	0.50	14 ppm		ND	0.74	ND	ND	ND	ND	ND	ND	ND
CHLOROBENZENE	0.50	2,000 ppm		ND	ND	ND	ND	ND	ND	ND	ND	ND
ETHYLBENZENE	0.50	8,000 ppm		ND	ND	ND	ND	ND	ND	ND	ND	ND
P-XYLENE	0.50	NL		ND	0.9	ND	ND	ND	ND	ND	1.3	ND
M-XYLENE	0.50	200,000 ppm		ND	ND	ND	ND	ND	ND	ND	ND	ND
O-XYLENE	0.50	200,000 ppm		ND	ND	ND	ND	ND	ND	ND	ND	ND
ISOPROPYLBENZENE	0.50	3,000 ppm		ND	ND	ND	ND	ND	ND	ND	ND	ND
STYRENE	0.50	NL		ND	ND	ND	ND	ND	ND	ND	ND	ND
N-PROPYLBENZENE	0.50	NL		ND	ND	ND	ND	ND	ND	ND	ND	ND
TERT-BUTYLBENZENE	0.50	NL		ND	ND	ND	ND	ND	ND	ND	ND	ND
2-CHLOROTOLUENE	0.50	2,000 ppm		ND	ND	ND	ND	ND	ND	ND	ND	ND
4-CHLOROTOLUENE	0.50	NL		ND	ND	ND	ND	ND	ND	ND	ND	ND
BROMOBENZENE	0.50	NL		ND	ND	ND	ND	ND	ND	ND	ND	ND
SEC-BUTYLBENZENE	0.50	NL		ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-TRIMETHYLBENZENE	0.50	NL		ND	ND	ND	ND	ND	ND	ND	ND	ND
4-ISOPROPYLTOLUENE	0.50	NL		ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-TRIMETHYLBENZENE	0.50	NL		ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-DICHLOROBENZENE	0.50	1.6 ppm		ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-DICHLOROBENZENE	0.50	29 ppm		ND	ND	ND	ND	ND	ND	ND	ND	ND
N-BUTYLBENZENE	0.50	NL		ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-DICHLOROBENZENE	0.50	7,000 ppm		ND	ND	ND	ND	ND	ND	ND	ND	ND
HEXACHLOROBUTADIENE	0.50	91 ppm		ND	ND	ND	ND	ND	ND	ND	ND	ND
NAPHTHALENE	0.50	300 ppm		ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-TRICHLOROBENZENE	0.50	2,000 ppm		ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-TRICHLOROBENZENE	0.50	NL		ND	ND	ND	ND	ND	ND	ND	ND	ND
		TOTAL ORGANICS		22.17	128.74	21.60	7.00	8.60	16.50	16.60	15.40	4.15

NOTES: A - DUE TO OVERLAP IN THE TWO METHODS, THESE VALUES ARE TREATED AS DUPLICATES AND ONLY THE HIGHEST VALUE WAS USED IN CALCULATING.
ALL ANALYSES COMPLETED BY ENVIROTEST LABORATORIES, INC. NA - NOT ANALYZED NL - NO LEVEL AVAILABLE

TABLE 2
LABORATORY ANALYTICAL SUMMARY
GAESS SITE
SOIL SAMPLING DATA
HARRIMAN, NEW YORK

PARAMETER	SAMPLE NO. LAB NO. DATE SAMPLED		B-19 SS-19 99647-009 Q 5/28/91	B-20 SS-20 99647-010 Q 5/28/91	B-21 SS-21 99647-011 Q 5/28/91	FLD BLK 99589-011 Q 5/24/91
EPA METHOD 502.1 (ug/l)	MDL (ppb)	NYSDEC LEVELS				
CHLOROMETHANE	0.50	540 ppm	ND	ND	ND	ND
BROMOMETHANE	0.50	80 PPM	ND	ND	ND	ND
DICHLORODIFLUOROMETHANE	0.50	20,000 ppm	ND	ND	ND	ND
VINYL CHLORIDE	0.50	.35 ppm	ND	ND	ND	ND
METHYLENE CHLORIDE	0.50	93 ppm	2.7	2	ND	3.8
TRICHLOROFLUOROMETHANE	0.50	20,000 ppm	ND	ND	ND	ND
1,1-DICHLOROETHENE	0.50	12 ppm	ND	ND	ND	ND
TRANS-1,2-DICHLOROETHENE	0.50	2,000 ppm	ND	ND	ND	ND
CIS-1,2-DICHLOROETHENE	0.50	800 ppm	ND	ND	ND	ND
CHLOROFORM	0.50	110 ppm	ND	ND	ND	ND
1,2-DICHLOROETHANE	0.50	7.7 ppm	ND	ND	ND	ND
2,2-DICHLOROPROPANE	0.50	NL	ND	ND	ND	ND
DIBROMOMETHANE	0.50	800 ppm	ND	ND	ND	ND
1,1,1-TRICHLOROETHANE	0.50	700 ppm	ND	ND	ND	ND
CARBON TETRACHLORIDE	0.50	5.4 ppm	ND	ND	ND	ND
BROMODICHLOROMETHANE	0.50	5.4 ppm	ND	ND	ND	ND
1,2-DICHLOROPROPANE	0.50	10 ppm	ND	ND	ND	ND
1,1-DICHLOROPROPENE	0.50	NL	ND	ND	ND	ND
TRICHLOROETHENE	0.50	64 ppm	ND	1.4 A	ND	1.8 A
1,3-DICHLOROPROPANE	0.50	NL	ND	ND	ND	ND
DIBROMOCHLOROMETHANE	0.50	8.3 ppm	ND	ND	ND	ND
1,1,2-TRICHLOROETHANE	0.50	120 ppm	ND	ND	ND	ND
1,2-DIBROMOETHANE	0.50	8,200 ppm	ND	ND	ND	ND
BROMOFORM	0.50	89 ppm	ND	ND	ND	ND
1,1,1,2-TETRACHLOROETHANE	0.50	270 ppm	ND	ND	ND	ND
1,2,3-TRICHLOROPROPANE	0.50	500 ppm	ND	ND	ND	ND
1,1,2,2-TETRACHLOROETHANE	0.50	35 ppm	ND	ND	ND	ND
TETRACHLOROETHENE	0.50	14 ppm	ND	ND	ND	ND
CHLOROBENZENE	0.50	2,000 ppm	ND	ND	ND	ND
BROMOBENZENE	0.50	NL	ND	ND	ND	ND
2-CHLOROTOLUENE	0.50	2,000 ppm	ND	ND	ND	ND
4-CHLOROTOLUENE	0.50	NL	ND	ND	ND	ND
1,3-DICHLOROBENZENE	0.50	29 ppm	ND	ND	ND	ND
1,2-DICHLOROBENZENE	0.50	7,000 ppm	ND	ND	ND	ND
1,4-DICHLOROBENZENE	0.50	1.6 ppm	ND	ND	ND	ND
CIS-1,3-DICHLOROPROPENE	0.50	NL	ND	ND	ND	ND
TRANS-1,3-DICHLOROPROPENE	0.50	NL	ND	ND	ND	ND

TABLE 2
LABORATORY ANALYTICAL SUMMARY
GAESS SITE
SOIL SAMPLING DATA
HARRIMAN, NEW YORK

PARAMETER	SAMPLE NO. LAB NO. DATE SAMPLED		B-19 SS-19 99647-009 Q 5/28/91	B-20 SS-20 99647-010 Q 5/28/91	B-21 SS-21 99647-011 Q 5/28/91	FLD BLK 99589-011 Q 5/24/91
EPA METHOD 503.1 (ug/l)						
BENZENE	0.50	24 ppm	ND	ND	ND	ND
TRICHLOROETHENE	0.50	64 ppm	ND	1.2	ND	1.6
TOLUENE	0.50	20,000 ppm	2.1	1.4	2.6	ND
TETRACHLOROETHENE	0.50	14 ppm	ND	ND	ND	ND
CHLOROBENZENE	0.50	2,000 ppm	ND	ND	ND	ND
ETHYLBENZENE	0.50	8,000 ppm	ND	ND	ND	ND
P-XYLENE	0.50	NL	ND	0.9	ND	ND
M-XYLENE	0.50	200,000 ppm	ND	ND	ND	ND
O-XYLENE	0.50	200,000 ppm	ND	ND	ND	ND
ISOPROPYLBENZENE	0.50	3,000 ppm	ND	ND	ND	ND
STYRENE	0.50	NL	ND	ND	ND	ND
N-PROPYLBENZENE	0.50	NL	ND	ND	ND	ND
TERT-BUTYLBENZENE	0.50	NL	ND	ND	ND	ND
2-CHLOROTOLUENE	0.50	2,000 ppm	ND	ND	ND	ND
4-CHLOROTOLUENE	0.50	NL	ND	ND	ND	ND
BROMOBENZENE	0.50	NL	ND	ND	ND	ND
SEC-BUTYLBENZENE	0.50	NL	ND	ND	ND	ND
1,3,5-TRIMETHYLBENZENE	0.50	NL	ND	ND	ND	ND
4-ISOPROPROPYLTOLUENE	0.50	NL	ND	ND	ND	ND
1,2,4-TRIMETHYLBENZENE	0.50	NL	ND	ND	ND	ND
1,4-DICHLOROBENZENE	0.50	1.6 ppm	ND	ND	ND	ND
1,3-DICHLOROBENZENE	0.50	29 ppm	ND	ND	ND	ND
N-BUTYLBENZENE	0.50	NL	ND	ND	ND	ND
1,2-DICHLOROBENZENE	0.50	7,000 ppm	ND	ND	ND	ND
HEXACHLOROBUTADIENE	0.50	91 ppm	ND	ND	ND	ND
NAPHTHALENE	0.50	300 ppm	ND	ND	ND	ND
1,2,4-TRICHLOROBENZENE	0.50	2,000 ppm	ND	ND	ND	ND
1,2,3-TRICHLOROBENZENE	0.50	NL	ND	ND	ND	ND
TOTAL ORGANICS			4.80	5.70	2.60	5.60

NOTES: A - DUE TO OVERLAP IN THE TWO METHODS, THESE VALUES ARE TREATED AS DUPLICATES AND ONLY THE HIGHEST VALUE WAS USED IN CALCULATING.
ALL ANALYSES COMPLETED BY ENVIROTEST LABORATORIES, INC. NA - NOT ANALYZED NL - NO LEVEL

TABLE 2
LABORATORY ANALYTICAL SUMMARY
GAESS SITE
SOIL SAMPLING DATA
HARRIMAN, NEW YORK

PARAMETER	SAMPLE NO. / LAB NO. / DATE SAMPLED		B-1 SS-1 99589-001 Q 5/23/91	B-2 SS-2 99589-002 Q 5/23/91	B-3 SS-3 99589-003 Q 5/23/91	B-4 SS-4 99589-004 Q 5/24/91	B-5 SS-5 99589-005 Q 5/24/91	B-6 SS-6 99589-006 Q 5/24/91	B-7 SS-7 99589-007 Q 5/24/91	B-8 SS-8 99589-008 Q 5/24/91	B-9 SS-9 99589-009 Q 5/24/91	B-10 SS-10 99589-010 Q 5/24/91
EPA METHOD SW846 6010 (MG/L)	NYSDEC LEVELS											
SILVER		200 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA METHOD SW846 6010 (MG/L)												
ARSENIC		80 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA METHOD SW846 6010 (MG/L)												
BARIUM		4,000 ppm	0.08	0.09	0.13	0.23	0.16	0.18	0.18	0.28	0.16	0.14
EPA METHOD SW846 6010 (MG/L)												
CADMIUM		80 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA METHOD SW846 6010 (MG/L)												
CHROMIUM		NA	ND	0.01	0.01	0.03	0.01	ND	ND	ND	ND	ND
EPA METHOD SW846 7470 (UG/L)												
MERCURY		20 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA METHOD SW846 6010 (MG/L)												
LEAD		NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA 160.3 (%)												
PERCENT SOLID		NA	90.6	89.9	89.6	91.1	82.9	84.5	83.3	86.3	88.8	91.1
EPA METHOD SW846 6010 (MG/L)												
SELENIUM		200 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
			0.08	0.10	0.14	0.26	0.17	0.18	0.18	0.28	0.16	0.14

ALL ANALYSES COMPLETED BY ENVIROTEST LABORATORIES, INC. NA - NOT ANALYZED ND - NOT DETECTED

TABLE 2
LABORATORY ANALYTICAL SUMMARY
GAESS SITE
SOIL SAMPLING DATA
HARRIMAN, NEW YORK

PARAMETER	SAMPLE NO. / LAB NO. / DATE SAMPLED		B-11 SS-11 99647-001 Q 5/28/91	B-12 SS-12 99647-002 Q 5/28/91	B-13 SS-13 99647-003 Q 5/28/91	B-14 SS-14 99647-004 Q 5/28/91	B-15 SS-15 99647-005 Q 5/28/91	B-16 SS-16 99647-006 Q 5/28/91	B-17 SS-17 99647-007 Q 5/28/91	B-18 SS-18 99647-008 Q 5/28/91	B-19 SS-19 99647-009 Q 5/28/91	B-20 SS-20 99647-010 Q 5/28/91	B-21 SS-21 99647-011 5/28/91
EPA METHOD SW846 6010 (MG/L)	NYSDEC LEVELS												
SILVER		200 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA METHOD SW846 6010 (MG/L)													
ARSENIC		80 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA METHOD SW846 6010 (MG/L)													
BARIUM		4,000 ppm	0.28	0.11	0.30	0.11	0.16	0.10	0.45	0.09	0.18	0.07	0.07
EPA METHOD SW846 6010 (MG/L)													
CADMIUM		80 ppm	ND	ND	ND	ND	0.007	0.03	0.008	ND	0.007	ND	ND
EPA METHOD SW846 6010 (MG/L)													
CHROMIUM		NA	0.03	ND	0.02	ND	0.02	0.03	0.02	0.01	0.03	ND	ND
EPA METHOD SW846 7470 (UG/L)													
MERCURY		20 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA METHOD SW846 6010 (MG/L)													
LEAD		NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA 160.3 (%)													
PERCENT SOLID		NA	85.1	90.6	94.0	93.7	96.9	94.0	96.0	94.4	96.3	88.4	93.5
EPA METHOD SW846 6010 (MG/L)													
SELENIUM		200 ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
			0.31	0.11	0.32	0.11	0.19	0.16	0.48	0.10	0.22	0.07	0.07

ALL ANALYSES COMPLETED BY ENVIROTEST LABORATORIES, INC. NA - NOT ANALYZED ND - NOT DETECTED

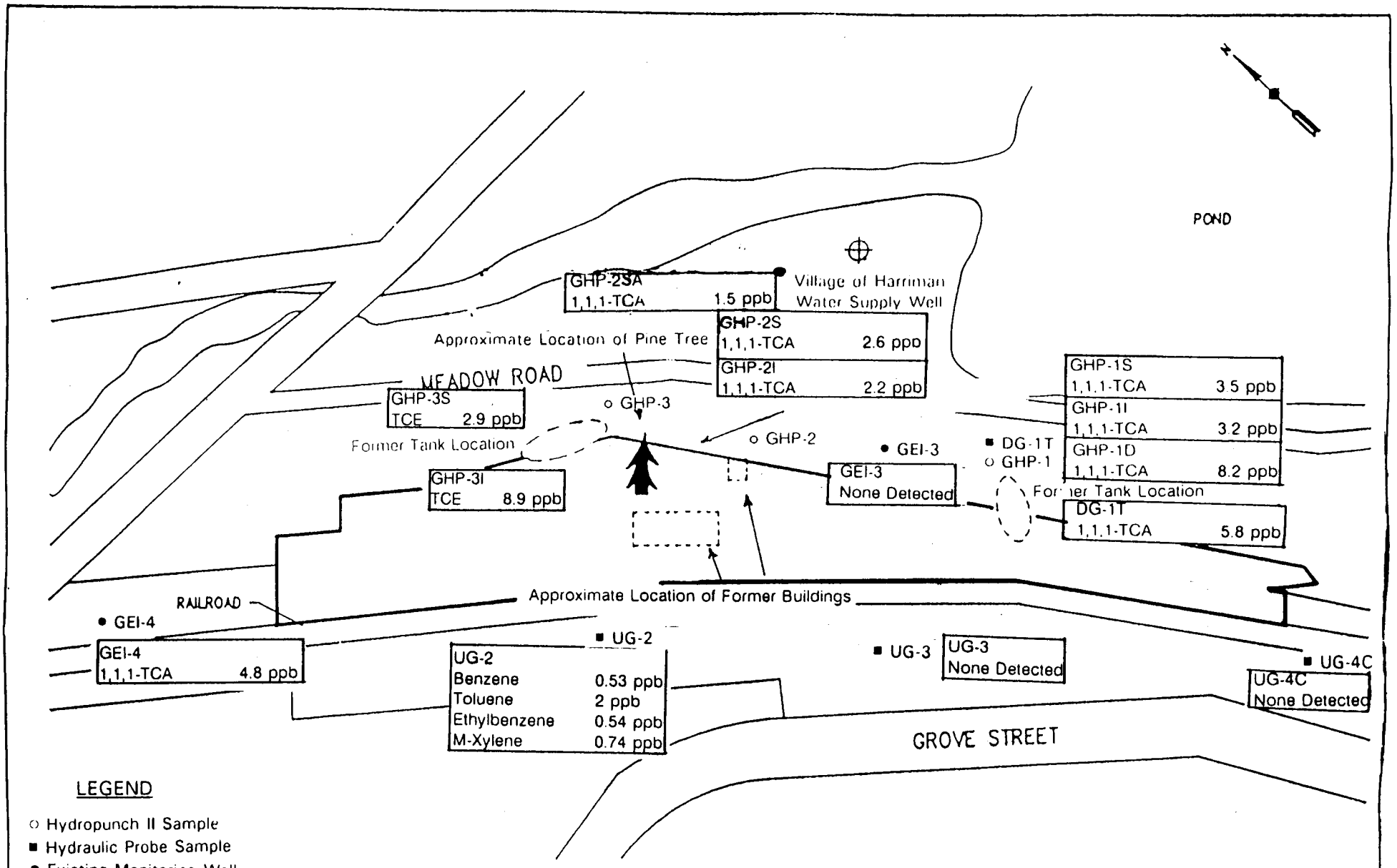
TABLE 3
LABORATORY ANALYTICAL SUMMARY
GAESS SITE
DOWNGRADIENT GROUNDWATER SAMPLES
HARRIMAN, NEW YORK

PARAMETER	SAMPLE NO. / LAB NO. / DATE SAMPLED	MDL	NYSDEC LEVELS	GHP-1S 99494-001 Q 5/21/91	GHP-1I 99494-002 Q 5/21/91	GHP-1D 99494-003 Q 5/21/91	GHP-2S 99494-004 Q 5/22/91	GHP-2I 99494-005 Q 5/22/91	GHP-2SA 99494-006 Q 5/22/91	GHP-3S 99494-007 Q 5/22/91	GHP-3I 99494-008 Q 5/22/91	FLD BLK 99494-009 Q 5/22/91
EPA METHOD 335.2 (MG/L)												
CYANIDE		0.01	<100 ppb	NA	NA	NA	<0.01	<0.01	NA	<0.01	<0.01	NA
EPA METHOD 502.1 (ug/l)												
CHLOROMETHANE		0.50	5 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
BROMOMETHANE		0.50	5 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
DICHLORODIFLUOROMETHANE		0.50	5 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
VINYL CHLORIDE		0.50	20 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
METHYLENE CHLORIDE		0.50	4.7 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRICHLOROFLUOROMETHANE		0.50	5 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-DICHLOROETHENE		0.50	5 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRANS-1,2-DICHLOROETHENE		0.50	5 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
CIS-1,2-DICHLOROETHENE		0.50	5 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
CHLOROFORM		0.50	see note b:	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-DICHLOROETHANE		0.50	5 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,2-DICHLOROPROPANE		0.50	0.5 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
DIBROMOMETHANE		0.50	5 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-TRICHLOROETHANE		0.50	5 ppb	3.5	3.2	8.2	2.6	2.2	1.5	ND	ND	ND
CARBON TETRACHLORIDE		0.50	5 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
BROMODICHLOROMETHANE		0.50	see note b:	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-DICHLOROPROPANE		0.50	0.5 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-DICHLOROPROPENE		0.50	5 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRICHLOREOTHENE		0.50	5 ppb	ND	ND	ND	ND	ND	ND	1.3	6.1	ND
1,3-DICHLOROPROPANE		0.50	5 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
DIBROMOCHLOROMETHANE		0.50	see note b:	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-TRICHLOROETHANE		0.50	5 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-DIBROMOETHANE		0.50	0.0004 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
BROMOFORM		0.50	see note b:	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-TETRACHLOROETHANE		0.50	5 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-TRICHLOROPROPANE		0.50	5 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-TETRACHLOROETHANE		0.50	1.8 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
TETRACHLOROETHENE		0.50	0.69 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
CHLOROBENZENE		0.50	5 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
BROMOBENZENE		0.50	5 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-CHLOROTOLUENE		0.50	5 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-CHLOROTOLUENE		0.50	5 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-DICHLOROBENZENE		0.50	5 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-DICHLOROBENZENE		0.50	4.7 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-DICHLOROBENZENE		0.50	4.7 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND

TABLE 3
LABORATORY ANALYTICAL SUMMARY
GAESS SITE
DOWNGRADIENT GROUNDWATER SAMPLES
HARRIMAN, NEW YORK

PARAMETER	SAMPLE NO. / LAB NO. / DATE SAMPLED		GHP-1S 99494-001 Q 5/21/91	GHP-1I 99494-002 Q 5/21/91	GHP-1D 99494-003 Q 5/21/91	GHP-2S 99494-004 Q 5/22/91	GHP-2I 99494-005 Q 5/22/91	GHP-2SA 99494-006 Q 5/22/91	GHP-3S 99494-007 Q 5/22/91	GHP-3I 99494-008 Q 5/22/91	FLD BLK 99494-009 Q 5/22/91
CIS-1,3-DICHLOROPROPENE	0.50	5 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRANS-1,3-DICHLOROPROPENE	0.50	5 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA METHOD 503.1 (ug/l)											
BENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRICHLOROETHENE	0.50	5 ppb	ND	ND	ND	ND	ND	ND	2.9 A	8.9 A	ND
TOLUENE	0.50	5 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
TETRACHLOROETHENE	0.50	0.69 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
CHLOROBENZENE	0.50	5 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
ETHYLBENZENE	0.50	5 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
P-XYLENE	0.50	5 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
M-XYLENE	0.50	5 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
O-XYLENE	0.50	5 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
ISOPROPYLBENZENE	0.50	NL	ND	ND	ND	ND	ND	ND	ND	ND	ND
STYRENE	0.50	1.2 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-PROPYLBENZENE	0.50	5 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
TERT-BUTYLBENZENE	0.50	5 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-CHLOROTOLUENE	0.50	5 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-CHLOROTOLUENE	0.50	5 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
BROMOBENZENE	0.50	5 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
SEC-BUTYLBENZENE	0.50	5 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-TRIMETHYLBENZENE	0.50	5 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-ISOPROPROPYLTOLUENE	0.50	NL	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-TRIMETHYLBENZENE	0.50	5 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-DICHLOROBENZENE	0.50	4.7 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-DICHLOROBENZENE	0.50	5 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-BUTYLBENZENE	0.50	5 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-DICHLOROBENZENE	0.50	4.7 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
HEXACHLOROBUTADIENE	0.50	4.5 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
NAPHTHALENE	0.50	0.1 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-TRICHLOROBENZENE	0.50	5 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-TRICHLOROBENZENE	0.50	5 ppb	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL ORGANICS			3.50	3.20	8.20	2.60	2.20	1.50	2.90	8.90	0.00

NOTES: A - DUE TO OVERLAP IN THE TWO METHODS, THESE VALUES ARE TREATED AS DUPLICATES AND ONLY THE HIGHEST VALUE WAS USED IN CALCULATING.
B - TOTAL CONCENTRATION OF THESE FOUR TRIHALOMETHANES SHALL NOT EXCEED 100 UG/L.
ALL ANALYSES COMPLETED BY ENVIROTEST LABORATORIES, INC. NA - NOT ANALYZED NL - NO LEVEL AVAILABLE



SIRRINE ENVIRONMENTAL CONSULTANTS

Figure 4-4
Groundwater Sample Analytical Results
Gaess Environmental Site
Harriman, New York

TABLE 4
LABORATORY ANALYTICAL SUMMARY
GAESS SITE
DOWNGRADIENT HYDRAULIC PROBE SAMPLE, FIELD AND TRIP BLANKS
HARRIMAN, NEW YORK

PARAMETER	SAMPLE NO. LAB NO. DATE SAMPLED	MDL	NYSDEC LEVELS	DG-1T 98568-004 Q 4/24/91	FB-1 98568-005 Q 4/24/91	FB-2 98568-006 Q 4/24/91	TRIP BLK 98568-007 Q 4/24/91
EPA METHOD 335.2 (MG/L)							
CYANIDE		0.01	<100 ppb	NA	0.01	<0.01	NA
EPA METHOD 502.1 (ug/l)							
CHLOROMETHANE		0.50	5 ppb	ND	ND	ND	ND
BROMOMETHANE		0.50	5 ppb	ND	ND	ND	ND
DICHLORODIFLUOROMETHANE		0.50	5 ppb	ND	ND	ND	ND
VINYL CHLORIDE		0.50	20 ppb	ND	ND	ND	ND
METHYLENE CHLORIDE		0.50	4.7 ppb	ND	ND	ND	ND
TRICHLOROFLUOROMETHANE		0.50	5 ppb	ND	ND	ND	ND
1,1-DICHLOROETHENE		0.50	5 ppb	ND	ND	ND	ND
TRANS-1,2-DICHLOROETHENE		0.50	5 ppb	ND	ND	ND	ND
CIS-1,2-DICHLOROETHENE		0.50	5 ppb	ND	ND	ND	ND
CHLOROFORM		0.50	see note b:	ND	ND	ND	ND
1,2-DICHLOROETHANE		0.50	5 ppb	ND	ND	ND	ND
2,2-DICHLOROPROPANE		0.50	0.5 ppb	ND	ND	ND	ND
DIBROMOMETHANE		0.50	5 ppb	ND	ND	ND	ND
1,1,1-TRICHLOROETHANE		0.50	5 ppb	5.8	ND	ND	ND
CARBON TETRACHLORIDE		0.50	5 ppb	ND	ND	ND	ND
BROMODICHLOROMETHANE		0.50	see note b:	ND	ND	ND	ND
1,2-DICHLOROPROPANE		0.50	0.5 ppb	ND	ND	ND	ND
1,1-DICHLOROPROPENE		0.50	5 ppb	ND	ND	ND	ND
TRICHLOREOTHENE		0.50	5 ppb	ND	ND	ND	ND
1,3-DICHLOROPROPANE		0.50	5 ppb	ND	ND	ND	ND
DIBROMOCHLOROMETHANE		0.50	see note b:	ND	ND	ND	ND
1,1,2-TRICHLOROETHANE		0.50	5 ppb	ND	ND	ND	ND
1,2-DIBROMOETHANE		0.50	0.0004 ppb	ND	ND	ND	ND
BROMOFORM		0.50	see note b:	ND	ND	ND	ND
1,1,1,2-TETRACHLOROETHANE		0.50	5 ppb	ND	ND	ND	ND
1,2,3-TRICHLOROPROPANE		0.50	5 ppb	ND	ND	ND	ND
1,1,2,2-TETRACHLOROETHANE		0.50	1.8 ppb	ND	ND	ND	ND
TETRACHLOROETHENE		0.50	0.69 ppb	ND	ND	ND	ND
CHLOROBENZENE		0.50	5 ppb	ND	ND	ND	ND
BROMOBENZENE		0.50	5 ppb	ND	ND	ND	ND
2-CHLOROTOLUENE		0.50	5 ppb	ND	ND	ND	ND
4-CHLOROTOLUENE		0.50	5 ppb	ND	ND	ND	ND
1,3-DICHLOROBENZENE		0.50	5 ppb	ND	ND	ND	ND
1,2-DICHLOROBENZENE		0.50	4.7 ppb	ND	ND	ND	ND
1,4-DICHLOROBENZENE		0.50	4.7 ppb	ND	ND	ND	ND
CIS-1,3-DICHLOROPROPENE		0.50	5 ppb	ND	ND	ND	ND

TABLE 4
LABORATORY ANALYTICAL SUMMARY
GAESS SITE
DOWNGRADIENT HYDRAULIC PROBE SAMPLE, FIELD AND TRIP BLANKS
HARRIMAN, NEW YORK

PARAMETER	SAMPLE NO. LAB NO. DATE SAMPLED		DG-1T 98568-004 Q 4/24/91	FB-1 98568-005 Q 4/24/91	FB-2 98568-006 Q 4/24/91	TRIP BLK 98568-007 Q 4/24/91
TRANS-1,3-DICHLOROPROPENE	0.50	5 ppb	ND	ND	ND	ND
TRANS-1,3-DICHLOROPROPENE	0.50					
EPA METHOD 503.1 (ug/l)						
BENZENE	0.50	ND	ND	ND	ND	ND
TRICHLOROETHENE	0.50	5 ppb	ND	ND	ND	ND
TOLUENE	0.50	5 ppb	ND	ND	ND	ND
TETRACHLOROETHENE	0.50	0.69 ppb	ND	ND	ND	ND
CHLOROBENZENE	0.50	5 ppb	ND	ND	ND	ND
ETHYLBENZENE	0.50	5 ppb	ND	ND	ND	ND
P-XYLENE	0.50	5 ppb	ND	ND	ND	ND
M-XYLENE	0.50	5 ppb	ND	ND	ND	ND
O-XYLENE	0.50	5 ppb	ND	ND	ND	ND
ISOPROPYLBENZENE	0.50	NL	ND	ND	ND	ND
STYRENE	0.50	1.2 ppb	ND	ND	ND	ND
N-PROPYLBENZENE	0.50	5 ppb	ND	ND	ND	ND
TERT-BUTYLBENZENE	0.50	5 ppb	ND	ND	ND	ND
2-CHLOROTOLUENE	0.50	5 ppb	ND	ND	ND	ND
4-CHLOROTOLUENE	0.50	5 ppb	ND	ND	ND	ND
BROMOBENZENE	0.50	5 ppb	ND	ND	ND	ND
SEC-BUTYLBENZENE	0.50	5 ppb	ND	ND	ND	ND
1,3,5-TRIMETHYLBENZENE	0.50	5 ppb	ND	ND	ND	ND
4-ISOPROPROPYLTOLUENE	0.50	NL	ND	ND	ND	ND
1,2,4-TRIMETHYLBENZENE	0.50	5 ppb	ND	ND	ND	ND
1,4-DICHLOROBENZENE	0.50	4.7 ppb	ND	ND	ND	ND
1,3-DICHLOROBENZENE	0.50	5 ppb	ND	ND	ND	ND
N-BUTYLBENZENE	0.50	5 ppb	ND	ND	ND	ND
1,2-DICHLOROBENZENE	0.50	4.7 ppb	ND	ND	ND	ND
HEXACHLOROBUTADIENE	0.50	4.5 ppb	ND	ND	ND	ND
NAPHTHALENE	0.50	0.1 ppb	ND	ND	ND	ND
1,2,4-TRICHLOROBENZENE	0.50	5 ppb	ND	ND	ND	ND
1,2,3-TRICHLOROBENZENE	0.50	5 ppb	ND	ND	ND	ND
1,2,3-TRICHLOROBENZENE	0.50					
		TOTAL ORGANIC	5.80	0.00	0.00	0.00

NOTES: A - DUE TO OVERLAP IN THE TWO METHODS, THESE VALUES ARE TREATED AS DUPLICATES AND ONLY THE HIGHEST VALUE WAS USED IN CALCULATING.
B - TOTAL CONCENTRATION OF THESE FOUR TRIHALOMETHANES SHALL NOT EXCEED 100 UG/L.
ALL ANALYSES COMPLETED BY ENVIROTEST LABORATORIES, INC. NA - NOT ANALYZED NL - NO LEVEL AVAILABLE

interval of 32 - 34 feet. GHP-2 contained 1,1,1-TCA at concentrations of 1.5 ppb at a depth interval of 7 - 9 feet, 2.6 ppb at a depth interval of 12 - 14 feet and 2.2 ppb at a depth interval of 22.5 - 24 feet. GHP-3 contained TCE at concentrations of 2.9 ppb at a depth interval of 12.5 - 14 feet and 8.9 ppb at a depth interval of 17.5 - 19. The downgradient groundwater sample data are presented on Table 3.

Additionally, one downgradient groundwater sample was collected with the hydraulic probe method and volatile organic analysis was performed. 1,1,1-TCA was found present at a concentration of 5.8 ppb at a depth of 24 feet.

The NYSDEC limit for TCE and 1,1,1-TCA in drinking water are each 5 ppb. Therefore, the NYSDEC limits are slightly exceeded in GHP-1 and GHP-3. Figure 4-4 presents the analytical results of the groundwater sampling.

4.5.4.2 Upgradient Groundwater Samples

The upgradient groundwater samples did not indicate the presence of TCE or 1,1,1-TCA. One upgradient sample did indicate the presence of benzene, toluene, ethylbenzene and m-xylene. UG-2 contained benzene at 0.53 ppb, toluene at 2.0 ppb, ethylbenzene at 0.54 ppb and m-xylene and 0.74 ppb. The benzene is the only one of these compounds that were present at a concentration above the NYSDEC limit of 0.5 ppb.

The remaining upgradient groundwater samples did not indicate the presence of volatile organics in the groundwater. The upgradient groundwater samples are presented in Table 4.

4.5.4.3 Existing Monitoring Well Samples

The results of the analyses indicate the presence of lead and zinc in the

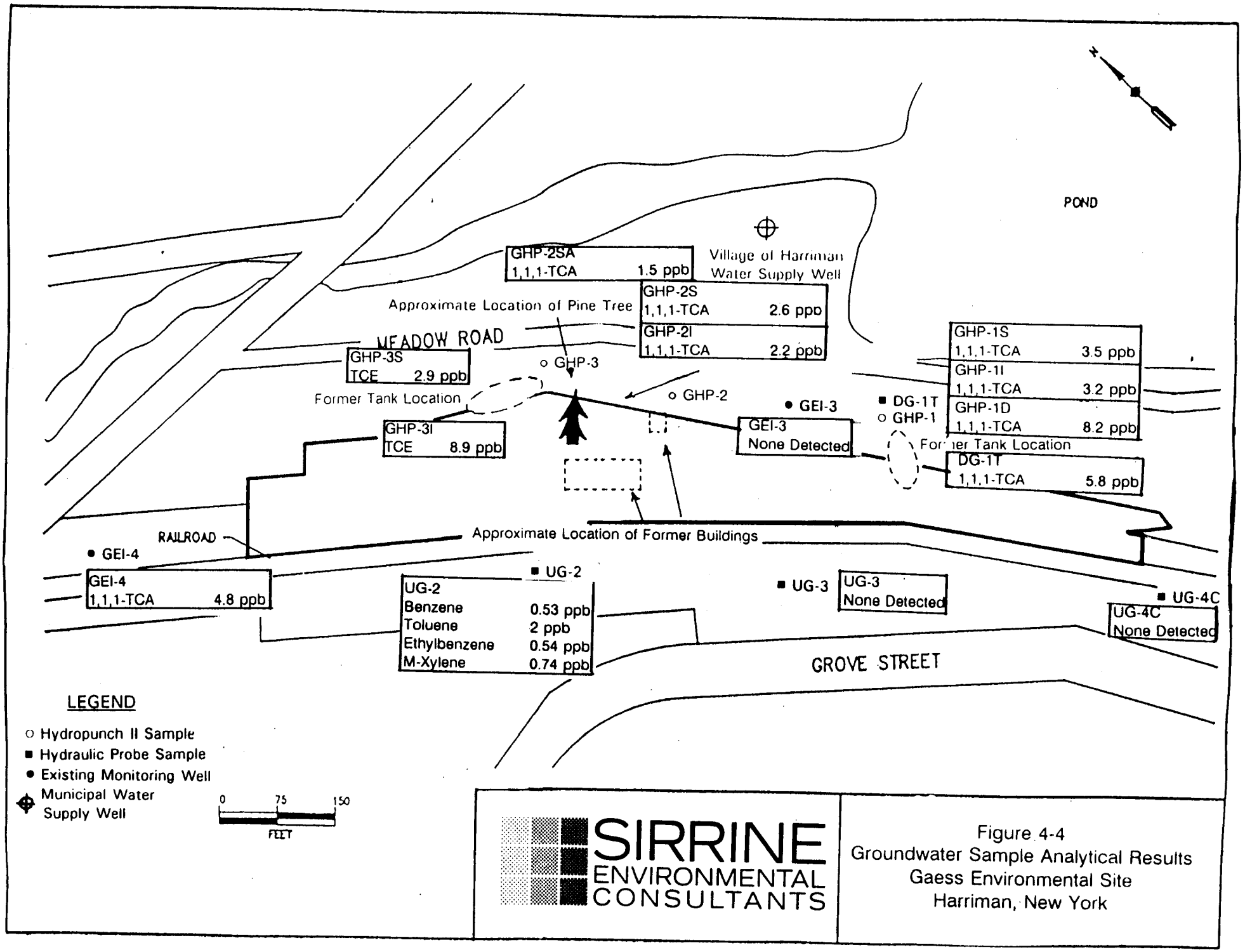


Figure 4-4
Groundwater Sample Analytical Results
Gaess Environmental Site
Harriman, New York

TABLE 5
LABORATORY ANALYTICAL SUMMARY
GAESS SITE
UPGRADIENT AND EXISTING MONITORING WELL SAMPLES
HARRIMAN, NEW YORK

PARAMETER	SAMPLE NO. LAB NO. DATE SAMPLED	MDL	NYSDEC LEVELS	UG-2 98568-001 4/23/91	Q	UG-3 98568-002 4/24/91	Q	UG-4C 98568-003 4/24/91	Q	GEI-3 96283-001 2/15/91	Q	GEI-4 96283-002 2/15/91	Q	TRIP BLK 96283-003 2/15/91	Q
EPA METHOD 335.2 (MG/L)															
CYANIDE		0.01	<100 ppb	<0.01		<0.01		NA		<0.01		<0.01		NA	
EPA METHOD 502.1 (ug/l)															
CHLOROMETHANE		0.50	5 ppb	ND		ND		ND		ND		ND		ND	
BROMOMETHANE		0.50	5 ppb	ND		ND		ND		ND		ND		ND	
DICHLORODIFLUOROMETHANE		0.50	5 ppb	ND		ND		ND		ND		ND		ND	
VINYL CHLORIDE		0.50	20 ppb	ND		ND		ND		ND		ND		ND	
METHYLENE CHLORIDE		0.50	4.7 ppb	ND		ND		ND		ND		ND		ND	
TRICHLOROFLUOROMETHANE		0.50	5 ppb	ND		ND		ND		ND		ND		ND	
1,1-DICHLOROETHENE		0.50	5 ppb	ND		ND		ND		ND		ND		ND	
TRANS-1,2-DICHLOROETHENE		0.50	5 ppb	ND		ND		ND		ND		ND		ND	
CIS-1,2-DICHLOROETHENE		0.50	5 ppb	ND		ND		ND		ND		ND		ND	
CHLOROFORM		0.50	see note b:	ND		ND		ND		ND		ND		ND	
1,2-DICHLOROETHANE		0.50	5 ppb	ND		ND		ND		ND		ND		ND	
2,2-DICHLOROPROPANE		0.50	0.5 ppb	ND		ND		ND		ND		ND		ND	
DIBROMOMETHANE		0.50	5 ppb	ND		ND		ND		ND		ND		ND	
1,1,1-TRICHLOROETHANE		0.50	5 ppb	ND		ND		ND		ND		ND		ND	
CARBON TETRACHLORIDE		0.50	5 ppb	ND		ND		ND		ND		4.8		ND	
BROMODICHLOROMETHANE		0.50	see note b:	ND		ND		ND		ND		ND		ND	
1,2-DICHLOROPROPANE		0.50	0.5 ppb	ND		ND		ND		ND		ND		ND	
1,1-DICHLOROPROPENE		0.50	5 ppb	ND		ND		ND		ND		ND		ND	
TRICHLOREOTHENE		0.50	5 ppb	ND		ND		ND		ND		ND		ND	
1,3-DICHLOROPROPANE		0.50	5 ppb	ND		ND		ND		ND		ND		ND	
DIBROMOCHLOROMETHANE		0.50	see note b:	ND		ND		ND		ND		ND		ND	
1,1,2-TRICHLOROETHANE		0.50	5 ppb	ND		ND		ND		ND		ND		ND	
1,2-DIBROMOETHANE		0.50	0.0004 ppb	ND		ND		ND		ND		ND		ND	
BROMOFORM		0.50	see note b:	ND		ND		ND		ND		ND		ND	
1,1,1,2-TETRACHLOROETHANE		0.50	5 ppb	ND		ND		ND		ND		ND		ND	
1,2,3-TRICHLOROPROPANE		0.50	5 ppb	ND		ND		ND		ND		ND		ND	
1,1,2,2-TETRACHLOROETHANE		0.50	1.8 ppb	ND		ND		ND		ND		ND		ND	
TETRACHLOROETHENE		0.50	0.69 ppb	ND		ND		ND		ND		ND		ND	
CHLOROBENZENE		0.50	5 ppb	ND		ND		ND		ND		ND		ND	
BROMOBENZENE		0.50	5 ppb	ND		ND		ND		ND		ND		ND	
2-CHLOROTOLUENE		0.50	5 ppb	ND		ND		ND		ND		ND		ND	
4-CHLOROTOLUENE		0.50	5 ppb	ND		ND		ND		ND		ND		ND	
1,3-DICHLOROBENZENE		0.50	5 ppb	ND		ND		ND		ND		ND		ND	
1,2-DICHLOROBENZENE		0.50	4.7 ppb	ND		ND		ND		ND		ND		ND	

TABLE 5
LABORATORY ANALYTICAL SUMMARY
GAESS SITE
UPGRADIENT AND EXISTING MONITORING WELL SAMPLES
HARRIMAN, NEW YORK

PARAMETER	SAMPLE NO. LAB NO. DATE SAMPLED		UG-2 98568-001 4/23/91	Q	UG-3 98568-002 4/24/91	Q	UG-4C 98568-003 4/24/91	Q	GEI-3 96283-001 2/15/91	Q	GEI-4 96283-002 2/15/91	TRIP BLK 96283-003 2/15/91	Q
1,4-DICHLOROBENZENE	0.50	4.7 ppb	ND		ND		ND		ND		ND	ND	
CIS-1,3-DICHLOROPROPENE	0.50	5 ppb	ND		ND		ND		ND		ND	ND	
TRANS-1,3-DICHLOROPROPENE	0.50	5 ppb	ND		ND		ND		ND		ND	ND	
EPA METHOD 503.1 (ug/l)													
BENZENE	0.50	ND	0.53		ND		ND		ND		ND	ND	
TRICHLOROETHENE	0.50	5 ppb	ND		ND		ND		ND		ND	ND	
TOLUENE	0.50	5 ppb	2		ND		ND		ND		ND	ND	
TETRACHLOROETHENE	0.50	0.69 ppb	ND		ND		ND		ND		ND	ND	
CHLOROBENZENE	0.50	5 ppb	ND		ND		ND		ND		ND	ND	
ETHYLBENZENE	0.50	5 ppb	0.54		ND		ND		ND		ND	ND	
P-XYLENE	0.50	5 ppb	ND		ND		ND		ND		ND	ND	
M-XYLENE	0.50	5 ppb	0.74		ND		ND		ND		ND	ND	
O-XYLENE	0.50	5 ppb	ND		ND		ND		ND		ND	ND	
ISOPROPYLBENZENE	0.50	NL	ND		ND		ND		ND		ND	ND	
STYRENE	0.50	1.2 ppb	ND		ND		ND		ND		ND	ND	
N-PROPYLBENZENE	0.50	5 ppb	ND		ND		ND		ND		ND	ND	
TERT-BUTYLBENZENE	0.50	5 ppb	ND		ND		ND		ND		ND	ND	
2-CHLOROTOLUENE	0.50	5 ppb	ND		ND		ND		ND		ND	ND	
4-CHLOROTOLUENE	0.50	5 ppb	ND		ND		ND		ND		ND	ND	
BROMOBENZENE	0.50	5 ppb	ND		ND		ND		ND		ND	ND	
SEC-BUTYLBENZENE	0.50	5 ppb	ND		ND		ND		ND		ND	ND	
1,3,5-TRIMETHYLBENZENE	0.50	5 ppb	ND		ND		ND		ND		ND	ND	
4-ISOPROPROPYLTOLUENE	0.50	NL	ND		ND		ND		ND		ND	ND	
1,2,4-TRIMETHYLBENZENE	0.50	5 ppb	ND		ND		ND		ND		ND	ND	
1,4-DICHLOROBENZENE	0.50	4.7 ppb	ND		ND		ND		ND		ND	ND	
1,3-DICHLOROBENZENE	0.50	5 ppb	ND		ND		ND		ND		ND	ND	
N-BUTYLBENZENE	0.50	5 ppb	ND		ND		ND		ND		ND	ND	
1,2-DICHLOROBENZENE	0.50	4.7 ppb	ND		ND		ND		ND		ND	ND	
HEXACHLOROBUTADIENE	0.50	4.5 ppb	ND		ND		ND		ND		ND	ND	
NAPHTHALENE	0.50	0.1 ppb	ND		ND		ND		ND		ND	ND	
1,2,4-TRICHLOROBENZENE	0.50	5 ppb	ND		ND		ND		ND		ND	ND	
1,2,3-TRICHLOROBENZENE	0.50	5 ppb	ND		ND		ND		ND		ND	ND	
		TOTAL ORGANICS	3.81		0.00		0.00		4.80		4.80	0.00	

NOTES: A - DUE TO OVERLAP IN THE TWO METHODS, THESE VALUES ARE TREATED AS DUPLICATES AND ONLY THE HIGHEST VALUE WAS USED IN CALCULATING.
B - TOTAL CONCENTRATION OF THESE FOUR TRIHALOMETHANES SHALL NOT EXCEED 100 UG/L.

non-filtered sample collected from the downgradient groundwater monitoring well GEI-3 above the detection limits of 5.0 ppb and 0.01 ppm, respectively. Lead was present in a concentration of 28 ppb and zinc was present in a concentration of 0.02 ppm. The NYSDEC "action" level for lead and zinc in groundwater is 25 ppb for lead and <300 ppb for zinc. Only lead is slightly above the NYSDEC "action" level in GEI-3. Groundwater collected from GEI-3 for analysis which was field filtered did not contain any constituents above the detection limit.

The results of the analyses from upgradient groundwater monitoring well (GEI-4) indicated the presence of arsenic, chromium, copper, nickel, lead, and zinc above the detection limits of each of the constituents in the non-filtered sample. This included arsenic, chromium and lead at or above the NYSDEC "action" levels. Arsenic is present at a concentration of 14 ppb, chromium is present at a concentration of 11 ppb, and lead is present at a concentration of 230 ppb. The NYSDEC "action" levels for these compounds are 2.5 ppb, 5.0 ppb and 25 ppb for arsenic, chromium, and lead, respectively. Only two compounds were detected in concentrations above the detection limit in the field filtered sample collected from GEI-4. These compounds, copper and zinc, were both present in concentrations below the NYSDEC "action" level.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the investigation and the laboratory analytical data , Sirrine has concluded that TCE and 1,1,1-TCA contamination exist in groundwater at the Gaess site at concentrations which slightly exceed the revised NYSDEC Drinking Water Standards. The downgradient groundwater samples (GHP-1 and GHP-3 contained 8.2 ppb of 1,1,1-TCA and 8.9 ppb of TCE, respectively) contained concentrations of TCE and 1,1,1-TCA above the 5 ppb limit for drinking water.

Although the upgradient groundwater samples did not indicate a presence of either TCE or 1,1,1-TCA, UG-2 did indicate trace amounts of benzene, toluene, ethylbenzene and m-xylene. Benzene was present at a concentration of 0.53 ppb, which is very close to the NYSDEC limit of 0.5 ppb and near the quantification limit of the instrument. Sirrine believes this contamination may be associated with oil staining on the ground surface in the location where sample UG-2 was collected. None of the other upgradient groundwater samples indicated the presence of contamination.

Additionally, monitoring well (GEI-4) installed by Geo-Engineering as part of the 1985 hydrogeologic investigation, indicated the presence of 1,1,1-TCA at a concentration of 4.8 ppb. This may indicate the existence of another source of the 1,1,1-TCA contamination.

The laboratory results for priority pollutant metals collected from the existing upgradient and downgradient monitoring wells on the Gaess site, indicate metal levels are higher in the upgradient monitoring well, compared to the downgradient monitoring well. This indicates that the site is not contributing metal contamination to the groundwater.

The river sediment samples did not indicate a presence of TCE or 1,1,1-TCA in the Ramapo River or the associated pond. However, Sirrine did observe a sheen on the pond surface near the bank where the river sediment sample (RS-3) was collected. This sheen may be due to the ongoing pond filling activities performed by the Village of Harriman Maintenance Department.

The soil sampling performed in the area of the former site operations indicated the presence of contaminants at concentrations below the NYSDEC action levels. However, the SGS taken at the Gaess Site has found two localized areas where 1,1,1-TCA and TCE exist. These anomalous areas coincide with the soil sampling locations that indicated higher concentrations (although still below NYSDEC action levels) of volatile organics in the soil surrounding the main operations area. All other soil data affirms documentation that the source of contamination at the site has been removed as reported by CWM and Geo-Engineering in 1985. Although residual levels of contaminants remain (in very low

TABLE 6
LABORATORY ANALYTICAL SUMMARY
GAESS SITE
EXISTING GROUNDWATER MONITORING WELLS
HARRIMAN, NEW YORK

PARAMETER	SAMPLE NO. / LAB NO. / DATE SAMPLED		GEI-3-M1 (NON-FILTERED) 101734-01 7/26/91	Q	GEI-3-M2 (FILTERED) 101734-02 7/26/91	Q	GEI-4-M1 (NON-FILTERED) 101734-03 7/26/91	GEI-4-M2 (FILTERED) 101734-04 7/26/91	Q
EPA METHOD 200.7 (MG/L)	MDL	NYSDEC LEVELS							
SILVER	0.01	50 ppb	<0.01		<0.01		<0.01	<0.01	
EPA METHOD 206.2 (UG/L)	MDL	NYSDEC LEVELS							
ARSENIC	5.00	2.5 ppb	<5.0		<5.0		14	<5.0	
EPA METHOD 200.7 (MG/L)	MDL	NYSDEC LEVELS							
BERYLLIUM	0.005	0.008 ppb	<0.005		<0.005		<0.005	<0.005	
EPA METHOD 200.7 (MG/L)	MDL	NYSDEC LEVELS							
CADMIUM	0.005	10 ppb	<0.005		<0.005		<0.005	<0.005	
EPA METHOD 200.7 (MG/L)	MDL	NYSDEC LEVELS							
CHROMIUM	0.01	50 ppb	<0.01		<0.01		0.05	<0.01	
EPA METHOD 200.7 (MG/L)	MDL	NYSDEC LEVELS							
COPPER	0.01	<200 ppb	<0.01		<0.01		0.11	0.01	
EPA METHOD 245.1 (UG/L)	MDL	NYSDEC LEVELS							
MERCURY	0.40	2 ppb	<0.4		<0.4		<0.4	<0.4	
EPA METHOD 200.7 (MG/L)	MDL	NYSDEC LEVELS							
NICKEL	0.04	700 ppb	<0.04		<0.04		0.04	<0.04	
EPA METHOD 239.2 (UG/L)	MDL	NYSDEC LEVELS							
LEAD	5.00	25 ppb	28		<5.0		230	<5.0	
EPA METHOD 200.7 (MG/L)	MDL	NYSDEC LEVELS							
ANTIMONY	0.05	2.5ppb	<0.05		<0.05		<0.05	<0.05	

TABLE 6
LABORATORY ANALYTICAL SUMMARY
GAESS SITE
EXISTING GROUNDWATER MONITORING WELLS
HARRIMAN, NEW YORK

PARAMETER	SAMPLE NO. / LAB NO. / DATE SAMPLED		GEI-3-M1 (NON-FILTERED) 101734-01 7/26/91		GEI-3-M2 (FILTERED) 101734-02 7/26/91	Q	GEI-4-M1 (NON-FILTERED) 101734-03 7/26/91		GEI-4-M2 (FILTERED) 101734-04 7/26/91	Q
EPA METHOD 270.2 (UG/L)	MDL	NYSDEC LEVELS								
SELENIUM	5.00	10 ppb	<5.0		<5.0		<5.0		<5.0	
EPA METHOD 279.2 (UG/L)	MDL	NYSDEC LEVELS								
THALLIUM	10.00	2.5 ppb	<10		<10		<10		<10	
EPA METHOD 200.7 (MG/L)	MDL	NYSDEC LEVELS								
ZINC	0.01	<300 ppb	0.02	0.044 ppm	<0.01		0.17	0.47 ppm	0.02	

NOTES:

ALL ANALYSES COMPLETED BY ENVIROTEST LABORATORIES, INC.

concentrations) they are below NYSDEC action levels and do not warrant removal.

Based on the results of the site investigation, the specific source of the contamination in the Village of Harriman wells remains undetermined. Although the presence of contamination in the on-site downgradient "Hydropunch II" groundwater samples appears to be related to the Gaess site due to the volatile organic constituent levels at the same order of magnitude as those found in the Village of Harriman wells, this finding is inconsistent with the dilution that will occur when the water supply well is operating. Contaminant concentration levels should be highly diluted when the Village of Harriman wells are pumping due to inflow from the Ramapo River. Since the Village of Harriman wells were developed prior to sampling and this dilution effect did not occur, it can only be concluded that there may be another source of contamination.

Sirrine recommends that additional groundwater samples be collected from the existing on-site monitoring wells. Additionally, further investigation of the downgradient groundwater quality is needed to accurately determine the contaminant source. This investigation should include the installation of a groundwater monitoring well closer to the Village of Harriman water supply well because this location is both downgradient from the "Hydropunch II" sample GHP-3 which contained levels of TCE and another potential source of contamination, the Village of Harriman Maintenance building. The recommended location for this well is between the Village of Harriman Maintenance Building and the Village of Harriman Water Supply Well. It is recommended that this monitoring well be installed so that the screen extends through the unconsolidated groundwater zone to the thin clay layer overlying the bedrock. To prevent migration of contaminants to the lower aquifer, the well screen should not extend into the bedrock. The monitoring well should be installed using hollow stem augers and continuous split spoon samples should be collected during the drilling activities. The split spoon soil samples should be screened with a photoionization detector (PID) or a flame ionization detector (FID) and only those samples which indicate potential contamination should be collected for laboratory analysis. A minimum of four samples would be collected for laboratory analysis.

Although the river water and sediment have both been sampled, the river remains as a potential source of contamination. Therefore, Sirrine recommends the collection of three additional river sediment samples at locations adjacent to the Village of Harriman well.

Finally, until the source of the groundwater contamination is determined, interim measures to remove the TCE contamination from the Village of Harriman well should be intiated.

APPENDIX A
SOIL BORING LOGS

SIRRINE ENVIRONMENTAL CONSULTANTS

TEST BORING REPORT

BORING NO. GHP-1

PROJECT: GREES ENVIRONMENTAL SITE
CLIENT: CWM
CONTRACTOR: LAND, AIR, WATER ENV. SVS.
EQUIPMENT USED: MOBILE B-61

JOB NO: P-1093.20
PAGE NO: 1 of 1
LOCATION: Harriman, NY
ELEVATION:
DATE START: 5/21/91
DATE FINISH: 5/21/91
DRILLER: Carl Petersen
PREPARED BY: Rich Zweig

GROUND WATER		DEPTH TO:				CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE			
					SIZE ID			
					HAMMER WT			
					HAMMER FALL			

DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
					WELL GRADED SAND WITH SILT (SW-SM) Brown, mostly medium to fine sand, some silt, — FLOOD PLAIN DEPOSITS —
					WATER ENCOUNTERED AT ≈ 4'
5.0					
10.0					
			GHP-1 S	12'-14'	HYDROPUNCH SAMPLE COLLECTED.
15.0					
20.0					

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLE ID.	COMPONENT %	GROUND WATER ABBREV.
0 - 4	VERY LOOSE	0 - 2	VERY SOFT	S SPLIT SPOON	MOSTLY 50 - 100%	WD - WHILE DRILLING
5 - 10	LOOSE	3 - 4	SOFT	T TUBE	SOME 30 - 45%	NE - NOT ENCOUNTERED
11 - 30	MEDIUM DENSE	5 - 8	MEDIUM STIFF	U UNDISTURBED PISTON	LITTLE 15 - 25%	UR - NOT READ
31 - 50	DENSE	9 - 15	STIFF	G GRAB SAMPLE	FEW 5 - 10%	
51+	VERY DENSE	16 - 30	VERY STIFF	X OTHER	TRACE <5%	BORING NO. GHP-1
		31+	HARD	NR NO RECOVERY		

SIRRINE ENVIRONMENTAL CONSULTANTS

TEST BORING REPORT

BORING NO. GHP-1
PAGE 2 of 2

DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
			GHP-1 I	22.5'-24'	WELL GRADED SAND WITH SILT AND GRAVEL (SW-SM) BROWN, mostly medium to fine sand, some silt, little fine subrounded gravel -FLOOD PLAIN DEPOSITS- HYDROPUNCH SAMPLE COLLECTED
25.0					
30.0					APPARENT CLAY LENS @ ≈ 30'
			GHP-1 D	32'-34'	HYDROPUNCH SAMPLE COLLECTED
					DRILLING TERMINATED @ 34'
35.0					TOP OF BEDROCK SURFACE (As DETERMINED BY THE DRILLING OF DG-1T)
40.0					
45.0					

BLOWS/FT.	DENSITY
0 - 4	VERY LOOSE
5 - 10	LOOSE
11 - 30	MEDIUM DENSE
31 - 50	DENSE
51+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0 - 2	VERY SOFT
3 - 4	SOFT
5 - 8	MEDIUM STIFF
9 - 15	STIFF
16 - 30	VERY STIFF
31+	HARD

SAMPLE ID.	
S	SPLIT SPOON
T	TUBE
U	UNDISTURBED PISTON
G	GRAB SAMPLE
X	OTHER
NR	NO RECOVERY

COMPONENT %	
MOSTLY	50 - 100%
SOME	30 - 45%
LITTLE	15 - 25%
FEW	5 - 10%
TRACE	<5%

GROUND WATER ABBREV.
WD - WHILE DRILLING
NE - NOT ENCOUNTERED
UR - NOT READ

BORING NO. GHP-1

SIRRINE ENVIRONMENTAL CONSULTANTS

TEST BORING REPORT

BORING NO. GHP-2

PROJECT: GABBS ENVIRONMENTAL SITE
CLIENT: CWM
CONTRACTOR: LAND, AIR, WATER ENV. SVS.
EQUIPMENT USED: MOBILE B-61

JOB NO: P-1093.20
PAGE NO: 1 of 2
LOCATION: Harriman, NY
ELEVATION:
DATE START: 5/22/91
DATE FINISH: 5/22/91
DRILLER: Carl Petersen
PREPARED BY: Rich Zweig

GROUND WATER		DEPTH TO:			CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE			
					TYPE		
					SIZE ID		
					HAMMER WT		
					HAMMER FALL		

DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
					SANDY SILT WITH GRAVEL (ML)
					Dark brown, moist, mostly silt, some fine sand,
					few medium subrounded gravel
					▼ WATER ENCOUNTERED — FLOOD PLAIN DEPOSITS —
					AT ≈ 3.5'
5.0					
			GHP-2 SA	7' to 9'	HYDROPUNCH SAMPLE COLLECTED
10.0					
			GHP-2 S	12' to 14'	HYDROPUNCH SAMPLE COLLECTED
15.0					
					ROCK ENCOUNTERED (BOULDER ?)
20.0					

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY
0 - 4	VERY LOOSE	0 - 2	VERY SOFT
5 - 10	LOOSE	3 - 4	SOFT
11 - 30	MEDIUM DENSE	5 - 8	MEDIUM STIFF
31 - 50	DENSE	9 - 15	STIFF
51+	VERY DENSE	16 - 30	VERY STIFF
		31+	HARD

SAMPLE ID.		COMPONENT %	
S	SPLIT SPOON	MOSTLY	50 - 100%
T	TUBE	SOME	30 - 45%
U	UNDISTURBED PISTON	LITTLE	15 - 25%
G	GRAB SAMPLE	FEW	5 - 10%
X	OTHER	TRACE	<5%
NR	NO RECOVERY		

GROUND WATER ABBREV.	
WD - WHILE DRILLING	
NE - NOT ENCOUNTERED	
UR - NOT READ	

BORING NO. GHP-2

SIRRINE ENVIRONMENTAL CONSULTANTS

TEST BORING REPORT

BORING NO. GHP-2

PAGE 2 of

DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
			GHP-2 I	22.5' to 24'	HYDROPUNCH SAMPLE COLLECTED
25.0					TOP OF BEDROCK SURFACE
					DRILLING TERMINATED AT 26'
30.0					
35.0					
40.0					
45.0					

BLOWS/FT.	DENSITY
0 - 4	VERY LOOSE
5 - 10	LOOSE
11 - 30	MEDIUM DENSE
31 - 50	DENSE
51+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0 - 2	VERY SOFT
3 - 4	SOFT
5 - 8	MEDIUM STIFF
9 - 15	STIFF
16 - 30	VERY STIFF
31+	HARD

SAMPLE ID.	
S	SPLIT SPOON
T	TUBE
U	UNDISTURBED PISTON
G	GRAB SAMPLE
X	OTHER
NR	NO RECOVERY

COMPONENT %	
MOSTLY	50 - 100%
SOME	30 - 45%
LITTLE	15 - 25%
FEW	5 - 10%
TRACE	<5%

GROUND WATER ABBREV.
WD - WHILE DRILLING
NE - NOT ENCOUNTERED
UR - NOT READ

BORING NO. GHP-2

SIRRINE ENVIRONMENTAL CONSULTANTS

TEST BORING REPORT

BORING NO. GHP-3

PROJECT: GAESS ENVIRONMENTAL SITE
CLIENT: CWM
CONTRACTOR: LAND, AIR, WATER ENV. SVS.
EQUIPMENT USED: MOBILE B-61

JOB NO: P-1093.20
PAGE NO: 1 of 2
LOCATION: Harriman, NY
ELEVATION: —
DATE START: 5/22/91
DATE FINISH: 5/22/91
DRILLER: Carl Petersen
PREPARED BY: Rich Berg

GROUND WATER		DEPTH TO:				CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE			
					SIZE ID			
					HAMMER WT			
					HAMMER FALL			

DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
5.0					SANDY ELASTIC SILT WITH GRAVEL (MH) Brown, dry, mostly clayey silt, some fine sand, few medium to fine gravel. — FLOOD PLAIN DEPOSIT —
10.0					WATER ENCOUNTERED AT ≈ 10'
					STIFF CLAY LENS
			GHP3 S	12.5' to 14'	HYDROPUNCH SAMPLE COLLECTED
15.0					GRAVELLY LEAN CLAY (CL) Red-brown, wet, very stiff clay, little coarse to fine sub-angular gravel. — GLACIAL TILL —
			GHP-3 I	17.5' to 19'	HYDROPUNCH SAMPLE COLLECTED
20.0					

BLOWS/FT.	DENSITY
0 - 4	VERY LOOSE
5 - 10	LOOSE
11 - 30	MEDIUM DENSE
31 - 50	DENSE
51+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0 - 2	VERY SOFT
3 - 4	SOFT
5 - 8	MEDIUM STIFF
9 - 15	STIFF
16 - 30	VERY STIFF
31+	HARD

SAMPLE ID.	
S	SPLIT SPOON
T	TUBE
U	UNDISTURBED PISTON
G	GRAB SAMPLE
X	OTHER
NR	NO RECOVERY

COMPONENT %	
MOSTLY	50 - 100%
SOME	30 - 45%
LITTLE	15 - 29%
FEW	5 - 10%
TRACE	<5%

GROUND WATER ABBREV.
WD - WHILE DRILLING
NE - NOT ENCOUNTERED
UR - NOT READ

BORING NO. GHP-3

SIRRINE ENVIRONMENTAL CONSULTANTS

TEST BORING REPORT

BORING NO. GHP-3

PAGE 2 of 2

DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
					TOP OF BEDROCK SURFACE ≈ 21'
					DRILLING TERMINATED AT 21'
25.0					
30.0					
35.0					
40.0					
45.0					

BLOWS/FT.	DENSITY
0 - 4	VERY LOOSE
5 - 10	LOOSE
11 - 30	MEDIUM DENSE
31 - 50	DENSE
51+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0 - 2	VERY SOFT
3 - 4	SOFT
5 - 8	MEDIUM STIFF
9 - 15	STIFF
16 - 30	VERY STIFF
31+	HARD

SAMPLE ID.	
S	SPLIT SPOON
T	TUBE
U	UNDISTURBED PISTON
G	GRAB SAMPLE
X	OTHER
NR	NO RECOVERY

COMPONENT %	
MOSTLY	50 - 100%
SOME	30 - 45%
LITTLE	15 - 25%
FEW	5 - 10%
TRACE	<5%

GROUND WATER ABBREV.
WD - WHILE DRILLING
NE - NOT ENCOUNTERED
UR - NOT READ

BORING NO. GHP-3

SIRRINE ENVIRONMENTAL CONSULTANTS

TEST BORING REPORT

BORING NO. B-1

PROJECT: GROSS ENVIRONMENTAL SITE
CLIENT: CWM
CONTRACTOR: LAND, AIR, WATER ENV. SVS.
EQUIPMENT USED: MOBILE B-61

JOB NO: P-1093.20
PAGE NO: 1 of 1
LOCATION: Harriman, NY
ELEVATION: —
DATE START: 5/23/91
DATE FINISH: 5/23/91
DRILLER: Carl Petersen
PREPARED BY: Rich Zweig

GROUND WATER		DEPTH TO:			CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE		
					SIZE ID		
					HAMMER WT		
					HAMMER FALL		

DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
					SILT WITH SAND (ML) Black, mostly silt, little medium sand, few coal and slag. — FILL —
5.0		5 19 33 55/3"			POORLY GRADED SAND WITH SILT AND GRAVEL (SPSM) Medium dense, light brown, mostly medium to fine sand, few medium to fine gravel, trace silt. — FILL —
		16 47 39 43 28 43 85	SS-1	9.5 to 10'	POORLY GRADED SAND WITH SILT AND GRAVEL (SPSM) Very dense, light brown, mostly medium to fine sand, little medium to fine gravel, trace silt. — FILL —
10.0					WELL GRADED SAND WITH GRAVEL (SW) Hard, brown, dry, mostly coarse to fine sand, little medium to fine gravel. — ALLUVIAL TERRACE DEPOSITS —
15.0					
20.0					

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLE ID.	COMPONENT %	GROUND WATER ABBREV.
0 - 4	VERY LOOSE	0 - 2	VERY SOFT	S SPLIT SPOON	MOSTLY 50 - 100%	WD - WHILE DRILLING
5 - 10	LOOSE	3 - 4	SOFT	T TUBE	SOME 30 - 45%	NE - NOT ENCOUNTERED
11 - 30	MEDIUM DENSE	5 - 8	MEDIUM STIFF	U UNDISTURBED PISTON	LITTLE 15 - 25%	UR - NOT READ
31 - 50	DENSE	9 - 15	STIFF	G GRAB SAMPLE	FEW 5 - 10%	
51+	VERY DENSE	16 - 30	VERY STIFF	X OTHER	TRACE <5%	BORING NO. B-1
		31+	HARD	NR NO RECOVERY		

SIRRINE ENVIRONMENTAL CONSULTANTS — TEST BORING REPORT

BORING NO. B-2

PROJECT: GASS ENVIRONMENTAL SITE
CLIENT: CWM
CONTRACTOR: LAND, AIR, WATER ENV. SVS.
EQUIPMENT USED: MOBILE B-61

JOB NO: P-1093.20
PAGE NO: 1 of 1
LOCATION: Harriman, NY
ELEVATION: —
DATE START: 5/23/91
DATE FINISH: 5/23/91
DRILLER: Carl Petersen
PREPARED BY: Rich Buerig

GROUND WATER		DEPTH TO:				CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE			
					SIZE ID			
					HAMMER WT			
					HAMMER FALL			

DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
					POORLY GRADED SAND WITH GRAVEL (SP) Medium dense, dark brown, dry, mostly medium to fine sand, some medium to fine subrounded gravel. — FILL —
5.0		10 14 21 26 11 30 R			POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM) Medium dense, light brown, dry, mostly coarse sand, some medium to fine subrounded gravel, trace silt. — FILL —
10.0		17 19 22 27	SS-2	9' to 10'	WELL GRADED SAND (SW) Dense, light brown, dry, mostly coarse to fine sand. — ALLUVIAL TERRACE DEPOSITS —
15.0					
20.0					

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLE ID.	COMPONENT %	GROUND WATER ABBREV.
0 - 4	VERY LOOSE	0 - 2	VERY SOFT	S SPLIT SPOON	MOSTLY 50 - 100%	WD - WHILE DRILLING
5 - 10	LOOSE	3 - 4	SOFT	T TUBE	SOME 30 - 45%	NE - NOT ENCOUNTERED
11 - 30	MEDIUM DENSE	5 - 8	MEDIUM STIFF	U UNDISTURBED PISTON	LITTLE 15 - 25%	UR - NOT READ
31 - 50	DENSE	9 - 15	STIFF	G GRAB SAMPLE	FEW 5 - 10%	
51+	VERY DENSE	16 - 30	VERY STIFF	X OTHER	TRACE <5%	BORING NO. B-2
		31+	HARD	NR NO RECOVERY		

SIRRINE ENVIRONMENTAL CONSULTANTS

TEST BORING REPORT

BORING NO. B-3

PROJECT: GABBS ENVIRONMENTAL SITE
CLIENT: CWM
CONTRACTOR: LAND, AIR, WATER, ENV. SYS.
EQUIPMENT USED: MOBILE B-61

JOB NO: P-1093.20
PAGE NO: 1 of 1
LOCATION: Harriman, NY
ELEVATION: —
DATE START: 5/23/91
DATE FINISH: 5/23/91
DRILLER: Carl Petersen
PREPARED BY: Rick Zweig

GROUND WATER		DEPTH TO:				CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE			
					SIZE ID			
					HAMMER WT			
					HAMMER FALL			

DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
5.0					POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM) Dark brown, dry, mostly medium to fine sand, some medium to fine sub rounded gravel, few silt. — FILL —
10.0		12 8 4 3 3 4 7 14	SS-3	8' to 10'	ELASTIC SILT WITH SAND (MH) STIFF, Brown, dry to moist, mostly silt, some fine sand, trace clay — GLACIAL TILL — SANDY SILT WITH GRAVEL (ML) Stiff, dark brown to black, moist, mostly silty sand, some fine sub angular gravel, few clay. (HNu > 15ppm in hole) — GLACIAL TILL —
15.0					
20.0					

BLOWS/FT.	DENSITY
0 - 4	VERY LOOSE
5 - 10	LOOSE
11 - 30	MEDIUM DENSE
31 - 50	DENSE
51+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0 - 2	VERY SOFT
3 - 4	SOFT
5 - 8	MEDIUM STIFF
9 - 15	STIFF
16 - 30	VERY STIFF
31+	HARD

SAMPLE ID.	
S	SPLIT SPOON
T	TUBE
U	UNDISTURBED PISTON
G	GRAB SAMPLE
X	OTHER
NR	NO RECOVERY

COMPONENT %	
MOSTLY	50 - 100%
SOME	30 - 49%
LITTLE	15 - 29%
FEW	5 - 10%
TRACE	<5%

GROUND WATER ABBREV.	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ

BORING NO. B-3

SIRRINE ENVIRONMENTAL CONSULTANTS

TEST BORING REPORT

BORING NO. B-4

PROJECT: Gross Environmental Site
CLIENT: CWM
CONTRACTOR: Land, Air, Water Env. Sys.
EQUIPMENT USED: Mobile B-61

JOB NO: P-1093.20
PAGE NO: 1 of 1
LOCATION: Herriman, NY
ELEVATION: —
DATE START: 5/24/91
DATE FINISH: 5/24/91
DRILLER: Carl Petersen
PREPARED BY: Rich Zweig

GROUND WATER		DEPTH TO:				CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE			
					SIZE ID			
					HAMMER WT			
					HAMMER FALL			

DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
					POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM) Brown, dry, mostly medium to fine sand, some medium to fine subangular gravel, little silt, trace boulders. — FILL —
5.0					
		17			POORLY GRADED SAND (SP) Very dense, dry, black, mostly medium to fine sand, some red brick fragments, HNu peaked at 1500ppm. — FILL —
		30			
		29			
		24			
		33			
		50			
		12		8' to 10'	
10.0		20			SANDY SILT (ML) Dense, brown, moist-towet, mostly silty sand, wet on bottom of split spoon. — GLACIAL TILL —
		9			
		14	SS-4		
		18			
		16			
15.0					
20.0					

BLOWS/FT.	DENSITY
0 - 4	VERY LOOSE
5 - 10	LOOSE
11 - 30	MEDIUM DENSE
31 - 50	DENSE
51+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0 - 2	VERY SOFT
3 - 4	SOFT
5 - 8	MEDIUM STIFF
9 - 15	STIFF
16 - 30	VERY STIFF
31+	HARD

SAMPLE ID.	
S	SPLIT SPOON
T	TUBE
U	UNDISTURBED PISTON
G	GRAB SAMPLE
X	OTHER
NR	NO RECOVERY

COMPONENT %	
MOSTLY	50 - 100%
SOME	30 - 45%
LITTLE	15 - 29%
FEW	5 - 10%
TRACE	<5%

GROUND WATER ABBREV.
WD - WHILE DRILLING
NE - NOT ENCOUNTERED
UR - NOT READ

BORING NO. B-4

SIRRINE ENVIRONMENTAL CONSULTANTS

TEST BORING REPORT

BORING NO. B-5

PROJECT: GAESS ENVIRONMENTAL SITE
CLIENT: CWM
CONTRACTOR: LAND, AIR, WATER ENV. SVS.
EQUIPMENT USED: MOBILE B-61

JOB NO: P1093.20
PAGE NO: 1 of 1
LOCATION: HARRIMAN, NY
ELEVATION: —
DATE START: 5/24/91
DATE FINISH: 5/24/91
DRILLER: Carl Petersen
PREPARED BY: Rich Zweig

GROUND WATER		DEPTH TO:				CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE			
					SIZE ID			
					HAMMER WT			
					HAMMER FALL			

DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
5.0					POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM) Dark-brown, dry, mostly medium to fine sand, some medium to fine subangular gravel, little silt, trace boulders — FILL —
10.0		4 3 4 7			POORLY GRADED SAND (SP) Loose, brown, moist to wet, mostly medium to fine sand, trace fine sub-rounded gravel, deflection on Hnu meter. — GLACIAL TILL —
15.0					
20.0					

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLE ID.		COMPONENT %		GROUND WATER ABBREV.
0 - 4	VERY LOOSE	0 - 2	VERY SOFT	S	SPLIT SPOON	MOSTLY	50 - 100%	WD - WHILE DRILLING
5 - 10	LOOSE	3 - 4	SOFT	T	TUBE	SOME	30 - 45%	NE - NOT ENCOUNTERED
11 - 30	MEDIUM DENSE	5 - 8	MEDIUM STIFF	U	UNDISTURBED PISTON	LITTLE	15 - 25%	UR - NOT READ
31 - 50	DENSE	9 - 15	STIFF	G	GRAB SAMPLE	FEW	5 - 10%	
51+	VERY DENSE	16 - 30	VERY STIFF	X	OTHER	TRACE	<5%	BORING NO. B-5
		31+	HARD	NR	NO RECOVERY			

SIRRINE ENVIRONMENTAL CONSULTANTS

TEST BORING REPORT

BORING NO. B-6

PROJECT: GRESS ENVIRONMENTAL SITE
CLIENT: GWM
CONTRACTOR: LAND, AIR, WATER ENV. SVS.
EQUIPMENT USED: MOBILE B-61

JOB NO: P-1093.20
PAGE NO: 1 of 1
LOCATION: Harriman, NY
ELEVATION: —
DATE START: 5/24/91
DATE FINISH: 5/24/91
DRILLER: Carl Petersen
PREPARED BY: Richard Burns

GROUND WATER		DEPTH TO:				CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE			
					SIZE ID			
					HAMMER WT			
					HAMMER FALL			

DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
5.0					POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM) Brown-black, dry, mostly medium to fine sand, some silt, little fine rounded gravel. — FILL —
10.0		4 6 3 7 4 3 22 45			SANDY ELASTIC SILT WITH GRAVEL (MH) Stiff, brown, moist, mostly silty clay, little medium to fine sand, few fine angular gravel. — GLACIAL TILL —
15.0					
20.0					

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLE ID.		COMPONENT %		GROUND WATER ABBREV.
0 - 4	VERY LOOSE	0 - 2	VERY SOFT	S	SPLIT SPOON	MOSTLY	50 - 100%	WD - WHILE DRILLING
5 - 10	LOOSE	3 - 4	SOFT	T	TUBE	SOME	30 - 45%	NE - NOT ENCOUNTERED
11 - 30	MEDIUM DENSE	5 - 8	MEDIUM STIFF	U	UNDISTURBED PISTON	LITTLE	15 - 29%	NR - NOT READ
31 - 50	DENSE	9 - 15	STIFF	G	GRAB SAMPLE	FEW	5 - 10%	
51+	VERY DENSE	16 - 30	VERY STIFF	X	OTHER	TRACE	<5%	BORING NO. B-6
		31+	HARD	NR	NO RECOVERY			

SIRRINE ENVIRONMENTAL CONSULTANTS

TEST BORING REPORT

BORING NO. B-7

PROJECT: GARSS ENVIRONMENTAL SITE
CLIENT: CWM
CONTRACTOR: LAND, AIR, WATER, ENV. SVS.
EQUIPMENT USED: MOBILE B-61

JOB NO: P-1093.20
PAGE NO: 1 of 1
LOCATION: Harriman, NY
ELEVATION: —
DATE START: 5/24/91
DATE FINISH: 5/24/91
DRILLER: Carl Petersen
PREPARED BY: Richard Zweig

GROUND WATER		DEPTH TO:				CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE			
					SIZE ID			
					HAMMER WT			
					HAMMER FALL			

DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
					SILT WITH SAND (ML) Brown, dry, mostly silt, some medium to fine sand — FILL —
					ORGANIC SOIL WITH SAND (OL/OH) Black, moist, organic silt, little fine sand. — FILL —
5.0					
		3			ELASTIC SILT WITH SAND (MH) Medium stiff, Lt. brown, moist, mostly silt, some fine sand, little clay — GLACIAL TILL —
		3			
		4			
		7			
		7			
		75			
		9			
10.0		13			SANDY ELASTIC SILT WITH GRAVEL (MH) Hard, brown, moist, mostly silty clay, some fine sand, few fine sub-angular gravel. — GLACIAL TILL —
15.0					
20.0					

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLE ID.	COMPONENT %	GROUND WATER ABBREV.
0 - 4	VERY LOOSE	0 - 2	VERY SOFT	S SPLIT SPOON	MOSTLY 50 - 100%	WD - WHILE DRILLING
5 - 10	LOOSE	3 - 4	SOFT	T TUBE	SOME 30 - 45%	NE - NOT ENCOUNTERED
11 - 30	MEDIUM DENSE	5 - 8	MEDIUM STIFF	U UNDISTURBED PISTON	UTTLE 15 - 25%	UR - NOT READ
31 - 50	DENSE	9 - 15	STIFF	G GRAB SAMPLE	FEW 5 - 10%	
51+	VERY DENSE	16 - 30	VERY STIFF	X OTHER	TRACE <5%	BORING NO. B-7
		31+	HARD	NR NO RECOVERY		

SIRRINE ENVIRONMENTAL CONSULTANTS

TEST BORING REPORT

BORING NO. B-8

PROJECT: GAESS ENVIRONMENTAL SITE
CLIENT: CWM
CONTRACTOR: LAND, AIR, WATER, ENV. SVS.
EQUIPMENT USED: MOBILE B-61

JOB NO: P-1093.20
PAGE NO: 1 of 1
LOCATION: Harriman, NY
ELEVATION:
DATE START: 5/24/91
DATE FINISH: 5/24/91
DRILLER: Carl Peterson
PREPARED BY: Richard Burig

GROUND WATER		DEPTH TO:				CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE			
					SIZE ID			
					HAMMER WT			
					HAMMER FALL			

DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
5.0		6 11 14 15 12 16 14 21			SANDY SILT WITH GRAVEL (ML) Black, mostly silt and fine sand, few medium to fine sub-rounded gravel. — FILL — SANDY LEAN CLAY (CL) Very stiff, black, moist, mostly clay, some medium to fine sand — FILL — GRAVELLY ELASTIC SILT WITH SAND (MH) Very stiff, brown, moist, mostly silty clay, little fine rounded gravel, few fine sand. — GLACIAL TILL —
10.0					
15.0					
20.0					

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLE ID.	COMPONENT %	GROUND WATER ABBREV.
0 - 4	VERY LOOSE	0 - 2	VERY SOFT	S SPLIT SPOON	MOSTLY 50 - 100%	WD - WHILE DRILLING
5 - 10	LOOSE	3 - 4	SOFT	T TUBE	SOME 30 - 45%	NE - NOT ENCOUNTERED
11 - 30	MEDIUM DENSE	5 - 8	MEDIUM STIFF	U UNDISTURBED PISTON	LITTLE 15 - 29%	UR - NOT READ
31 - 50	DENSE	9 - 15	STIFF	G GRAB SAMPLE	FEW 5 - 10%	
51+	VERY DENSE	16 - 30	VERY STIFF	X OTHER	TRACE <5%	BORING NO. B-8
		31+	HARD	NR NO RECOVERY		

SIRRINE ENVIRONMENTAL CONSULTANTS

TEST BORING REPORT

BORING NO. B-9

PROJECT: GAESS ENVIRONMENTAL SITE
CLIENT: CWM
CONTRACTOR: LAND, AIR, WATER, ENV. SVS.
EQUIPMENT USED: MOBILE B-61

JOB NO: P-1093.20
PAGE NO: 1 of 1
LOCATION: Harriman, NY
ELEVATION: —
DATE START: 5/24/91
DATE FINISH: 5/24/91
DRILLER: Carl Petersen
PREPARED BY: Richard Zweig

GROUND WATER		DEPTH TO:				CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE			
					SIZE ID			
					HAMMER WT			
					HAMMER FALL			

DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
5.0		4 5 4 7			SANDY SILT WITH GRAVEL (ML) Black, mostly silt and fine sand, few medium to fine rounded gravel — FILL — GRAVELLY ELASTIC SILT WITH SAND (MH) Stiff, brown, moist, mostly silty clay, some medium to fine sub-angular gravel, few medium to fine sand. — GLACIAL TILL
10.0					
15.0					
20.0					

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLE ID.	COMPONENT %	GROUND WATER ABBREV.
0 - 4	VERY LOOSE	0 - 2	VERY SOFT	S SPLIT SPOON	MOSTLY 50 - 100%	WD - WHILE DRILLING
5 - 10	LOOSE	3 - 4	SOFT	T TUBE	SOME 30 - 45%	NE - NOT ENCOUNTERED
11 - 30	MEDIUM DENSE	5 - 8	MEDIUM STIFF	U UNDISTURBED PISTON	LITTLE 15 - 25%	UR - NOT READ
31 - 50	DENSE	9 - 15	STIFF	G GRAB SAMPLE	FEW 5 - 10%	
51+	VERY DENSE	16 - 30	VERY STIFF	X OTHER	TRACE <5%	BORING NO. B-9
		31+	HARD	NR NO RECOVERY		

SIRRINE ENVIRONMENTAL CONSULTANTS

TEST BORING REPORT

BORING NO. B-10

PROJECT: GAESS ENVIRONMENTAL SITE
CLIENT: CWM
CONTRACTOR: LAND, AIR, WATER, ENV. SVS.
EQUIPMENT USED: MOBILE B-61

JOB NO: P-1093.20
PAGE NO: 1 of 1
LOCATION: Harriman, NY
ELEVATION: —
DATE START: 5/24/91
DATE FINISH: 5/24/91
DRILLER: Carl Petersen
PREPARED BY: Richard Sveig

GROUND WATER		DEPTH TO:			CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE			
					TYPE		
					SIZE ID		
					HAMMER WT		
					HAMMER FALL		

DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
5.0		41			POORLY GRADED SAND WITH SILT (SP-SM) Black, dry; mostly medium to fine Sand, some silt — FILL —
		12			
		7			
		7			
		6			WELL GRADED SAND WITH SILT (SW-SM) Loose, brown, moist, mostly medium to fine sand, some silt. — GLACIAL TILL —
		4			
		6			
10.0		4			
15.0					
20.0					

BLOWS/FT. DENSITY		BLOWS/FT. CONSISTENCY		SAMPLE ID.		COMPONENT %		GROUND WATER ABBREV.
0 - 4	VERY LOOSE	0 - 2	VERY SOFT	S	SPLIT SPOON	MOSTLY	50 - 100%	WD - WHILE DRILLING
5 - 10	LOOSE	3 - 4	SOFT	T	TUBE	SOME	30 - 45%	NE - NOT ENCOUNTERED
11 - 30	MEDIUM DENSE	5 - 8	MEDIUM STIFF	U	UNDISTURBED PISTON	LITTLE	15 - 29%	UR - NOT READ
31 - 50	DENSE	9 - 15	STIFF	G	GRAB SAMPLE	FEW	5 - 10%	
51+	VERY DENSE	16 - 30	VERY STIFF	X	OTHER	TRACE	<5%	BORING NO. B-10
		31+	HARD	NR	NO RECOVERY			

SIRRINE ENVIRONMENTAL CONSULTANTS

TEST BORING REPORT

BORING NO. B-11

PROJECT: GAESS ENVIRONMENTAL SITE
CLIENT: CWM
CONTRACTOR: LAND, AIR, WATER, ENV. SVS.
EQUIPMENT USED: MOBILE B-61

JOB NO: P-1093.20
PAGE NO: 1 of 1
LOCATION: Harriman, NY
ELEVATION: —
DATE START: 5/28/91
DATE FINISH: 5/28/91
DRILLER: Carl Petersen
PREPARED BY: Richard Zweig

GROUND WATER		DEPTH TO:				CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE			
					SIZE ID			
					HAMMER WT			
					HAMMER FALL			

DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
					POORLY GRADED SAND WITH SILT AND GRAVEL (SRSM) Black, dry, mostly medium to fine Sand, little silt, few medium to fine gravel, 1.5 Hnu reading — FILL —
5.0					
		3			
		3			
		2			
		4			
		12			WELL GRADED SAND WITH SILT (SW-SM) Medium dense, brown, moist, mostly medium sand, some silt, slight deflection on Hnu. — GLACIAL TILL —
		9			
		11			
10.0		17			
15.0					
20.0					

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLE ID.	COMPONENT %	GROUND WATER ABBREV.
0 - 4	VERY LOOSE	0 - 2	VERY SOFT	S SPLIT SPOON	MOSTLY 50 - 100%	WD - WHILE DRILLING
5 - 10	LOOSE	3 - 4	SOFT	T TUBE	SOME 30 - 45%	NE - NOT ENCOUNTERED
11 - 30	MEDIUM DENSE	5 - 8	MEDIUM STIFF	U UNDISTURBED PISTON	LITTLE 15 - 25%	UR - NOT READ
31 - 50	DENSE	9 - 15	STIFF	G GRAB SAMPLE	FEW 5 - 10%	
51+	VERY DENSE	16 - 30	VERY STIFF	X OTHER	TRACE <5%	BORING NO. B-11
		31+	HARD	NR NO RECOVERY		

SIRRINE ENVIRONMENTAL CONSULTANTS

TEST BORING REPORT

BORING NO. B-12

PROJECT: GAESS ENVIRONMENTAL SITE
CLIENT: CWM
CONTRACTOR: LAND, AIR, WATER, ENV. SVS.
EQUIPMENT USED: MOBILE B61

JOB NO: P-1093.20
PAGE NO: 1 of 1
LOCATION: Harriman, NY
ELEVATION: —
DATE START: 5/28/91
DATE FINISH: 5/28/91
DRILLER: Carl Petersen
PREPARED BY: Richard Burg

GROUND WATER		DEPTH TO:				CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE			
					SIZE ID			
					HAMMER WT			
					HAMMER FALL			

DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
					POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM) Black, dry, mostly medium to fine sand, some silt, little medium to fine sub-rounded gravel. — FILL —
5.0		5 4 5 5 5 6			POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM) Loose, dry to moist, brown, mostly fine Sand, some silt, little medium to fine sub-rounded gravel — FILL —
10.0		10 11			SANDY SILT WITH GRAVEL (ML) Very Stiff, moist, brown, mostly silt, some medium to fine sand, little medium to fine gravel. — GLACIAL TILL —
15.0					
20.0					

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY
0 - 4	VERY LOOSE	0 - 2	VERY SOFT
5 - 10	LOOSE	3 - 4	SOFT
11 - 30	MEDIUM DENSE	5 - 8	MEDIUM STIFF
31 - 50	DENSE	9 - 15	STIFF
51+	VERY DENSE	16 - 30	VERY STIFF
		31+	HARD

SAMPLE ID.		COMPONENT %	
S	SPLIT SPOON	MOSTLY	50 - 100%
T	TUBE	SOME	30 - 45%
U	UNDISTURBED PISTON	LITTLE	15 - 25%
G	GRAB SAMPLE	FEW	5 - 10%
X	OTHER	TRACE	<5%
NR	NO RECOVERY		

GROUND WATER ABBREV.
WD - WHILE DRILLING
NE - NOT ENCOUNTERED
UR - NOT READ

BORING NO. B-12

SIRRINE ENVIRONMENTAL CONSULTANTS

TEST BORING REPORT

BORING NO. B-13

PROJECT: GAESS ENVIRONMENTAL SITE
CLIENT: CWM
CONTRACTOR: LAND, AIR, WATER ENV. SVS.
EQUIPMENT USED: MOBILE B61

JOB NO: P-1093.20
PAGE NO: 1 of 1
LOCATION: Harriman, NY
ELEVATION: —
DATE START: 5/28/91
DATE FINISH: 5/28/91
DRILLER: Carl Petersen
PREPARED BY: Richard Ewig

GROUND WATER		DEPTH TO:				CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE			
					SIZE ID			
					HAMMER WT			
					HAMMER FALL			

DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
5.0		5 9 12 17 15 16 19 -R- 5 9 43 40			POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM) Brown, dry, mostly coarse to fine sand, little silt, few medium to fine gravel. —FILL— POORLY GRADED SAND WITH GRAVEL (SP) Dense, dry, mostly coarse to fine sand, little medium to fine gravel. —FILL— WELL GRADED SAND WITH GRAVEL (SW) Very dense, moist, mostly coarse to fine sand, few medium to fine gravel. —GLACIAL TILL—
10.0					
15.0					
20.0					

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLE ID.	COMPONENT %	GROUND WATER ABBREV.
0 - 4	VERY LOOSE	0 - 2	VERY SOFT	S SPLIT SPOON	MOSTLY 50 - 100%	WD - WHILE DRILLING
5 - 10	LOOSE	3 - 4	SOFT	T TUBE	SOME 30 - 45%	NE - NOT ENCOUNTERED
11 - 30	MEDIUM DENSE	5 - 8	MEDIUM STIFF	U UNDISTURBED PISTON	LITTLE 15 - 29%	UR - NOT READ
31 - 50	DENSE	9 - 15	STIFF	G GRAB SAMPLE	FEW 5 - 10%	
51+	VERY DENSE	16 - 30	VERY STIFF	X OTHER	TRACE <5%	BORING NO. B-13
		31+	HARD	NR NO RECOVERY		

SIRRINE ENVIRONMENTAL CONSULTANTS

TEST BORING REPORT

BORING NO. B-14

PROJECT: GAESS ENVIRONMENTAL SITE
CLIENT: CWM
CONTRACTOR: LAND, AIR, WATER, ENV. SVS.
EQUIPMENT USED: MOBILE 61

JOB NO: P-1093.20
PAGE NO: 1 of 1
LOCATION: Harriman, NY
ELEVATION: —
DATE START: 5/28/91
DATE FINISH: 5/28/91
DRILLER: Carl Petersen
PREPARED BY: Richard Zweig

GROUND WATER		DEPTH TO:				CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE			
					SIZE ID			
					HAMMER WT			
					HAMMER FALL			

DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
5.0		13			POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM) Brown, dry, mostly coarse to fine sand, some silt, little rock, bricks, and fine gravel. — FILL —
		17			
		14			
		15			
		18			
		21			
		50			
10.0		50/2"			WELL GRADED SAND WITH SILT AND GRAVEL (SW-SM) Very dense, moist, brown, mostly coarse to fine sand, little medium to fine gravel, little silt. — GLACIAL TILL —
15.0					
20.0					

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLE ID.	COMPONENT %	GROUND WATER ABBREV.
0 - 4	VERY LOOSE	0 - 2	VERY SOFT	S SPLIT SPOON	MOSTLY 50 - 100%	WD - WHILE DRILLING
5 - 10	LOOSE	3 - 4	SOFT	T TUBE	SOME 30 - 45%	NE - NOT ENCOUNTERED
11 - 30	MEDIUM DENSE	5 - 8	MEDIUM STIFF	U UNDISTURBED PISTON	LITTLE 15 - 25%	UR - NOT READ
31 - 50	DENSE	9 - 15	STIFF	G GRAB SAMPLE	FEW 5 - 10%	
51+	VERY DENSE	16 - 30	VERY STIFF	X OTHER	TRACE <5%	BORING NO.
		31+	HARD	NR NO RECOVERY		

SIRRINE ENVIRONMENTAL CONSULTANTS — TEST BORING REPORT

BORING NO. B-15

PROJECT: GAESS ENVIRONMENTAL SITE
CLIENT: CWM
CONTRACTOR: LAND, AIR, WATER ENV. SVS.
EQUIPMENT USED: MOBILE B61

JOB NO: P-1093.20
PAGE NO: 1 of 1
LOCATION: Harriman, NY
ELEVATION:
DATE START: 5/28/91
DATE FINISH: 5/28/91
DRILLER: Carl Peterson
PREPARED BY: Richard Burns

GROUND WATER		DEPTH TO:				CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE			
					SIZE ID			
					HAMMER WT			
					HAMMER FALL			

DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
5.0		25 10 12 16 14 18 58 24			POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM) Black, mostly medium to fine sand, some silt, little medium to fine gravel — FILL — POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM) Medium dense, brown, dry, mostly medium to fine sand, some silt, little medium to fine gravel. — FILL — WELL GRADED SAND AND GRAVEL (SW) Very dense, dry, brown, mostly coarse to fine sand, some medium to fine gravel. — GLACIAL TILL —
10.0					
15.0					
20.0					

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLE ID.	COMPONENT %	GROUND WATER ABBREV.
0 - 4	VERY LOOSE	0 - 2	VERY SOFT	S SPLIT SPOON	MOSTLY 50 - 100%	WD - WHILE DRILLING
5 - 10	LOOSE	3 - 4	SOFT	T TUBE	SOME 30 - 45%	NE - NOT ENCOUNTERED
11 - 30	MEDIUM DENSE	5 - 8	MEDIUM STIFF	U UNDISTURBED PISTON	LITTLE 15 - 25%	UR - NOT READ
31 - 50	DENSE	9 - 15	STIFF	G GRAB SAMPLE	FEW 5 - 10%	
51+	VERY DENSE	16 - 30	VERY STIFF	X OTHER	TRACE <5%	BORING NO. B-15
		31+	HARD	NR NO RECOVERY		

SIRRINE ENVIRONMENTAL CONSULTANTS

TEST BORING REPORT

BORING NO. B-16

PROJECT: GAESS ENVIRONMENTAL SITE
CLIENT: CWM
CONTRACTOR: LAND, AIR, WATER ENV. SVS.
EQUIPMENT USED: MOBILE B61

JOB NO: P-1093.20
PAGE NO: 1 of 1
LOCATION: Hermian, NY
ELEVATION: —
DATE START: 5/28/91
DATE FINISH: 5/28/91
DRILLER: Carl Petersen
PREPARED BY: Richard Tuerg

GROUND WATER		DEPTH TO:				CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE			
					SIZE ID			
					HAMMER WT			
					HAMMER FALL			

DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
5.0		25			POORLY SORTED SAND WITH SILT AND GRAVEL (SP-SM) Black, dry, mostly sand, some silt, little medium to fine gravel. — FILL —
		16			
		7			
		10			
		7			
		10			
		13			
10.0		29			WELL GRADED SAND AND GRAVEL (SW) Medium dense, brown, dry, mostly coarse to medium sand, some medium to fine gravel — GLACIAL TILL —
15.0					
20.0					

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLE ID.	COMPONENT %	GROUND WATER ABBREV.
0 - 4	VERY LOOSE	0 - 2	VERY SOFT	S SPLIT SPOON	MOSTLY 50 - 100%	WD - WHILE DRILLING
5 - 10	LOOSE	3 - 4	SOFT	T TUBE	SOME 30 - 45%	NE - NOT ENCOUNTERED
11 - 30	MEDIUM DENSE	5 - 8	MEDIUM STIFF	U UNDISTURBED PISTON	LITTLE 15 - 25%	UR - NOT READ
31 - 50	DENSE	9 - 15	STIFF	G GRAB SAMPLE	FEW 5 - 10%	
51+	VERY DENSE	16 - 30	VERY STIFF	X OTHER	TRACE <5%	BORING NO. B-16
		31+	HARD	NR NO RECOVERY		

SIRRINE ENVIRONMENTAL CONSULTANTS

TEST BORING REPORT

BORING NO. B-17

PROJECT: GABBS ENVIRONMENTAL SITE
CLIENT: CWM
CONTRACTOR: LAND, AIR, WATER ENV. SVS.
EQUIPMENT USED: MOBILE B-61

JOB NO: P-1093.20
PAGE NO: 1 of 1
LOCATION: Harriman, NY
ELEVATION: —
DATE START: 5/28/91
DATE FINISH: 5/28/91
DRILLER: Carl Peterson
PREPARED BY: Richard Burg

GROUND WATER		DEPTH TO:				CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE			
					SIZE ID			
					HAMMER WT			
					HAMMER FALL			

DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
5.0		13 26 26 35 21 23 19 30			POORLY GRADED SAND AND GRAVEL (SP) Brown, dry, medium to fine sand, few medium to fine gravel. — FILL — POORLY GRADED SAND AND GRAVEL (SP) Very dense, dry, brown, coarse to medium (G) to fine Sand, some medium to fine gravel — FILL — WELL GRADED GRAVEL WITH SAND (GW) Very dense, dry, brown, mostly coarse to fine gravel, some coarse to fine Sand, little cobbles. — GLACIAL TILL —
10.0					
15.0					
20.0					

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLE ID.	COMPONENT %	GROUND WATER ABBREV.
0 - 4	VERY LOOSE	0 - 2	VERY SOFT	S SPLIT SPOON	MOSTLY 50 - 100%	WD - WHILE DRILLING
5 - 10	LOOSE	3 - 4	SOFT	T TUBE	SOME 30 - 45%	NE - NOT ENCOUNTERED
11 - 30	MEDIUM DENSE	5 - 8	MEDIUM STIFF	U UNDISTURBED PISTON	LITTLE 15 - 25%	UR - NOT READ
31 - 50	DENSE	9 - 15	STIFF	G GRAB SAMPLE	FEW 5 - 10%	
51+	VERY DENSE	16 - 30	VERY STIFF	X OTHER	TRACE <5%	BORING NO. B-17
		31+	HARD	NR NO RECOVERY		

SIRRINE ENVIRONMENTAL CONSULTANTS

TEST BORING REPORT

BORING NO. B-18

PROJECT: GAESS ENVIRONMENTAL SITE
CLIENT: CUNY
CONTRACTOR: LAND, AIR, AND WATER ENV. SVS.
EQUIPMENT USED: MOBILE B-61

JOB NO: P-1093.20
PAGE NO: 1 of 1
LOCATION: Harriman NY
ELEVATION: —
DATE START: 5/28/91
DATE FINISH: 5/28/91
DRILLER: Carl Peterson
PREPARED BY: Richard Zweig

GROUND WATER		DEPTH TO:				CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE			
					SIZE ID			
					HAMMER WT			
					HAMMER FALL			

DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
5.0		14 13 13 16 19 22 29 27			POORLY GRADED GRAVEL AND SAND (GP) Brown, dry, mostly medium gravel, some medium to fine Sand, some coal fragments WELL GRADED SAND AND GRAVEL (SW) Very dense, dry, brown, mostly coarse to fine Sand, some coarse to fine gravel — GLACIAL DEPOSITS —
10.0					
15.0					
20.0					

BLOWS/FT. DENSITY		BLOWS/FT. CONSISTENCY		SAMPLE ID.	COMPONENT %	GROUND WATER ABBREV.
0 - 4	VERY LOOSE	0 - 2	VERY SOFT	S SPLIT SPOON	MOSTLY 50 - 100%	WD - WHILE DRILLING
5 - 10	LOOSE	3 - 4	SOFT	T TUBE	SOME 30 - 45%	NE - NOT ENCOUNTERED
11 - 30	MEDIUM DENSE	5 - 8	MEDIUM STIFF	U UNDISTURBED PISTON	LITTLE 15 - 25%	UR - NOT READ
31 - 50	DENSE	9 - 15	STIFF	G GRAB SAMPLE	FEW 5 - 10%	
51+	VERY DENSE	16 - 30	VERY STIFF	X OTHER	TRACE <5%	BORING NO. B-18
		31+	HARD	NR NO RECOVERY		

SIRRINE ENVIRONMENTAL CONSULTANTS

TEST BORING REPORT

BORING NO. B-19

PROJECT: GOESS ENVIRONMENTAL SITE
CLIENT: CWM
CONTRACTOR: LAND, AIR WATER ENV. SYS.
EQUIPMENT USED: MOBILE B-61

JOB NO: P-1093.20
PAGE NO: 1 of 1
LOCATION: Harriman, NY
ELEVATION:
DATE START: 5/29/91
DATE FINISH: 5/28/91
DRILLER: Carl Petersen
PREPARED BY: Richardzweig

GROUND WATER		DEPTH TO:			CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE			
					TYPE		
					SIZE ID		
					HAMMER WT		
					HAMMER FALL		

DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
					POORLY GRADED SAND AND GRAVEL (SP) Brown, dry, mostly coarse to fine sand, little medium to fine gravel — FILL —
5.0					
		16			WELL GRADED SAND AND GRAVEL (SW) Dense, dry, brown, mostly coarse to medium sand, some medium to fine gravel — GLACIAL DEPOSITS —
		19			
		10			
		23			
		28			
		21			
		29			
10.0		24			
15.0					
20.0					

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLE ID.	COMPONENT %	GROUND WATER ABBREV.
0 - 4	VERY LOOSE	0 - 2	VERY SOFT	S SPLIT SPOON	MOSTLY 50 - 100%	WD - WHILE DRILLING
5 - 10	LOOSE	3 - 4	SOFT	T TUBE	SOME 30 - 45%	NE - NOT ENCOUNTERED
11 - 30	MEDIUM DENSE	5 - 8	MEDIUM STIFF	U UNDISTURBED PISTON	LITTLE 15 - 29%	UR - NOT READ
31 - 50	DENSE	9 - 15	STIFF	G GRAB SAMPLE	FEW 5 - 10%	
51+	VERY DENSE	16 - 30	VERY STIFF	X OTHER	TRACE <5%	BORING NO. B-19
		31+	HARD	NR NO RECOVERY		

SIRRINE ENVIRONMENTAL CONSULTANTS

TEST BORING REPORT

BORING NO. B-20

PROJECT: GAESS ENVIRONMENTAL SITE
CLIENT: CWM
CONTRACTOR: LAND, AIR, WATER ENV. SVS.
EQUIPMENT USED: MOBILE B-61

JOB NO: P-1093.20
PAGE NO: 1 of 1
LOCATION: Harriman, NY
ELEVATION: —
DATE START: 5/28/91
DATE FINISH: 5/28/91
DRILLER: Carl Petersen
PREPARED BY: Richard Burns

GROUND WATER		DEPTH TO:				CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE			
					SIZE ID			
					HAMMER WT			
					HAMMER FALL			

DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
5.0		4 5 8 7			POORLY GRADED SAND AND GRAVEL (SP) Brown, dry, coarse to fine sand, some medium to fine gravel. — FILL — POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM) Brown, moist, coarse to fine sand, some fine silt, little fine gravel. — FILL —
10.0		9 11 13 13			WELL GRADED SAND (SW) Medium dense, moist, brown, mostly fine sand, some coarser layers of sand with gravel. — GLACIAL DEPOSITS
15.0					
20.0					

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLE ID.	COMPONENT %	GROUND WATER ABBREV.
0 - 4	VERY LOOSE	0 - 2	VERY SOFT	S SPLIT SPOON	MOSTLY 50 - 100%	WD - WHILE DRILLING
5 - 10	LOOSE	3 - 4	SOFT	T TUBE	SOME 30 - 45%	NE - NOT ENCOUNTERED
11 - 30	MEDIUM DENSE	5 - 8	MEDIUM STIFF	U UNDISTURBED PISTON	LITTLE 15 - 25%	NR - NOT READ
31 - 50	DENSE	9 - 15	STIFF	G GRAB SAMPLE	FEW 5 - 10%	
51+	VERY DENSE	16 - 30	VERY STIFF	X OTHER	TRACE <5%	BORING NO. B-20
		31+	HARD	NR NO RECOVERY		

SIRRINE ENVIRONMENTAL CONSULTANTS

TEST BORING REPORT

BORING NO. B-21

PROJECT: GAESS ENVIRONMENTAL SITE
CLIENT: CWM
CONTRACTOR: LAND, AIR, WATER, ENV. SRS.
EQUIPMENT USED: MOBILE B-61

JOB NO: P-1093.20
PAGE NO: 1 of 1
LOCATION: Harrison NY
ELEVATION:
DATE START: 5/28/91
DATE FINISH: 5/28/91
DRILLER: Carl Petersen
PREPARED BY: Richard Berg

GROUND WATER		DEPTH TO:				CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE			
					SIZE ID			
					HAMMER WT			
					HAMMER FALL			

DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
5.0		10 12 13 12			POORLY GRADED SAND AND GRAVEL (SP) Brown, dry, mostly coarse to fine sand, some medium to fine gravel. — FILL —
		7 | 18 6 | 15 6 | 17 5 | 23	NR		WELL GRADED SAND AND GRAVEL (SW) Medium dense, moist, brown, mostly fine sand, little medium gravel. (some coarse layers of sand and gravel). — GLACIAL DEPOSITS —
10.0					
15.0					
20.0					

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLE ID.	COMPONENT %	GROUND WATER ABBREV.
0 - 4	VERY LOOSE	0 - 2	VERY SOFT	S SPLIT SPOON	MOSTLY 50 - 100%	WD - WHILE DRILLING
5 - 10	LOOSE	3 - 4	SOFT	T TUBE	SOME 30 - 45%	NE - NOT ENCOUNTERED
11 - 30	MEDIUM DENSE	5 - 8	MEDIUM STIFF	U UNDISTURBED PISTON	LITTLE 15 - 25%	UR - NOT READ
31 - 50	DENSE	9 - 15	STIFF	G GRAB SAMPLE	FEW 5 - 10%	
51+	VERY DENSE	16 - 30	VERY STIFF	X OTHER	TRACE <5%	BORING NO. B-21
		31+	HARD	NR NO RECOVERY		

APPENDIX B
CHAIN OF CUSTODY
AND
REQUEST FOR ANALYSIS

SIRRINE ENVIRONMENTAL CONSULTANTS

REQUEST FOR ANALYSIS

- This form must accompany samples - Do Not send under separate cover
- Separate forms should be completed for each shipping container

PROJECT NAME: GAESS SITE
SEC JOB NO.: P1093.20
PROJECT MANAGER: BOB PETERSEN
BILLING ADDRESS: SIRRINE ENVIRONMENTAL CONSULTANTS ~~P.O. BOX 2000~~ 100 NASSAU PK BLD ~~GREENVILLE, SC 29616~~ PRINCETON NJ 08540

SAMPLE SHIPMENT DATE: 5/24/91
SHIPPED TO:
LAB NAME: ENVIROTEST LABORATORIES
LOCATION: NEWBURGH NY
LAB CONTACT:
LAB PHONE: 914 562-8890
MODE OF SHIPMENT: Personal Delivery
AIRBILL NO.: N/A

(Job number must be included on all invoices)

SAMPLE NO.	SAMPLE TYPE	SAMPLE VOLUME	PRESERVATIVE	REQUIRED TESTING PROGRAM	SPECIAL INSTRUCTIONS
B-1SS-1	SOIL		NONE	EPA 502.1 & 503.1, CLP-Metals	
B-2SS-2	↓	↓	↓	↓	
B-3SS-3					
B-4SS-4					
B-5SS-5					
B-6SS-6					
B-7SS-7					
B-8SS-8					
B-9SS-9					
B-10SS-10	↓	↓	↓	↓	

TURNAROUND TIME REQUIRED: (Turnaround time must be arranged with lab prior to shipment)
NORMAL ✓ RUSH _____ (Subject to rush service charge)

POSSIBLE HAZARD IDENTIFICATION: (Please indicate if samples are hazardous materials and/or suspected to contain high levels of chemical compounds.) LOW CONCENTRATION/ENVIRONMENTAL SAMPLES ONLY ✓

MEDIUM OR HIGH CONCENTRATION SAMPLES/DOT HAZ MAT CLASSIFICATION _____ OTHER _____ (Please specify)

SAMPLE DISPOSAL :
RETURN TO CLIENT _____ DISPOSAL BY LAB ✓

FOR LAB USE ONLY
RECEIVED BY: [signature] DATE/TIME 5/24/91 16:00

SEC 12/89

Original Report - White; Laboratory Copy - Yellow; File Copy - Pink

SIRRINE ENVIRONMENTAL CONSULTANTS

REQUEST FOR ANALYSIS

- This form must accompany samples - Do Not send under separate cover
- Separate forms should be completed for each shipping container

PROJECT NAME: GAESS SITE
SEC JOB NO.: D-1093.20
PROJECT MANAGER: Roy Petersen
BILLING ADDRESS: SIRRINE ENVIRONMENTAL CONSULTANTS ~~P.O. BOX 24000 GREENVILLE, SC 29616~~ 100 Nassau Pk Blvd Princeton NJ 08540

SAMPLE SHIPMENT DATE: 5/24/91
SHIPPED TO:
LAB NAME: ENVIROTEST LABORATORIES
LOCATION: NEWBURGH, NY
LAB CONTACT:
LAB PHONE: 914 562-8640
MODE OF SHIPMENT: Personal Delivery
AIRBILL NO.: N/A

(Job number must be included on all invoices)

SAMPLE NO.	SAMPLE TYPE	SAMPLE VOLUME	PRESERVATIVE	REQUIRED TESTING PROGRAM	SPECIAL INSTRUCTIONS
Field Blk	Water	1 Liter, 40 ml ea	HNO_3 & HCl	EPA 502.1 & 503.1, CLP Metals	

TURNAROUND TIME REQUIRED: (Turnaround time must be arranged with lab prior to shipment)
NORMAL ✓ RUSH _____ (Subject to rush service charge)

POSSIBLE HAZARD IDENTIFICATION: (Please indicate if samples are hazardous materials and/or suspected to contain high levels of chemical compounds.) LOW CONCENTRATION/ENVIRONMENTAL SAMPLES ONLY ✓

MEDIUM OR HIGH CONCENTRATION SAMPLES/DOT HAZ MAT CLASSIFICATION _____ OTHER _____ (Please specify)

SAMPLE DISPOSAL :
RETURN TO CLIENT _____ DISPOSAL BY LAB ✓

FOR LAB USE ONLY
RECEIVED BY: J. C. O'Mara DATE/TIME 5/24/91 16:00

SEC 12/89

Original Report - White; Laboratory Copy - Yellow; File Copy - Pink

SIRRINE ENVIRONMENTAL CONSULTANTS

Chain Of Custody Record

Page 1 Of 1

Sirrine Job No. P-1013.2

Project/Location: BASF Harriman, NY

Client Name: Chemical Waste Management, Inc.

Collected By: Rich Zweig

Sample ID	Date	Time	COMP	GRAB	WELL	Sample Location	# Of Containers	pH, Sp. Cond.	TOC	TOX	Cl, Fl, SO4	NITRATES	VOC	METALS	PESTICIDE	HERBIDIDE	PHENOL	ACID/B/N Ext.	COLIFORM	CYANIDE	Remarks
									F P		F	F P		F P			P		P	P F P F P F P	F - Filtered P - Preserved Analytical Program: CWA SDWA CLP RCRA
B-1 SS-1	5/23/91	1330	✓			8-10	2						X	X							CLP Metals EPA SOW 1 & SOW 3.1
B-2 SS-2	↓	1400	✓			8-10'	2						X	X							
B-3 SS-3	↓	1457	✓			8-10	2						X	X							
B-4 SS-4	5/24/91	815	✓			8-10	2						X	X							
B-5 SS-5		930	✓			8-10	2						X	X							
B-6 SS-6		1020	✓			8-10	2						X	X							
B-7 SS-7		1100	✓			8-10	2						X	X							
B-8 SS-8		1145	✓			8-10	2						X	X							
B-9 SS-9		1230	✓			6-8	2						X	X							
B-10 SS-10		1330	✓			6-8	2						X	X							
FLD BLK		1335		✓		—	3						X	X							

Custody Transfers Prior To Receipt By Lab

	Relinquished By/(Signed) (Organization)	Received By/(Signed) (Organization)	Date	Time
1.	Richard Zweig Sirrine	Paul Rella	5/24/91	1600
2.				
3.				

Sample Delivery Details/Laboratory Receipt

Delivered Directly To Lab ☐ Shipped ☐

Method Of Shipment: _____ Airbill # _____

Analytical Lab: _____ Location: _____

Received By Lab By: _____ (Signature) Date: 5/24/91 Time: 16 00

Additional Remarks:
(Condition Upon Lab Receipt, Etc.)

B-57-1-5-90

Original Report - White; Client Copy - Yellow; File Copy - Pink; Laboratory Copy - Gold

SIRRINE ENVIRONMENTAL CONSULTANTS

REQUEST FOR ANALYSIS

- This form must accompany samples - Do Not send under separate cover
- Separate forms should be completed for each shipping container

PROJECT NAME: GAESS SITE
SEC JOB NO.: P-1093.20
PROJECT MANAGER: Roy Peterson
BILLING ADDRESS: SIRRINE ENVIRONMENTAL CONSULTANTS
~~P.O. BOX 24000~~ 100 NASSAU PK BLVD
GREENVILLE, SC 29616 PRINCETON NJ 08540

SAMPLE SHIPMENT DATE: 5/28/91
SHIPPED TO: ENVIROTEST LABORATORIES
LAB NAME:
LOCATION:
LAB CONTACT:
LAB PHONE:
MODE OF SHIPMENT:
AIRBILL NO.:

(Job number must be included on all invoices)

SAMPLE NO.	SAMPLE TYPE	SAMPLE VOLUME	PRESERVATIVE	REQUIRED TESTING PROGRAM	SPECIAL INSTRUCTIONS
B-11 SS-11	SOIL		—	VOA EPA 5030.1 SW3.1-CLPMETALS	
B-12 SS-12					
B-13 SS-13					
B-14 SS-14					
B-15 SS-15					
B-16 SS-16					
B-17 SS-17					
B-18 SS-18					
B-19 SS-19					
B-20 SS-20					

TURNAROUND TIME REQUIRED: (Turnaround time must be arranged with lab prior to shipment)
NORMAL ✓ RUSH _____ (Subject to rush service charge)

POSSIBLE HAZARD IDENTIFICATION: (Please indicate if samples are hazardous materials and/or suspected to contain high levels of chemical compounds.) LOW CONCENTRATION/ENVIRONMENTAL SAMPLES ONLY ✓

MEDIUM OR HIGH CONCENTRATION SAMPLES/DOT HAZ MAT CLASSIFICATION _____ OTHER _____ (Please specify)

SAMPLE DISPOSAL :
RETURN TO CLIENT _____ DISPOSAL BY LAB ✓

FOR LAB USE ONLY
RECEIVED BY: _____ DATE/TIME _____

SEC 12/89

Original Report - White; Laboratory Copy - Yellow; File Copy - Pink

SIRRINE ENVIRONMENTAL CONSULTANTS

REQUEST FOR ANALYSIS

- This form must accompany samples - Do Not send under separate cover
- Separate forms should be completed for each shipping container

PROJECT NAME: [redacted]
SEC JOB NO.: P1693.23
PROJECT MANAGER: [redacted]
BILLING ADDRESS: SIRRINE ENVIRONMENTAL CONSULTANTS
P.O. BOX [redacted]
GREENVILLE, SC [redacted]
100 NASSAU PARK BLVD
PRINCETON, NJ 08540

SAMPLE SHIPMENT DATE: 5/21/91
SHIPPED TO: ENVIROTEST
LAB NAME:
LOCATION:
LAB CONTACT:
LAB PHONE:
MODE OF SHIPMENT:
AIRBILL NO.:

(Job number must be included on all invoices)

SAMPLE NO.	SAMPLE TYPE	SAMPLE VOLUME	PRESERVATIVE	REQUIRED TESTING PROGRAM	SPECIAL INSTRUCTIONS
B21.55.11	Soil	1 - 125	—	EPA 502.1 503.1 CLP METALS	

TURNAROUND TIME REQUIRED: (Turnaround time must be arranged with lab prior to shipment)
NORMAL ✓ RUSH _____ (Subject to rush service charge)

POSSIBLE HAZARD IDENTIFICATION: (Please indicate if samples are hazardous materials and/or suspected to contain high levels of chemical compounds.) LOW CONCENTRATION/ENVIRONMENTAL SAMPLES ONLY ✓

MEDIUM OR HIGH CONCENTRATION SAMPLES/DOT HAZ MAT CLASSIFICATION _____ OTHER _____ (Please specify)

SAMPLE DISPOSAL :
RETURN TO CLIENT _____ DISPOSAL BY LAB ✓

FOR LAB USE ONLY
RECEIVED BY: [signature] DATE/TIME 5/23/91 - 7703

SEC 12/89

Original Report - White; Laboratory Copy - Yellow; File Copy - Pink

SIRRINE ENVIRONMENTAL CONSULTANTS

Chain Of Custody Record

Page 1 Of _____

Sirrine Job No. [redacted]

Project/Location: [redacted], HARRIMAN NY

Client Name: [redacted] / VISOR Mgmt

Collected By: R. Lowry

Sample ID	Date	Time	COMP	GRAB	WELL	Sample Location	# Of Containers	pH, Sp. Cond. F P	TOC F P	TOX	Cl, Fl, SO4 F	NITRATES F P	VOC	METALS F P	PESTICIDE	HERBIDIDE	PHENOL P	ACID/B/N Ext.	COLIFORM P	CYANIDE P	F P	F P	F P	Remarks
B-11 S-11	5/28/11	850	X			8-10'	2						X	X										624 SVOA + TCL P METALS
B-12 S-12		725	X			10-12																		
B-13 S-13		1145	X			10-12																		
B-14 S-14		1110	X			8-10																		
B-15 S-15		1200	X			8-10																		
B-16 S-16		1250	X			8-10																		
B-17 S-17		1315	X			8-10																		
B-18 S-18		1350	X			6-8																		
B-19 S-19		1420	X			8-10																		
B-20 S-20		1510	X			8-10																		
B-21 S-21		1535	X			8-10																		

F - Filtered P - Preserved

Analytical Program: CWA SDWA CLP RCRA

Custody Transfers Prior To Receipt By Lab

	Relinquished By/(Signed) (Organization)	Received By/(Signed) (Organization)	Date	Time
1.	[redacted] Sirrine			
2.				
3.				

Sample Delivery Details/Laboratory Receipt

Delivered Directly To Lab ☐ Shipped ☐

Method Of Shipment: _____ Airbill # _____

Analytical Lab: [redacted] Location: _____

Received By Lab By (Signature): [redacted] Date: 5/29/11 Time: 1703

Additional Remarks: (Condition Upon Lab Receipt, Etc.)

B-57-1-5-90

Original Report - White; Client Copy - Yellow; File Copy - Pink; Laboratory Copy - Gold

EnviroTest Laboratories Inc.

315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890

CHAIN OF CUSTODY RECORD

Company Name, Location: VERLINE

Project Name/P.O. Number: KONATENITH

Project Site Location: KIONIA

Project Coordinator/Contact: 1093.20

SAMPLING DATE	TIME AM PM	COMP	GRAB	SAMPLE I.D. No.	Total Number of Containers	40ml Glass HCL	Liter Amber Sulfuric Acid	Liter Amber Organic Washed	Liter Plastic Nitric Acid	Liter Plastic Sodium Hydroxide	Liter Plastic	Liter Plastic Sulfuric Acid	250ml Plastic	125ml Plastic Sterile	250 ml Amber	2 oz Qorpak	ANALYSIS
7/26/91	1300		✓	GE1-3-M1			1		1								[illegible] NON-FILTERED
[illegible]	[illegible]			[illegible]													
7/26/91	1300		✓	GE1-3-M2					1								[illegible] FILTERED
7/26/91	1500		✓	GE1-4-M1					1								[illegible] NON-FILTERED
7/26/91	1500		✓	GE1-4-M2					1								[illegible] FILTERED

Relinquished by EnviroTest Laboratories	Custody Shipping Number	Date	Received by	Date
Print		Time	Print	Time
Signature			Signature	

Relinquished by	Date	Received by	Date
Print	Time		Time
Signature			

Relinquished by	Date	Received by ETL	Date
Print: Richard Zweig	Time	Paul Pillar	Time
Signature: [signature]		[signature]	

REMARKS

SIRRINE ENVIRONMENTAL CONSULTANTS

REQUEST FOR ANALYSIS

- This form must accompany samples - Do Not send under separate cover
- Separate forms should be completed for each shipping container

PROJECT NAME: GAESS SITE
SEC JOB NO.: P-1093.20
PROJECT MANAGER: ROY PETERSEN
BILLING ADDRESS: SIRRINE ENVIRONMENTAL CONSULTANTS
~~P.O. BOX 24000~~ 100 NASSAU PARK BLVD.
~~GREENVILLE, SC 29616~~ PRINCETON, NJ 08540

SAMPLE SHIPMENT DATE: 5/23/91
SHIPPED TO:
LAB NAME: ENVIROTEST LABORATORIES
LOCATION: NEWBURGH, NEW YORK
LAB CONTACT:
LAB PHONE: 914 562-8890
MODE OF SHIPMENT: Personnel Delivery
AIRBILL NO.: N/A

(Job number must be included on all invoices)

SAMPLE NO.	SAMPLE TYPE	SAMPLE VOLUME	PRESERVATIVE	REQUIRED TESTING PROGRAM	SPECIAL INSTRUCTIONS
GHP-1S	WATER	3 x 40ml	HCL	EPA 502.1 & 503.1	
GHP-1I	↓	3 x 40ml	HCL	↓	
GHP-1D	↓	↓	↓	↓	
GHP-2S	↓	3x40ml (1 x 1L)	HCL & NaOH	502.1 & 503.1 & CN⁻	
GHP-2I	↓	↓	↓	↓	
GHP-2S4	↓	↓	↓	↓	
GHP-3S	↓	↓	↓	↓	
GHP-3I	↓	↓	↓	↓	
FIELD BLK	↓	3 x 40ml	HCL	502.1 & 503.1	

TURNAROUND TIME REQUIRED: (Turnaround time must be arranged with lab prior to shipment)
NORMAL ✓ RUSH ___ (Subject to rush service charge)

POSSIBLE HAZARD IDENTIFICATION: (Please indicate if samples are hazardous materials and/or suspected to contain high levels of chemical compounds.) LOW CONCENTRATION/ENVIRONMENTAL SAMPLES ONLY ✓

MEDIUM OR HIGH CONCENTRATION SAMPLES/DOT HAZ MAT CLASSIFICATION ___ OTHER ___ (Please specify)

SAMPLE DISPOSAL :
RETURN TO CLIENT ___ DISPOSAL BY LAB ✓

FOR LAB USE ONLY
RECEIVED BY: Ka M. Gatz DATE/TIME 5-23-91 7:50 AM

SEC 12/89

Original Report - White; Laboratory Copy - Yellow; File Copy - Pink

SIRRINE ENVIRONMENTAL CONSULTANTS

Chain Of Custody Record

Page 1 Of 1

Sirrine Job No. P-1093.2

Project/Location: GAESS, HARRIMAN, NY

Client Name: Chemical Waste Management, Inc.

Collected By: Richard Zuzey

Sample ID	Date	Time	COMP	GRAB	WELL	Sample Location	# Of Containers	Sample Analysis (x)																Remarks
								pH, Sp. Cond.	TOC F P	TOX	Cl, Fl, SO4 F	NITRATES F P	VOC HCl F P	METALS	PESTICIDE	HERBIDIDE	PHENOL P	ACID/B/N Ext.	COLIFORM P	CYANIDE P	F	F	F	F	F P
GWP-1S	5/21/91	1340		✓		Eastern side of GE1-3	3						X												502.1 & 503.1
GWP-1I	5/21/91	1415		✓		" "	3						X												" "
GWP-1D	5/21/91	1615		✓		" "	3						X												" "
GWP-2S	5/22/91	1040		✓		50 west of GE1-3	4						X							X					502.1 & 503.1 CN
GWP-2I	5/22/91	1120		✓		" "	4						X							X					" "
GWP-2SA	5/22/91	1355		✓		" "	4						X							X					" "
GWP-3S	5/22/91	1605		✓		ACROSS FROM WATER MGT BLDG	3						X							X					" "
GWP-3I	5/22/91	1710		✓		" "	4						X							X					" "
FLD BLK	5/22/91	1740		✓		—	2						X												502.1 503.1

F - Filtered (P) Preserved

Analytical Program: CWA SDWA CLP RCRA

Custody Transfers Prior To Receipt By Lab

	Relinquished By/(Signed) (Organization)	Received By/(Signed) (Organization)	Date	Time
1.	Richard Zuzey			
2.				
3.				

Sample Delivery Details/Laboratory Receipt

Delivered Directly To Lab ☑ Shipped ☐

Method Of Shipment: Delivery Airbill # _____

Analytical Lab: Envirotest Location: Newburgh New York

Received By Lab By: _____ (Signature) Date: 5-23-91 Time: 7:30 AM

Additional Remarks: (Condition Upon Lab Receipt, Etc.)

B-57-1-5-90

Original Report - White; Client Copy - Yellow; File Copy - Pink; Laboratory Copy - Gold

APPENDIX C
LABORATORY RESULTS

SOIL BORING SAMPLE RESULTS

ANALYTICAL REPORT

Company:

SIRRINE ENVIRONMENTAL
ATTN. ROY PETERSON
100 NASSAU PARK BLVD.
PRINCETON NJ 08540

Report Summary

Report Date: 21-JUN-91

Project: STANDARD

Lab Number: 99589

Sample Number(s): 99589-001
to
99589-011

Ronald A. Bayer
Laboratory Director

Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99589-001 Project Name: STANDARD

Date Collected: 23-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 24-MAY-91

Sample Location: B-1 SS-1

Comments: GAESS SITE D-1093.20 (ROY PETERSON)

Analysis	Result	Units	Method	Analyzed
AG	<0.01	MG/L	SW846 6010	05-JUN-91
AS	<0.1	MG/L	SW846 6010	05-JUN-91
BA	0.08	MG/L	SW846 6010	05-JUN-91
CD	<0.005	MG/L	SW846 6010	05-JUN-91
CR	<0.01	MG/L	SW846 6010	05-JUN-91
HG	<0.4	UG/L	SW846 7470	06-JUN-91
PB	<0.2	MG/L	SW846 6010	05-JUN-91
PSOL	90.6	%	EPA 160.3	28-MAY-91
SE	<0.1	MG/L	SW846 6010	05-JUN-91
TCLPEXT			SW846 1311	29-MAY-91

Remarks:

APPENDIX C
LABORATORY RESULTS

SOIL BORING SAMPLE RESULTS

ANALYTICAL REPORT

Company:

SIRRINE ENVIRONMENTAL
ATTN. ROY PETERSON
100 NASSAU PARK BLVD.
PRINCETON NJ 08540

Report Summary

Report Date:	21-JUN-91
Project:	STANDARD
Lab Number:	99589
Sample Number(s):	99589-001 to 99589-011

Ronald A. Bayer
Laboratory Director

EnviroTest Laboratories Inc.
315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890
FAX (914) 562-0841

Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99589-001 Project Name: STANDARD

Date Collected: 23-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 24-MAY-91

Sample Location: B-1 SS-1

Comments: GAESS SITE D-1093.20 (ROY PETERSON)

Analysis	Result	Units	Method	Analyzed
AG	<0.01	MG/L	SW846 6010	05-JUN-91
AS	<0.1	MG/L	SW846 6010	05-JUN-91
BA	0.08	MG/L	SW846 6010	05-JUN-91
CD	<0.005	MG/L	SW846 6010	05-JUN-91
CR	<0.01	MG/L	SW846 6010	05-JUN-91
HG	<0.4	UG/L	SW846 7470	06-JUN-91
PB	<0.2	MG/L	SW846 6010	05-JUN-91
PSOL	90.6	%	EPA 160.3	28-MAY-91
SE	<0.1	MG/L	SW846 6010	05-JUN-91
TCLPEXT			SW846 1311	29-MAY-91

Remarks:

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99589-001 Project Name: STANDARD

Date Collected: 23-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 24-MAY-91 Method: VOA-502.1

Analyzed Date: 03-JUN-91

Sample Location: B-1 SS-1

Comments: GAESS SITE D-1093.20 (ROY PETERSON)

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5	.77	
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5	.88	
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

Samplenum: 99589-001

Method: VOA-502.1 continued

CAS NO.	Compound	ug/kg	ug/kg	Qualifier
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99589-001 Project Name: STANDARD

Date Collected: 23-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 24-MAY-91 Method: VOA-503.1

Analyzed Date: 03-JUN-91

Sample Location: B-1 SS-1

Comments: GAESS SITE D-1093.20 (ROY PETERSON)

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5		U
108-88-3	Toluene	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

EnviroTest Laboratories Inc.
315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890
FAX (914) 562-0841

Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99589-002 Project Name: STANDARD

Date Collected: 23-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 24-MAY-91

Sample Location: B-2 SS-2

Comments: GAESS SITE D-1093.20 (ROY PETERSON)

Analysis	Result	Units	Method	Analyzed
AG	<0.01	MG/L	SW846 6010	05-JUN-91
AS	<0.1	MG/L	SW846 6010	05-JUN-91
BA	0.09	MG/L	SW846 6010	05-JUN-91
CD	<0.005	MG/L	SW846 6010	05-JUN-91
CR	0.01	MG/L	SW846 6010	05-JUN-91
HG	<0.4	UG/L	SW846 7470	06-JUN-91
PB	<0.2	MG/L	SW846 6010	05-JUN-91
PSOL	89.9	%	EPA 160.3	28-MAY-91
SE	<0.1	MG/L	SW846 6010	05-JUN-91
TCLPEXT			SW846 1311	29-MAY-91

Remarks:

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99589-002 Project Name: STANDARD

Date Collected: 23-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 24-MAY-91 Method: VOA-502.1

Analyzed Date: 03-JUN-91

Sample Location: B-2 SS-2

Comments: GAESS SITE D-1093.20 (ROY PETERSON)

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5	1.8	
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5	1.2	
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

EnviroTest Laboratories Inc.
315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890
FAX (914) 562-0841

Samplenum: 99589-002

Method: VOA-502.1 continued

CAS NO.	Compound	ug/kg	ug/kg	Qualifier
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99589-002 Project Name: STANDARD

Date Collected: 23-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 24-MAY-91 Method: VOA-503.1

Analyzed Date: 03-JUN-91

Sample Location: B-2 SS-2

Comments: GAESS SITE D-1093.20 (ROY PETERSON)

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5	1.1	
108-88-3	Toluene	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99589-003 Project Name: STANDARD

Date Collected: 23-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 24-MAY-91

Sample Location: B-3 SS-3

Comments: GAESS SITE D-1093.20 (ROY PETERSON)

Analysis	Result	Units	Method	Analyzed
AG	<0.01	MG/L	SW846 6010	05-JUN-91
AS	<0.1	MG/L	SW846 6010	05-JUN-91
BA	0.13	MG/L	SW846 6010	05-JUN-91
CD	<0.005	MG/L	SW846 6010	05-JUN-91
CR	0.01	MG/L	SW846 6010	05-JUN-91
HG	<0.4	UG/L	SW846 7470	06-JUN-91
PB	<0.2	MG/L	SW846 6010	05-JUN-91
PSOL	89.6	%	EPA 160.3	28-MAY-91
SE	<0.1	MG/L	SW846 6010	05-JUN-91
TCLPEXT			SW846 1311	29-MAY-91

Remarks:

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99589-003 Project Name: STANDARD

Date Collected: 23-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 24-MAY-91 Method: VOA-502.1

Analyzed Date: 03-JUN-91

Sample Location: B-3 SS-3

Comments: GAESS SITE D-1093.20 (ROY PETERSON)

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5	6.2	
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5	.88	
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5	.77	
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

Samplenum: 99589-003

Method: VOA-502.1 continued

CAS NO.	Compound	ug/kg	ug/kg	Qualifier
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99589-003 Project Name: STANDARD

Date Collected: 23-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 24-MAY-91 Method: VOA-503.1

Analyzed Date: 03-JUN-91

Sample Location: B-3 SS-3

Comments: GAESS SITE D-1093.20 (ROY PETERSON)

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5	.8	
108-88-3	Toluene	.5	.99	
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

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Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99589-004 Project Name: STANDARD

Date Collected: 24-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 24-MAY-91

Sample Location: B-4 SS-4

Comments: GAESS SITE D-1093.20 (ROY PETERSON)

Analysis	Result	Units	Method	Analyzed
AG	<0.01	MG/L	SW846 6010	05-JUN-91
AS	<0.1	MG/L	SW846 6010	05-JUN-91
BA	0.23	MG/L	SW846 6010	05-JUN-91
CD	<0.005	MG/L	SW846 6010	05-JUN-91
CR	0.03	MG/L	SW846 6010	05-JUN-91
HG	<0.4	UG/L	SW846 7470	06-JUN-91
PB	<0.2	MG/L	SW846 6010	05-JUN-91
PSOL	91.1	%	EPA 160.3	28-MAY-91
SE	<0.1	MG/L	SW846 6010	05-JUN-91
TCLPEXT			SW846 1311	29-MAY-91

Remarks:

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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99589-004 Project Name: STANDARD

Date Collected: 24-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 24-MAY-91 Method: VOA-502.1

Analyzed Date: 03-JUN-91

Sample Location: B-4 SS-4

Comments: GAESS SITE D-1093.20 (ROY PETERSON)

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5	23	
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5	.66	
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5	1.2	
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5	1.1	
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

Samplenum: 99589-004

Method: VOA-502.1 continued

CAS NO.	Compound	ug/kg	ug/kg	Qualifier
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99589-005 Project Name: STANDARD

Date Collected: 24-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 24-MAY-91 Method: VOA-502.1

Analyzed Date: 03-JUN-91

Sample Location: B-5 SS-5

Comments: GAESS SITE D-1093.20 (ROY PETERSON)

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5	4.9	J
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5	2.1	
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99589-004 Project Name: STANDARD

Date Collected: 24-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 24-MAY-91 Method: VOA-503.1

Analyzed Date: 03-JUN-91

Sample Location: B-4 SS-4

Comments: GAESS SITE D-1093.20 (ROY PETERSON)

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5	1.2	
108-88-3	Toluene	.5	4.1	
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

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Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99589-005 Project Name: STANDARD

Date Collected: 24-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 24-MAY-91

Sample Location: B-5 SS-5

Comments: GAESS SITE D-1093.20 (ROY PETERSON)

Analysis	Result	Units	Method	Analyzed
AG	<0.01	MG/L	SW846 6010	05-JUN-91
AS	<0.1	MG/L	SW846 6010	05-JUN-91
BA	0.16	MG/L	SW846 6010	05-JUN-91
CD	<0.005	MG/L	SW846 6010	05-JUN-91
CR	0.01	MG/L	SW846 6010	05-JUN-91
HG	<0.4	UG/L	SW846 7470	06-JUN-91
PB	<0.2	MG/L	SW846 6010	05-JUN-91
PSOL	82.9	%	EPA 160.3	28-MAY-91
SE	<0.1	MG/L	SW846 6010	05-JUN-91
TCLPEXT			SW846 1311	29-MAY-91

Remarks:

Samplenum: 99589-005

Method: VOA-502.1 continued

CAS NO.	Compound	ug/kg	ug/kg	Qualifier
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99589-005 Project Name: STANDARD

Date Collected: 24-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 24-MAY-91 Method: VOA-503.1

Analyzed Date: 03-JUN-91

Sample Location: B-5 SS-5

Comments: GAESS SITE D-1093.20 (ROY PETERSON)

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5	2.1	
108-88-3	Toluene	.5	.72	
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

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Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99589-006 Project Name: STANDARD

Date Collected: 24-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 24-MAY-91

Sample Location: B-6 SS-6

Comments: GAESS SITE D-1093.20 (ROY PETERSON)

Analysis	Result	Units	Method	Analyzed
AG	<0.01	MG/L	SW846 6010	05-JUN-91
AS	<0.1	MG/L	SW846 6010	05-JUN-91
BA	0.18	MG/L	SW846 6010	05-JUN-91
CD	<0.005	MG/L	SW846 6010	05-JUN-91
CR	<0.01	MG/L	SW846 6010	05-JUN-91
HG	<0.4	UG/L	SW846 7470	06-JUN-91
PB	<0.2	MG/L	SW846 6010	05-JUN-91
PSOL	84.5	%	EPA 160.3	28-MAY-91
SE	<0.1	MG/L	SW846 6010	05-JUN-91
TCLPEXT			SW846 1311	29-MAY-91

Remarks:

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99589-006 Project Name: STANDARD

Date Collected: 24-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 24-MAY-91 Method: VOA-502.1

Analyzed Date: 04-JUN-91

Sample Location: B-6 SS-6

Comments: GAESS SITE D-1093.20 (ROY PETERSON)

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5	5.8	
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5	1.2	
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5	120	
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

Samplenum: 99589-006

Method: VOA-502.1 continued

CAS NO.	Compound	ug/kg	ug/kg	Qualifier
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99589-006 Project Name: STANDARD

Date Collected: 24-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 24-MAY-91 Method: VOA-503.1

Analyzed Date: 04-JUN-91

Sample Location: B-6 SS-6

Comments: GAESS SITE D-1093.20 (ROY PETERSON)

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5	130	
108-88-3	Toluene	.5	1.7 J	
127-18-4	Tetrachloroethene	.5	4.5 J	
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99589-007 Project Name: STANDARD

Date Collected: 24-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 24-MAY-91

Sample Location: B-7 SS-7

Comments: GAESS SITE D-1093.20 (ROY PETERSON)

Analysis	Result	Units	Method	Analyzed
AG	<0.01	MG/L	SW846 6010	05-JUN-91
AS	<0.1	MG/L	SW846 6010	05-JUN-91
BA	0.18	MG/L	SW846 6010	05-JUN-91
CD	<0.005	MG/L	SW846 6010	05-JUN-91
CR	<0.01	MG/L	SW846 6010	05-JUN-91
HG	<0.4	UG/L	SW846 7470	06-JUN-91
PB	<0.2	MG/L	SW846 6010	05-JUN-91
PSOL	83.3	%	EPA 160.3	28-MAY-91
SE	<0.1	MG/L	SW846 6010	05-JUN-91
TCLPEXT			SW846 1311	29-MAY-91

Remarks:

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99589-007 Project Name: STANDARD

Date Collected: 24-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 24-MAY-91 Method: VOA-502.1

Analyzed Date: 04-JUN-91

Sample Location: B-7 SS-7

Comments: GAESS SITE D-1093.20 (ROY PETERSON)

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5	5.4	
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5	1.6	
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5	1.8	
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5	760	
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

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Samplenum: 99589-007

Method: VOA-502.1 continued

CAS NO.	Compound	ug/kg	ug/kg	Qualifier
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99589-007 Project Name: STANDARD

Date Collected: 24-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 24-MAY-91 Method: VOA-503.1

Analyzed Date: 04-JUN-91

Sample Location: B-7 SS-7

Comments: GAESS SITE D-1093.20 (ROY PETERSON)

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5	830	
108-88-3	Toluene	.5		U
127-18-4	Tetrachloroethene	.5	18	
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

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Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99589-008 Project Name: STANDARD

Date Collected: 24-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 24-MAY-91

Sample Location: B-8 SS-8

Comments: GAESS SITE D-1093.20 (ROY PETERSON)

Analysis	Result	Units	Method	Analyzed
AG	<0.01	MG/L	SW846 6010	05-JUN-91
AS	<0.1	MG/L	SW846 6010	05-JUN-91
BA	0.28	MG/L	SW846 6010	05-JUN-91
CD	<0.005	MG/L	SW846 6010	05-JUN-91
CR	<0.01	MG/L	SW846 6010	05-JUN-91
HG	<0.4	UG/L	SW846 7470	06-JUN-91
PB	<0.2	MG/L	SW846 6010	05-JUN-91
PSOL	86.3	%	EPA 160.3	28-MAY-91
SE	<0.1	MG/L	SW846 6010	05-JUN-91
TCLPEXT			SW846 1311	29-MAY-91

Remarks:

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99589-008 Project Name: STANDARD

Date Collected: 24-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 24-MAY-91 Method: VOA-502.1

Analyzed Date: 04-JUN-91

Sample Location: [redacted]

Comments: GAESS SITE D-1093.20 (ROY PETERSON)

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5	2.4	
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	[redacted]	.5	42	
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

Samplenum: 99589-008

Method: VOA-502.1 continued

CAS NO.	Compound	ug/kg	ug/kg	Qualifier
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99589-008 Project Name: STANDARD

Date Collected: 24-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 24-MAY-91 Method: VOA-503.1

Analyzed Date: 04-JUN-91

Sample Location: B-8 SS-8

Comments: GAESS SITE D-1093.20 (ROY PETERSON)

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5	50	
108-88-3	Toluene	.5		U
127-18-4	Tetrachloroethene	.5	2.4	
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

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Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99589-009 Project Name: STANDARD

Date Collected: 24-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 24-MAY-91

Sample Location: B-9 SS-9

Comments: GAESS SITE D-1093.20 (ROY PETERSON)

Analysis	Result	Units	Method	Analyzed
AG	<0.01	MG/L	SW846 6010	05-JUN-91
AS	<0.1	MG/L	SW846 6010	05-JUN-91
BA	0.16	MG/L	SW846 6010	05-JUN-91
CD	<0.005	MG/L	SW846 6010	05-JUN-91
CR	<0.01	MG/L	SW846 6010	05-JUN-91
HG	<0.4	UG/L	SW846 7470	06-JUN-91
PB	<0.2	MG/L	SW846 6010	05-JUN-91
PSOL	88.8	%	EPA 160.3	28-MAY-91
SE	<0.1	MG/L	SW846 6010	05-JUN-91
TCLPEXT			SW846 1311	29-MAY-91

Remarks:

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99589-009 Project Name: STANDARD

Date Collected: 24-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 24-MAY-91 Method: VOA-502.1

Analyzed Date: 04-JUN-91

Sample Location: B-9 SS-9

Comments: GAESS SITE D-1093.20 (ROY PETERSON)

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5	6.1	J
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	[redacted]	.5	43	
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

Samplenum: 99589-009

Method: VOA-502.1 continued

CAS NO.	Compound	ug/kg	ug/kg	Qualifier
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99589-009 Project Name: STANDARD

Date Collected: 24-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 24-MAY-91 Method: VOA-503.1

Analyzed Date: 04-JUN-91

Sample Location: B-9 SS-9

Comments: GAESS SITE D-1093.20 (ROY PETERSON)

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5	35	
108-88-3	Toluene	.5	1.1	
127-18-4	Tetrachloroethene	.5	.55	
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

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Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99589-010 Project Name: STANDARD

Date Collected: 24-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 24-MAY-91

Sample Location: B-10 SS-10

Comments: GAESS SITE D-1093.20 (ROY PETERSON)

Analysis	Result	Units	Method	Analyzed
AG	<0.01	MG/L	SW846 6010	05-JUN-91
AS	<0.1	MG/L	SW846 6010	05-JUN-91
BA	0.14	MG/L	SW846 6010	05-JUN-91
CD	<0.005	MG/L	SW846 6010	05-JUN-91
CR	<0.01	MG/L	SW846 6010	05-JUN-91
HG	<0.4	UG/L	SW846 7470	06-JUN-91
PB	<0.2	MG/L	SW846 6010	05-JUN-91
PSOL	91.1	%	EPA 160.3	28-MAY-91
SE	<0.1	MG/L	SW846 6010	05-JUN-91
TCLPEXT			SW846 1311	29-MAY-91

Remarks:

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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99589-010 Project Name: STANDARD

Date Collected: 24-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 24-MAY-91 Method: VOA-502.1

Analyzed Date: 04-JUN-91

Sample Location: B-10 SS-10

Comments: GAESS SITE D-1093.20 (ROY PETERSON)

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5	[illegible]	
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	[redacted]	.5	.99	
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

Samplenum: 99589-010

Method: VOA-502.1 continued

CAS NO.	Compound	ug/kg	ug/kg	Qualifier
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99589-010 Project Name: STANDARD

Date Collected: 24-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 24-MAY-91 Method: VOA-503.1

Analyzed Date: 04-JUN-91

Sample Location: B-10 SS-10

Comments: GAESS SITE D-1093.20 (ROY PETERSON)

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5	.76	
108-88-3	Toluene	.5	4.3	
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

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ANALYTICAL REPORT

Company:

SIRRINE ENVIRONMENTAL
ROY PETERSON
100 NASSAU PARK BLVD.
PRINCETON NJ 08540

Report Summary

Report Date: 20-JUN-91

Project: STANDARD

Lab Number: 99647

Sample Number(s): 99647-001
to
99647-011

Ronald A. Bayer
Laboratory Director

EnviroTest Laboratories Inc.
315 Fullerton Avenue
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Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99589-011 Project Name: STANDARD

Date Collected: 24-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 24-MAY-91

Sample Location: **FIELD BLANK**

Comments: GAESS SITE D-1093.20 (ROY PETERSON)

Analysis	Result	Units	Method	Analyzed
AG	<0.01	MG/L	SW846 6010	03-JUN-91
AS	<0.1	MG/L	SW846 6010	05-JUN-91
BA	<0.05	MG/L	SW846 6010	03-JUN-91
CD	<0.005	MG/L	SW846 6010	03-JUN-91
CR	<0.01	MG/L	SW846 6010	03-JUN-91
HG	<0.4	UG/L	SW846 7470	06-JUN-91
PB	<0.2	MG/L	SW846 6010	05-JUN-91
SE	<0.1	MG/L	SW846 6010	05-JUN-91
TCLPEXT			SW846 1311	29-MAY-91

Remarks:

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Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99647-001 Project Name: STANDARD

Date Collected: 28-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 28-MAY-91

Sample Location: **B-11SS-11**

Comments: GAESS SITE P-1093.20

Analysis	Result	Units	Method	Analyzed
AG	<0.01	MG/L	SW846 6010	05-JUN-91
AS	<0.1	MG/L	SW846 6010	05-JUN-91
BA	0.28	MG/L	SW846 6010	05-JUN-91
CD	<0.005	MG/L	SW846 6010	05-JUN-91
CR	0.03	MG/L	SW846 6010	05-JUN-91
HG	<0.4	UG/L	SW846 7470	06-JUN-91
PB	<0.2	MG/L	SW846 6010	05-JUN-91
PSOL	85.2	%	EPA 160.3	30-MAY-91
SE	<0.1	MG/L	SW846 6010	05-JUN-91
TCLPEXT			SW846 1311	30-MAY-91

Remarks:

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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99647-001 Project Name: STANDARD

Date Collected: 28-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 28-MAY-91 Method: VOA-502.1

Analyzed Date: 04-JUN-91

Sample Location: B-11SS-11

Comments: GAESS SITE P-1093.20

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5	5.6	J
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5	110	
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

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Samplenum: 99647-001

Method: VOA-502.1 continued

CAS NO.	Compound	ug/kg	ug/kg	Qualifier
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99647-001 Project Name: STANDARD

Date Collected: 28-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 28-MAY-91 Method: VOA-503.1

Analyzed Date: 04-JUN-91

Sample Location: **B-11SS-11**

Comments: GAESS SITE P-1093.20

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	**Trichloroethene**	.5	**120**	
108-88-3	**Toluene**	.5	**1.5**	
127-18-4	**Tetrachloroethene**	.5	**.74**	
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	**p-Xylene**	.5	**.9**	
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

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Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99647-002 Project Name: STANDARD

Date Collected: 28-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 28-MAY-91

Sample Location: **B-12SS-12**

Comments: GAESS SITE P-1093.20

Analysis	Result	Units	Method	Analyzed
AG	<0.01	MG/L	SW846 6010	05-JUN-91
AS	<0.1	MG/L	SW846 6010	05-JUN-91
BA	0.11	MG/L	SW846 6010	05-JUN-91
CD	<0.005	MG/L	SW846 6010	05-JUN-91
CR	<0.01	MG/L	SW846 6010	05-JUN-91
HG	<0.4	UG/L	SW846 7470	06-JUN-91
PB	<0.2	MG/L	SW846 6010	05-JUN-91
PSOL	90.6	%	EPA 160.3	30-MAY-91
SE	<0.1	MG/L	SW846 6010	05-JUN-91
TCLPEXT			SW846 1311	30-MAY-91

Remarks:

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NYSDOH 10142 NJDEP 73507 CTDOHS PH-0054

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99647-002 Project Name: STANDARD

Date Collected: 28-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 28-MAY-91 Method: VOA-502.1

Analyzed Date: 04-JUN-91

Sample Location: B-12SS-12

Comments: GAESS SITE P-1093.20

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	[redacted]	.5	2.5	J
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	[redacted]	.5	16	J
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

Samplenum: 99647-002

Method: VOA-502.1 continued

CAS NO.	Compound	ug/kg	ug/kg	Qualifier
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99647-002 Project Name: STANDARD

Date Collected: 28-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 28-MAY-91 Method: VOA-503.1

Analyzed Date: 04-JUN-91

Sample Location: B-12SS-12

Comments: GAESS SITE P-1093.20

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5	17	
108-88-3	Toluene	.5	2.1	
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

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Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99647-003 Project Name: STANDARD

Date Collected: 28-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 28-MAY-91

Sample Location: B-13SS-13

Comments: GAESS SITE P-1093.20

Analysis	Result	Units	Method	Analyzed
AG	<0.01	MG/L	SW846 6010	05-JUN-91
AS	<0.1	MG/L	SW846 6010	05-JUN-91
BA	0.30	MG/L	SW846 6010	05-JUN-91
CD	<0.005	MG/L	SW846 6010	05-JUN-91
CR	0.02	MG/L	SW846 6010	05-JUN-91
HG	<0.4	UG/L	SW846 7470	06-JUN-91
PB	<0.2	MG/L	SW846 6010	05-JUN-91
PSOL	94.0	%	EPA 160.3	30-MAY-91
SE	<0.1	MG/L	SW846 6010	05-JUN-91
TCLPEXT			SW846 1311	30-MAY-91

Remarks:

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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99647-003 Project Name: STANDARD

Date Collected: 28-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 28-MAY-91 Method: VOA-502.1

Analyzed Date: 04-JUN-91

Sample Location: B-13SS-13

Comments: GAESS SITE P-1093.20

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5	[illegible]	
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

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Samplenum: 99647-003

Method: VOA-502.1 continued

CAS NO.	Compound	ug/kg	ug/kg	Qualifier
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99647-003 Project Name: STANDARD

Date Collected: 28-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 28-MAY-91 Method: VOA-503.1

Analyzed Date: 04-JUN-91

Sample Location: B-13SS-13

Comments: GAESS SITE P-1093.20

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5		U
108-88-3	Toluene	.5	2.7 J	
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

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Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99647-004 Project Name: STANDARD

Date Collected: 28-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 28-MAY-91

Sample Location: B-14SS-14

Comments: GAESS SITE P-1093.20

Analysis	Result	Units	Method	Analyzed
AG	<0.01	MG/L	SW846 6010	05-JUN-91
AS	<0.1	MG/L	SW846 6010	05-JUN-91
BA	0.11	MG/L	SW846 6010	05-JUN-91
CD	<0.005	MG/L	SW846 6010	05-JUN-91
CR	<0.01	MG/L	SW846 6010	05-JUN-91
HG	<0.4	UG/L	SW846 7470	06-JUN-91
PB	<0.2	MG/L	SW846 6010	05-JUN-91
PSOL	93.7	%	EPA 160.3	30-MAY-91
SE	<0.1	MG/L	SW846 6010	05-JUN-91
TCLPEXT			SW846 1311	30-MAY-91

Remarks:

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99647-004 Project Name: STANDARD

Date Collected: 28-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 28-MAY-91 Method: VOA-502.1

Analyzed Date: 05-JUN-91

Sample Location: B-148S-14

Comments: GAESS SITE P-1093.20

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5	3.6	J
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

Samplenum: 99647-004

Method: VOA-502.1 continued

CAS NO.	Compound	ug/kg	ug/kg	Qualifier
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99647-004 Project Name: STANDARD

Date Collected: 28-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 28-MAY-91 Method: VOA-503.1

Analyzed Date: 05-JUN-91

Sample Location: B-148S-14

Comments: GAESS SITE P-1093.20

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5		U
108-88-3	Toluene	.5	3	
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

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Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99647-005 Project Name: STANDARD

Date Collected: 28-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 28-MAY-91

Sample Location: B-158S-15

Comments: GAESS SITE P-1093.20

Analysis	Result	Units	Method	Analyzed
AG	<0.01	MG/L	SW846 6010	05-JUN-91
AS	<0.1	MG/L	SW846 6010	05-JUN-91
BA	0.16	MG/L	SW846 6010	05-JUN-91
CD	0.007	MG/L	SW846 6010	05-JUN-91
CR	0.02	MG/L	SW846 6010	05-JUN-91
HG	<0.4	UG/L	SW846 7470	06-JUN-91
PB	<0.2	MG/L	SW846 6010	05-JUN-91
PSOL	96.9	%	EPA 160.3	30-MAY-91
SE	<0.1	MG/L	SW846 6010	05-JUN-91
TCLPEXT			SW846 1311	30-MAY-91

Remarks:

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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99647-005 Project Name: STANDARD

Date Collected: 28-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 28-MAY-91 Method: VOA-502.1

Analyzed Date: 05-JUN-91

Sample Location: B-15SS-15

Comments: GAESS SITE P-1093.20

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5	7.1	
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	[illegible]	.5	6	
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

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Samplenum: 99647-005

Method: VOA-502.1 continued

CAS NO.	Compound	ug/kg	ug/kg	Qualifier
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99647-005 Project Name: STANDARD

Date Collected: 28-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 28-MAY-91 Method: VOA-503.1

Analyzed Date: 05-JUN-91

Sample Location: B-15SS-15

Comments: GAESS SITE P-1093.20

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5	5.4	
108-88-3	Toluene	.5	3.4	
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

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Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99647-006 Project Name: STANDARD

Date Collected: 28-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 28-MAY-91

Sample Location: B-168S-16

Comments: GAESS SITE P-1093.20

Analysis	Result	Units	Method	Analyzed
AG	<0.01	MG/L	SW846 6010	05-JUN-91
AS	<0.1	MG/L	SW846 6010	05-JUN-91
BA	0.10	MG/L	SW846 6010	05-JUN-91
CD	0.03	MG/L	SW846 6010	05-JUN-91
CR	0.03	MG/L	SW846 6010	05-JUN-91
HG	<0.4	UG/L	SW846 7470	06-JUN-91
PB	<0.2	MG/L	SW846 6010	05-JUN-91
PSOL	94.0	%	EPA 160.3	30-MAY-91
SE	<0.1	MG/L	SW846 6010	05-JUN-91
TCLPEXT			SW846 1311	30-MAY-91

Remarks:

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99647-006 Project Name: STANDARD

Date Collected: 28-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 28-MAY-91 Method: VOA-502.1

Analyzed Date: 05-JUN-91

Sample Location: B-16SS-16

Comments: GAESS SITE P-1093.20

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5	9.5	J
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	[redacted]	.5	2.9	
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

Samplenum: 99647-006

Method: VOA-502.1 continued

CAS NO.	Compound	ug/kg	ug/kg	Qualifier
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99647-006 Project Name: STANDARD

Date Collected: 28-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 28-MAY-91 Method: VOA-503.1

Analyzed Date: 05-JUN-91

Sample Location: B-168S-16

Comments: GAESS SITE P-1093.20

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5	2.4	
108-88-3	Toluene	.5	4.2	
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

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Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99647-007 Project Name: STANDARD

Date Collected: 28-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 28-MAY-91

Sample Location: B-17SS-17

Comments: GAESS SITE P-1093.20

Analysis	Result	Units	Method	Analyzed
AG	<0.01	MG/L	SW846 6010	05-JUN-91
AS	<0.1	MG/L	SW846 6010	05-JUN-91
BA	0.45	MG/L	SW846 6010	05-JUN-91
CD	0.008	MG/L	SW846 6010	05-JUN-91
CR	0.02	MG/L	SW846 6010	05-JUN-91
HG	<0.4	UG/L	SW846 7470	06-JUN-91
PB	<0.2	MG/L	SW846 6010	05-JUN-91
PSOL	96.0	%	EPA 160.3	30-MAY-91
SE	<0.1	MG/L	SW846 6010	05-JUN-91
TCLPEXT			SW846 1311	30-MAY-91

Remarks:

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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99647-007 Project Name: STANDARD

Date Collected: 28-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 28-MAY-91 Method: VOA-502.1

Analyzed Date: 05-JUN-91

Sample Location: B-17SS-17

Comments: GAESS SITE P-1093.20

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5	8.4	
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5	1.7	
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

Samplenum: 99647-007

Method: VOA-502.1 continued

CAS NO.	Compound	ug/kg	ug/kg	Qualifier
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99647-007 Project Name: STANDARD

Date Collected: 28-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 28-MAY-91 Method: VOA-503.1

Analyzed Date: 05-JUN-91

Sample Location: B-17SS-17

Comments: GAESS SITE P-1093.20

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5	[illegible]	
108-88-3	Toluene	.5	[illegible]	
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5	1.3 J	
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

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Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99647-008 Project Name: STANDARD

Date Collected: 28-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 28-MAY-91

Sample Location: B-18SS-18

Comments: GAESS SITE P-1093.20

Analysis	Result	Units	Method	Analyzed
AG	<0.01	MG/L	SW846 6010	05-JUN-91
AS	<0.1	MG/L	SW846 6010	05-JUN-91
BA	0.09	MG/L	SW846 6010	05-JUN-91
CD	<0.005	MG/L	SW846 6010	05-JUN-91
CR	0.01	MG/L	SW846 6010	05-JUN-91
HG	<0.4	UG/L	SW846 7470	06-JUN-91
PB	<0.2	MG/L	SW846 6010	05-JUN-91
PSOL	94.4	%	EPA 160.3	30-MAY-91
SE	<0.1	MG/L	SW846 6010	05-JUN-91
TCLPEXT			SW846 1311	30-MAY-91

Remarks:

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99647-008 Project Name: STANDARD

Date Collected: 28-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 28-MAY-91 Method: VOA-502.1

Analyzed Date: 05-JUN-91

Sample Location: B-1SS-18

Comments: GAESS SITE P-1093.20

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5	2.1	
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	[illegible]	.5	.85	
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

Samplenum: 99647-008

Method: VOA-502.1 continued

CAS NO.	Compound	ug/kg	ug/kg	Qualifier
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99647-008 Project Name: STANDARD

Date Collected: 28-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 28-MAY-91 Method: VOA-503.1

Analyzed Date: 05-JUN-91

Sample Location: B-18SS-18

Comments: GAESS SITE P-1093.20

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5	.85	
108-88-3	Toluene	.5	1.2 j	
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99647-009 Project Name: STANDARD

Date Collected: 28-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 28-MAY-91

Sample Location: B-19SS-19

Comments: GAESS SITE P-1093.20

Analysis	Result	Units	Method	Analyzed
AG	<0.01	MG/L	SW846 6010	05-JUN-91
AS	<0.1	MG/L	SW846 6010	05-JUN-91
BA	0.18	MG/L	SW846 6010	05-JUN-91
CD	0.007	MG/L	SW846 6010	05-JUN-91
CR	0.03	MG/L	SW846 6010	05-JUN-91
HG	<0.4	UG/L	SW846 7470	06-JUN-91
PB	<0.2	MG/L	SW846 6010	05-JUN-91
PSOL	96.3	%	EPA 160.3	30-MAY-91
SE	<0.1	MG/L	SW846 6010	05-JUN-91
TCLPEXT			SW846 1311	30-MAY-91

Remarks:

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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99647-009 Project Name: STANDARD

Date Collected: 28-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 28-MAY-91 Method: VOA-502.1

Analyzed Date: 05-JUN-91

Sample Location: **B-19SS-19**

Comments: GAESS SITE P-1093.20

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5	2.7	J
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

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Samplenum: 99647-009

Method: VOA-502.1 continued

CAS NO.	Compound	ug/kg	ug/kg	Qualifier
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99647-009 Project Name: STANDARD

Date Collected: 28-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 28-MAY-91 Method: VOA-503.1

Analyzed Date: 05-JUN-91

Sample Location: B-19SS-19

Comments: GAESS SITE P-1093.20

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5		U
108-88-3	Toluene	.5	2.1	J
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99647-010 Project Name: STANDARD

Date Collected: 28-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 28-MAY-91

Sample Location: **B-20SS-20**

Comments: GAESS SITE P-1093.20

Analysis	Result	Units	Method	Analyzed
AG	<0.01	MG/L	SW846 6010	05-JUN-91
AS	<0.1	MG/L	SW846 6010	05-JUN-91
BA	0.07	MG/L	SW846 6010	05-JUN-91
CD	<0.005	MG/L	SW846 6010	05-JUN-91
CR	<0.01	MG/L	SW846 6010	05-JUN-91
HG	<0.4	UG/L	SW846 7470	06-JUN-91
PB	<0.2	MG/L	SW846 6010	05-JUN-91
PSOL	88.4	%	EPA 160.3	30-MAY-91
SE	<0.1	MG/L	SW846 6010	05-JUN-91
TCLPEXT			SW846 1311	30-MAY-91

Remarks:

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99647-010 Project Name: STANDARD

Date Collected: 28-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 28-MAY-91 Method: VOA-502.1

Analyzed Date: 05-JUN-91

Sample Location: B-20SS-20

Comments: GAESS SITE P-1093.20

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5	2	
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	[redacted]	.5	1.4	
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

Samplenum: 99647-010

Method: VOA-502.1 continued

CAS NO.	Compound	ug/kg	ug/kg	Qualifier
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99647-010 | Project Name: STANDARD

Date Collected: 28-MAY-91 | Matrix: 3 Soil/Sldg

Date Received: 28-MAY-91 | Method: VOA-503.1

Analyzed Date: 05-JUN-91

Sample Location: B-20SS-20

Comments: GAESS SITE P-1093.20

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5	1.2 J	
108-88-3	Toluene	.5	1.4 J	
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

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Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99647-011 Project Name: STANDARD

Date Collected: 28-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 28-MAY-91

Sample Location: B-21SS-21

Comments: GAESS SITE P-1093.20

Analysis	Result	Units	Method	Analyzed
AG	<0.01	MG/L	SW846 6010	05-JUN-91
AS	<0.1	MG/L	SW846 6010	05-JUN-91
BA	0.07	MG/L	SW846 6010	05-JUN-91
CD	<0.005	MG/L	SW846 6010	05-JUN-91
CR	<0.01	MG/L	SW846 6010	05-JUN-91
HG	<0.4	UG/L	SW846 7470	06-JUN-91
PB	<0.2	MG/L	SW846 6010	05-JUN-91
PSOL	93.5	%	EPA 160.3	30-MAY-91
SE	<0.1	MG/L	SW846 6010	05-JUN-91
TCLPEXT			SW846 1311	30-MAY-91

Remarks:

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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99647-011

Project Name: STANDARD

Date Collected: 28-MAY-91

Matrix: 3 Soil/Sldg

Date Received: 28-MAY-91

Method: VOA-502.1

Analyzed Date: 05-JUN-91

Sample Location: B-21SS-21

Comments: GAESS SITE P-1093.20

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

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Samplenum: 99647-011

Method: VOA-502.1 continued

CAS NO.	Compound	ug/kg	ug/kg	Qualifier
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99647-011 Project Name: STANDARD

Date Collected: 28-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 28-MAY-91 Method: VOA-503.1

Analyzed Date: 05-JUN-91

Sample Location: B-2188-21

Comments: GAESS SITE P-1093.20

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5		U
108-88-3	Toluene	.5	2.6 J	
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99589-011 Project Name: STANDARD

Date Collected: 24-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 24-MAY-91 Method: VOA-502.1

Analyzed Date: 05-JUN-91

Sample Location: FIELD BLANK

Comments: GAESS SITE D-1093.20 (ROY PETERSON)

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5	3.8	
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5	1.8	
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

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Samplenum: 99589-011

Method: VOA-502.1 continued

CAS NO.	Compound	ug/kg	ug/kg	Qualifier
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99589-011 Project Name: STANDARD

Date Collected: 24-MAY-91 Matrix: 3 Soil/Sldg

Date Received: 24-MAY-91 Method: VOA-503.1

Analyzed Date: 05-JUN-91

Sample Location: FIELD BLANK

Comments: GAESS SITE D-1093.20 (ROY PETERSON)

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5	1.6	
108-88-3	Toluene	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

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ANALYTICAL REPORT

Company:

RICH ZWEIG
SIRRINE ENVIRONMENTAL
100 NASSAU PARK BLVD.
PRINCETON NJ 08540

Report Summary

Report Date: 14-MAY-91

Project: STANDARD

Lab Number: 98568

Sample Number(s): 98568-001
to
98568-007

Ronald A. Bayer
Laboratory Director

cc

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NYSDOH 10142 NJDEP 73507 CTDOHS PH-0054

Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 98568-001 Project Name: STANDARD

Date Collected: 23-APR-91 Matrix: 2 GW/WW

Date Received: 25-APR-91

Sample Location: UG-2

Comments: GAESS SITE P-1093

Analysis	Result	Units	Method	Analyzed
CN	<0.01	MG/L	EPA 335.2	30-APR-91

Remarks:

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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 98568-001 Project Name: STANDARD

Date Collected: 23-APR-91 Matrix: 2 GW/WW

Date Received: 25-APR-91 Method: VOA-502.1

Analyzed Date: 26-APR-91

Sample Location: UG-2

Comments: GAESS SITE P-1093

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

Samplenum: 98568-001

Method: VOA-502.1 continued

CAS NO.	Compound	ug/l	ug/l	Qualifier
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 98568-001 Project Name: STANDARD

Date Collected: 23-APR-91 Matrix: 2 GW/WW

Date Received: 25-APR-91 Method: VOA-503.1

Analyzed Date: 26-APR-91

Sample Location: UG-2

Comments: GAESS SITE P-1093

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
71-43-2	Benzene	.5	.53	
79-01-6	Trichloroethene	.5		U
108-88-3	Toluene	.5	2	
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5	.54	
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5	.74	
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

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Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 98568-002 Project Name: STANDARD

Date Collected: 24-APR-91 Matrix: 2 GW/WW

Date Received: 25-APR-91

Sample Location: UG-3

Comments: GAESS SITE P-1093

Analysis	Result	Units	Method	Analyzed
CN	<0.01	MG/L	EPA 335.2	30-APR-91

Remarks:

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NYSDOH 10142 NJDEP 73507 CTDOHS PH-0054

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 98568-002 Project Name: STANDARD

Date Collected: 24-APR-91 Matrix: 2 GW/WW

Date Received: 25-APR-91 Method: VOA-502.1

Analyzed Date: 26-APR-91

Sample Location: UG-3

Comments: GAESS SITE P-1093

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

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Samplenum: 98568-002

Method: VOA-502.1 continued

CAS NO.	Compound	ug/l	ug/l	Qualifier
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 98568-002 Project Name: STANDARD

Date Collected: 24-APR-91 Matrix: 2 GW/WW

Date Received: 25-APR-91 Method: VOA-503.1

Analyzed Date: 26-APR-91

Sample Location: UG-3

Comments: GAESS SITE P-1093

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5		U
108-88-3	Toluene	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 98568-003 Project Name: STANDARD

Date Collected: 24-APR-91 Matrix: 2 GW/WW

Date Received: 25-APR-91 Method: VOA-502.1

Analyzed Date: 26-APR-91

Sample Location: UG-4C

Comments: GAESS SITE P-1093

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

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Samplenum: 98568-003

Method: VOA-502.1 continued

CAS NO.	Compound	ug/l	ug/l	Qualifier
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 98568-003 Project Name: STANDARD

Date Collected: 24-APR-91 Matrix: 2 GW/WW

Date Received: 25-APR-91 Method: VOA-503.1

Analyzed Date: 26-APR-91

Sample Location: UG-4C

Comments: GAESS SITE P-1093

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5		U
108-88-3	Toluene	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

EnviroTest Laboratories Inc.

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ANALYTICAL REPORT

Company:

SIRRINE ENVIRONMENTAL
RICH ZWEIG
100 NASSAU PARK BLVD.
PRINCETON NJ 08540

Report Summary

Report Date: 17-MAY-91

Project: STANDARD

Lab Number: 98569

Sample Number(s): 98569-001
to
98569-003

Ronald A. Bayer
Laboratory Director

EnviroTest Laboratories Inc.
315 Fullerton Avenue
Newburgh, NY 12550
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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 98569-001 Project Name: STANDARD

Date Collected: 24-APR-91 Matrix: 3 Soil/Sldg

Date Received: 25-APR-91 Method: VOA-502.1

Analyzed Date: 08-MAY-91

Sample Location: RS-1

Comments: GAESS SITE P-1093

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	3.2		U
74-83-9	Bromomethane	3.2		U
75-71-8	Dichlorodifluoromethane	3.2		U
75-01-4	Vinyl Chloride	3.2		U
75-00-3	Chloroethane	3.2		U
75-09-2	Methylene Chloride	3.2		U
75-69-4	Trichlorofluoromethane	3.2		U
75-35-4	1,1-Dichloroethene	3.2		U
74-97-5	Bromochloromethane	3.2		U
75-34-3	1,1-Dichloroethane	3.2		U
156-59-4	Trans-1,2-Dichloroethene	3.2		U
156-59-4	cis-1,2-Dichloroethene	3.2		U
67-66-3	Chloroform	3.2		U
107-06-2	1,2-Dichloroethane	3.2		U
590-20-7	2,2-Dichloropropane	3.2		U
74-95-3	Dibromomethane	3.2		U
71-55-6	1,1,1-Trichloroethane	3.2		U
56-23-5	Carbon Tetrachloride	3.2		U
75-27-4	Bromodichloromethane	3.2		U
78-87-5	1,2-Dichloropropane	3.2		U
563-58-6	1,1-Dichloropropene	3.2		U
79-01-6	Trichloroethene	3.2		U
142-28-9	1,3-Dichloropropane	3.2		U
124-48-1	Dibromochloromethane	3.2		U
79-00-5	1,1,2-Trichloroethane	3.2		U
106-93-4	1,2-Dibromoethane	3.2		U
75-25-2	Bromoform	3.2		U
630-20-6	1,1,1,2-Tetrachloroethane	3.2		U
96-18-4	1,2,3-Trichloropropane	3.2		U
79-34-5	1,1,2,2-Tetrachloroethane	3.2		U

Continued ...

Samplenum: 98569-001

Method: VOA-502.1 continued

CAS NO.	Compound	ug/kg	ug/kg	Qualifier
108-90-7	Chlorobenzene	3.2		U
108-86-1	Bromobenzene	3.2		U
95-49-8	2-Chlorotoluene	3.2		U
106-43-4	4-Chlorotoluene	3.2		U
541-73-1	1,3-Dichlorobenzene	3.2		U
95-50-1	1,2-Dichlorobenzene	3.2		U
106-46-7	1,4-Dichlorobenzene	3.2		U
10061-01-5	cis-1,3-Dichloropropene	3.2		U
10061-02-6	trans-1,3-Dichloropropene	3.2		U

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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 98569-001 Project Name: STANDARD

Date Collected: 24-APR-91 Matrix: 3 Soil/Sldg

Date Received: 25-APR-91 Method: VOA-503.1

Analyzed Date: 08-MAY-91

Sample Location: RS-1

Comments: GAESS SITE P-1093

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
71-43-2	Benzene	3.2		U
79-01-6	Trichloroethene	3.2		U
108-88-3	Toluene	3.2	14	
127-18-4	Tetrachloroethene	3.2		U
108-90-7	Chlorobenzene	3.2		U
100-41-4	Ethylbenzene	3.2		U
106-42-3	p-Xylene	3.2		U
108-38-3	m-Xylene	3.2		U
95-47-6	o-Xylene	3.2		U
98-82-8	Isopropylbenzene	3.2		U
100-42-5	Styrene	3.2		U
103-65-1	n-Propylbenzene	3.2		U
98-06-6	tert-Butylbenzene	3.2		U
95-49-8	2-Chlorotoluene	3.2		U
106-43-4	4-Chlorotoluene	3.2		U
108-86-1	Bromobenzene	3.2		U
135-98-8	sec-Butylbenzene	3.2		U
108-67-8	1,3,5-Trimethylbenzene	3.2		U
99-87-6	4-Isopropyltoluene	3.2		U
95-63-6	1,2,4-Trimethylbenzene	3.2		U
106-46-7	1,4-Dichlorobenzene	3.2		U
541-73-1	1,3-Dichlorobenzene	3.2		U
104-51-8	n-Butylbenzene	3.2		U
95-50-1	1,2-Dichlorobenzene	3.2		U
87-68-3	Hexachlorobutadiene	3.2		U
91-20-3	Naphthalene	3.2		U
120-82-1	1,2,4-Trichlorobenzene	3.2		U
87-61-6	1,2,3-Trichlorobenzene	3.2		U

Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 98569-002 Project Name: STANDARD

Date Collected: 24-APR-91 Matrix: 3 Soil/Sldg

Date Received: 25-APR-91

Sample Location: RS-2

Comments: GAESS SITE P-1093

Analysis	Result	Units	Method	Analyzed
CN	<1.4	MG/KG	SW846 9010	30-APR-91
PSOL	71.5	%	EPA 160.3	26-APR-91

Remarks:

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 98569-002 Project Name: STANDARD

Date Collected: 24-APR-91 Matrix: 3 Soil/Sldg

Date Received: 25-APR-91 Method: VOA-502.1

Analyzed Date: 08-MAY-91

Sample Location: RS-2

Comments: GAESS SITE P-1093

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	1.4		U
74-83-9	Bromomethane	1.4		U
75-71-8	Dichlorodifluoromethane	1.4		U
75-01-4	Vinyl Chloride	1.4		U
75-00-3	Chloroethane	1.4		U
75-09-2	Methylene Chloride	1.4		U
75-69-4	Trichlorofluoromethane	1.4		U
75-35-4	1,1-Dichloroethene	1.4		U
74-97-5	Bromochloromethane	1.4		U
75-34-3	1,1-Dichloroethane	1.4		U
156-59-4	Trans-1,2-Dichloroethene	1.4		U
156-59-4	cis-1,2-Dichloroethene	1.4		U
67-66-3	Chloroform	1.4		U
107-06-2	1,2-Dichloroethane	1.4		U
590-20-7	2,2-Dichloropropane	1.4		U
74-95-3	Dibromomethane	1.4		U
71-55-6	1,1,1-Trichloroethane	1.4		U
56-23-5	Carbon Tetrachloride	1.4		U
75-27-4	Bromodichloromethane	1.4		U
78-87-5	1,2-Dichloropropane	1.4		U
563-58-6	1,1-Dichloropropene	1.4		U
79-01-6	Trichloroethene	1.4		U
142-28-9	1,3-Dichloropropane	1.4		U
124-48-1	Dibromochloromethane	1.4		U
79-00-5	1,1,2-Trichloroethane	1.4		U
106-93-4	1,2-Dibromoethane	1.4		U
75-25-2	Bromoform	1.4		U
630-20-6	1,1,1,2-Tetrachloroethane	1.4		U
96-18-4	1,2,3-Trichloropropane	1.4		U
79-34-5	1,1,2,2-Tetrachloroethane	1.4		U

Continued ...

Samplenum: 98569-002

Method: VOA-502.1 continued

CAS NO.	Compound	ug/kg	ug/kg	Qualifier
108-90-7	Chlorobenzene	1.4		U
108-86-1	Bromobenzene	1.4		U
95-49-8	2-Chlorotoluene	1.4		U
106-43-4	4-Chlorotoluene	1.4		U
541-73-1	1,3-Dichlorobenzene	1.4		U
95-50-1	1,2-Dichlorobenzene	1.4		U
106-46-7	1,4-Dichlorobenzene	1.4		U
10061-01-5	cis-1,3-Dichloropropene	1.4		U
10061-02-6	trans-1,3-Dichloropropene	1.4		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 98569-002 Project Name: STANDARD

Date Collected: 24-APR-91 Matrix: 3 Soil/Sldg

Date Received: 25-APR-91 Method: VOA-503.1

Analyzed Date: 08-MAY-91

Sample Location: RS-2

Comments: GAESS SITE P-1093

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
71-43-2	Benzene	1.4		U
79-01-6	Trichloroethene	1.4		U
108-88-3	Toluene	1.4		U
127-18-4	Tetrachloroethene	1.4		U
108-90-7	Chlorobenzene	1.4		U
100-41-4	Ethylbenzene	1.4		U
106-42-3	p-Xylene	1.4		U
108-38-3	m-Xylene	1.4		U
95-47-6	o-Xylene	1.4		U
98-82-8	Isopropylbenzene	1.4		U
100-42-5	Styrene	1.4		U
103-65-1	n-Propylbenzene	1.4		U
98-06-6	tert-Butylbenzene	1.4		U
95-49-8	2-Chlorotoluene	1.4		U
106-43-4	4-Chlorotoluene	1.4		U
108-86-1	Bromobenzene	1.4		U
135-98-8	sec-Butylbenzene	1.4		U
108-67-8	1,3,5-Trimethylbenzene	1.4		U
99-87-6	4-Isopropyltoluene	1.4		U
95-63-6	1,2,4-Trimethylbenzene	1.4		U
106-46-7	1,4-Dichlorobenzene	1.4		U
541-73-1	1,3-Dichlorobenzene	1.4		U
104-51-8	n-Butylbenzene	1.4		U
95-50-1	1,2-Dichlorobenzene	1.4		U
87-68-3	Hexachlorobutadiene	1.4		U
91-20-3	Naphthalene	1.4		U
120-82-1	1,2,4-Trichlorobenzene	1.4		U
87-61-6	1,2,3-Trichlorobenzene	1.4		U

Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 98569-003 Project Name: STANDARD

Date Collected: 24-APR-91 Matrix: 3 Soil/Sldg

Date Received: 25-APR-91

Sample Location: RS-3

Comments: GAESS SITE P-1093

Analysis	Result	Units	Method	Analyzed
CN	<2.3	MG/KG	SW846 9010	30-APR-91
PSOL	43.3	%	EPA 160.3	26-APR-91

Remarks:

EnviroTest Laboratories Inc.

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FAX (914) 562-0841

NYSDOH 10142 NJDEP 73507 CTDOHS PH-0054

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 98569-003 Project Name: STANDARD

Date Collected: 24-APR-91 Matrix: 3 Soil/Sldg

Date Received: 25-APR-91 Method: VOA-502.1

Analyzed Date: 08-MAY-91

Sample Location: RS-3

Comments: GAESS SITE P-1093

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	2.3		U
74-83-9	Bromomethane	2.3		U
75-71-8	Dichlorodifluoromethane	2.3		U
75-01-4	Vinyl Chloride	2.3		U
75-00-3	Chloroethane	2.3		U
75-09-2	Methylene Chloride	2.3		U
75-69-4	Trichlorofluoromethane	2.3		U
75-35-4	1,1-Dichloroethene	2.3		U
74-97-5	Bromochloromethane	2.3		U
75-34-3	1,1-Dichloroethane	2.3		U
156-59-4	Trans-1,2-Dichloroethene	2.3		U
156-59-4	cis-1,2-Dichloroethene	2.3		U
67-66-3	Chloroform	2.3		U
107-06-2	1,2-Dichloroethane	2.3		U
590-20-7	2,2-Dichloropropane	2.3		U
74-95-3	Dibromomethane	2.3		U
71-55-6	1,1,1-Trichloroethane	2.3		U
56-23-5	Carbon Tetrachloride	2.3		U
75-27-4	Bromodichloromethane	2.3		U
78-87-5	1,2-Dichloropropane	2.3		U
563-58-6	1,1-Dichloropropene	2.3		U
79-01-6	Trichloroethene	2.3		U
142-28-9	1,3-Dichloropropane	2.3		U
124-48-1	Dibromochloromethane	2.3		U
79-00-5	1,1,2-Trichloroethane	2.3		U
106-93-4	1,2-Dibromoethane	2.3		U
75-25-2	Bromoform	2.3		U
630-20-6	1,1,1,2-Tetrachloroethane	2.3		U
96-18-4	1,2,3-Trichloropropane	2.3		U
79-34-5	1,1,2,2-Tetrachloroethane	2.3		U

Continued ...

Samplenum: 98569-003

Method: VOA-502.1 continued

CAS NO.	Compound	ug/kg	ug/kg	Qualifier
108-90-7	Chlorobenzene	2.3		U
108-86-1	Bromobenzene	2.3		U
95-49-8	2-Chlorotoluene	2.3		U
106-43-4	4-Chlorotoluene	2.3		U
541-73-1	1,3-Dichlorobenzene	2.3		U
95-50-1	1,2-Dichlorobenzene	2.3		U
106-46-7	1,4-Dichlorobenzene	2.3		U
10061-01-5	cis-1,3-Dichloropropene	2.3		U
10061-02-6	trans-1,3-Dichloropropene	2.3		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 98569-003 Project Name: STANDARD

Date Collected: 24-APR-91 Matrix: 3 Soil/Sldg

Date Received: 25-APR-91 Method: VOA-503.1

Analyzed Date: 10-MAY-91

Sample Location: RS-3

Comments: GAESS SITE P-1093

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
71-43-2	Benzene	2.3		U
79-01-6	Trichloroethene	2.3		U
108-88-3	Toluene	2.3		U
127-18-4	Tetrachloroethene	2.3		U
108-90-7	Chlorobenzene	2.3		U
100-41-4	Ethylbenzene	2.3		U
106-42-3	p-Xylene	2.3		U
108-38-3	m-Xylene	2.3		U
95-47-6	o-Xylene	2.3		U
98-82-8	Isopropylbenzene	2.3		U
100-42-5	Styrene	2.3		U
103-65-1	n-Propylbenzene	2.3		U
98-06-6	tert-Butylbenzene	2.3		U
95-49-8	2-Chlorotoluene	2.3		U
106-43-4	4-Chlorotoluene	2.3		U
108-86-1	Bromobenzene	2.3		U
135-98-8	sec-Butylbenzene	2.3		U
108-67-8	1,3,5-Trimethylbenzene	2.3		U
99-87-6	4-Isopropyltoluene	2.3		U
95-63-6	1,2,4-Trimethylbenzene	2.3		U
106-46-7	1,4-Dichlorobenzene	2.3		U
541-73-1	1,3-Dichlorobenzene	2.3		U
104-51-8	n-Butylbenzene	2.3		U
95-50-1	1,2-Dichlorobenzene	2.3		U
87-68-3	Hexachlorobutadiene	2.3		U
91-20-3	Naphthalene	2.3		U
120-82-1	1,2,4-Trichlorobenzene	2.3		U
87-61-6	1,2,3-Trichlorobenzene	2.3		U

ANALYTICAL REPORT

Company:

SIRRINE ENVIRONMENTAL CONS.
MR.ZWEIG
100 NASSAU PK. BLVD.
PRINCETON NJ 08540

Report Summary

Report Date: 14-MAR-91

Project: STANDARD

Lab Number: 96283

Sample Number(s): 96283-001
to
96283-003

Ronald A. Bayer
Laboratory Director

EnviroTest
Laboratories Inc.

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FAX (914) 562-0841

NYSDOH 10142 NJDEP 73507 CTDOHS PH-0054

Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL CONSULTING

Sample Number: 96283-001 Project Name: STANDARD

Date Collected: 15-FEB-91 Matrix: 2 GW/WW

Date Received: 15-FEB-91

Sample Location: GEI-3

Comments: HARRIMAN SITE

Analysis	Result	Units	Method	Analyzed
CN	<0.01	MG/L	EPA 335.2	21-FEB-91

Remarks:

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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL CONSULTING

Sample Number: 96283-001 Project Name: STANDARD

Date Collected: 15-FEB-91 Matrix: 2 GW/WW

Date Received: 15-FEB-91 Method: VOA-502.1

Analyzed Date: 24-FEB-91

Sample Location: GEI-3

Comments: HARRIMAN SITE

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

Samplenum: 96283-001

Method: VOA-502.1 continued

CAS NO.	Compound	ug/l	ug/l	Qualifier
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL CONSULTING

Sample Number: 96283-001 Project Name: STANDARD

Date Collected: 15-FEB-91 Matrix: 2 GW/WW

Date Received: 15-FEB-91 Method: VOA-503.1

Analyzed Date: 19-FEB-91

Sample Location: GEI-3

Comments: HARRIMAN SITE

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5		U
108-88-3	Toluene	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

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Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL CONSULTING

Sample Number: 96283-002 Project Name: STANDARD

Date Collected: 15-FEB-91 Matrix: 2 GW/WW

Date Received: 15-FEB-91

Sample Location: GEI-4

Comments: HARRIMAN SITE

Analysis	Result	Units	Method	Analyzed
CN	<0.01	MG/L	EPA 335.2	21-FEB-91

Remarks:

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NYSDOH 10142 NJDEP 73507 CTDOHS PH-0054

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL CONSULTING

Sample Number: 96283-002 Project Name: STANDARD

Date Collected: 15-FEB-91 Matrix: 2 GW/WW

Date Received: 15-FEB-91 Method: VOA-502.1

Analyzed Date: 24-FEB-91

Sample Location: GEI-4

Comments: HARRIMAN SITE

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5	4.8	
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

Samplenum: 96283-002

Method: VOA-502.1 continued

CAS NO.	Compound	ug/l	ug/l	Qualifier
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL CONSULTING

Sample Number: 96283-002
Project Name: STANDARD
Date Collected: 15-FEB-91
Matrix: 2 GW/WW
Date Received: 15-FEB-91
Method: VOA-503.1
Analyzed Date: 19-FEB-91
Sample Location: GEI-4
Comments: HARRIMAN SITE

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5		U
108-88-3	Toluene	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL CONSULTING

Sample Number: 96283-003 Project Name: STANDARD

Date Collected: 15-FEB-91 Matrix: 2 GW/WW

Date Received: 15-FEB-91 Method: VOA-502.1

Analyzed Date: 01-MAR-91

Sample Location: TRIP BLANK

Comments: HARRIMAN SITE

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

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Samplenum: 96283-003

Method: VOA-502.1 continued

CAS NO.	Compound	ug/l	ug/l	Qualifier
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL CONSULTING

Sample Number: 96283-003 Project Name: STANDARD

Date Collected: 15-FEB-91 Matrix: 2 GW/WW

Date Received: 15-FEB-91 Method: VOA-503.1

Analyzed Date: 19-FEB-91

Sample Location: TRIP BLANK

Comments: HARRIMAN SITE

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5		U
108-88-3	Toluene	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

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ORGANIC DATA REPORTING QUALIFIERS

VALUE - A value is reported if the result is greater than or equal to the detection limit.

U - Indicates that the compound was analyzed for but not detected. The value followed by the U (e.g. 10U) is the minimum detection limit for the sample based on necessary concentration or dilution action. This is not necessarily the instrument detection limit.

J - Indicates an estimated value. This qualifier is used when mass spectral data indicates the presence of a compound that meets the identification criteria and the result is < than the specified detection limit but > than zero.

B - This qualifier is used when the analyte is found in the blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

C - This qualifier applies to pesticide parameters where the identification has been confirmed by gas chromatography/mass spectrometry.

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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 98568-004 Project Name: STANDARD

Date Collected: 24-APR-91 Matrix: 2 GW/WW

Date Received: 25-APR-91 Method: VOA-503.1

Analyzed Date: 26-APR-91

Sample Location: DG-1T

Comments: GAESS SITE P-1093

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5		U
108-88-3	Toluene	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 98568-004 Project Name: STANDARD

Date Collected: 24-APR-91 Matrix: 2 GW/WW

Date Received: 25-APR-91 Method: VOA-502.1

Analyzed Date: 26-APR-91

Sample Location: DG-1T

Comments: GAESS SITE P-1093

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5	5.8	
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

Samplenum: 98568-004

Method: VOA-502.1 continued

CAS NO.	Compound	ug/l	ug/l	Qualifier
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 98568-005 Project Name: STANDARD

Date Collected: 24-APR-91 Matrix: 2 GW/WW

Date Received: 25-APR-91

Sample Location: FB-1

Comments: GAESS SITE P-1093

Analysis	Result	Units	Method	Analyzed
CN	0.01	MG/L	EPA 335.2	30-APR-91

Remarks:

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NYSDOH 10142 NJDEP 73507 CTDOHS PH-0054

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 98568-005 Project Name: STANDARD

Date Collected: 24-APR-91 Matrix: 2 GW/WW

Date Received: 25-APR-91 Method: VOA-503.1

Analyzed Date: 26-APR-91

Sample Location: FB-1

Comments: GAESS SITE P-1093

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5		U
108-88-3	Toluene	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 98568-005 Project Name: STANDARD

Date Collected: 24-APR-91 Matrix: 2 GW/WW

Date Received: 25-APR-91 Method: VOA-502.1

Analyzed Date: 26-APR-91

Sample Location: FB-1

Comments: GAESS SITE P-1093

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

Samplenum: 98568-005

Method: VOA-502.1 continued

CAS NO.	Compound	ug/l	ug/l	Qualifier
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 98568-006 Project Name: STANDARD

Date Collected: 24-APR-91 Matrix: 2 GW/WW

Date Received: 25-APR-91

Sample Location: FB-2

Comments: GAESS SITE P-1093

Analysis	Result	Units	Method	Analyzed
CN	<0.01	MG/L	EPA 335.2	30-APR-91

Remarks:

EnviroTest Laboratories Inc.

315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890
FAX (914) 562-0841

NYSDOH 10142 NJDEP 73507 CTDOHS PH-0054

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 98568-006 Project Name: STANDARD

Date Collected: 24-APR-91 Matrix: 2 GW/WW

Date Received: 25-APR-91 Method: VOA-503.1

Analyzed Date: 26-APR-91

Sample Location: FB-2

Comments: GAESS SITE P-1093

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5		U
108-88-3	Toluene	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

EnviroTest Laboratories Inc.

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Newburgh, NY 12550
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NYSDOH 10142 NJDEP 73507 CTDOHS PH-0054

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 98568-006 Project Name: STANDARD

Date Collected: 24-APR-91 Matrix: 2 GW/WW

Date Received: 25-APR-91 Method: VOA-502.1

Analyzed Date: 26-APR-91

Sample Location: FB-2

Comments: GAESS SITE P-1093

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

Samplenum: 98568-006

Method: VOA-502.1 continued

CAS NO.	Compound	ug/l	ug/l	Qualifier
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 98568-007 Project Name: STANDARD

Date Collected: 24-APR-91 Matrix: 2 GW/WW

Date Received: 25-APR-91 Method: VOA-502.1

Analyzed Date: 26-APR-91

Sample Location: TRIP BLANK

Comments: GAESS SITE P-1093

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

Samplenum: 98568-007

Method: VOA-502.1 continued

CAS NO.	Compound	ug/l	ug/l	Qualifier
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 98568-007 Project Name: STANDARD

Date Collected: 24-APR-91 Matrix: 2 GW/WW

Date Received: 25-APR-91 Method: VOA-503.1

Analyzed Date: 26-APR-91

Sample Location: TRIP BLANK

Comments: GAESS SITE P-1093

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5		U
108-88-3	Toluene	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

UPGRADIANT GROUNDWATER SAMPLING RESULTS

ANALYTICAL REPORT

Company:

RICH ZWEIG
SIRRINE ENVIRONMENTAL
100 NASSAU PARK BLVD.
PRINCETON NJ 08540

Report Summary

Report Date: 14-MAY-91

Project: STANDARD

Lab Number: 98568

Sample Number(s): 98568-001
to
98568-007

Ronald A. Bayer
Laboratory Director

EnviroTest Laboratories Inc.
315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890
FAX (914) 562-0841

Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 98568-001 Project Name: STANDARD

Date Collected: 23-APR-91 Matrix: 2 GW/WW

Date Received: 25-APR-91

Sample Location: UG-2

Comments: GAESS SITE P-1093

Analysis	Result	Units	Method	Analyzed
CN	<0.01	MG/L	EPA 335.2	30-APR-91

Remarks:

EnviroTest Laboratories Inc.

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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 98568-001 Project Name: STANDARD

Date Collected: 23-APR-91 Matrix: 2 GW/WW

Date Received: 25-APR-91 Method: VOA-502.1

Analyzed Date: 26-APR-91

Sample Location: UG-2

Comments: GAESS SITE P-1093

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

Samplenum: 98568-001

Method: VOA-502.1 continued

CAS NO.	Compound	ug/l	ug/l	Qualifier
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 98568-001 Project Name: STANDARD

Date Collected: 23-APR-91 Matrix: 2 GW/WW

Date Received: 25-APR-91 Method: VOA-503.1

Analyzed Date: 26-APR-91

Sample Location: UG-2

Comments: GAESS SITE P-1093

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
71-43-2	Benzene	.5	.53	
79-01-6	Trichloroethene	.5		U
108-88-3	Toluene	.5	2	
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5	.54	
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5	.74	
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 98568-002 Project Name: STANDARD

Date Collected: 24-APR-91 Matrix: 2 GW/WW

Date Received: 25-APR-91

Sample Location: UG-3

Comments: GAESS SITE P-1093

Analysis	Result	Units	Method	Analyzed
CN	<0.01	MG/L	EPA 335.2	30-APR-91

Remarks:

EnviroTest Laboratories Inc.

315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890
FAX (914) 562-0841

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 98568-002 Project Name: STANDARD

Date Collected: 24-APR-91 Matrix: 2 GW/WW

Date Received: 25-APR-91 Method: VOA-502.1

Analyzed Date: 26-APR-91

Sample Location: UG-3

Comments: GAESS SITE P-1093

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

Samplenum: 98568-002

Method: VOA-502.1 continued

CAS NO.	Compound	ug/l	ug/l	Qualifier
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 98568-002 Project Name: STANDARD

Date Collected: 24-APR-91 Matrix: 2 GW/WW

Date Received: 25-APR-91 Method: VOA-503.1

Analyzed Date: 26-APR-91

Sample Location: UG-3

Comments: GAESS SITE P-1093

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5		U
108-88-3	Toluene	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 98568-003 Project Name: STANDARD

Date Collected: 24-APR-91 Matrix: 2 GW/WW

Date Received: 25-APR-91 Method: VOA-502.1

Analyzed Date: 26-APR-91

Sample Location: UG-4C

Comments: GAESS SITE P-1093

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

Samplenum: 98568-003

Method: VOA-502.1 continued

CAS NO.	Compound	ug/l	ug/l	Qualifier
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 98568-003 Project Name: STANDARD

Date Collected: 24-APR-91 Matrix: 2 GW/WW

Date Received: 25-APR-91 Method: VOA-503.1

Analyzed Date: 26-APR-91

Sample Location: UG-4C

Comments: GAESS SITE P-1093

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5		U
108-88-3	Toluene	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 98568-004 Project Name: STANDARD

Date Collected: 24-APR-91 Matrix: 2 GW/WW

Date Received: 25-APR-91 Method: VOA-503.1

Analyzed Date: 26-APR-91

Sample Location: DG-1T

Comments: GAESS SITE P-1093

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5		U
108-88-3	Toluene	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 98568-004 Project Name: STANDARD

Date Collected: 24-APR-91 Matrix: 2 GW/WW

Date Received: 25-APR-91 Method: VOA-502.1

Analyzed Date: 26-APR-91

Sample Location: DG-1T

Comments: GAESS SITE P-1093

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5	[redacted]	
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

Samplenum: 98568-004

Method: VOA-502.1 continued

CAS NO.	Compound	ug/l	ug/l	Qualifier
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 98568-005 Project Name: STANDARD

Date Collected: 24-APR-91 Matrix: 2 GW/WW

Date Received: 25-APR-91

Sample Location: FB-1

Comments: GAESS SITE P-1093

Analysis	Result	Units	Method	Analyzed
CN	0.01	MG/L	EPA 335.2	30-APR-91

Remarks:

EnviroTest Laboratories Inc.

315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890
FAX (914) 562-0841

NYSDOH 10142 NJDEP 73507 CTDOHS PH-0054

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 98568-005 Project Name: STANDARD

Date Collected: 24-APR-91 Matrix: 2 GW/WW

Date Received: 25-APR-91 Method: VOA-503.1

Analyzed Date: 26-APR-91

Sample Location: FB-1

Comments: GAESS SITE P-1093

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5		U
108-88-3	Toluene	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 98568-005 Project Name: STANDARD

Date Collected: 24-APR-91 Matrix: 2 GW/WW

Date Received: 25-APR-91 Method: VOA-502.1

Analyzed Date: 26-APR-91

Sample Location: FB-1

Comments: GAESS SITE P-1093

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

Samplenum: 98568-005

Method: VOA-502.1 continued

CAS NO.	Compound	ug/l	ug/l	Qualifier
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 98568-006 Project Name: STANDARD

Date Collected: 24-APR-91 Matrix: 2 GW/WW

Date Received: 25-APR-91

Sample Location: FB-2

Comments: GAESS SITE P-1093

Analysis	Result	Units	Method	Analyzed
CN	<0.01	MG/L	EPA 335.2	30-APR-91

Remarks:

315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890
FAX (914) 562-0841

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 98568-006 Project Name: STANDARD

Date Collected: 24-APR-91 Matrix: 2 GW/WW

Date Received: 25-APR-91 Method: VOA-503.1

Analyzed Date: 26-APR-91

Sample Location: FB-2

Comments: GAESS SITE P-1093

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5		U
108-88-3	Toluene	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

EnviroTest Laboratories Inc.
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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 98568-006 Project Name: STANDARD

Date Collected: 24-APR-91 Matrix: 2 GW/WW

Date Received: 25-APR-91 Method: VOA-502.1

Analyzed Date: 26-APR-91

Sample Location: FB-2

Comments: GAESS SITE P-1093

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

Samplenum: 98568-006

Method: VOA-502.1 continued

CAS NO.	Compound	ug/l	ug/l	Qualifier
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 98568-007 Project Name: STANDARD

Date Collected: 24-APR-91 Matrix: 2 GW/WW

Date Received: 25-APR-91 Method: VOA-502.1

Analyzed Date: 26-APR-91

Sample Location: TRIP BLANK

Comments: GAESS SITE P-1093

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

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Samplenum: 98568-007

Method: VOA-502.1 continued

CAS NO.	Compound	ug/l	ug/l	Qualifier
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 98568-007 Project Name: STANDARD

Date Collected: 24-APR-91 Matrix: 2 GW/WW

Date Received: 25-APR-91 Method: VOA-503.1

Analyzed Date: 26-APR-91

Sample Location: TRIP BLANK

Comments: GAESS SITE P-1093

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5		U
108-88-3	Toluene	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

EnviroTest Laboratories Inc.

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NYSDOH 10142 NJDEP 73507 CTDOHS PH-0054

DOWNGRADIENT GROUNDWATER SAMPLING RESULTS

ANALYTICAL REPORT

Company:

RICH ZWEIG
SIRRINE ENVIRONMENTAL
100 NASSAU PARK BLVD.
PRINCETON NJ 08540

Report Summary

Report Date: 11-JUN-91

Project: STANDARD

Lab Number: 99494

Sample Number(s): 99494-001
to
99494-009

Ronald A. Bayer
Laboratory Director

EnviroTest Laboratories Inc.
315 Fullerton Avenue
Newburgh, NY 12550
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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99494-001 Project Name: STANDARD

Date Collected: 21-MAY-91 Matrix: 2 GW/WW

Date Received: 23-MAY-91 Method: VOA-503.1

Analyzed Date: 31-MAY-91

Sample Location: GWP-1S

Comments: GAESS,HARRIMAN,N.Y. JOB:P-1093.2

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5		U
108-88-3	Toluene	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99494-001 Project Name: STANDARD

Date Collected: 21-MAY-91 Matrix: 2 GW/WW

Date Received: 23-MAY-91 Method: VOA-502.1

Analyzed Date: 04-JUN-91

Sample Location: [redacted]

Comments: GAESS,HARRIMAN,N.Y. JOB:P-1093.2

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	[redacted]	.5	[redacted]	
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

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Samplenum: 99494-001

Method: VOA-502.1 continued

CAS NO.	Compound	ug/l	ug/l	Qualifier
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99494-002 Project Name: STANDARD

Date Collected: 21-MAY-91 Matrix: 2 GW/WW

Date Received: 23-MAY-91 Method: VOA-503.1

Analyzed Date: 31-MAY-91

Sample Location: GWP-1I

Comments: GAESS,HARRIMAN,N.Y. JOB:P-1093.2

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5		U
108-88-3	Toluene	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99494-002 Project Name: STANDARD

Date Collected: 21-MAY-91 Matrix: 2 GW/WW

Date Received: 23-MAY-91 Method: VOA-502.1

Analyzed Date: 04-JUN-91

Sample Location: [redacted]

Comments: GAESS,HARRIMAN,N.Y. JOB:P-1093.2

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	[redacted]	.5	[redacted]	
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

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Samplenum: 99494-002

Method: VOA-502.1 continued

CAS NO.	Compound	ug/l	ug/l	Qualifier
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99494-003 Project Name: STANDARD

Date Collected: 21-MAY-91 Matrix: 2 GW/WW

Date Received: 23-MAY-91 Method: VOA-503.1

Analyzed Date: 31-MAY-91

Sample Location: [redacted]-1D

Comments: GAESS,HARRIMAN,N.Y. JOB:P-1093.2

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5		U
108-88-3	Toluene	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99494-003 Project Name: STANDARD

Date Collected: 21-MAY-91 Matrix: 2 GW/WW

Date Received: 23-MAY-91 Method: VOA-502.1

Analyzed Date: 04-JUN-91

Sample Location: GWP-1D

Comments: GAESS,HARRIMAN,N.Y. JOB:P-1093.2

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5	[redacted]	
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

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Samplenum: 99494-003

Method: VOA-502.1 continued

CAS NO.	Compound	ug/l	ug/l	Qualifier
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99494-004 Project Name: STANDARD

Date Collected: 22-MAY-91 Matrix: 2 GW/WW

Date Received: 23-MAY-91

Sample Location: [redacted]

Comments: GAESS,HARRIMAN,N.Y. JOB:P-1093.2

Analysis	Result	Units	Method	Analyzed
CN	<0.01	MG/L	EPA 335.2	24-MAY-91

Remarks:

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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99494-004 Project Name: STANDARD

Date Collected: 22-MAY-91 Matrix: 2 GW/WW

Date Received: 23-MAY-91 Method: VOA-503.1

Analyzed Date: 31-MAY-91

Sample Location: GEP-2S ?

Comments: GAESS,HARRIMAN,N.Y. JOB:P-1093.2

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5		U
108-88-3	Toluene	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99494-004 Project Name: STANDARD

Date Collected: 22-MAY-91 Matrix: 2 GW/WW

Date Received: 23-MAY-91 Method: VOA-502.1

Analyzed Date: 04-JUN-91

Sample Location: GHP-28

Comments: GAESS,HARRIMAN,N.Y. JOB:P-1093.2

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5	[illegible]	
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

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Samplenum: 99494-004

Method: VOA-502.1 continued

CAS NO.	Compound	ug/l	ug/l	Qualifier
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

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Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99494-005 Project Name: STANDARD

Date Collected: 22-MAY-91 Matrix: 2 GW/WW

Date Received: 23-MAY-91

Sample Location: [redacted]

Comments: GAESS,HARRIMAN,N.Y. JOB:P-1093.2

Analysis	Result	Units	Method	Analyzed
CN	<0.01	MG/L	EPA 335.2	24-MAY-91

Remarks:

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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99494-005 Project Name: STANDARD

Date Collected: 22-MAY-91 Matrix: 2 GW/WW

Date Received: 23-MAY-91 Method: VOA-503.1

Analyzed Date: 31-MAY-91

Sample Location: GWP-2I

Comments: GAESS,HARRIMAN,N.Y. JOB:P-1093.2

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5		U
108-88-3	Toluene	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99494-005 Project Name: STANDARD

Date Collected: 22-MAY-91 Matrix: 2 GW/WW

Date Received: 23-MAY-91 Method: VOA-502.1

Analyzed Date: 05-JUN-91

Sample Location: GWP-21

Comments: GAESS,HARRIMAN,N.Y. JOB:P-1093.2

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5	[redacted]	
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

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Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99494-006 Project Name: STANDARD

Date Collected: 22-MAY-91 Matrix: 2 GW/WW

Date Received: 23-MAY-91

Sample Location: GEP-2SA

Comments: GAESS,HARRIMAN,N.Y. JOB:P-1093.2

Analysis	Result	Units	Method	Analyzed
CN	0.01	MG/L	EPA 335.2	24-MAY-91

Remarks:

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Samplenum: 99494-005

Method: VOA-502.1 continued

CAS NO.	Compound	ug/l	ug/l	Qualifier
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99494-006 Project Name: STANDARD

Date Collected: 22-MAY-91 Matrix: 2 GW/WW

Date Received: 23-MAY-91 Method: VOA-503.1

Analyzed Date: 31-MAY-91

Sample Location: GEP-2SA

Comments: GAESS,HARRIMAN,N.Y. JOB:P-1093.2

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5		U
108-88-3	Toluene	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99494-006 Project Name: STANDARD

Date Collected: 22-MAY-91 Matrix: 2 GW/WW

Date Received: 23-MAY-91 Method: VOA-502.1

Analyzed Date: 05-JUN-91

Sample Location: GWP-28A

Comments: GAESS,HARRIMAN,N.Y. JOB:P-1093.2

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5	[redacted]	
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

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Samplenum: 99494-006

Method: VOA-502.1 continued

CAS NO.	Compound	ug/l	ug/l	Qualifier
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99494-007 Project Name: STANDARD

Date Collected: 22-MAY-91 Matrix: 2 GW/WW

Date Received: 23-MAY-91

Sample Location: [redacted]

Comments: GAESS,HARRIMAN,N.Y. JOB:P-1093.2

Analysis	Result	Units	Method	Analyzed
CN	<0.01	MG/L	EPA 335.2	24-MAY-91

Remarks:

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Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99494-007 Project Name: STANDARD

Date Collected: 22-MAY-91 Matrix: 2 GW/WW

Date Received: 23-MAY-91 Method: VOA-503.1

Analyzed Date: 31-MAY-91

Sample Location: ~~GHP-3S~~

Comments: GAESS,HARRIMAN,N.Y. JOB:P-1093.2

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5	2.9	
108-88-3	Toluene	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99494-007 Project Name: STANDARD

Date Collected: 22-MAY-91 Matrix: 2 GW/WW

Date Received: 23-MAY-91 Method: VOA-502.1

Analyzed Date: 05-JUN-91

Sample Location: GWP-3S

Comments: GAESS,HARRIMAN,N.Y. JOB:P-1093.2

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	[redacted]	.5	1.3	
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

Samplenum: 99494-007

Method: VOA-502.1 continued

CAS NO.	Compound	ug/l	ug/l	Qualifier
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99494-008 Project Name: STANDARD

Date Collected: 22-MAY-91 Matrix: 2 GW/WW

Date Received: 23-MAY-91

Sample Location: [redacted]

Comments: GAESS,HARRIMAN,N.Y. JOB:P-1093.2

Analysis	Result	Units	Method	Analyzed
CN	<0.01	MG/L	EPA 335.2	24-MAY-91

Remarks:

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NYSDOH 10142 NJDEP 73507 CTDOHS PH-0054

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99494-008 Project Name: STANDARD

Date Collected: 22-MAY-91 Matrix: 2 GW/WW

Date Received: 23-MAY-91 Method: VOA-502.1

Analyzed Date: 05-JUN-91

Sample Location: [redacted]

Comments: GAESS,HARRIMAN,N.Y. JOB:P-1093.2

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	[redacted]	.5	[redacted]	
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

EnviroTest Laboratories Inc.
315 Fullerton Avenue
Newburgh, NY 12550
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FAX (914) 562-0841

Samplenum: 99494-008

Method: VOA-502.1 continued

CAS NO.	Compound	ug/l	ug/l	Qualifier
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99494-008 Project Name: STANDARD

Date Collected: 22-MAY-91 Matrix: 2 GW/WW

Date Received: 23-MAY-91 Method: VOA-503.1

Analyzed Date: 01-JUN-91

Sample Location: GWP-3I

Comments: GAESS,HARRIMAN,N.Y. JOB:P-1093.2

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5	8.9 J	
108-88-3	Toluene	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99494-009 Project Name: STANDARD

Date Collected: 22-MAY-91 Matrix: 2 GW/WW

Date Received: 23-MAY-91 Method: VOA-502.1

Analyzed Date: 05-JUN-91

Sample Location: **FIELD BLANK**

Comments: GAESS,HARRIMAN,N.Y. JOB:P-1093.2

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-59-4	Trans-1,2-Dichloroethene	.5		U
156-59-4	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U

Continued ...

Samplenum: 99494-009

Method: VOA-502.1 continued

CAS NO.	Compound	ug/l	ug/l	Qualifier
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U

Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 101734-01 Project Name: STANDARD

Date Collected: 26-JUL-91 Matrix: 2 GW/WW

Date Received: 26-JUL-91

Sample Location: GEI-3-M1 NON-FILTERED

Comments: ZWEIG 1093.20

Analysis	Result	Units	Method	Analyzed
AG	<0.01	MG/L	EPA 200.7	31-JUL-91
AS	<5.0	UG/L	EPA 206.2	01-AUG-91
BE	<0.005	MG/L	EPA 200.7	31-JUL-91
CD	<0.005	MG/L	EPA 200.7	31-JUL-91
CR	<0.01	MG/L	EPA 200.7	31-JUL-91
CU	<0.01	MG/L	EPA 200.7	31-JUL-91
HG	<0.4	UG/L	EPA 245.1	30-JUL-91
NI	<0.04	MG/L	EPA 200.7	31-JUL-91
PB	28	UG/L	EPA 239.2	01-AUG-91
SB	<0.05	MG/L	EPA 200.7	31-JUL-91
SE	<5.0	UG/L	EPA 270.2	31-JUL-91
TL	<10	UG/L	EPA 279.2	05-AUG-91
ZN	0.02	MG/L	EPA 200.7	31-JUL-91

Remarks:

ANALYTICAL REPORT

Company:

SIRRINE ENVIRONMENTAL

100 NASSAU PARK BLVD.

PRINCETON NJ 08540

Report Summary

Report Date: 06-AUG-91

Project: STANDARD

Lab Number: 101734

Sample Number(s): 101734-01
to
101734-04

Ronald A. Bayer
Laboratory Director

EnviroTest Laboratories Inc.

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NYSDOH 10142 NJDEP 73507 CTDOHS PH-0054

Volatile Organics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 99494-009 Project Name: STANDARD

Date Collected: 22-MAY-91 Matrix: 2 GW/WW

Date Received: 23-MAY-91 Method: VOA-503.1

Analyzed Date: 01-JUN-91

Sample Location: FIELD BLANK

Comments: GAESS,HARRIMAN,N.Y. JOB:P-1093.2

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
71-43-2	Benzene	.5		U
79-01-6	Trichloroethene	.5		U
108-88-3	Toluene	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
100-41-4	Ethylbenzene	.5		U
106-42-3	p-Xylene	.5		U
108-38-3	m-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
108-86-1	Bromobenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
104-51-8	n-Butylbenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
91-20-3	Naphthalene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U

ANALYTICAL REPORT

Company:

SIRRINE ENVIRONMENTAL

100 NASSAU PARK BLVD.

PRINCETON NJ 08540

Report Summary

Report Date: 13-AUG-91

Project: STANDARD

Lab Number: 101734

Sample Number(s): 101734-01
to
101734-04

Ronald A. Bayer
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NYSDOH 10142 NJDEP 73507 CTDOHS PH-0054

Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 101734-04 Project Name: STANDARD

Date Collected: 26-JUL-91 Matrix: 2 GW/WW

Date Received: 26-JUL-91

Sample Location: GEI-4-M2 FILTERED

Comments: ZWEIG 1093.20

Analysis	Result	Units	Method	Analyzed
AG	<0.01	MG/L	EPA 200.7	31-JUL-91
AS	<5.0	UG/L	EPA 206.2	01-AUG-91
BE	<0.005	MG/L	EPA 200.7	31-JUL-91
CD	<0.005	MG/L	EPA 200.7	31-JUL-91
CR	<0.01	MG/L	EPA 200.7	31-JUL-91
CU	0.01	MG/L	EPA 200.7	31-JUL-91
HG	<0.4	UG/L	EPA 245.1	30-JUL-91
NI	<0.04	MG/L	EPA 200.7	31-JUL-91
PB	<5.0	UG/L	EPA 239.2	01-AUG-91
SB	<0.05	MG/L	EPA 200.7	31-JUL-91
SE	<5.0	UG/L	EPA 270.2	31-JUL-91
TL	<10	UG/L	EPA 279.2	05-AUG-91
ZN	0.02	MG/L	EPA 200.7	31-JUL-91

Remarks:

Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 101734-03 Project Name: STANDARD

Date Collected: 26-JUL-91 Matrix: 2 GW/WW

Date Received: 26-JUL-91

Sample Location: GEI-4-M1 NON-FILTERED

Comments: ZWEIG 1093.20

Analysis	Result	Units	Method	Analyzed
AG	<0.01	MG/L	EPA 200.7	31-JUL-91
AS	14	UG/L	EPA 206.2	01-AUG-91
BE	<0.005	MG/L	EPA 200.7	31-JUL-91
CD	<0.005	MG/L	EPA 200.7	31-JUL-91
CR	0.05	MG/L	EPA 200.7	31-JUL-91
CU	0.11	MG/L	EPA 200.7	31-JUL-91
HG	<0.4	UG/L	EPA 245.1	30-JUL-91
NI	0.04	MG/L	EPA 200.7	31-JUL-91
PB	230	UG/L	EPA 239.2	02-AUG-91
SB	<0.05	MG/L	EPA 200.7	31-JUL-91
SE	<5.0	UG/L	EPA 270.2	31-JUL-91
TL	<10	UG/L	EPA 279.2	05-AUG-91
ZN	0.17	MG/L	EPA 200.7	31-JUL-91

Remarks:

Inorganics Analysis Data Sheet

Client Name: SIRRINE ENVIRONMENTAL

Sample Number: 101734-02 Project Name: STANDARD

Date Collected: 26-JUL-91 Matrix: 2 GW/WW

Date Received: 26-JUL-91

Sample Location: GEI-3-M2 FILTERED

Comments: ZWEIG 1093.20

Analysis	Result	Units	Method	Analyzed
AG	<0.01	MG/L	EPA 200.7	31-JUL-91
AS	<5.0	UG/L	EPA 206.2	01-AUG-91
BE	<0.005	MG/L	EPA 200.7	31-JUL-91
CD	<0.005	MG/L	EPA 200.7	31-JUL-91
CR	<0.01	MG/L	EPA 200.7	31-JUL-91
CU	<0.01	MG/L	EPA 200.7	31-JUL-91
HG	<0.4	UG/L	EPA 245.1	30-JUL-91
NI	<0.04	MG/L	EPA 200.7	31-JUL-91
PB	<5.0	UG/L	EPA 239.2	01-AUG-91
SB	<0.05	MG/L	EPA 200.7	31-JUL-91
SE	<5.0	UG/L	EPA 270.2	31-JUL-91
TL	<10	UG/L	EPA 279.2	05-AUG-91
ZN	<0.01	MG/L	EPA 200.7	31-JUL-91

Remarks:

EnviroTest Laboratories Inc.

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FAX (914) 562-0841

NYSDOH 10142 NJDEP 73507 CTDOHS PH-0054

INORGANIC QUALITY CONTROL RESULTS

Client ID:CEI 3-M1 Date Collected: 7/26/91
Envirotest Lab No.: 101734-01 Date Received: 7/26/91
Date Digested: 7/30/91

Concentration Units (ug/l)

Analyte	Sample Result	Duplicate Result	RPD	Spike Added	Spiked sample Result	%Rec.
Antimony	<50	<50	NC	500	484	96.8
Arsenic	<5	<5	NC	40	39.62	99.1
Beryllium	<5	<5	NC	50	49	98.0
Cadmium	<5	<5	NC	50	50	100.0
Chromium	<10	<10	NC	200	198	99.0
Cobalt	<50	<50	NC	500	470	94.0
Copper	<10	<10	NC	250	245	98.0
Iron	175	171	2.31	1000	1117	94.2
Lead	28	28	0.00	20	52	120.0
Manganese	24	22	8.70	500	501	95.4
Mercury	<0.4	<0.4	NC	1.00	0.988	98.8
Nickel	<40	<40	NC	500	475	95.0
Selenium	<5	<5	NC	10	10.54	105.4
Silver	<10	<10	NC	50	44	88.0
Thallium	<10	<10	NC	50	53:23	106.5
Zinc	19	<10	71.00	500	478	91.8

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APPENDIX D

TARGET ENVIRONMENTAL SERVICES, INC.

REPORTS

SOIL GAS SURVEY

FORMER CHEMICAL WASTE SITE

HARRIMAN, NEW YORK

TARGET ENVIRONMENTAL SERVICES, INC.

SOIL GAS SURVEY

FORMER CHEMICAL WASTE SITE

RIVER AND MEADOW ROADS

HARRIMAN, NEW YORK

PREPARED FOR

SIRRINE ENVIRONMENTAL CONSULTANTS

100 NASSAU PARK BOULEVARD

PRINCETON, NEW JERSEY 08540

PREPARED BY

TARGET ENVIRONMENTAL SERVICES, INC.

9180 RUMSEY ROAD

COLUMBIA, MARYLAND 21045

(301) 992-6622

MAY 1991

EXECUTIVE SUMMARY

On April 22-24, 1991, **TARGET** Environmental Services, Inc. (**TARGET**) conducted a soil gas survey and collected water samples at the former chemical waste site, River and Meadow Roads, Harriman, New York, near an area where trichloroethene (TCE) contamination has been reported in municipal wells. Soil gas samples were analyzed by GC/ECD for halogenated hydrocarbons.

GC/ECD analysis revealed low levels of 1,1,1-trichloroethane (1,1,1-TCA) in some samples in the eastern and western portions of the survey area. A moderate level of trichloroethene (TCE) was present in the central survey area. Very low levels of tetrachloroethene (PCE) were present in the same area, as well as in the westernmost sample. A very low level of 1,1-dichloroethene (1,1-DCE) occurred in the westernmost sample.

A moderate level of TCE and low to very low levels of 1,1,1-TCA, PCE and 1,1-DCE are present in the soil gas within the subsurface of the surveyed area.

Introduction

Trichloroethene (TCE) contamination has been reported in municipal wells near the former chemical waste site, River and Meadow Roads, Harriman, New York. **Sirrine Environmental Consultants** contracted **TARGET** Environmental Services, Inc. (**TARGET**) to perform a soil gas survey and collect water samples at the site in order to determine the presence and extent of TCE contamination. Soils are reported as fine to coarse sands with occasional layers of silt and gravel. Ground water was reported at 10 feet below the surface. The site is located in a mixed residential/light industrial area. The field phase of the project was conducted on April 22-24, 1991.

Detectability

The soil gas survey data presented in this report are the result of precise sampling and measurement of contaminant concentrations in the vadose zone. Analyte detection at a particular location is representative of vapor, dissolved, and/or liquid phase contamination at that location. The presence of detectable levels of target analytes in the vadose zone is dependent upon several factors, including the presence of vapor-phase hydrocarbons or dissolved or liquid concentrations adequate to facilitate volatilization into the unsaturated zone.

Terminology

In order to prevent misunderstanding of certain terms used in this report, the following clarifications are offered:

The term "feature" is used in reference to a discernible pattern in the contoured data. It denotes a contour form rather than a definite or separate chemical occurrence.

The term "occurrence" is used to indicate an area where chemical compounds are present in sufficient concentrations to be detected by the analysis of soil vapors. The term is not indicative of any specific mode of occurrence (vapor, dissolved, etc.), and does not necessarily indicate or suggest the presence of "free product" or "phase-separated hydrocarbons."

The term "anomaly" refers to an area where hydrocarbons were measured in excess of what would normally be considered "natural" or "background" levels.

The term "analyte" refers to any of the hydrocarbons standardized for quantification in the chromatographic analysis.

The term "vadose zone" represents the unsaturated zone between the ground water table and the ground surface.

The term "indicates" is used when evidence dictates a unique conclusion. The term "suggests" is used when several explanations of certain evidence are possible, but one in particular seems more likely. As a result, "indicates" carries a higher degree of confidence in a conclusion than does "suggests."

Field Procedures

Soil gas samples were collected at a total of 20 locations at the site, as shown in Figure 1. To collect the samples, a van-mounted hydraulic probe was used to advance connected 3' sections of 1" diameter threaded steel casing down to a depth of 10'. Some samples were collected shallower than the proposed 10' due to probe refusal (Table 1). The entire sampling system was purged with ambient air drawn through an organic vapor filter cartridge. A teflon line was inserted into the casing to the bottom of the hole, and the bottom-hole line perforations were isolated from the up-hole annulus by an inflatable packer. A sample of in-situ soil gas was then withdrawn through the probe and used to purge atmospheric air from the sampling system. A second sample of soil gas was withdrawn through the probe and encapsulated in a pre-evacuated glass vial at two atmospheres of pressure (15 psig). The self-sealing vial was detached from the sampling system, packaged, labeled, and stored for laboratory analysis.

Prior to the day's field activities all sampling equipment and probes were decontaminated by washing with soapy water and rinsing thoroughly. Internal surfaces were flushed dry using pre-purified nitrogen or filtered ambient air, and external surfaces were wiped clean using clean paper towels.

Field control samples were collected at the beginning and end of each day's field activities. These QA/QC samples were obtained by filtering ambient air through a dust and organic vapor filter cartridge and collecting in the same manner as described above.

Four ground water samples (Samples 32-W, 33-W, 34-W and 35-W) were collected from the site, as shown in Figure 1. To collect the samples a van-mounted hydraulic probe was used to advance steel casing to a depth of 24'. Sample 32-W was collected at 21'. Once the steel casing was in place, water was allowed to fill the pipe. A water level sensor was used to detect the surface of the ground water table and to ensure that a sufficient amount of water was present to complete a sample. The water level sensor was removed and a stainless steel bailer was used to collect 40 ml of ground water. Samples were placed in glass vials with 3-5 drops of a 50% hydrochloric acid-water mixture, sealed, labeled and given to the client for analysis.

Prior to the day's field activities and after collection of each sample, the steel casing and the bailer apparatus were decontaminated by washing with Contrad, rinsing with distilled water and drying with nitrogen gas to ensure discrete sampling.

A field control sample was collected at the end of the day's field activities. This QA/QC sample was obtained using distilled water.

Laboratory Procedures

All of the soil gas samples collected during the field phase of the survey were analyzed according to EPA Method 601 on a gas chromatograph equipped with an electron capture detector (ECD), but using direct injection instead of purge and trap. Specific analytes standardized for the ECD analysis were:

1,1-dichloroethene (1,1-DCE)
methylene chloride (MC)
trans-1,2-dichloroethene (t-1,2-DCE)
chloroform (CF)
1,1-dichloroethane (1,1-DCA)
carbon tetrachloride (CT)
cis-1,2-dichloroethene (c-1,2-DCE)
1,1,1-trichloroethane (1,1,1-TCA)
trichloroethene (TCE)
1,1,2-trichloroethane (1,1,2-TCA)
tetrachloroethene (PCE)

The chlorinated hydrocarbons in this suite were chosen because of their common usage in industrial solvents, and/or their degradational relationship to commonly used compounds.

The analytical equipment was calibrated using an instrument-response curve and injection of known concentrations of the above standards. Retention times of the standards were used to identify the peaks in the chromatograms of the field samples and their response factors were used to calculate the analyte concentrations. The tabulated results of the laboratory analysis of the soil gas samples are reported in micrograms per liter ($\mu g/l$) in Table 2.

For QA/QC purposes, a duplicate analysis was performed on every tenth field sample. Laboratory blanks of nitrogen gas (99.999%) were also analyzed after every tenth field sample.

Discussion and Interpretation of Results

In order to provide graphic presentation of the results, individual data sets in Table 2 have been mapped and contoured to produce Figures 2 through 5. Map sample points with no data shown indicate that the analyte concentrations in the sample were below the detection limit.

GC/ECD analysis revealed low levels of 1,1,1-trichloroethane (1,1,1-TCA, Figure 2) in some samples in the eastern and western portions of the survey area (Stations 11, 12 and 23-26). A moderate level of trichloroethene (TCE, Figure 3) was present in the central survey area (Station 17), with lower levels to the northeast. Very low levels of tetrachloroethene (PCE, Figure 4) were present in the same area, as well as in the westernmost sample. A very low level of 1,1-dichloroethene (1,1-DCE, Figure 5) occurred in the westernmost sample.

A moderate level of TCE and low to very low levels of 1,1,1-TCA, PCE and 1,1-DCE are present in the soil gas within the subsurface of the surveyed area.

TABLE 1

SAMPLING DEPTH

SAMPLE	FEET
11	10
12	10
13	9
14	7
15	10
16	10
17	9
18	10
19	9
20	7.5
21	6.5
22	8
23	10
24	10
25	10
26	10
27	10
28	7
29	10
30	10

TABLE 2

LABORATORY RESULTS
ELECTRON CAPTURE DETECTOR ANALYSIS
CONCENTRATIONS IN MICROGRAMS PER LITER

SAMPLE	11DCE	MC	t12DCE	11DCA	c12DCE	CF	111TCA	CT	TCE	112TCA	PCE
11	1.7	<1.0	<1.0	<1.0	<1.0	<0.10	0.54	<0.05	<0.10	<0.10	1.4
12	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	2.2	<0.05	<0.10	<0.10	<0.05
13	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	<0.10	<0.05	<0.10	<0.10	<0.05
14	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	<0.10	<0.05	<0.10	<0.10	<0.05
15	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	<0.10	<0.05	<0.10	<0.10	<0.05
16	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	<0.10	<0.05	1.6	<0.10	<0.05
17	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	<0.10	<0.05	21	<0.10	0.50
18	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	<0.10	<0.05	5.2	<0.10	0.19
19	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	<0.10	<0.05	<0.10	<0.10	<0.05
20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	<0.10	<0.05	<0.10	<0.10	<0.05
21	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	<0.10	<0.05	<0.10	<0.10	<0.05
22	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	<0.10	<0.05	<0.10	<0.10	<0.05
23	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	0.14	<0.05	<0.10	<0.10	<0.05
24	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	0.60	<0.05	<0.10	<0.10	<0.05
25	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	0.16	<0.05	<0.10	<0.10	<0.05
26	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	0.39	<0.05	<0.10	<0.10	<0.05
27	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	<0.10	<0.05	<0.10	<0.10	<0.05
28	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	<0.10	<0.05	<0.10	<0.10	<0.05
29	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	<0.10	<0.05	<0.10	<0.10	<0.05
30	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	<0.10	<0.05	<0.10	<0.10	<0.05

11DCE = 1,1-dichloroethene
t12DCE = trans-1,2-dichloroethene
c12DCE = cis-1,2-dichloroethene
111TCA = 1,1,1-trichloroethane
TCE = trichloroethene
PCE = tetrachloroethene

MC = methylene chloride
11DCA = 1,1-dichloroethane
CF = chloroform
CT = carbon tetrachloride
112TCA = 1,1,2-trichloroethane

TABLE 2 (cont)

LABORATORY RESULTS
ELECTRON CAPTURE DETECTOR ANALYSIS
CONCENTRATIONS IN MICROGRAMS PER LITER

SAMPLE	11DCE	MC	t12DCE	11DCA	c12DCE	CF	111TCA	CT	TCE	112TCA	PCE
FIELD CONTROL SAMPLES											
1	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	<0.10	<0.05	<0.10	<0.10	<0.05
2	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	<0.10	<0.05	<0.10	<0.10	<0.05
3	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	<0.10	<0.05	<0.10	<0.10	<0.05
4	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	<0.10	<0.05	<0.10	<0.10	<0.05
LABORATORY DUPLICATE ANALYSES											
16	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	<0.10	<0.05	1.6	<0.10	<0.05
16R	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	<0.10	<0.05	1.6	<0.10	<0.05
26	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	0.39	<0.05	<0.10	<0.10	<0.05
26R	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	0.42	<0.05	<0.10	<0.10	<0.05
LABORATORY BLANKS											
BMSCW-1	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	<0.10	<0.05	<0.10	<0.10	<0.05
BMSCW-2	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	<0.10	<0.05	<0.10	<0.10	<0.05

11DCE = 1,1-dichloroethene
t12DCE = trans-1,2-dichloroethene
c12DCE = cis-1,2-dichloroethene
111TCA = 1,1,1-trichloroethane
TCE = trichloroethene
PCE = tetrachloroethene

MC = methylene chloride
11DCA = 1,1-dichloroethane
CF = chloroform
CT = carbon tetrachloride
112TCA = 1,1,2-trichloroethane

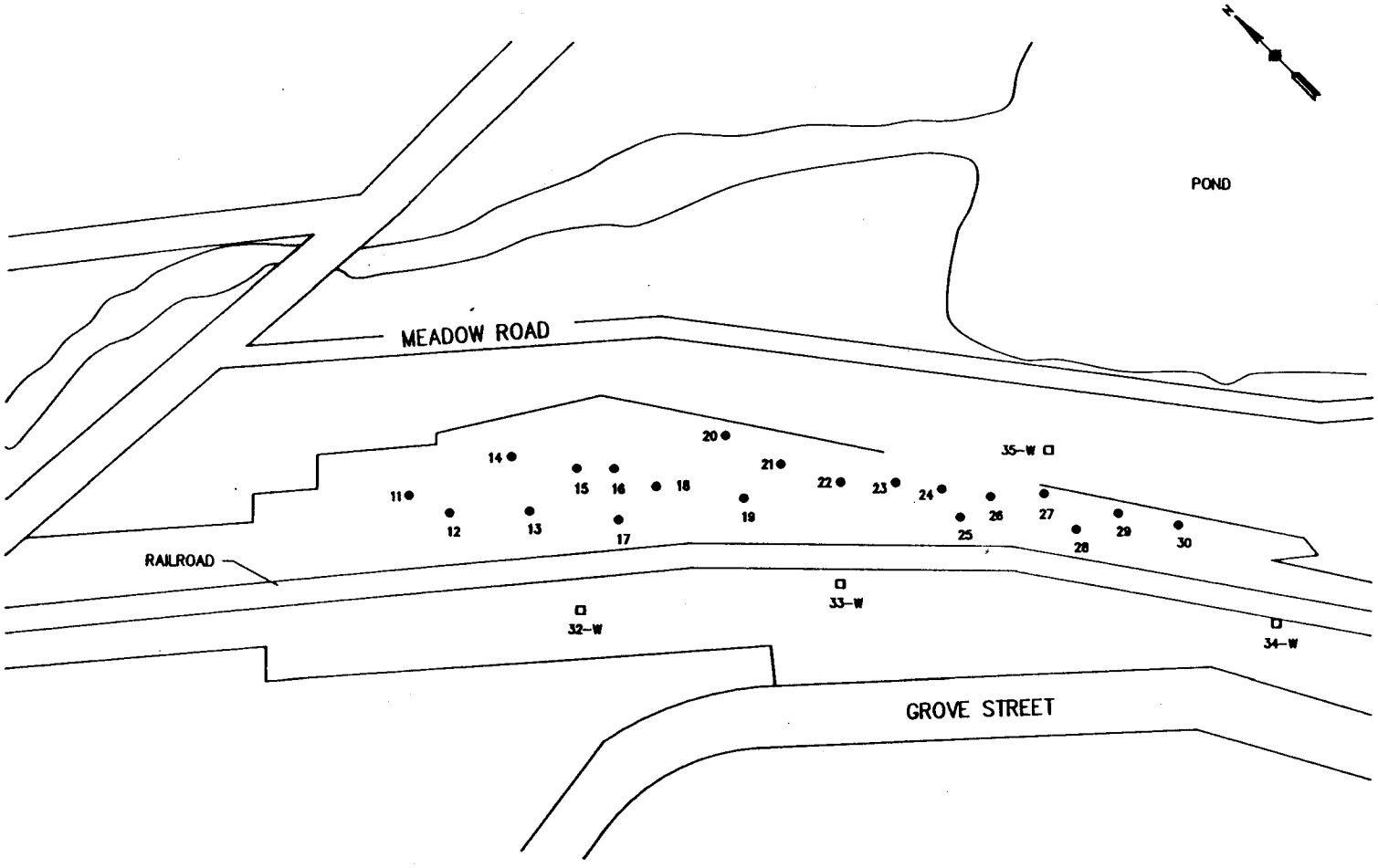
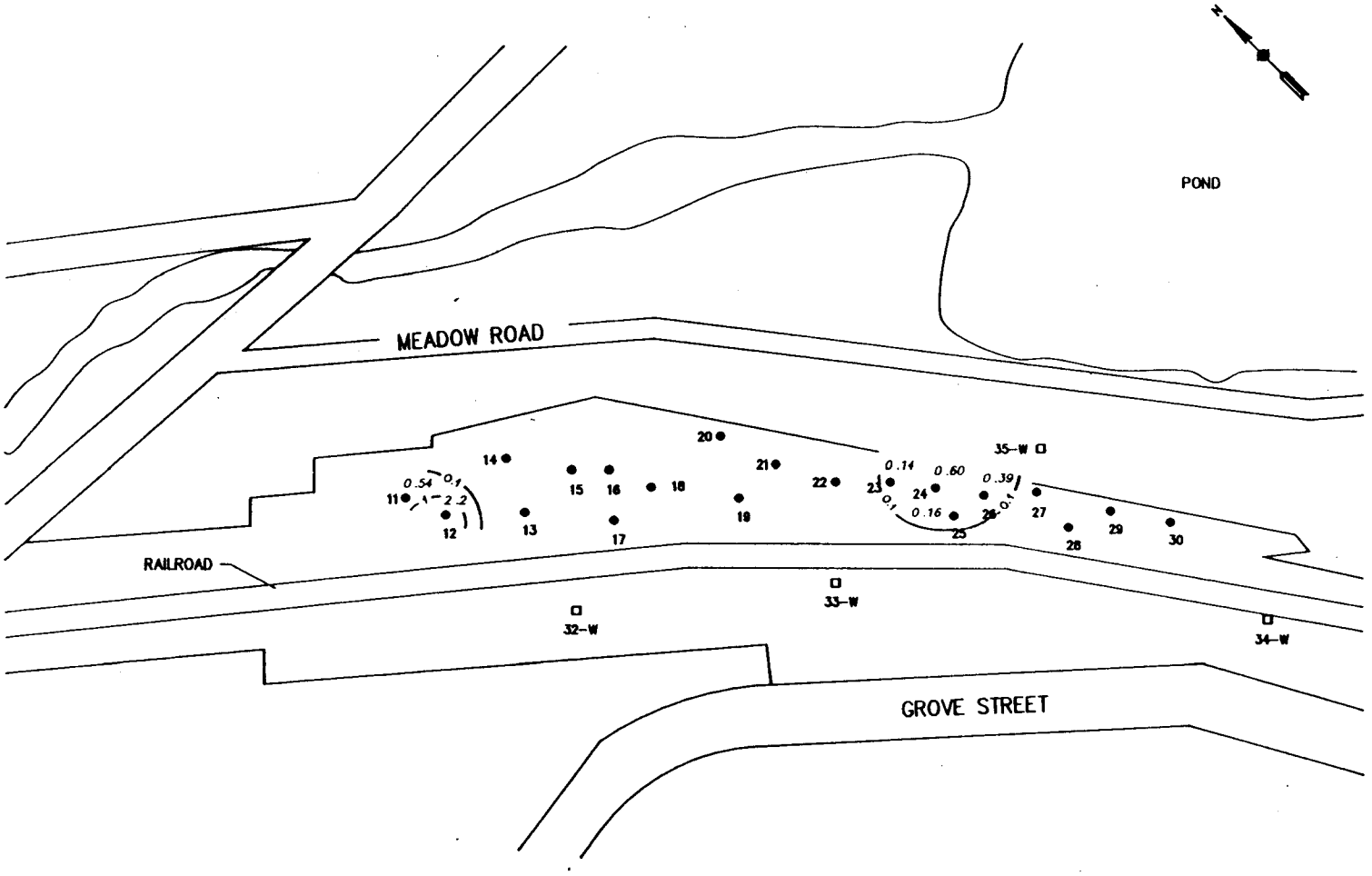


FIGURE 1. Sample Locations

TARGET ENVIRONMENTAL SERVICES, INC.

This map is integral to a written report and should be viewed in that context.

FORMER CHEMICAL WASTE SITE
HARRIMAN, NEW YORK



0 75 150

FEET

● SOIL GAS SAMPLE LOCATION

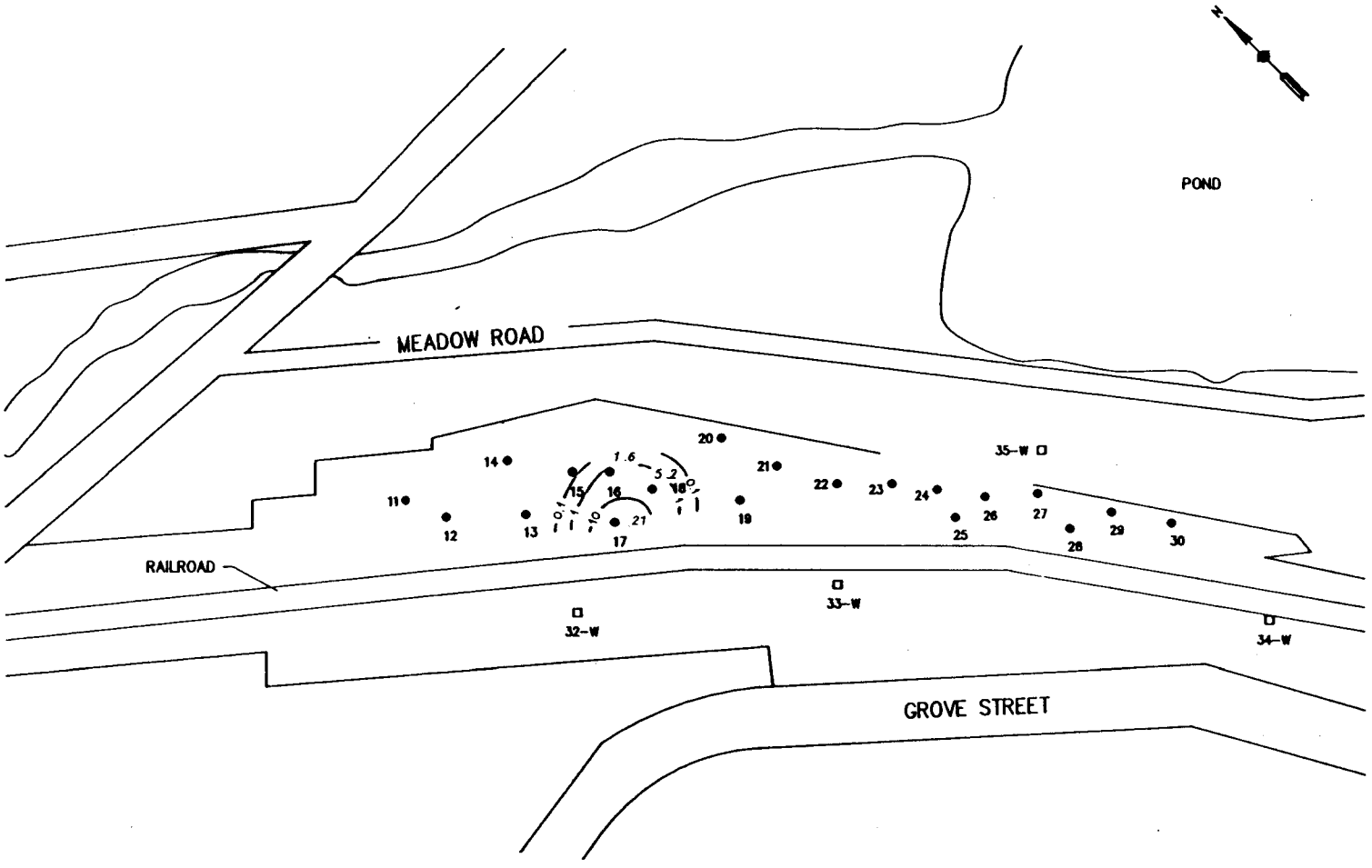
□ WATER SAMPLE LOCATION

FIGURE 2. 1,1,1-Tetrachloroethane (1,1,1-TCA) (µg/l)

TARGET ENVIRONMENTAL SERVICES, INC.

This map is integral to a written report and should be viewed in that context.

FORMER CHEMICAL WASTE SITE
HARRIMAN, NEW YORK



0 75 150
FEET

● SOIL GAS SAMPLE LOCATION

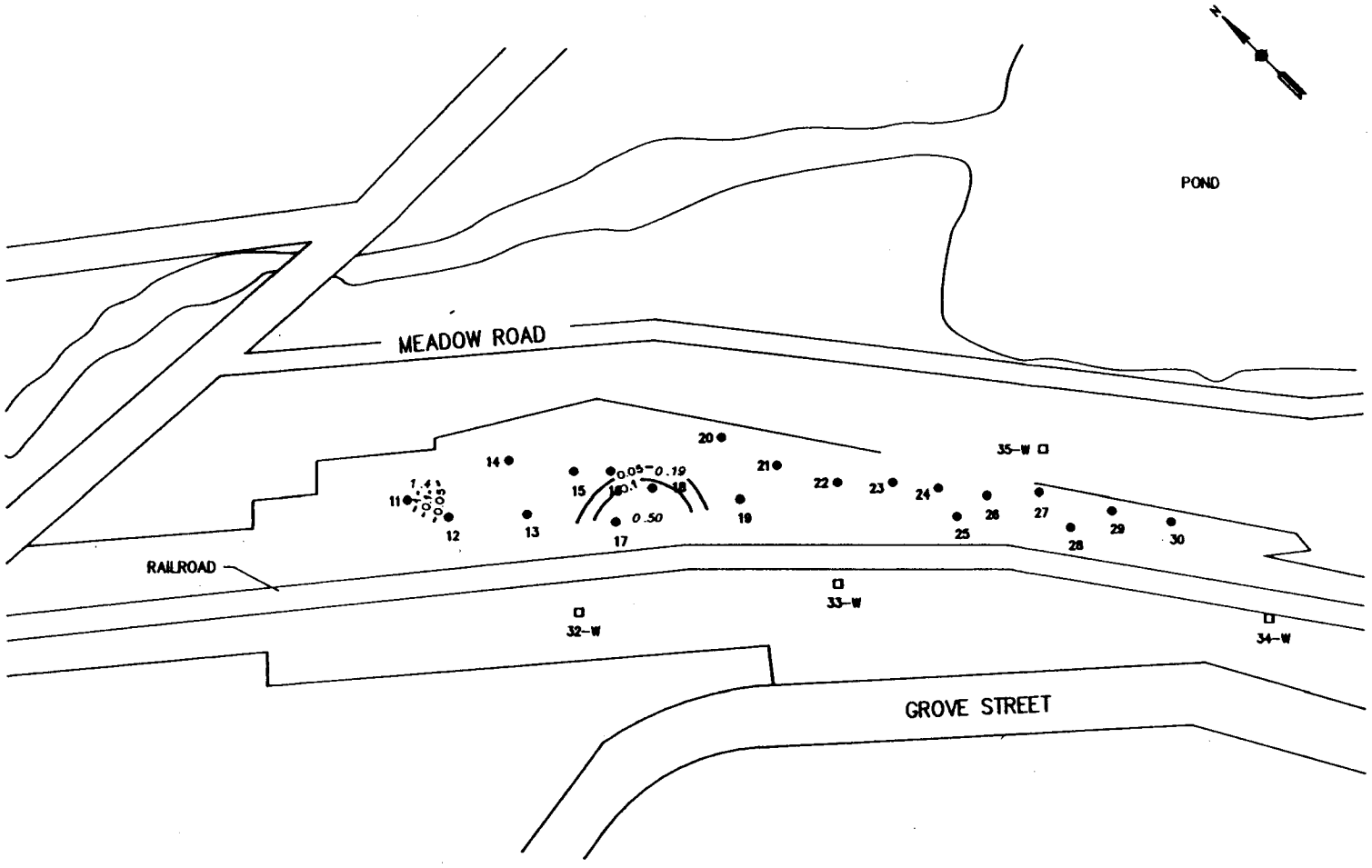
□ WATER SAMPLE LOCATION

ENVIRONMENTAL SERVICES, INC.

This map is integral to a written report and should be viewed in that context.

FIGURE 3. Trichloroethene (TCE) (µg/l)

FORMER CHEMICAL WASTE SITE
HARRIMAN, NEW YORK



0 75 150
FEET

● SOIL GAS SAMPLE LOCATION

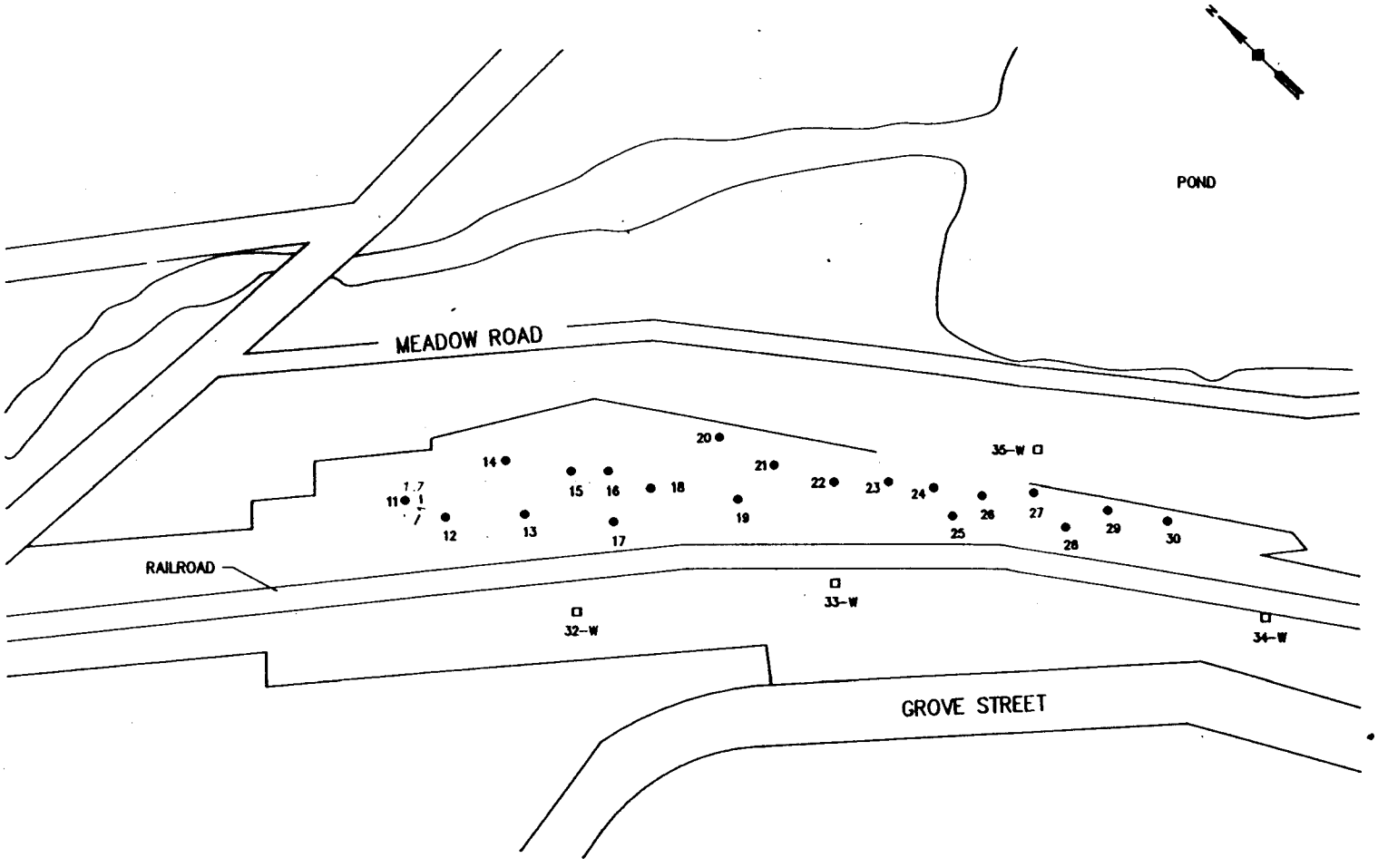
□ WATER SAMPLE LOCATION

TARGET ENVIRONMENTAL SERVICES, INC.

This map is integral to a written report and should be viewed in that context.

FIGURE 4. Tetrachloroethene (PCE)
(µg/l)

FORMER CHEMICAL WASTE SITE
HARRIMAN, NEW YORK



0 75 150
FEET

● SOIL GAS SAMPLE LOCATION

□ WATER SAMPLE LOCATION

TARGET ENVIRONMENTAL SERVICES, INC.

This map is integral to a written report and should be viewed in that context.

FIGURE 5. 1,1-dichloroethene (1,1-DCE) ($\mu g/l$)

FORMER CHEMICAL WASTE SITE
HARRIMAN, NEW YORK

TABLE 1
MH-1 AIR STRIPPER TREATMENT SYSTEM PERFORMANCE RESULTS
GAESS INACTIVE HAZARDOUS WASTE SITE
HARRIMAN, NEW YORK

DATE	SAMPLE NO.	ANALYTICAL METHOD	TYPE	MDL (UG/L)	RESULT (UG/L)
4/30/92	110755-01	Total Coliform	Effluent	100 ml	<1
5/1/92	110807-03	Total Coliform	Effluent	100 ml	<1
5/1/92	110807-01	V0A-502.1	Influent	0.5 0.5	8.4 Chloroform 15 TCE
5/1/92	110807-01	VOA-503.1	Influent	0.5	19 TCE
5/1/92	110807-02	V0A-502.1	Effluent	0.5	Non-Detected
5/1/92	110807-02	V0A-503.1	Effluent	0.5	Non-Detected
5/13/92	111172-01	V0A-502.1	Influent	0.5 0.5 0.5	2.4 Chloroform 0.8 TCA 14 TCE
5/13/92	111172-01	V0A-503.1	Influent	0.5	14 TCE
5/13/92	111172-02	V0A-502.1	Effluent	0.5	Non-Detected
5/13/92	111172-02	V0A-503.1	Effluent	0.5	Non-Detected
5/14/92	111196-01	V0A-502.1	Influent	0.5 0.5 0.5	1.4 Chloroform 0.59 TCA 11 TCE
5/14/92	111196-01	V0A-503.1	Influent	0.5	11 TCE
5/14/92	111196-02	V0A-502.1	Effluent	0.5	Non-Detected
5/14/92	111196-02	V0A-503.1	Effluent	0.5	Non-Detected
5/15/92	111253-01	V0A-502.1	Influent	0.5 0.5 0.5	0.8 Chloroform 0.71 TCA 8.7 TCE
5/15/92	111253-01	V0A-503.1	Influent	0.5	9.7 TCE
5/15/92	111253-02	V0A-502.1	Effluent	0.5	Non-Detected
5/15/92	111253-02	V0A-503.1	Effluent	0.5	Non-Detected
5/16/92	111318-01	V0A-502.1	Influent	0.5 0.5 0.5	0.82 Chloroform 0.7 TCA 9.1 TCE
5/16/92	111318-01	V0A-503.1	Influent	0.5	9.9 TCE

TABLE 1 (CONTINUED)
MH-1 AIR STRIPPER TREATMENT SYSTEM PERFORMANCE RESULTS
GAESS INACTIVE HAZARDOUS WASTE SITE
HARRIMAN, NEW YORK

DATE	SAMPLE NO.	ANALYTICAL METHOD	TYPE	MDL (UG/L)	RESULT (UG/L)
5/16/92	111318-02	V0A-502.1	Effluent	0.5	Non-Detected
5/16/92	111318-02	V0A-503.1	Effluent	0.5	Non-Detected
5/17/92	111319.01	V0A-502.1	Influent	0.5 0.5 0.5	1.1 Chloroform 1.1 TCA 13 TCE
5/17/92	111319-01	V0A-503.1	Influent	0.5	14 TCE
5/17/92	111319-02	V0A-502.1	Effluent	0.5	Non-Detected
5/17/92	111319-02	V0A-503.1	Effluent	0.5	Non-Detected
5/18/92	111320-01	V0A-502.1	Influent	0.5 0.5 0.5	0.88 Chloroform 0.5 TCA 15 TCE
5/18/92	111320-01	V0A-503.1	Influent	0.5	16 TCE
5/18/92	111320-02	V0A-502.1	Effluent	0.5	Non-Detected
5/18/92	111320-02	V0A-503.1	Effluent	0.5	Non-Detected
5/19/92	111330-01	V0A-502.1	Influent	0.5 0.5 0.5	0.9 Chloroform 1.1 TCA 11 TCE
5/19/92	111330-01	V0A-503.1	Influent	0.5	11 TCE
5/19/92	111330-02	V0A-502.1	Effluent	0.5	Non-Detected
5/19/92	111330-02	V0A-503.1	Effluent	0.5	Non-Detected
5/26/92	111520-01	V0A-502.1	Influent	0.5 0.5	0.64 TCA 6.8 TCE
5/26/91	111520-02	V0A-502.1	Effluent	0.5	Non-Detected
6/3/92	111834-01	V0A-502.1	Influent	0.5 0.5	0.82 TCA 7.8 TCE
6/3/92	111834-02	V0A-502.1	Effluent	0.5	Non-Detected
6/10/92	112064-01	V0A-502.1	Influent	0.5 0.5	0.83 TCA 6.1 TCE
6/10/92	112064-02	V0A-502.1	Effluent	0.5	Non-Detected

TABLE 2
LABORATORY ANALYTICAL SUMMARY
SOIL SAMPLING VOLATILES DATA
GAESS INACTIVE HAZARDOUS WASTE DISPOSAL SITE
HARRIMAN, NEW YORK

SAMPLE NUMBER LABORATORY NUMBER SAMPLE DATE EPA METHOD 502.1 UNITS PARAMETER	MINIMUM DETECTION LEVEL ppb	B-1 SS-1 99589-001 Q 5/23/91 ppb	B-2 SS-2 99589-002 Q 5/23/91 ppb	B-3 SS-3 99589-003 Q 5/23/91 ppb	B-4 SS-4 99589-004 Q 5/24/91 ppb	B-5 SS-5 99589-005 Q 5/24/91 ppb	B-6 SS-6 99589-006 Q 5/24/91 ppb	B-7 SS-7 99589-007 Q 5/24/91 ppb	B-8 SS-8 99589-008 Q 5/24/91 ppb	B-9 SS-9 99589-009 Q 5/24/91 ppb
CHLOROMETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
BROMOMETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
DICHLORODIFLUOROMETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
VINYL CHLORIDE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
METHYLENE CHLORIDE	0.50	0.77	1.8	6.2	23	4.9	5.8	5.4	2.4	6.1
TRICHLOROFLUOROMETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-DICHLOROETHENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRANS-1,2-DICHLOROETHENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
CIS-1,2-DICHLOROETHENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
CHLOROFORM	0.50	ND	ND	ND	0.66	ND	ND	1.6	ND	ND
1,2-DICHLOROETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,2-DICHLOROPROPANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
DIBROMOMETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-TRICHLOROETHANE	0.50	0.88	ND	0.88	1.2	ND	1.2	1.8	ND	ND
CARBON TETRACHLORIDE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
BROMODICHLOROMETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-DICHLOROPROPANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-DICHLOROPROPENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRICHLOROETHENE	0.50	ND	1.2 A	0.77	1.1	2.1 A	120	760	42	43 A
1,3-DICHLOROPROPANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
DIBROMOCHLOROMETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-TRICHLOROETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-DIBROMOETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
BROMOFORM	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-TETRACHLOROETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-TRICHLOROPROPANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-TETRACHLOROETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
TETRACHLOROETHENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
CHLOROBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
BROMOBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-CHLOROTOLUENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-CHLOROTOLUENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-DICHLOROBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-DICHLOROBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-DICHLOROBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
CIS-1,3-DICHLOROPROPENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRANS-1,3-DICHLOROPROPENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND

TABLE 2 (CONTINUED)
LABORATORY ANALYTICAL SUMMARY
SOIL SAMPLING VOLATILES DATA
GAESS INACTIVE HAZARDOUS WASTE DISPOSAL SITE
HARRIMAN, NEW YORK

SAMPLE NUMBER LABORATORY NUMBER SAMPLE DATE EPA METHOD 503.1 UNITS PARAMETER	MINIMUM DETECTION LEVEL ppb	B-1 SS-1 99589-001 Q 5/23/91 ppb	B-2 SS-2 99589-002 Q 5/23/91 ppb	B-3 SS-3 99589-003 Q 5/23/91 ppb	B-4 SS-4 99589-004 Q 5/24/91 ppb	B-5 SS-5 99589-005 Q 5/24/91 ppb	B-6 SS-6 99589-006 Q 5/24/91 ppb	B-7 SS-7 99589-007 Q 5/24/91 ppb	B-8 SS-8 99589-008 Q 5/24/91 ppb	B-9 SS-9 99589-009 Q 5/24/91 ppb
BENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRICHLOROETHENE	0.50	ND	1.1	0.8 A	1.2 A	2.1	130 A	830 A	50 A	39
TOLUENE	0.50	ND	ND	0.99	4.1	0.72	1.7	ND	ND	1.1
TETRACHLOROETHENE	0.50	ND	ND	ND	ND	ND	4.5	18	2.4	0.55
CHLOROBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
ETHYLBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
P-XYLENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
M-XYLENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
O-XYLENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
ISOPROPYLBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
STYRENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-PROPYLBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
TERT-BUTYLBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-CHLOROTOLUENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-CHLOROTOLUENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
BROMOBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
SEC-BUTYLBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-TRIMETHYLBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-ISOPROPROPYLTOLUENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-TRIMETHYLBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-DICHLOROBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-DICHLOROBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-BUTYLBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-DICHLOROBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
HEXACHLOROBUTADIENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
NAPHTHALENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-TRICHLOROBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-TRICHLOROBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL ORGANICS		1.65	3.00	8.87	30.16	7.72	143.20	856.80	54.80	50.75

NOTE:

A – DUE TO OVERLAP IN THE TWO METHODS, THESE VALUES ARE TREATED AS DUPLICATES AND ONLY THE HIGHEST VALUE WAS USED IN CALCULATING.

ND – NOT DETECTED

ALL ANALYSES COMPLETED BY ENVIROTEST LABORATORIES, INC.

TABLE 2 (CONTINUED)
LABORATORY ANALYTICAL SUMMARY
SOIL SAMPLING VOLATILES DATA
GAESS INACTIVE HAZARDOUS WASTE DISPOSAL SITE
HARRIMAN, NEW YORK

SAMPLE NUMBER LABORATORY NUMBER DATE SAMPLED EPA METHOD 503.1 UNITS PARAMETER	MINIMUM DETECTION LIMIT ppb	B-10 SS-10 99589-010 Q 5/24/91 ppb	B-11 SS-11 99647-001 Q 5/28/91 ppb	B-12 SS-12 99647-002 Q 5/28/91 ppb	B-13 SS-13 99647-003 Q 5/28/91 ppb	B-14 SS-14 99647-004 Q 5/28/91 ppb	B-15 SS-15 99647-005 Q 5/28/91 ppb	B-16 SS-16 99647-006 Q 5/28/91 ppb	B-17 SS-17 99647-007 Q 5/28/91 ppb	B-18 SS-18 99647-008 Q 5/28/91 ppb
BENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRICHLOROETHENE	0.50	0.76	120A	17A	ND	ND	5.4	2.4	1.4	.85
TOLUENE	0.50	4.3	1.5	2.1	2.7	3	3.4	4.2	4	1.2
TETRACHLOROETHENE	0.50	ND	0.74	ND	ND	ND	ND	ND	ND	ND
CHLOROBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
ETHYLBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
P-XYLENE	0.50	ND	0.9	ND	ND	ND	ND	ND	1.3	ND
M-XYLENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
O-XYLENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
ISOPROPYLBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
STYRENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-PROPYLBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
TERT-BUTYLBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-CHLOROTOLUENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-CHLOROTOLUENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
BROMOBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
SEC-BUTYLBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-TRIMETHYLBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-ISOPROPROPYLTOLUENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-TRIMETHYLBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-DICHLOROBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-DICHLOROBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-BUTYLBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-DICHLOROBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
HEXACHLOROBUTADIENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
NAPHTHALENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-TRICHLOROBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-TRICHLOROBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL ORGANICS		22.17	128.74	21.60	7.00	8.60	16.50	16.60	15.40	4.15

NOTES: A – DUE TO OVERLAP IN THE TWO METHODS, THESE VALUES ARE TREATED AS DUPLICATES AND ONLY THE HIGHEST VALUE WAS USED IN CALCULATING.
ND – NOT DETECTED
ALL ANALYSES COMPLETED BY ENVIROTEST LABORATORIES, INC.

TABLE 2 (CONTINUED)
LABORATORY ANALYTICAL SUMMARY
SOIL SAMPLING VOLATILES DATA
GAESS INACTIVE HAZARDOUS WASTE DISPOSAL SITE
HARRIMAN, NEW YORK

SAMPLE NUMBER LABORATORY NUMBER DATE SAMPLED EPA METHOD 502.1 UNITS PARAMETER	MINIMUM DETECTION LIMIT ppb	B-10 SS-10 99589-010 Q 5/24/91 ppb	B-11 SS-11 99647-001 Q 5/28/91 ppb	B-12 SS-12 99647-002 Q 5/28/91 ppb	B-13 SS-13 99647-003 Q 5/28/91 ppb	B-14 SS-14 99647-004 Q 5/28/91 ppb	B-15 SS-15 99647-005 Q 5/28/91 ppb	B-16 SS-16 99647-006 Q 5/28/91 ppb	B-17 SS-17 99647-007 Q 5/28/91 ppb	B-18 SS-18 99647-008 Q 5/28/91 ppb
CHLOROMETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
BROMOMETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
DICHLORODIFLUOROMETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
VINYL CHLORIDE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
METHYLENE CHLORIDE	0.50	16	5.6	2.5	4.3	5.6	7.1	9.5	8.4	2.1
TRICHLOROFLUOROMETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-DICHLOROETHENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRANS-1,2-DICHLOROETHENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
CIS-1,2-DICHLOROETHENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
CHLOROFORM	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-DICHLOROETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,2-DICHLOROPROPANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
DIBROMOMETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-TRICHLOROETHANE	0.50	0.88	ND	ND	ND	ND	ND	ND	ND	ND
CARBON TETRACHLORIDE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
BROMODICHLOROMETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-DICHLOROPROPANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-DICHLOROPROPENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRICHLOROETHENE	0.50	0.99A	110	16	ND	ND	6A	2.9A	1.7A	0.85A
1,3-DICHLOROPROPANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
DIBROMOCHLOROMETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-TRICHLOROETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-DIBROMOETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
BROMOFORM	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-TETRACHLOROETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-TRICHLOROPROPANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-TETRACHLOROETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
TETRACHLOROETHENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
CHLOROBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
BROMOBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-CHLOROTOLUENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-CHLOROTOLUENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-DICHLOROBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-DICHLOROBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-DICHLOROBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
CIS-1,3-DICHLOROPROPENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRANS-1,3-DICHLOROPROPENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND

TABLE 2 (CONTINUED)
LABORATORY ANALYTICAL SUMMARY
SOIL SAMPLING VOLATILES DATA
GAESS INACTIVE HAZARDOUS WASTE DISPOSAL SITE
HARRIMAN, NEW YORK

SAMPLE NUMBER LABORATORY NUMBER DATE SAMPLED EPA METHOD 502.1 UNITS PARAMETER	MINIMUM DETECTION LIMIT ppb	B-10 SS-10 99589-010 Q 5/24/91 ppb	B-11 SS-11 99647-001 Q 5/28/91 ppb	B-12 SS-12 99647-002 Q 5/28/91 ppb	B-13 SS-13 99647-003 Q 5/28/91 ppb	B-14 SS-14 99647-004 Q 5/28/91 ppb	B-15 SS-15 99647-005 Q 5/28/91 ppb	B-16 SS-16 99647-006 Q 5/28/91 ppb	B-17 SS-17 99647-007 Q 5/28/91 ppb	B-18 SS-18 99647-008 Q 5/28/91 ppb
CHLOROMETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
BROMOMETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
DICHLORODIFLUOROMETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
VINYL CHLORIDE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
METHYLENE CHLORIDE	0.50	16	5.6	2.5	4.3	5.6	7.1	9.5	8.4	2.1
TRICHLOROFLUOROMETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-DICHLOROETHENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRANS-1,2-DICHLOROETHENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
CIS-1,2-DICHLOROETHENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
CHLOROFORM	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-DICHLOROETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,2-DICHLOROPROPANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
DIBROMOMETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-TRICHLOROETHANE	0.50	0.88	ND	ND	ND	ND	ND	ND	ND	ND
CARBON TETRACHLORIDE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
BROMODICHLOROMETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-DICHLOROPROPANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-DICHLOROPROPENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRICHLOROETHENE	0.50	0.99A	110	16	ND	ND	6A	2.9A	1.7A	0.85A
1,3-DICHLOROPROPANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
DIBROMOCHLOROMETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-TRICHLOROETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-DIBROMOETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
BROMOFORM	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-TETRACHLOROETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-TRICHLOROPROPANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-TETRACHLOROETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
TETRACHLOROETHENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
CHLOROBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
BROMOBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-CHLOROTOLUENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-CHLOROTOLUENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-DICHLOROBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-DICHLOROBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-DICHLOROBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
CIS-1,3-DICHLOROPROPENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRANS-1,3-DICHLOROPROPENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND

TABLE 2 (CONTINUED)
LABORATORY ANALYTICAL SUMMARY
SOIL SAMPLING VOLATILES DATA
GAESS INACTIVE HAZARDOUS WASTE DISPOSAL SITE
HARRIMAN, NEW YORK

SAMPLE NUMBER LABORATORY NUMBER DATE SAMPLED EPA METHOD 502.1 UNITS PARAMETER	MINIMUM DETECTION LIMIT ppb	B-19 SS-19 99647-009 Q 5/28/91 ppb	B-20 SS-20 99647-010 Q 5/28/91 ppb	B-21 SS-21 99647-011 Q 5/28/91 ppb	FLD BLK 99589-011 Q 5/24/91 ppb
CHLOROMETHANE	0.50	ND	ND	ND	ND
BROMOMETHANE	0.50	ND	ND	ND	ND
DICHLORODIFLUOROMETHANE	0.50	ND	ND	ND	ND
VINYL CHLORIDE	0.50	ND	ND	ND	ND
METHYLENE CHLORIDE	0.50	2.7	2	ND	3.8
TRICHLOROFLUOROMETHANE	0.50	ND	ND	ND	ND
1,1-DICHLOROETHENE	0.50	ND	ND	ND	ND
TRANS-1,2-DICHLOROETHENE	0.50	ND	ND	ND	ND
CIS-1,2-DICHLOROETHENE	0.50	ND	ND	ND	ND
CHLOROFORM	0.50	ND	ND	ND	ND
1,2-DICHLOROETHANE	0.50	ND	ND	ND	ND
2,2-DICHLOROPROPANE	0.50	ND	ND	ND	ND
DIBROMOMETHANE	0.50	ND	ND	ND	ND
1,1,1-TRICHLOROETHANE	0.50	ND	ND	ND	ND
CARBON TETRACHLORIDE	0.50	ND	ND	ND	ND
BROMODICHLOROMETHANE	0.50	ND	ND	ND	ND
1,2-DICHLOROPROPANE	0.50	ND	ND	ND	ND
1,1-DICHLOROPROPENE	0.50	ND	ND	ND	ND
TRICHLOROETHENE	0.50	ND	1.4A	ND	1.8A
1,3-DICHLOROPROPANE	0.50	ND	ND	ND	ND
DIBROMOCHLOROMETHANE	0.50	ND	ND	ND	ND
1,1,2-TRICHLOROETHANE	0.50	ND	ND	ND	ND
1,2-DIBROMOETHANE	0.50	ND	ND	ND	ND
BROMOFORM	0.50	ND	ND	ND	ND
1,1,1,2-TETRACHLOROETHANE	0.50	ND	ND	ND	ND
1,2,3-TRICHLOROPROPANE	0.50	ND	ND	ND	ND
1,1,2,2-TETRACHLOROETHANE	0.50	ND	ND	ND	ND
TETRACHLOROETHENE	0.50	ND	ND	ND	ND
CHLOROBENZENE	0.50	ND	ND	ND	ND
BROMOBENZENE	0.50	ND	ND	ND	ND
2-CHLOROTOLUENE	0.50	ND	ND	ND	ND
4-CHLOROTOLUENE	0.50	ND	ND	ND	ND
1,3-DICHLOROBENZENE	0.50	ND	ND	ND	ND
1,2-DICHLOROBENZENE	0.50	ND	ND	ND	ND
1,4-DICHLOROBENZENE	0.50	ND	ND	ND	ND
CIS-1,3-DICHLOROPROPENE	0.50	ND	ND	ND	ND
TRANS-1,3-DICHLOROPROPENE	0.50	ND	ND	ND	ND

TABLE 2 (CONTINUED)
LABORATORY ANALYTICAL SUMMARY
SOIL SAMPLING VOLATILES DATA
GAESS INACTIVE HAZARDOUS WASTE DISPOSAL SITE
HARRIMAN, NEW YORK

SAMPLE NUMBER LABORATORY NUMBER DATE SAMPLED EPA METHOD 503.1 UNITS PARAMETER	MINIMUM DETECTION LIMIT ppb	B-19 SS-19 99647-009 Q 5/28/91 ppb	B-20 SS-20 99647-010 Q 5/28/91 ppb	B-21 SS-21 99647-011 Q 5/28/91 ppb	FLD BLK 99589-011 Q 5/24/91 ppb
BENZENE	0.50	ND	ND	ND	ND
TRICHLOROETHENE	0.50	ND	1.2	ND	1.6
TOLUENE	0.50	2.1	1.4	2.6	ND
TETRACHLOROETHENE	0.50	ND	ND	ND	ND
CHLOROBENZENE	0.50	ND	ND	ND	ND
ETHYLBENZENE	0.50	ND	ND	ND	ND
P-XYLENE	0.50	ND	0.9	ND	ND
M-XYLENE	0.50	ND	ND	ND	ND
O-XYLENE	0.50	ND	ND	ND	ND
ISOPROPYLBENZENE	0.50	ND	ND	ND	ND
STYRENE	0.50	ND	ND	ND	ND
N-PROPYLBENZENE	0.50	ND	ND	ND	ND
TERT-BUTYLBENZENE	0.50	ND	ND	ND	ND
2-CHLOROTOLUENE	0.50	ND	ND	ND	ND
4-CHLOROTOLUENE	0.50	ND	ND	ND	ND
BROMOBENZENE	0.50	ND	ND	ND	ND
SEC-BUTYLBENZENE	0.50	ND	ND	ND	ND
1,3,5-TRIMETHYLBENZENE	0.50	ND	ND	ND	ND
4-ISOPROPROPYLTOLUENE	0.50	ND	ND	ND	ND
1,2,4-TRIMETHYLBENZENE	0.50	ND	ND	ND	ND
1,4-DICHLOROBENZENE	0.50	ND	ND	ND	ND
1,3-DICHLOROBENZENE	0.50	ND	ND	ND	ND
N-BUTYLBENZENE	0.50	ND	ND	ND	ND
1,2-DICHLOROBENZENE	0.50	ND	ND	ND	ND
HEXACHLOROBUTADIENE	0.50	ND	ND	ND	ND
NAPHTHALENE	0.50	ND	ND	ND	ND
1,2,4-TRICHLOROBENZENE	0.50	ND	ND	ND	ND
1,2,3-TRICHLOROBENZENE	0.50	ND	ND	ND	ND
TOTAL ORGANICS		4.80	5.70	2.60	5.60

NOTES: A – DUE TO OVERLAP IN THE TWO METHODS, THESE VALUES ARE TREATED AS DUPLICATES AND ONLY THE HIGHEST VALUE WAS USED IN CALCULATING.
ND – NOT DETECTED
ALL ANALYSES COMPLETED BY ENVIROTEST LABORATORIES, INC.

TABLE 3
LABORATORY ANALYTICAL SUMMARY
SOIL SAMPLING METALS DATA
GAESS INACTIVE HAZARDOUS WASTE DISPOSAL SITE
HARRIMAN, NEW YORK

SAMPLE NUMBER	B-1 / SS-1	B-2 / SS-2	B-3 / SS-3	B-4 / SS-4	B-5 / SS-5	B-6 / SS-6	B-7 / SS-7	B-8 / SS-8	B-9 / SS-9	B-10 / SS-10
LABORATORY NUMBER	99589-001 Q	99589-002 Q	99589-003 Q	99589-004 Q	99589-005 Q	99589-006 Q	99589-007 Q	99589-008 Q	99589-009 Q	99589-010 Q
DATE SAMPLED	5/23/91	5/23/91	5/23/91	5/24/91	5/24/91	5/24/91	5/24/91	5/24/91	5/24/91	5/24/91
EPA METHOD SW846 6010										
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
PARAMETER										
SILVER	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ARSENIC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BARIUM	0.08	0.09	0.13	0.23	0.16	0.18	0.18	0.28	0.16	0.14
CADMIUM	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CHROMIUM	ND	0.01	0.01	0.03	0.01	ND	ND	ND	ND	ND
LEAD	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SELENIUM	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA METHOD SW846 7470										
UNITS	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
PARAMETER										
MERCURY	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL METALS	0.08	0.10	0.14	0.26	0.07	0.18	0.18	0.28	0.16	0.14
EPA METHOD 160.3										
UNITS	%	%	%	%	%	%	%	%	%	%
PARAMETER										
PERCENT SOLID	90.6	89.9	89.6	91.1	82.9	84.5	83.3	86.3	88.8	91.1

TABLE 3 (CONTINUED)
LABORATORY ANALYTICAL SUMMARY
SOIL SAMPLING METALS DATA
GAESS INACTIVE HAZARDOUS WASTE DISPOSAL SITE
HARRIMAN, NEW YORK

SAMPLE NUMBER	B-11 / SS-11	B-12 / SS-12	B-13 / SS-13	B-14 / SS-14	B-15 / SS-15	B-16 / SS-16	B-17 / SS-17	B-18 / SS-18	B-19 / SS-19	B-20 / SS-20	B-21 / SS-21
LABORATORY NUMBER	99647-001 Q	99647-002 Q	99647-003 Q	99647-004 Q	99647-005 Q	99647-006 Q	99647-007 Q	99647-008 Q	99647-008 Q	99647-009 Q	99647-010 Q
DATE SAMPLED	5/28/91	5/28/91	5/28/91	5/28/91	5/28/91	5/28/91	5/28/91	5/28/91	5/28/91	5/28/91	5/28/91
EPA METHOD SW846 6010											
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
PARAMETER											
SILVER	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ARSENIC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BARIUM	0.28	0.11	0.30	0.11	0.16	0.10	0.45	0.09	0.18	0.07	0.07
CADMIUM	ND	ND	ND	ND	0.007	0.03	0.008	ND	0.007	ND	ND
CHROMIUM	0.03	ND	0.02	ND	0.02	0.03	0.02	0.01	0.03	ND	ND
LEAD	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SELENIUM	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA METHOD SW846 7470											
UNITS	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
PARAMETER											
MERCURY	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL METALS	0.31	0.11	0.32	0.11	0.19	0.16	0.48	0.10	0.22	0.07	0.07
EPA METHOD 160.3											
UNITS	%	%	%	%	%	%	%	%	%	%	%
PARAMETER											
PERCENT SOLID	85.1	90.6	94.0	93.7	96.9	94.0	96.0	94.4	96.3	88.4	93.5

NOTE:
NA - NOT ANALYZED
ND - NOT DETECTED
ALL ANALYSES COMPLETED BY ENVIROTEST LABORATORIES, INC.

TABLE 4
LABORATORY ANALYTICAL SUMMARY
GROUNDWATER SAMPLING VOLATILES AND CYANIDE DATA
GAESS INACTIVE HAZARDOUS WASTE DISPOSAL SITE
HARRIMAN, NEW YORK

SAMPLE NUMBER LABORATORY NUMBER DATE SAMPLED EPA METHOD 335.2 UNITS PARAMETER	MINIMUM DETECTION LIMIT	GHP-1S 99494-001 Q 5/21/91	GHP-1I 99494-002 Q 5/21/91	GHP-1D 99494-003 Q 5/21/91	GHP-2S 99494-004 Q 5/22/91	GHP-2I 99494-005 Q 5/22/91	GHP-2SA 99494-006 Q 5/22/91	GHP-3S 99494-007 Q 5/22/91	GHP-3I 99494-0081 Q 5/22/91	FLD BLK 99494-009 Q 5/22/91
	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
CYANIDE	0.01	NA	NA	NA	<0.01	<0.01	NA	<0.01	<0.01	NA
EPA METHOD 502.1 UNITS PARAMETER	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
CHLOROMETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
BROMOMETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
DICHLORODIFLUOROMETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
VINYL CHLORIDE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
METHYLENE CHLORIDE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRICHLOROFLUOROMETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-DICHLOROETHENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRANS-1,2-DICHLOROETHENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
CIS-1,2-DICHLOROETHENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
CHLOROFORM	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-DICHLOROETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,2-DICHLOROPROPANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
DIBROMOMETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-TRICHLOROETHANE	0.50	3.5	3.2	8.2	2.6	2.2	1.5	ND	ND	ND
CARBON TETRACHLORIDE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
BROMODICHLOROMETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-DICHLOROPROPANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-DICHLOROPROPENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRICHLOREOTHENE	0.50	ND	ND	ND	ND	ND	ND	1.3	6.1	ND
1,3-DICHLOROPROPANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
DIBROMOCHLOROMETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-TRICHLOROETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-DIBROMOETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
BROMOFORM	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-TETRACHLOROETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-TRICHLOROPROPANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-TETRACHLOROETHANE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
TETRACHLOROETHENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
CHLOROBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
BROMOBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-CHLOROTOLUENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-CHLOROTOLUENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-DICHLOROBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-DICHLOROBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-DICHLOROBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
CIS-1,3-DICHLOROPROPENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRANS-1,3-DICHLOROPROPENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND

TABLE 4 (CONTINUED)
LABORATORY ANALYTICAL SUMMARY
GROUNDWATER SAMPLING VOLATILES AND CYANIDE DATA
GAESS INACTIVE HAZARDOUS WASTE DISPOSAL SITE
HARRIMAN, NEW YORK

SAMPLE NUMBER LABORATORY NUMBER DATE SAMPLED EPA METHOD 503.1 UNITS PARAMETER	MINIMUM DETECTION LIMIT ppb	GHP-1S 99494-001 Q 5/21/91 ppb	GHP-1I 99494-002 Q 5/21/91 ppb	GHP-1D 99494-003 Q 5/21/91 ppb	GHP-2S 99494-004 Q 5/22/91 ppb	GHP-2I 99494-005 Q 5/22/91 ppb	GHP-2SA 99494-006 Q 5/22/91 ppb	GHP-3S 99494-007 Q 5/22/91 ppb	GHP-3I 99494-0081 Q 5/22/91 ppb	FLD BLK 99494-009 Q 5/22/91 ppb
BENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRICHLOROETHENE	0.50	ND	ND	ND	ND	ND	ND	2.9A	8.9A	ND
TOLUENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
TETRACHLOROETHENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
CHLOROBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
ETHYLBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
P-XYLENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
M-XYLENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
O-XYLENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
ISOPROPYLBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
STYRENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-PROPYLBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
TERT-BUTYLBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-CHLOROTOLUENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-CHLOROTOLUENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
BROMOBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
SEC-BUTYLBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-TRIMETHYLBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-ISOPROPROPYLTOLUENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-TRIMETHYLBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-DICHLOROBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-DICHLOROBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-BUTYLBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-DICHLOROBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
HEXACHLOROBUTADIENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
NAPHTHALENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-TRICHLOROBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-TRICHLOROBENZENE	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL ORGANICS		3.50	3.20	8.20	2.60	2.20	1.50	2.90	8.90	0.00

NOTES: A – DUE TO OVERLAP IN THE TWO METHODS, THESE VALUES ARE TREATED AS DUPLICATES AND ONLY THE HIGHEST VALUE WAS USED IN CALCULATING.
NA – NOT ANALYZED
ND – NOT DETECTED
ALL ANALYSES COMPLETED BY ENVIROTEST LABORATORIES, INC.

TABLE 4
LABORATORY ANALYTICAL SUMMARY
GROUNDWATER SAMPLING VOLATILES AND CYANIDE DATA
GAESS INACTIVE HAZARDOUS WASTE DISPOSAL SITE
HARRIMAN, NEW YORK

SAMPLE NUMBER LABORATORY NUMBER DATE SAMPLED EPA METHOD 335.2 UNITS PARAMETER	MINIMUM DETECTION LEVEL	UG-2 98568-001 Q 4/23/91	UG-3 98568-002 Q 4/24/91	UG-4C 98568-003 Q 4/24/91	GEI-3 96283-001 Q 2/15/91	GEI-4 96283-002 Q 2/15/91	TRIP BLK 96283-003 Q 2/15/91
	ppm	ppm	ppm	ppm	ppm	ppm	ppm
CYANIDE	0.01	<0.01	<0.01	NA	<0.01	<0.01	NA
EPA METHOD 502.1 UNITS PARAMETER	ppb	ppb	ppb	ppb	ppb	ppb	ppb
CHLOROMETHANE	0.50	ND	ND	ND	ND	ND	ND
BROMOMETHANE	0.50	ND	ND	ND	ND	ND	ND
DICHLORODIFLUOROMETHANE	0.50	ND	ND	ND	ND	ND	ND
VINYL CHLORIDE	0.50	ND	ND	ND	ND	ND	ND
METHYLENE CHLORIDE	0.50	ND	ND	ND	ND	ND	ND
TRICHLOROFLUOROMETHANE	0.50	ND	ND	ND	ND	ND	ND
1,1-DICHLOROETHENE	0.50	ND	ND	ND	ND	ND	ND
TRANS-1,2-DICHLOROETHENE	0.50	ND	ND	ND	ND	ND	ND
CIS-1,2-DICHLOROETHENE	0.50	ND	ND	ND	ND	ND	ND
CHLOROFORM	0.50	ND	ND	ND	ND	ND	ND
1,2-DICHLOROETHANE	0.50	ND	ND	ND	ND	ND	ND
2,2-DICHLOROPROPANE	0.50	ND	ND	ND	ND	ND	ND
DIBROMOMETHANE	0.50	ND	ND	ND	ND	ND	ND
1,1,1-TRICHLOROETHANE	0.50	ND	ND	ND	ND	4.8	ND
CARBON TETRACHLORIDE	0.50	ND	ND	ND	ND	ND	ND
BROMODICHLOROMETHANE	0.50	ND	ND	ND	ND	ND	ND
1,2-DICHLOROPROPANE	0.50	ND	ND	ND	ND	ND	ND
1,1-DICHLOROPROPENE	0.50	ND	ND	ND	ND	ND	ND
TRICHLOREOTHENE	0.50	ND	ND	ND	ND	ND	ND
1,3-DICHLOROPROPANE	0.50	ND	ND	ND	ND	ND	ND
DIBROMOCHLOROMETHANE	0.50	ND	ND	ND	ND	ND	ND
1,1,2-TRICHLOROETHANE	0.50	ND	ND	ND	ND	ND	ND
1,2-DIBROMOETHANE	0.50	ND	ND	ND	ND	ND	ND
BROMOFORM	0.50	ND	ND	ND	ND	ND	ND
1,1,1,2-TETRACHLOROETHANE	0.50	ND	ND	ND	ND	ND	ND
1,2,3-TRICHLOROPROPANE	0.50	ND	ND	ND	ND	ND	ND
1,1,2,2-TETRACHLOROETHANE	0.50	ND	ND	ND	ND	ND	ND
TETRACHLOROETHENE	0.50	ND	ND	ND	ND	ND	ND
CHLOROBENZENE	0.50	ND	ND	ND	ND	ND	ND
BROMOBENZENE	0.50	ND	ND	ND	ND	ND	ND
2-CHLOROTOLUENE	0.50	ND	ND	ND	ND	ND	ND
4-CHLOROTOLUENE	0.50	ND	ND	ND	ND	ND	ND
1,3-DICHLOROBENZENE	0.50	ND	ND	ND	ND	ND	ND
1,2-DICHLOROBENZENE	0.50	ND	ND	ND	ND	ND	ND
1,4-DICHLOROBENZENE	0.50	ND	ND	ND	ND	ND	ND
CIS-1,3-DICHLOROPROPENE	0.50	ND	ND	ND	ND	ND	ND
TRANS-1,3-DICHLOROPROPENE	0.50	ND	ND	ND	ND	ND	ND

TABLE 4 (CONTINUED)
LABORATORY ANALYTICAL SUMMARY
GROUNDWATER SAMPLING VOLATILES AND CYANIDE DATA
GAESS INACTIVE HAZARDOUS WASTE DISPOSAL SITE
HARRIMAN, NEW YORK

SAMPLE NUMBER LABORATORY NUMBER DATE SAMPLED EPA METHOD 503.1	MINIMUM DETECTION LEVEL	UG-2 98568-001 Q 4/23/91	UG-3 98568-002 Q 4/24/91	UG-4C 98568-003 Q 4/24/91	GEI-3 96283-001 Q 2/15/91	GEI-4 96283-002 Q 2/15/91	TRIP BLK 96283-003 Q 2/15/91
UNITS	ppb	ppb	ppb	ppb	ppb	ppb	ppb
PARAMETER							
BENZENE	0.50	0.53	ND	ND	ND	ND	ND
TRICHLOROETHENE	0.50	ND	ND	ND	ND	ND	ND
TOLUENE	0.50	2	ND	ND	ND	ND	ND
TETRACHLOROETHENE	0.50	ND	ND	ND	ND	ND	ND
CHLOROBENZENE	0.50	ND	ND	ND	ND	ND	ND
ETHYLBENZENE	0.50	0.54	ND	ND	ND	ND	ND
P-XYLENE	0.50	ND	ND	ND	ND	ND	ND
M-XYLENE	0.50	0.74	ND	ND	ND	ND	ND
O-XYLENE	0.50	ND	ND	ND	ND	ND	ND
ISOPROPYLBENZENE	0.50	ND	ND	ND	ND	ND	ND
STYRENE	0.50	ND	ND	ND	ND	ND	ND
N-PROPYLBENZENE	0.50	ND	ND	ND	ND	ND	ND
TERT-BUTYLBENZENE	0.50	ND	ND	ND	ND	ND	ND
2-CHLOROTOLUENE	0.50	ND	ND	ND	ND	ND	ND
4-CHLOROTOLUENE	0.50	ND	ND	ND	ND	ND	ND
BROMOBENZENE	0.50	ND	ND	ND	ND	ND	ND
SEC-BUTYLBENZENE	0.50	ND	ND	ND	ND	ND	ND
1,3,5-TRIMETHYLBENZENE	0.50	ND	ND	ND	ND	ND	ND
4-ISOPROPROPYLTOLUENE	0.50	ND	ND	ND	ND	ND	ND
1,2,4-TRIMETHYLBENZENE	0.50	ND	ND	ND	ND	ND	ND
1,4-DICHLOROBENZENE	0.50	ND	ND	ND	ND	ND	ND
1,3-DICHLOROBENZENE	0.50	ND	ND	ND	ND	ND	ND
N-BUTYLBENZENE	0.50	ND	ND	ND	ND	ND	ND
1,2-DICHLOROBENZENE	0.50	ND	ND	ND	ND	ND	ND
HEXACHLOROBUTADIENE	0.50	ND	ND	ND	ND	ND	ND
NAPHTHALENE	0.50	ND	ND	ND	ND	ND	ND
1,2,4-TRICHLOROBENZENE	0.50	ND	ND	ND	ND	ND	ND
1,2,3-TRICHLOROBENZENE	0.50	ND	ND	ND	ND	ND	ND
TOTAL ORGANICS		3.81	0.00	0.00	0.00	4.80	0.00

NOTES: A – DUE TO OVERLAP IN THE TWO METHODS, THESE VALUES ARE TREATED AS DUPLICATES AND ONLY THE HIGHEST VALUE WAS USED IN CALCULATING.
NA – NOT ANALYZED
ND – NOT DETECTED
ALL ANALYSES COMPLETED BY ENVIROTEST LABORATORIES, INC.

TABLE 4 (CONTINUED)
LABORATORY ANALYTICAL SUMMARY
GROUNDWATER SAMPLING VOLATILES AND CYANIDE DATA
GAESS INACTIVE HAZARDOUS WASTE DISPOSAL SITE
HARRIMAN, NEW YORK

SAMPLE NUMBER LABORATORY NUMBER DATE SAMPLED EPA METHOD 503.1 UNITS PARAMETER	MINIMUM DETECTION LEVEL ppb	DG-1T 98568-004 Q 4/24/91 ppb	FB-1 98568-005 Q 4/24/91 ppb	FB-2 98568-006 Q 4/24/91 ppb	TRIP BLK 98568-007 Q 4/24/91 ppb
BENZENE	0.50	ND	ND	ND	ND
TRICHLOROETHENE	0.50	ND	ND	ND	ND
TOLUENE	0.50	ND	ND	ND	ND
TETRACHLOROETHENE	0.50	ND	ND	ND	ND
CHLOROBENZENE	0.50	ND	ND	ND	ND
ETHYLBENZENE	0.50	ND	ND	ND	ND
P-XYLENE	0.50	ND	ND	ND	ND
M-XYLENE	0.50	ND	ND	ND	ND
O-XYLENE	0.50	ND	ND	ND	ND
ISOPROPYLBENZENE	0.50	ND	ND	ND	ND
STYRENE	0.50	ND	ND	ND	ND
N-PROPYLBENZENE	0.50	ND	ND	ND	ND
TERT-BUTYLBENZENE	0.50	ND	ND	ND	ND
2-CHLOROTOLUENE	0.50	ND	ND	ND	ND
4-CHLOROTOLUENE	0.50	ND	ND	ND	ND
BROMOBENZENE	0.50	ND	ND	ND	ND
SEC-BUTYLBENZENE	0.50	ND	ND	ND	ND
1,3,5-TRIMETHYLBENZENE	0.50	ND	ND	ND	ND
4-ISOPROPROPYLTOLUENE	0.50	ND	ND	ND	ND
1,2,4-TRIMETHYLBENZENE	0.50	ND	ND	ND	ND
1,4-DICHLOROBENZENE	0.50	ND	ND	ND	ND
1,3-DICHLOROBENZENE	0.50	ND	ND	ND	ND
N-BUTYLBENZENE	0.50	ND	ND	ND	ND
1,2-DICHLOROBENZENE	0.50	ND	ND	ND	ND
HEXACHLOROBUTADIENE	0.50	ND	ND	ND	ND
NAPHTHALENE	0.50	ND	ND	ND	ND
1,2,4-TRICHLOROBENZENE	0.50	ND	ND	ND	ND
1,2,3-TRICHLOROBENZENE	0.50	ND	ND	ND	ND
TOTAL ORGANICS		5.80	0.00	0.00	0.00

NOTES: A – DUE TO OVERLAP IN THE TWO METHODS, THESE VALUES ARE TREATED AS DUPLICATES AND ONLY THE HIGHEST VALUE WAS USED IN CALCULATING.
NA – NOT ANALYZED
ND – NOT DETECTED
ALL ANALYSES COMPLETED BY ENVIROTEST LABORATORIES, INC.

TABLE 4
LABORATORY ANALYTICAL SUMMARY
GROUNDWATER SAMPLING VOLATILE AND CYANIDE DATA
GAESS INACTIVE HAZARDOUS WASTE DISPOSAL SITE
HARRIMAN, NEW YORK

SAMPLE NUMBER LABORATORY NUMBER DATE SAMPLED EPA METHOD 335.2 UNITS PARAMETER	MINIMUM DETECTION LEVEL ppm	DG-1T 98568-004 Q 4/24/91 ppm	FB-1 98568-005 Q 4/24/91 ppm	FB-2 98568-006 Q 4/24/91 ppm	TRIP BLK 98568-007 Q 4/24/91 ppm
CYANIDE	0.01	NA	0.01	<0.01	NA
EPA METHOD 502.1 UNITS PARAMETER	ppb	ppb	ppb	ppb	ppb
CHLOROMETHANE	0.50	ND	ND	ND	ND
BROMOMETHANE	0.50	ND	ND	ND	ND
DICHLORODIFLUOROMETHANE	0.50	ND	ND	ND	ND
VINYL CHLORIDE	0.50	ND	ND	ND	ND
METHYLENE CHLORIDE	0.50	ND	ND	ND	ND
TRICHLOROFLUOROMETHANE	0.50	ND	ND	ND	ND
1,1-DICHLOROETHENE	0.50	ND	ND	ND	ND
TRANS-1,2-DICHLOROETHENE	0.50	ND	ND	ND	ND
CIS-1,2-DICHLOROETHENE	0.50	ND	ND	ND	ND
CHLOROFORM	0.50	ND	ND	ND	ND
1,2-DICHLOROETHANE	0.50	ND	ND	ND	ND
2,2-DICHLOROPROPANE	0.50	ND	ND	ND	ND
DIBROMOMETHANE	0.50	ND	ND	ND	ND
1,1,1-TRICHLOROETHANE	0.50	5.8	ND	ND	ND
CARBON TETRACHLORIDE	0.50	ND	ND	ND	ND
BROMODICHLOROMETHANE	0.50	ND	ND	ND	ND
1,2-DICHLOROPROPANE	0.50	ND	ND	ND	ND
1,1-DICHLOROPROPENE	0.50	ND	ND	ND	ND
TRICHLOREOTHENE	0.50	ND	ND	ND	ND
1,3-DICHLOROPROPANE	0.50	ND	ND	ND	ND
DIBROMOCHLOROMETHANE	0.50	ND	ND	ND	ND
1,1,2-TRICHLOROETHANE	0.50	ND	ND	ND	ND
1,2-DIBROMOETHANE	0.50	ND	ND	ND	ND
BROMOFORM	0.50	ND	ND	ND	ND
1,1,1,2-TETRACHLOROETHANE	0.50	ND	ND	ND	ND
1,2,3-TRICHLOROPROPANE	0.50	ND	ND	ND	ND
1,1,2,2-TETRACHLOROETHANE	0.50	ND	ND	ND	ND
TETRACHLOROETHENE	0.50	ND	ND	ND	ND
CHLOROBENZENE	0.50	ND	ND	ND	ND
BROMOBENZENE	0.50	ND	ND	ND	ND
2-CHLOROTOLUENE	0.50	ND	ND	ND	ND
4-CHLOROTOLUENE	0.50	ND	ND	ND	ND
1,3-DICHLOROBENZENE	0.50	ND	ND	ND	ND
1,2-DICHLOROBENZENE	0.50	ND	ND	ND	ND
1,4-DICHLOROBENZENE	0.50	ND	ND	ND	ND
CIS-1,3-DICHLOROPROPENE	0.50	ND	ND	ND	ND
TRANS-1,3-DICHLOROPROPENE	0.50	ND	ND	ND	ND

TABLE 5
LABORATORY ANALYTICAL SUMMARY
RIVER SEDIMENT SAMPLING VOLATILES AND CYANIDE DATA
GAESS INACTIVE HAZARDOUS WASTE DISPOSAL SITE
HARRIMAN, NEW YORK

SAMPLE NUMBER LABORATORY NUMBER DATE SAMPLED EPA METHOD 9010 (MG/KG) UNITS PARAMETER	MINIMUM DETECTION LIMIT ppm	RS-1 98569-001 Q 4/24/91 ppm	MINIMUM DETECTION LIMIT ppm	RS-2 98569-002 Q 4/24/91 ppm	MINIMUM DETECTION LIMIT ppm	RS-3 98569-003 Q 4/24/91 ppm
CYANIDE	3.2	<3.2	1.4	<1.4	2.3	<2.3
EPA METHOD 502.1 UNITS PARAMETER	ppb	ppb	ppb	ppb	ppb	ppb
CHLOROMETHANE	0.50	ND	1.40	ND	2.30	ND
BROMOMETHANE	0.50	ND	1.40	ND	2.30	ND
DICHLORODIFLUOROMETHANE	0.50	ND	1.40	ND	2.30	ND
VINYL CHLORIDE	0.50	ND	1.40	ND	2.30	ND
METHYLENE CHLORIDE	0.50	ND	1.40	ND	2.30	ND
TRICHLOROFLUOROMETHANE	0.50	ND	1.40	ND	2.30	ND
1,1-DICHLOROETHENE	0.50	ND	1.40	ND	2.30	ND
TRANS-1,2-DICHLOROETHENE	0.50	ND	1.40	ND	2.30	ND
CIS-1,2-DICHLOROETHENE	0.50	ND	1.40	ND	2.30	ND
CHLOROFORM	0.50	ND	1.40	ND	2.30	ND
1,2-DICHLOROETHANE	0.50	ND	1.40	ND	2.30	ND
2,2-DICHLOROPROPANE	0.50	ND	1.40	ND	2.30	ND
DIBROMOMETHANE	0.50	ND	1.40	ND	2.30	ND
1,1,1-TRICHLOROETHANE	0.50	ND	1.40	ND	2.30	ND
CARBON TETRACHLORIDE	0.50	ND	1.40	ND	2.30	ND
BROMODICHLOROMETHANE	0.50	ND	1.40	ND	2.30	ND
1,2-DICHLOROPROPANE	0.50	ND	1.40	ND	2.30	ND
1,1-DICHLOROPROPENE	0.50	ND	1.40	ND	2.30	ND
TRICHLORETHENE	0.50	ND	1.40	ND	2.30	ND
1,3-DICHLOROPROPANE	0.50	ND	1.40	ND	2.30	ND
DIBROMOCHLOROMETHANE	0.50	ND	1.40	ND	2.30	ND
1,1,2-TRICHLOROETHANE	0.50	ND	1.40	ND	2.30	ND
1,2-DIBROMOETHANE	0.50	ND	1.40	ND	2.30	ND
BROMOFORM	0.50	ND	1.40	ND	2.30	ND
1,1,1,2-TETRACHLOROETHANE	0.50	ND	1.40	ND	2.30	ND
1,2,3-TRICHLOROPROPANE	0.50	ND	1.40	ND	2.30	ND
1,1,2,2-TETRACHLOROETHANE	0.50	ND	1.40	ND	2.30	ND
TETRACHLOROETHENE	0.50	ND	1.40	ND	2.30	ND
CHLOROBENZENE	0.50	ND	1.40	ND	2.30	ND
BROMOBENZENE	0.50	ND	1.40	ND	2.30	ND
2-CHLOROTOLUENE	0.50	ND	1.40	ND	2.30	ND
4-CHLOROTOLUENE	0.50	ND	1.40	ND	2.30	ND
1,3-DICHLOROBENZENE	0.50	ND	1.40	ND	2.30	ND
1,2-DICHLOROBENZENE	0.50	ND	1.40	ND	2.30	ND
1,4-DICHLOROBENZENE	0.50	ND	1.40	ND	2.30	ND
CIS-1,3-DICHLOROPROPENE	0.50	ND	1.40	ND	2.30	ND
TRANS-1,3-DICHLOROPROPENE	0.50	ND	1.40	ND	2.30	ND

TABLE 5 (CONTINUED)
LABORATORY ANALYTICAL SUMMARY
RIVER SEDIMENT SAMPLING VOLATILES AND CYANIDE DATA
GAESS INACTIVE HAZARDOUS WASTE DISPOSAL SITE
HARRIMAN, NEW YORK

SAMPLE NUMBER LABORATORY NUMBER DATE SAMPLED EPA METHOD 503.1 UNITS PARAMETER	MINIMUM DETECTION LIMIT ppb	RS-1 98569-001 Q 4/24/91 ppb	MINIMUM DETECTION LIMIT ppb	RS-2 98569-002 Q 4/24/91 ppb	MINIMUM DETECTION LIMIT ppb	RS-3 98569-003 Q 4/24/91 ppb
BENZENE	0.50	ND	1.40	ND	2.30	ND
TRICHLOROETHENE	0.50	ND	1.40	ND	2.30	ND
TOLUENE	0.50	14	1.40	ND	2.30	ND
TETRACHLOROETHENE	0.50	ND	1.40	ND	2.30	ND
CHLOROBENZENE	0.50	ND	1.40	ND	2.30	ND
ETHYLBENZENE	0.50	ND	1.40	ND	2.30	ND
P-XYLENE	0.50	ND	1.40	ND	2.30	ND
M-XYLENE	0.50	ND	1.40	ND	2.30	ND
O-XYLENE	0.50	ND	1.40	ND	2.30	ND
ISOPROPYLBENZENE	0.50	ND	1.40	ND	2.30	ND
STYRENE	0.50	ND	1.40	ND	2.30	ND
N-PROPYLBENZENE	0.50	ND	1.40	ND	2.30	ND
TERT-BUTYLBENZEN	0.50	ND	1.40	ND	2.30	ND
2,CHLOROTOLUENE	0.50	ND	1.40	ND	2.30	ND
4-CHLOROTOLUENE	0.50	ND	1.40	ND	2.30	ND
BROMOBENZENE	0.50	ND	1.40	ND	2.30	ND
SEC-BUTYLBENZENE	0.50	ND	1.40	ND	2.30	ND
1,3,5-TRIMETHYLBENZENE	0.50	ND	1.40	ND	2.30	ND
4-ISOPROPROPYLTOLUENE	0.50	ND	1.40	ND	2.30	ND
1,2,4-TRIMETHYLBENZENE	0.50	ND	1.40	ND	2.30	ND
1,4-DICHLOROBENZENE	0.50	ND	1.40	ND	2.30	ND
1,3-DICHLOROBENZENE	0.50	ND	1.40	ND	2.30	ND
N-BUTYLBENZENE	0.50	ND	1.40	ND	2.30	ND
1,2-DICHLOROBENZENE	0.50	ND	1.40	ND	2.30	ND
HEXACHLOROBUTADIENE	0.50	ND	1.40	ND	2.30	ND
NAPHTHALENE	0.50	ND	1.40	ND	2.30	ND
1,2,4-TRICHLOROBENZENE	0.50	ND	1.40	ND	2.30	ND
1,2,3-TRICHLOROBENZENE	0.50	ND	1.40	ND	2.30	ND
TOTAL ORGANICS		14.00		0.00		0.00

NOTES: A - DUE TO OVERLAP IN THE TWO METHODS, THESE VALUES ARE TREATED AS DUPLICATES AND ONLY THE HIGHEST VALUE WAS USED IN CALCULATING.
ND - NOT DETECTED
ALL ANALYSES COMPLETED BY ENVIROTEST LABORATORIES, INC.

SOIL GAS SURVEY

FORMER CHEMICAL WASTE SITE

HARRIMAN, NEW YORK

TARGET ENVIRONMENTAL SERVICES, INC.

SOIL GAS SURVEY

FORMER CHEMICAL WASTE SITE

RIVER AND MEADOW ROADS

HARRIMAN, NEW YORK

PREPARED FOR

SIRRINE ENVIRONMENTAL CONSULTANTS

100 NASSAU PARK BOULEVARD

PRINCETON, NEW JERSEY 08540

PREPARED BY

TARGET ENVIRONMENTAL SERVICES, INC.

9180 RUMSEY ROAD

COLUMBIA, MARYLAND 21045

(301) 992-6622

MAY 1991

EXECUTIVE SUMMARY

On April 22-24, 1991, **TARGET** Environmental Services, Inc. (**TARGET**) conducted a soil gas survey and collected water samples at the former chemical waste site, River and Meadow Roads, Harriman, New York, near an area where trichloroethene (TCE) contamination has been reported in municipal wells. Soil gas samples were analyzed by GC/ECD for halogenated hydrocarbons.

GC/ECD analysis revealed low levels of 1,1,1-trichloroethane (1,1,1-TCA) in some samples in the eastern and western portions of the survey area. A moderate level of trichloroethene (TCE) was present in the central survey area. Very low levels of tetrachloroethene (PCE) were present in the same area, as well as in the westernmost sample. A very low level of 1,1-dichloroethene (1,1-DCE) occurred in the westernmost sample.

A moderate level of TCE and low to very low levels of 1,1,1-TCA, PCE and 1,1-DCE are present in the soil gas within the subsurface of the surveyed area.

Introduction

Trichloroethene (TCE) contamination has been reported in municipal wells near the former chemical waste site, River and Meadow Roads, Harriman, New York. **Sirrine Environmental Consultants** contracted **TARGET** Environmental Services, Inc. (**TARGET**) to perform a soil gas survey and collect water samples at the site in order to determine the presence and extent of TCE contamination. Soils are reported as fine to coarse sands with occasional layers of silt and gravel. Ground water was reported at 10 feet below the surface. The site is located in a mixed residential/light industrial area. The field phase of the project was conducted on April 22-24, 1991.

Detectability

The soil gas survey data presented in this report are the result of precise sampling and measurement of contaminant concentrations in the vadose zone. Analyte detection at a particular location is representative of vapor, dissolved, and/or liquid phase contamination at that location. The presence of detectable levels of target analytes in the vadose zone is dependent upon several factors, including the presence of vapor-phase hydrocarbons or dissolved or liquid concentrations adequate to facilitate volatilization into the unsaturated zone.

Terminology

In order to prevent misunderstanding of certain terms used in this report, the following clarifications are offered:

The term "feature" is used in reference to a discernible pattern in the contoured data. It denotes a contour form rather than a definite or separate chemical occurrence.

The term "occurrence" is used to indicate an area where chemical compounds are present in sufficient concentrations to be detected by the analysis of soil vapors. The term is not indicative of any specific mode of occurrence (vapor, dissolved, etc.), and does not necessarily indicate or suggest the presence of "free product" or "phase-separated hydrocarbons."

The term "anomaly" refers to an area where hydrocarbons were measured in excess of what would normally be considered "natural" or "background" levels.

The term "analyte" refers to any of the hydrocarbons standardized for quantification in the chromatographic analysis.

The term "vadose zone" represents the unsaturated zone between the ground water table and the ground surface.

The term "indicates" is used when evidence dictates a unique conclusion. The term "suggests" is used when several explanations of certain evidence are possible, but one in particular seems more likely. As a result, "indicates" carries a higher degree of confidence in a conclusion than does "suggests."

Field Procedures

Soil gas samples were collected at a total of 20 locations at the site, as shown in Figure 1. To collect the samples, a van-mounted hydraulic probe was used to advance connected 3' sections of 1" diameter threaded steel casing down to a depth of 10'. Some samples were collected shallower than the proposed 10' due to probe refusal (Table 1). The entire sampling system was purged with ambient air drawn through an organic vapor filter cartridge. A teflon line was inserted into the casing to the bottom of the hole, and the bottom-hole line perforations were isolated from the up-hole annulus by an inflatable packer. A sample of in-situ soil gas was then withdrawn through the probe and used to purge atmospheric air from the sampling system. A second sample of soil gas was withdrawn through the probe and encapsulated in a pre-evacuated glass vial at two atmospheres of pressure (15 psig). The self-sealing vial was detached from the sampling system, packaged, labeled, and stored for laboratory analysis.

Prior to the day's field activities all sampling equipment and probes were decontaminated by washing with soapy water and rinsing thoroughly. Internal surfaces were flushed dry using pre-purified nitrogen or filtered ambient air, and external surfaces were wiped clean using clean paper towels.

Field control samples were collected at the beginning and end of each day's field activities. These QA/QC samples were obtained by filtering ambient air through a dust and organic vapor filter cartridge and collecting in the same manner as described above.

Four ground water samples (Samples 32-W, 33-W, 34-W and 35-W) were collected from the site, as shown in Figure 1. To collect the samples a van-mounted hydraulic probe was used to advance steel casing to a depth of 24'. Sample 32-W was collected at 21'. Once the steel casing was in place, water was allowed to fill the pipe. A water level sensor was used to detect the surface of the ground water table and to ensure that a sufficient amount of water was present to complete a sample. The water level sensor was removed and a stainless steel bailer was used to collect 40 ml of ground water. Samples were placed in glass vials with 3-5 drops of a 50% hydrochloric acid-water mixture, sealed, labeled and given to the client for analysis.

Prior to the day's field activities and after collection of each sample, the steel casing and the bailer apparatus were decontaminated by washing with Contrad, rinsing with distilled water and drying with nitrogen gas to ensure discrete sampling.

A field control sample was collected at the end of the day's field activities. This QA/QC sample was obtained using distilled water.

Laboratory Procedures

All of the soil gas samples collected during the field phase of the survey were analyzed according to EPA Method 601 on a gas chromatograph equipped with an electron capture detector (ECD), but using direct injection instead of purge and trap. Specific analytes standardized for the ECD analysis were:

1,1-dichloroethene (1,1-DCE)
methylene chloride (MC)
trans-1,2-dichloroethene (t-1,2-DCE)
chloroform (CF)
1,1-dichloroethane (1,1-DCA)
carbon tetrachloride (CT)
cis-1,2-dichloroethene (c-1,2-DCE)
1,1,1-trichloroethane (1,1,1-TCA)
trichloroethene (TCE)
1,1,2-trichloroethane (1,1,2-TCA)
tetrachloroethene (PCE)

The chlorinated hydrocarbons in this suite were chosen because of their common usage in industrial solvents, and/or their degradational relationship to commonly used compounds.

The analytical equipment was calibrated using an instrument-response curve and injection of known concentrations of the above standards. Retention times of the standards were used to identify the peaks in the chromatograms of the field samples and their response factors were used to calculate the analyte concentrations. The tabulated results of the laboratory analysis of the soil gas samples are reported in micrograms per liter ($\mu g/l$) in Table 2.

For QA/QC purposes, a duplicate analysis was performed on every tenth field sample. Laboratory blanks of nitrogen gas (99.999%) were also analyzed after every tenth field sample.

Discussion and Interpretation of Results

In order to provide graphic presentation of the results, individual data sets in Table 2 have been mapped and contoured to produce Figures 2 through 5. Map sample points with no data shown indicate that the analyte concentrations in the sample were below the detection limit.

GC/ECD analysis revealed low levels of 1,1,1-trichloroethane (1,1,1-TCA, Figure 2) in some samples in the eastern and western portions of the survey area (Stations 11, 12 and 23-26). A moderate level of trichloroethene (TCE, Figure 3) was present in the central survey area (Station 17), with lower levels to the northeast. Very low levels of tetrachloroethene (PCE, Figure 4) were present in the same area, as well as in the westernmost sample. A very low level of 1,1-dichloroethene (1,1-DCE, Figure 5) occurred in the westernmost sample.

A moderate level of TCE and low to very low levels of 1,1,1-TCA, PCE and 1,1-DCE are present in the soil gas within the subsurface of the surveyed area.

TABLE 1

SAMPLING DEPTH

SAMPLE	FEET
11	10
12	10
13	9
14	7
15	10
16	10
17	9
18	10
19	9
20	7.5
21	6.5
22	8
23	10
24	10
25	10
26	10
27	10
28	7
29	10
30	10

TABLE 2

LABORATORY RESULTS
ELECTRON CAPTURE DETECTOR ANALYSIS
CONCENTRATIONS IN MICROGRAMS PER LITER

SAMPLE	11DCE	MC	t12DCE	11DCA	c12DCE	CF	111TCA	CT	TCE	112TCA	PCE
11	1.7	<1.0	<1.0	<1.0	<1.0	<0.10	0.54	<0.05	<0.10	<0.10	1.4
12	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	2.2	<0.05	<0.10	<0.10	<0.05
13	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	<0.10	<0.05	<0.10	<0.10	<0.05
14	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	<0.10	<0.05	<0.10	<0.10	<0.05
15	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	<0.10	<0.05	<0.10	<0.10	<0.05
16	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	<0.10	<0.05	1.6	<0.10	<0.05
17	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	<0.10	<0.05	21	<0.10	0.50
18	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	<0.10	<0.05	5.2	<0.10	0.19
19	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	<0.10	<0.05	<0.10	<0.10	<0.05
20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	<0.10	<0.05	<0.10	<0.10	<0.05
21	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	<0.10	<0.05	<0.10	<0.10	<0.05
22	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	<0.10	<0.05	<0.10	<0.10	<0.05
23	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	0.14	<0.05	<0.10	<0.10	<0.05
24	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	0.60	<0.05	<0.10	<0.10	<0.05
25	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	0.16	<0.05	<0.10	<0.10	<0.05
26	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	0.39	<0.05	<0.10	<0.10	<0.05
27	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	<0.10	<0.05	<0.10	<0.10	<0.05
28	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	<0.10	<0.05	<0.10	<0.10	<0.05
29	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	<0.10	<0.05	<0.10	<0.10	<0.05
30	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	<0.10	<0.05	<0.10	<0.10	<0.05

11DCE = 1,1-dichloroethene
t12DCE = trans-1,2-dichloroethene
c12DCE = cis-1,2-dichloroethene
111TCA = 1,1,1-trichloroethane
TCE = trichloroethene
PCE = tetrachloroethene

MC = methylene chloride
11DCA = 1,1-dichloroethane
CF = chloroform
CT = carbon tetrachloride
112TCA = 1,1,2-trichloroethane

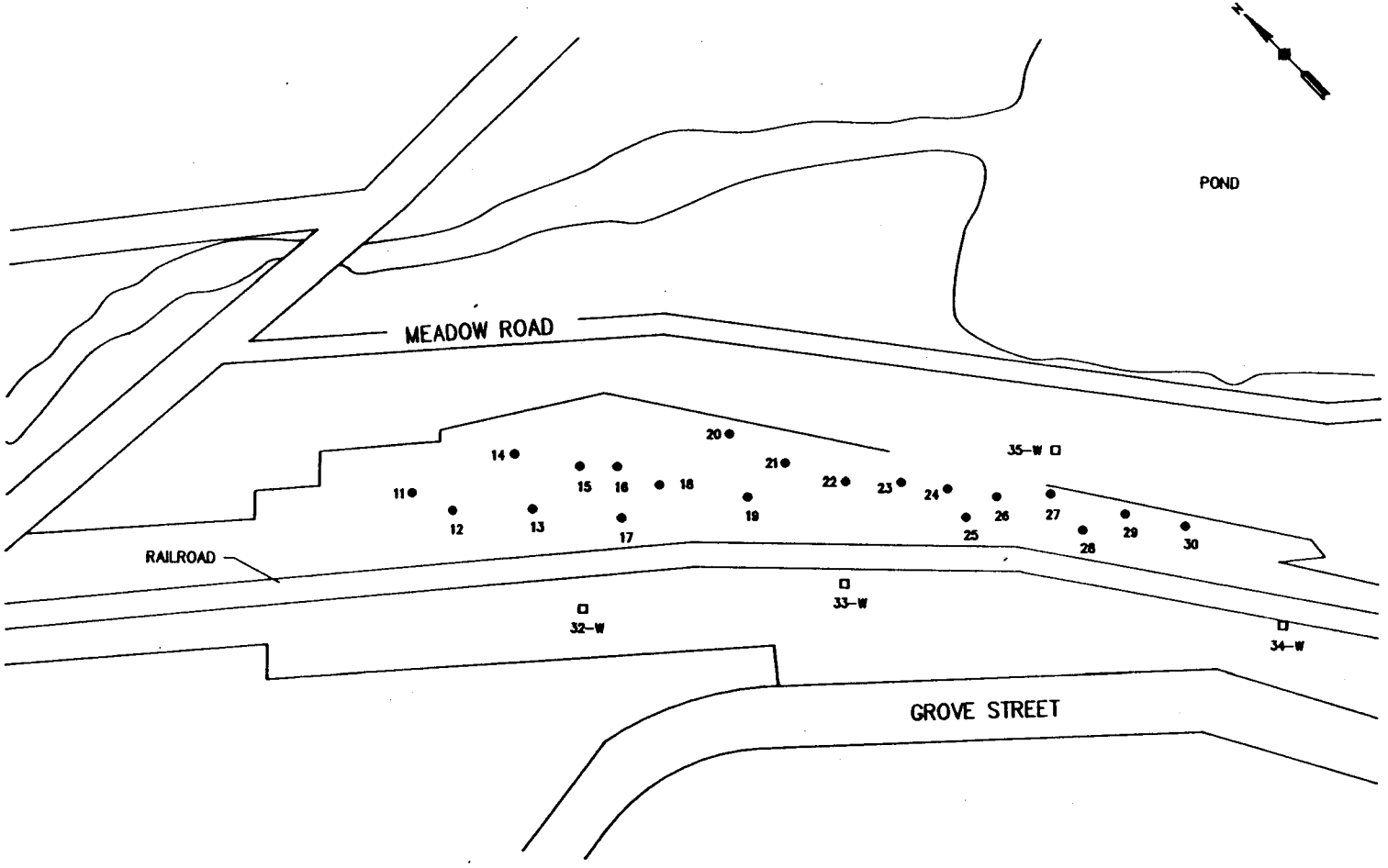
TABLE 2 (cont)

LABORATORY RESULTS
ELECTRON CAPTURE DETECTOR ANALYSIS
CONCENTRATIONS IN MICROGRAMS PER LITER

SAMPLE	11DCE	MC	t12DCE	11DCA	c12DCE	CF	111TCA	CT	TCE	112TCA	PCE
FIELD CONTROL SAMPLES											
1	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	<0.10	<0.05	<0.10	<0.10	<0.05
2	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	<0.10	<0.05	<0.10	<0.10	<0.05
3	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	<0.10	<0.05	<0.10	<0.10	<0.05
4	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	<0.10	<0.05	<0.10	<0.10	<0.05
LABORATORY DUPLICATE ANALYSES											
16	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	<0.10	<0.05	1.6	<0.10	<0.05
16R	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	<0.10	<0.05	1.6	<0.10	<0.05
26	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	0.39	<0.05	<0.10	<0.10	<0.05
26R	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	0.42	<0.05	<0.10	<0.10	<0.05
LABORATORY BLANKS											
BMSCW-1	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	<0.10	<0.05	<0.10	<0.10	<0.05
BMSCW-2	<1.0	<1.0	<1.0	<1.0	<1.0	<0.10	<0.10	<0.05	<0.10	<0.10	<0.05

11DCE = 1,1-dichloroethene
t12DCE = trans-1,2-dichloroethene
c12DCE = cis-1,2-dichloroethene
111TCA = 1,1,1-trichloroethane
TCE = trichloroethene
PCE = tetrachloroethene

MC = methylene chloride
11DCA = 1,1-dichloroethane
CF = chloroform
CT = carbon tetrachloride
112TCA = 1,1,2-trichloroethane



0 75 150
FEET

● SOIL GAS SAMPLE LOCATION

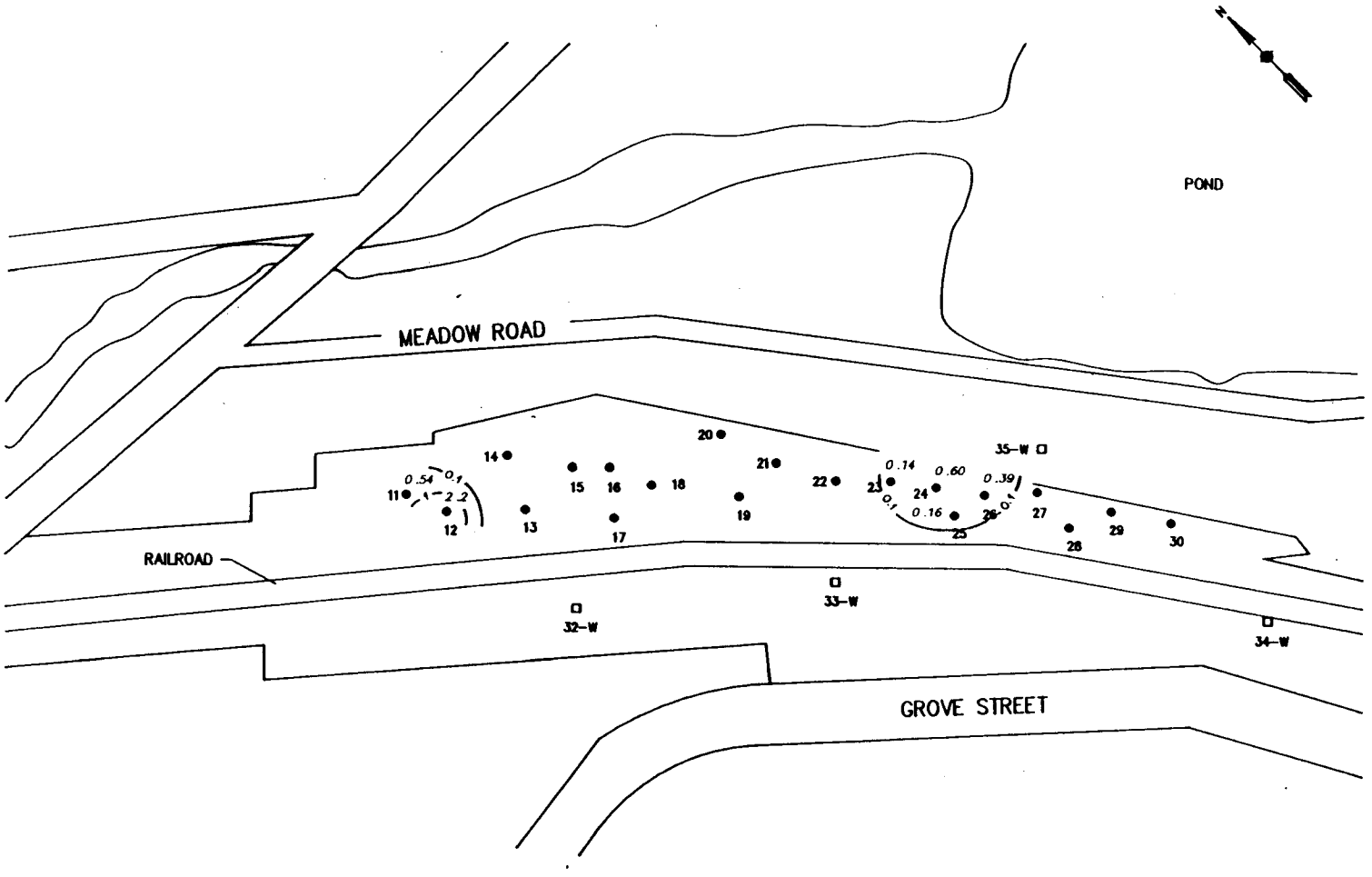
□ WATER SAMPLE LOCATION

TARGET ENVIRONMENTAL SERVICES, INC.

This map is integral to a written report and should be viewed in that context.

FIGURE 1. Sample Locations

FORMER CHEMICAL WASTE SITE
HARRIMAN, NEW YORK



0 75 150

FEET

● SOIL GAS SAMPLE LOCATION

□ WATER SAMPLE LOCATION

FIGURE 2. 1,1,1-Tetrachloroethane (1,1,1-TCA) ($\mu g/l$)

TARGET ENVIRONMENTAL SERVICES, INC.

This map is integral to a written report and should be viewed in that context.

FORMER CHEMICAL WASTE SITE
HARRIMAN, NEW YORK

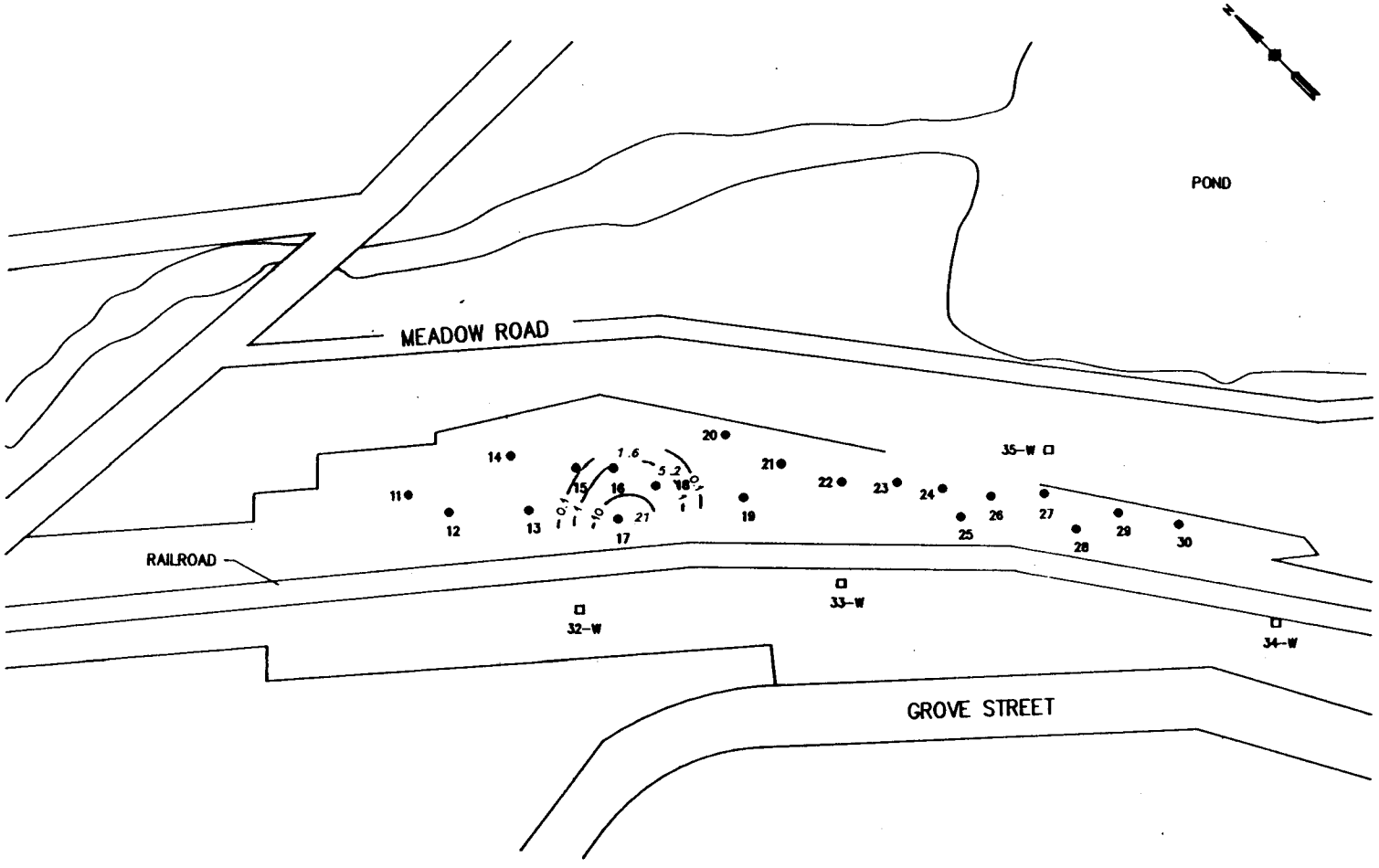
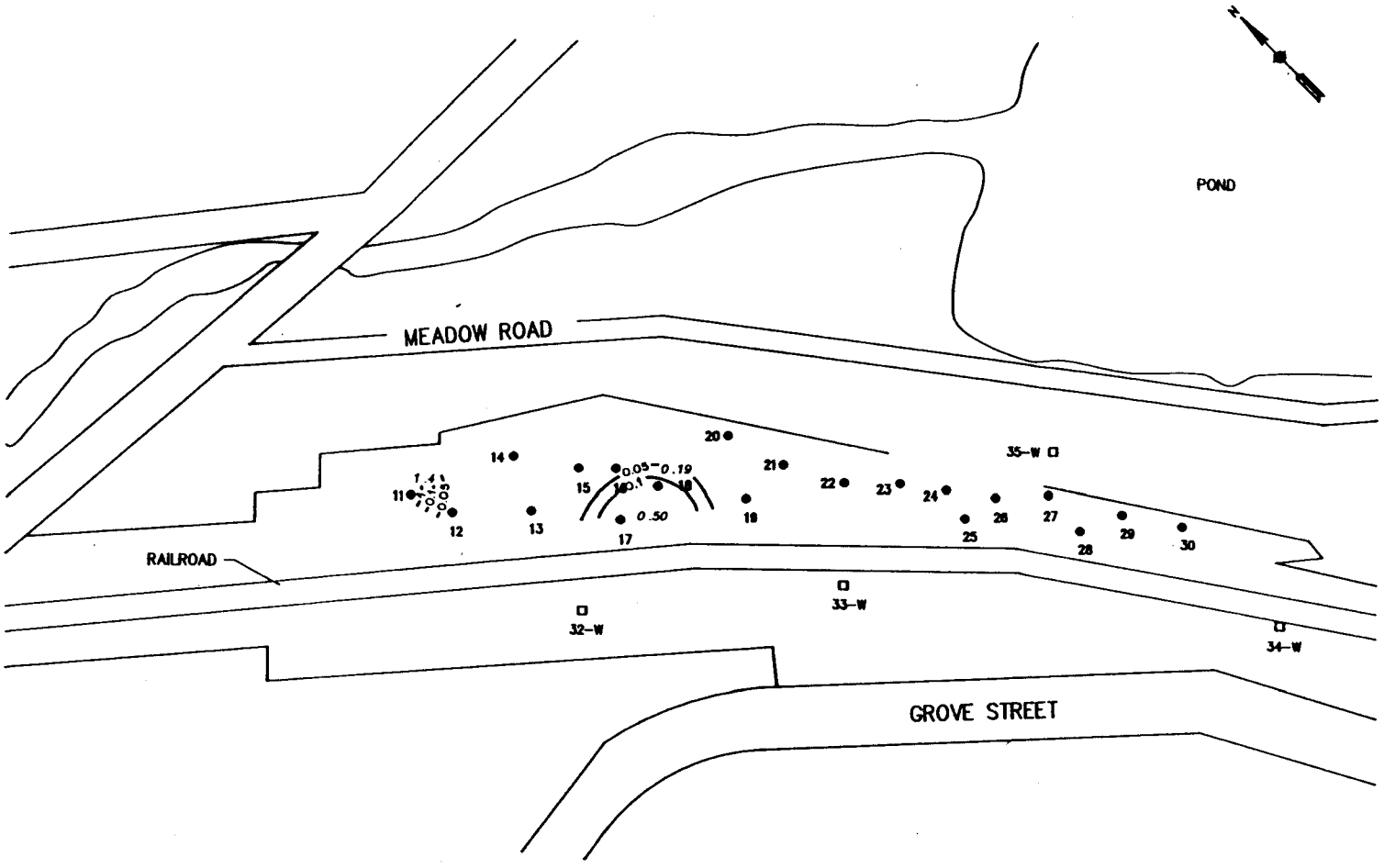


FIGURE 3. Trichloroethene (TCE)
(µg/l)

TARGET ENVIRONMENTAL SERVICES, INC.

This map is integral to a written report and should be viewed in that context.

FORMER CHEMICAL WASTE SITE
HARRIMAN, NEW YORK



0 75 150
FEET

● SOIL GAS SAMPLE LOCATION

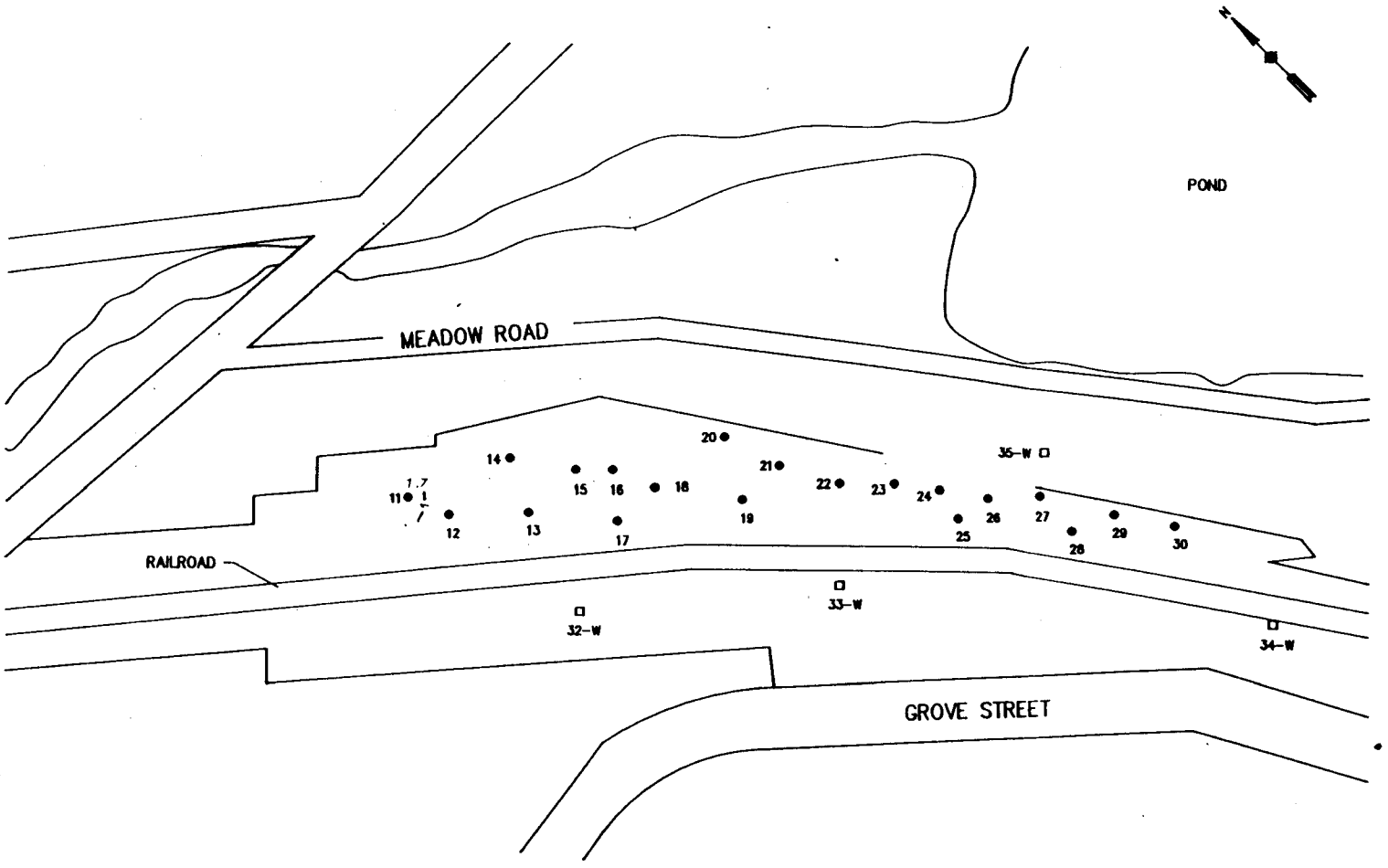
□ WATER SAMPLE LOCATION

TARGET ENVIRONMENTAL SERVICES, INC.

This map is integral to a written report and should be viewed in that context.

FIGURE 4. Tetrachloroethene (PCE)
(µg/l)

FORMER CHEMICAL WASTE SITE
HARRIMAN, NEW YORK



0 75 150
FEET

● SOIL GAS SAMPLE LOCATION

□ WATER SAMPLE LOCATION

FIGURE 5. 1,1-dichloroethene (1,1-DCE) ($\mu g/l$)

TARGET ENVIRONMENTAL SERVICES, INC.

This map is integral to a written report and should be viewed in that context.

FORMER CHEMICAL WASTE SITE
HARRIMAN, NEW YORK

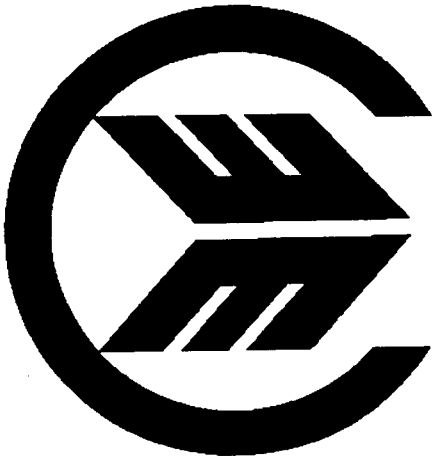
Gaess Inactive Hazardous Waste Disposal Site Harriman, New York

Site Number 336018

Citizen Participation Plan

Prepared For

Chemical Waste Management, Inc.



DECEMBER

~~February~~ 1993

Prepared By

SEC DONOHUE

Environment & Infrastructure

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Figure 2 ..... Site Location Map

Figure 3 ..... Existing Well Locations

Figure 4 ..... Proposed RI/FS Schedule and Tasks

1.0 INTRODUCTION

This document represents the site-specific citizen participation plan for the Gaess Inactive Hazardous Waste Site in the Village of Harriman, New York. The site is listed on the New York State Registry of Inactive Hazardous Waste Disposal Sites as a Class 2 site under Site Number 336018. This means that the site poses a significant threat to human health and/or the environment and action is required. The purpose of this plan, as set forth in the New York State Inactive Hazardous Waste Site Citizen Participation Plan is stated as follows:

> "The New York State Department of Environmental Conservation (NYSDEC) is committed to a citizen participation program as part of its responsibilities for the inactive hazardous waste site remedial program. Citizen participation promotes public understanding of the Department's responsibilities, planning activities and remedial activities at inactive hazardous waste disposal sites. It provides an opportunity for the Department to learn from the public information that will enable the Department to develop a comprehensive remedial program which is protective of both public health and the environment."

Citizen participation is an essential component that will be fully integrated with the technical component to achieve the most efficient and environmentally sound remedial program. This participation will be accomplished by identifying affected and/or interested public, establishing a local repository for the review of site documents, providing adequate notice of the availability of site documents and public meetings, assessing the public concerns and responding in an appropriate manner.

2.0 BACKGROUND INFORMATION

2.1 Site Location and Description

The Gaess Site is located in the Village of Harriman, Orange County, New York (Figure 1). The Village of Harriman lies within the boundaries of the Towns of Woodbury and Monroe. The site is situated approximately one quarter mile west of New York State Highway 17, off Meadow Road, southeast of the Ramapo River and adjacent to the right of way owned by the Consolidated Rail Corporation (Conrail) (Figure 2). A water well is located between the site and the river and is used by the Village of Harriman to supplement the water supply from their main well, which is located upstream to the southwest (Figure 3).

The Gaess site consists of approximately 4 acres and is located in the southern highlands of New York State which are associated with the Reading Prong, which trends southwest to northeast through Pennsylvania, New Jersey, and New York. The Gaess site is situated on a plateau which drops off rapidly to the northeast toward the Ramapo River. The topography rises rapidly to the southwest on the western side of the railroad right-of-way. The right-of-way, owned by Conrail, is located on the northern most extent of the plateau. It is understood, through past documentation, that previous site operations existed entirely on this plateau. The base of the plateau, north towards the river, is a floodplain.

2.2 Site History

In 1962, the site was leased from the Erie-Lackawana Railroad (Conrail predecessor) by John Kalodziejski, who operated the Harriman Sewage Disposal Company at this location. In 1972, the site was subleased to Gaess Environmental Services (Gaess). Gaess and its successor, SCA Chemical Services (SCA), operated a waste handling transfer station on the site until 1978. Chemical Waste Management (CWM) became involved with the site following the purchase of SCA in September, 1984.

In June, 1980, a NYSDEC Task Force discovered wastes abandoned on the site. These wastes were contained in two industrial tank truck trailers and various other waste containers. Following an investigation of the site, an additional tank truck trailer, a vacuum tank truck, and four 55-gallon drums were discovered buried at the site. In April, 1981 a Consent Agreement was signed between SCA and NYSDEC. This agreement initiated a cleanup of the site under the direction of the NYSDEC. The containers, the wastes contained in them and suspected contaminated soils were removed from the site by SCA in May through July of 1981 under the supervision of the

NYSDEC.

2.3 Problems Identified at the Site

In September 1984, SCA retained GeoEngineering Inc. to perform a site hydrogeological investigation based on the plan approved by the NYSDEC. The results of the investigation determined that trichloroethylene (TCE) and 1,1,1-trichloroethane (1,1,1-TCA) were present in the groundwater on the Gaess Site. However, the concentrations indicated by the groundwater samples analyzed were below the New York State Department of Health (NYSDOH) Drinking Water Standard of 50 ppb at the time of the investigation.

In 1990, it was discovered by the Village of Harriman that certain solvents were present in the Village of Harriman water supply well. CWM, who had acquired SCA, was contacted by the NYSDEC. CWM collected groundwater samples from the existing monitoring wells on the Gaess site. The results of the sampling indicated concentrations of TCE above the 1990 NYSDOH Drinking Water Standard of 5 ppb at the time of the investigation.

A Phase I and II investigation was performed by SEC Donohue, Inc. and identified the presence of 1,1,1-TCA and TCE in the groundwater of the Gaess Site. Additionally, soil samples, a soil gas survey, and river sediment samples were collected from the Gaess site and vicinity. The results from Phase I and II investigations confirmed the presence of TCE and 1,1,1-TCA in groundwater, and the soil gas survey determined the presence of various chlorinated solvents within the soil at minimal concentrations.

Due to the presence of the contaminants in the Village of Harriman water supply well and upon completion of the Phase I and II investigations, the NYSDEC and CWM entered into a Consent Agreement to construct a water treatment system on the water supply well.

3.0 PROJECT DESCRIPTION

3.1 Project Objectives

CWM is planning to conduct a Remedial Investigation/Feasibility Study (RI/FS) at the Gaess Site. In performing an RI/FS, CWM intends to reassess the extent of the problems at this site and determine the most environmentally sound and cost-effective way to deal with the problems in accordance with all applicable regulations.

3.2 Project History

In June 1980, a NYSDEC Task Force discovered wastes abandoned on the site. In April 1981, a Consent Agreement was signed between SCA and NYSDEC which initiated a cleanup of the site under the direction of NYSDEC.

1982

In early 1982, Ground/Water Technology, Inc. was engaged by SCA Chemical Services, Inc. to perform a geologic reconnaissance of the Harriman site and recommend a groundwater monitoring program. Their letter report to SCA, dated March 23, 1982, recommended the installation of two monitoring wells. A copy of this letter report was sent to the New York State Department of Environmental Conservation (NYSDEC). Following discussions with NYSDEC in the summer of 1984, the monitoring plan was approved with the addition of two piezometers for recording water level data.

1984

SCA retained GeoEngineering, Inc. in September, 1984 to perform a site hydrogeological investigation. During the week of October 15, 1984, two piezometers designated as GEI-1 (GeoEngineering, Inc.) and GEI-2, and two groundwater monitoring wells designated GEI-3 and GEI-4 were constructed on the site (Figure 3). These wells, and the Village of Harriman water supply wells (MH-1 and MH-3) were sampled on November 29, 1984. Concentrations of cyanide (33 micrograms per liter [ug/l]) and zinc (9ug/l) were detected in well GEI-4 and concentrations of cyanide (190 ug/l) and 1,1,1-trichloroethane (19 ug/l) in GEI-3. Trichloroethylene (TCE) was detected in the village well at a concentration of 13 ug/l, slightly above the detection limit of 10 ug/l. Copper was detected at a concentration of 17 ug/l. The results of the hydrogeological investigation were documented in a report prepared by GeoEngineering for CWM entitled

"Hydrogeological Investigation and Monitoring Plan," dated January, 1985. This report was never accepted by NYSDEC as final.

1990

In October 1990, CWM was contacted by the NYSDEC regarding contamination found in the Village of Harriman, Mary Harriman wells 1 and 3. The Harriman wells were sampled by the Village of Harriman on July 19, 1990. The analytical results indicated that in the shallow water supply well, designated MH-1, trichloroethene (TCE) was present at a concentration of 6.7 parts per billion (ppb) and the deep water supply well, designated MH-3, contained TCE at a concentration of 0.76 ppb. The New York State Department of Health (NYSDOH) Drinking Water Standards for Principal Organic Contaminants (POC) is five (5) ppb for TCE.

CWM responded to the NYSDEC notification by performing a Phase I investigation to determine if the Gaess site could be the source of the contamination detected in the Village of Harriman water supply wells. CWM retained SEC Donohue, Inc. to re-sample MH-1 and MH-3 as well as the upgradient Village of Harriman main water supply well on January 16, 1991. SECD also collected two surface water samples from the adjacent Ramapo River on the same date. The results of the Phase I investigation were documented in a report dated March 1991. The results of the samples collected as part of the Phase I investigation indicated the presence of 1,1,1-trichloroethane (1,1,1-TCA) and TCE above the detection limits of 0.5 ppb in three of the seven samples collected. EnviroTest Laboratories, Newburgh, New York determined that MH-1 contained 1.2 ppb of 1,1,1-TCA and 14 ppb and 16 ppb of TCE and MH-3 contained 0.69 ppb and 1.6 ppb of TCE. The results also indicated the presence of 1,1,1-TCA in monitoring well (GEI-4) in a concentration of 4.8 ppb.

Upon completion of the Phase I investigation, the NYSDEC notified CWM of the need to further investigate the Gaess Site. The Phase II investigation was performed to characterize the soils in and around the former Gaess site operations area to determine if residual soil contamination existed. A secondary purpose of the Phase II investigation was to determine if the TCE contamination present in the Village of Harriman water supply well (MH-1) was the result of a release from the Gaess site.

River sediment samples collected during the Phase II investigation did not indicated a presence of TCE or 1,1,1-TCA in the Ramapo River or the associated pond. The soil sampling and the soil gas survey (SGS) performed in the area of the former site operations determined the presence of contaminants at concentrations below the NYSDEC levels for human ingestion of soil.

The Phase II investigation at the Gaess site found low levels of TCE and 1,1,1-TCA in the groundwater. The downgradient groundwater samples contained concentrations of TCE and 1,1,1-TCA above the 5 ppb limit for NYSDOH drinking water standards (GHP-1 and GHP-3, hydropunch sample locations, contained 8.2 ppb of 1,1,1-TCA and 8.9 ppb of TCE, respectively).

Although the upgradient groundwater samples did not indicated a presence of either TCE or 1,1,1-TCA, UG-2 did indicate the presence of benzene, toluene, ethylbenzene, and m-xylene. Benzene was the only contaminant in UG-2 which was present at a concentration above the NYSDOH limit of 0.5 ppb, at a concentration of 0.53 ppb. This contamination may have been associated with oil staining on the ground surface in the location where sample UG-2 was collected. None of the other upgradient groundwater samples indicated the presence of volatile organic contamination.

In addition, the on-site monitoring well (GEI-4) installed by GeoEngineering as part of their 1985 hydrogeologic investigation was resampled as part of the Phase II investigation and indicated the presence of 1,1,1-TCA at a concentration of 4.8 ppb.

1991

In December 1991, the NYSDEC and CWM entered into an Interim Remedial Measure (IRM) Consent Agreement in order to remediate the contamination found in the Village of Harriman water supply well, MH-1.

The IRMs incorporated at the Gaess Site have primarily involved excavation and off-site disposal of contaminated soils and the construction and on-going operation of the air stripping tower to remove volatile organic compounds from the Village of Harriman water supply well. Any future remedial activities that may be ultimately incorporated at the site will be dependent on information obtained during the Remedial Investigation.

3.3 Description of Remedial Program

The RI will further characterize the site in order to evaluate the actual or potential risk to human health and the environment posed by the site. This investigation will focus on the contaminated site media that have been identified during previous investigations. This will produce an expanded data base to evaluate potential risks associated with the site and support the development and assessment of any further remedial activities that may be required. The following tasks will be performed as part of the RI:

- A site survey will be conducted and a detailed topographic map will be developed.

- Soil samples will be collected at three designated (Section 6.0 RI/FS Work Plan) site locations and a background location. The samples will be analyzed for volatile organic compounds. One sample from each boring will also be analyzed for TCL and TAL parameters.

- A Soil Gas Survey grid will be established across the floodplain below the site. Based on the results of this assessment soil samples may be collected and analyzed for TCE and 1,1,1-TCA. Additionally, monitoring wells may also be installed;

- A geophysical survey will be performed in order to identify the top of bedrock.

- The existing monitoring well network will be resampled. The samples will be analyzed for volatile organic compounds and metals (EPA Methods 502.1 and Priority Pollutant Metals).

- If a depression is identified in the bedrock surface during the RI from the results of proposed soil borings or the proposed seismic survey, the NYSDEC may require installation of additional soil borings or monitoring wells;

- A focused risk evaluation will be conducted to assess the potential human health and environmental risks associated with the Gaess Site in the absence of any further remedial activities.

In the FS portion of the RI/FS, potential remediation alternatives or combinations of technologies will be evaluated as they apply to the site and the contaminated media. The alternatives that are developed will be assessed according to the following criteria:

- Protection of human health and the environment;

- Compliance with Applicable or Relevant and Appropriate Requirements (ARARs);

- Short-term effectiveness;

- Long-term effectiveness and permanence;

- Reduction of contaminant toxicity, mobility;
- Cost;
- State acceptance; and
- Community acceptance.

The alternatives may be further evaluated and modified based on additional site characterization. The intent of the analysis is to provide sufficient information so that the selection of the appropriate remediation is based on a realistic comparison of alternatives.

After a remedy has been selected as a result of the RI/FS process, a remedial program may be initiated. In the case of the Gaess site, an IRM involving the construction and on-going operation of a groundwater treatment system has been implemented.

3.4 Project Schedule

The proposed RI/FS schedule and tasks is represented in Figure 4. The Remedial Investigation stage, which includes mobilization, sampling and monitoring activities, risk evaluation, laboratory analysis, data validation and the completion of a draft report, with NYSDEC review and the subsequent revisions, is scheduled to be completed by November, 1993. the feasibility study is expected to be finalized by March, 1994.

4.0 CONTACT LIST

This contact list may be periodically updated to include any additional information.

PRP Contact:

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Local Governments:

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Mr. John Karl
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Town of Monroe
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Town Board
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Monroe, NY 10950

Mr. Peter Martin
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Ms. Sandy Leonard
Town Board
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County Executive
range County Legislature
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Ms. Marion Murphy
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Roberta Murphy
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Steward Airport
New Windsor, NY 12553

Honorable William Larkin, Jr.
State Senator
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Kingston, NY 12247

Mr. Thomas DiNapoli
Chair of Legislative Commission
on Hazardous Waste
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Albany, NY 12248

Federal:

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7 Penn Plaza, Suite 600
New York, NY 10001

Honorable Daniel Moynihan
U.S. Senator
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41st Floor
New York, NY 10174

Mr. Benjamin Gilman
U.S. Congressman
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Adjacent Property Owners and Other Interested Parties:

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Harriman, NY 10926

Mr. and Mrs. Robert Schweizer
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Mr. Kenneth Kroog
Conlin Lane
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45 Gilbert Street
Monroe, N.Y. 10950
Attn: Legal

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Middletown, NY 10940
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P.O. Box 190
Warwick, NY 10990

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WMJV 105.5 FM/WPUT 1510 AM
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Patterson, NY 12563

News Director
WVOS 1240 AM/WVOS 95.9 FM
P.O. Box 150
Liberty, NY 12754

News Director
WTBY-TV
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City Editor
Unlimited Newspapers
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WLIR 1300 AM
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City Editor
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5.0 IDENTIFICATION OF DEPARTMENT CONTACTS

For General Information:

New York State Department of Environmental Conservation

Toll-Free Information Number: 1-800-342-9296

Citizen Participation Specialist

Erin O'Dell, NYSDEC, Region 3, 21 South Putts Corners Road, New Paltz, NY 12561-1696, (914) 255-5453

Bruce Bentley, Albany Office, 50 Wolf Road, Albany, NY 12233-7010, (518) 457-0849.

For Technical Information:

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Regional Hazardous Waste Remediation Engineer

Ramanand Pergadia, NYSDEC, Region 3, 21 South Putts Corners Road, New Paltz, NY 12561-1696, (914) 255-5453

New York State Department of Health

G. Anders Carlson, Bureau of Environmental Exposure Investigation, NYSDOH, 2 University Place, Room 205, Albany, NY 12203, (800) 485-1158 Ext. 310

Don Miles, Bureau of Environmental Exposure Investigation, NYSDOH, 2 University Place, Room 205, Albany, NY 12203, (800) 485-1158 Ext. 305

Nina Knapp, Bureau of Toxic Substance Assessment, NYSDOH, 2 University Place, Room 240, Albany, NY 12203, (800) 485-1158 Ext. 402

Orange County Health Department

Ken Mundy, 124 Main Street, Goshen, New York 10924 Tel. (914) 294-7961

6.0 IDENTIFICATION OF DOCUMENT REPOSITORIES

Documents related to the remedial program at the Gaess Site, if applicable, are available for public review at the following locations:

Village of Harriman
Village Hall
1 Church Street
Harriman, NY 10926
(906) 783-4421

Hours: Monday Through Friday, 8:00 a.m. - 12:30 p.m.; 1:30 p.m. - 4:00 p.m.

Monroe Free Library
Millpond Parkway
Monroe, NY 10950
(914) 783-4411

Hours: Monday, 10:00 a.m. - 5:00 p.m.
Tuesday, 10:00 a.m. - 9:00 p.m.
Wednesday, 1:00 p.m. - 5:00 p.m.
Thursday, 10:00 a.m. - 9:00 p.m.
Friday, 10:00 a.m. - 5:00 p.m.
Saturday, 10:00 a.m. - 4:00 p.m.

NYSDEC
Region 3
21 South Putts Corner Road
New Paltz, NY 12561-1696

Hours: Monday Through Friday 8:30 a.m. to 4:45 p.m.

The following documents, if applicable, will be placed in the repositories when they become available:

- Phase I Report, Phase II Report
- Request for Proposals
- Contract Documents for the Remedial Investigation/Feasibility Study
- Consent Orders/Consent Judgement/Stipulations (where possible/required drafts of Consent Orders, Consent Judgements and Stipulations)
- Final draft work plans developed by PRPs
- Remedial Investigation Report
- Feasibility Study Report
- Remedial Design Document
- Plans and specifications for remedial construction
- Quality Assurance/Quality Control Plans
- Health and Safety Plans (including contingency plans)
- Testing, sampling and monitoring data
- All responsiveness summaries
- The Site-Specific Citizen Participation Plan, and
- All fact sheets, newsletters, etc.

A document availability notice will be mailed to the contact list periodically to update the interested public about project documents that are available to review. These notices may be combined with other mailings.

7.0 DESCRIPTION OF SPECIFIC CITIZEN PARTICIPATION ACTIVITIES

Specific citizen participation activities are required by NYSDEC policy and 6NYCRR Part 375 during the various phases of the clean up process. The contact list will be utilized to inform and involve the interested/affected public of participation activities. Local project document repositories are established to enable the public to review project-related documents. The contact list will be notified when the documents become available.

During the development of the scope of work for the RI/FS the following activities are required by NYSDEC policy:

1. A minimum of one copy of the final draft work plan for the RI/FS will be placed in each of the local document repositories.

2. A public notice, informing the public of the availability of the final draft will be mailed to the contact list. The notice will include the following components;

   - Description of the site
   - Discussion of the RI/FS objectives
   - Overview of the RI/FS
   - Identification of the local document repository
   - Request for information and comments which may be useful in finalizing the work plan for the RI/FS
   - Identification of PRP, NYSDEC and DOH contacts

3. A minimum of one copy of the final work plan for the RI/FS will be placed in each of the local document repositories.

Since the Phase I and Phase II field work has been completed, the draft reports and NYSDEC's comments for each of the phases will also be placed in the local document repositories.

Additionally, during the RI/FS, information letters may be developed periodically to be distributed to the contact list. If necessary, public availability sessions/meetings will be held to answer questions, receive comments, explain the proposed action and schedule, review the site status and relay any restrictions or advisories concerning the site.

When the final draft RI/FS report is publicly available, the following activities are required by NYSDEC policy:

1. A minimum of one copy of the final draft RI/FS report will be placed in the local document repositories. A public notice of the availability of the final draft will be mailed to the contact list. The purpose of this notice is to:

   - Briefly describe the site
   - Provide an overview of the work completed in the RI/FS
   - Summarize the findings of the RI/FS
   - Provide a brief analysis of the proposed remedial program
   - Summarize the reasons for selection of the proposed program
   - Request information and comments which may be useful in finalizing the RI/FS
   - Announce the date, time and place of the public meeting
   - Announce a comment period of at least 30 days for written comments

2. Hold a public meeting. The purpose of the meeting is to:

   - Present the final draft RI/FS report
   - Discuss the remedial alternative considered
   - Describe, in detail, the most promising alternative and how this alternative mitigates the problems at the site

- Receive public comment

- Present schedule for future work

3. A transcript of the public meeting will be prepared and made available for public inspection and copying in the NYSDEC office nearest the site as well as the local document repository.

4. A minimum 30-day period for submission of written comments will be provided.

5. A responsiveness summary will be prepared and mailed to the contact list. The purpose of the responsiveness summary is to:

   - Provide a brief analysis of the remedial program selected for implementation

   - Discuss any significant changes from the proposed remedial program

   - Provide a response to significant comments, criticisms and new data

6. If the remedial program implemented differs significantly, a legal notice will be published in a local paper of general circulation to provide an explanation of the significant differences and the reasons such changes were made.

When the conceptual design is completed, a minimum of one copy will be placed in each local document repository as required by NYSDEC policy. A notice may be mailed to the contact list announcing the availability.

When the draft design is substantially complete, NYSDEC policy requires that a minimum of one copy be placed in the local document repository. Additionally, the contact list will be informed of the availability. The purpose of the contact is to:

- Briefly describe the site

- Provide a brief synopsis of remedial efforts to date

- Request information and comments which may be useful in finalizing the design

After the construction contract is awarded, NYSDEC policy requires that a minimum of one copy of the draft final plans and specifications and health and safety plans be placed in the local document repository. The same is required when the final plans are completed and at this time the contact list will be notified. The purpose of the contact is to:

- Provide a brief background of the site and the proposed remedial plan
- Describe the significant elements of the health and safety plans

Before the start of any remedial construction which may affect the public, the contact list will be notified. The purpose of the contact is to:

- Briefly describe the site
- Provide a brief overview of the goals of the remedial construction
- Describe the remedial construction
- Discuss the upcoming activity
- Present a schedule for the remainder of the work.

At the completion of the remedial construction, the contact list will be notified. The purpose of the contact is to:

- Briefly describe the site and the remedial program
- Explain how the remedial program mitigates the problems at the site
- Provide a brief description of the long-term operational, monitoring and maintenance requirements at the site.
- Identify who is responsible for operations, monitoring and maintenance.

Additional optional activities may take place based upon NYSDEC discretion. These activities may include development and distribution of information letters and conducting public availability sessions/meetings.

8.0 GLOSSARY OF KEY TERMS AND MAJOR PROGRAM ELEMENTS

8.1 Definitions of Commonly Used Citizen Participation Terms

Availability Session - Scheduled gathering of the Department staff and other involved individuals with the public in a setting less formal than a public meeting. This setting encourages "one-to-one" discussions in which the public meets with people involved with the project on an individual or small group basis to discuss particular questions or concerns.

Citizen Participation - A process to inform and involve the interested/affected public in the decision-making process during identification, assessment and remediation of inactive hazardous waste sites. This process helps to assure that the best decisions are made from environmental, human health, economic, social and political perspectives.

Citizen Participation Plan - A document that describes the site-specific citizen participation activities that will take place to complement the "technical" (remedial) activities. It also provides site background and rationale for the selected citizen participation program for the site. A plan may be updated or altered as public interest or the technical aspects of the program change.

Citizen Participation Specialist - A Department staff member within the Office of Public Affairs who provides guidance, evaluation and assistance to help the Project Manager carry out the site-specific Citizen Participation program.

Contact List - Names, addresses and/or telephone numbers of individuals, groups, organizations and media interested and/or affected by a particular hazardous waste site. Compiled and updated by the Department. Interest in the site, stage of remediation and other factors guide how comprehensive the list becomes. Used to assist the Department to inform and involve the interested/affected public.

Document Repository - Typically a regional DEC office and/or public building, such as a library, near a particular site, at which documents related to remedial and citizen participation activities at the site are available for public review. Provides access to documents at times and a location convenient to the public. Environmental Management Council (EMCs), Conservation Advisory Committees (CACs) as well as active local groups often can serve as supplemental document repositories.

Information Sheet - A written discussion of a site's remedial process, or some part of it, prepared by the Department for the public in easily understandable language. May be prepared for the "general" public or a particular segment. Uses may include, for example: discussion of an element of the remedial program, opportunities for public involvement, availability of a report or other information or announcement of a public meeting. May be mailed to all or part of the interested public, distributed at meetings and availability sessions or sent on an "as requested" basis.

Project Manager - A department staff member within the Division of Hazardous Waste Remediation (usually an engineer, geologist or hydrogeologist) responsible for the day-to-day administration of activities, and ultimate disposition of, one or more hazardous waste sites. The Project Manager works with the Office of Public Affairs as well as fiscal and legal staff to accomplish site-related goals and objectives.

Public - The universe of individuals, groups and organizations: a) affected (or potentially affected) by an inactive hazardous waste site and/or its remedial program; b) interested in the site and/or its remediation; c) having information about the site and its history.

Public Meeting - A scheduled gathering of the Department staff and the public to give and receive information, ask questions and discuss concerns. May take one of the following forms: large-group meeting called by the Department; participation by the Department at a meeting sponsored by another organization such as at town board or Department of Health; working group or workshop; tour of the hazardous waste site.

Public Notice - A written or verbal informational technique for telling people about an important part of a site's remedial program coming up soon (examples: announcement that the report for the RI/FS is publicly available; a public meeting has been scheduled).

The public notice may be formal and meet legal requirements (for example: what it must say, such as announcing the beginning of a public comment period; where, when and how it is published).

> PUBLISH - for purposed of 6NYCRR Part 373.7, at a minimum requires publication of a legal notice in a local newspaper of general circulation.

Another kind of public notice may be more informal and may not be legally required (examples: paid newspaper advertisement; telephone call to key citizen leaders; targeted mailings).

Responsiveness Summary - A formal or informal written or verbal summary and response by the Department to public questions and comments. Prepared during or after important elements in a site's remedial program. The responsiveness summary may list and respond to each question, or summarize and respond to questions in categories.

Toll-Free "800" Telephone Information Number - Provides cost-free access to the Department by members of the public who have questions, concerns or information about a particular hazardous waste site. Calls are taken and recorded 24 hours a day and a Department staff member contacts the caller as soon as possible (usually the same day).

8.2 Definitions of Significant Elements and Terms of the Remedial Program

Note: The first eight definitions represent major elements of the remedial process. They are presented in the order in which they occur, rather than in alphabetical order, to provide a context to aid in their definition.

Site Placed on Registry of Inactive Hazardous Waste Sites - Each inactive site known to contain hazardous waste must be included in the Registry. Therefore, all sites which state or county environmental or public health agencies identify as known to have received hazardous waste should be listed in the Registry as they are identified.

Phase I Site Investigation - Preliminary characterizations of hazardous substances present at a site; estimates pathways by which pollutants might be migrating away from the original site of disposal; identifies population or resources which might be affected by pollutants from a site; observes how the disposal area was used or operated; and gathers information regarding who might be responsible for wastes at a site. Involves a search of records from all agencies known to be involved with a site, interviews with site owners, employees and local residents to gather pertinent information about a site. Information gathered is summarized in a Phase I report.

After a Phase I investigation, DEC may choose to initiate an emergency response; to nominate the site for the National Priorities List; or, where additional information is needed to determine site significance, to conduct further (Phase II) investigation.

Phase II Site Investigation - Ordered by DEC when additional information is still needed after completion of the Phase I to properly classify the site. A Phase II investigation is not sufficiently detailed to determine the full extent of the contamination, to evaluate remedial alternatives, or to prepare a conceptual design for construction. Information gathered is summarized in a Phase

II report and is used to arrive at a final hazard ranking score and to classify the site.

Remedial Investigation (RI) - A process to determine the nature and extent of contamination by collection data and analyzing the site. It includes sampling and monitoring, as necessary, and includes the gathering of sufficient information to determine the necessity for, and proposed extent of, a remedial program for the site.

Feasibility Study (FS) - A process for developing, evaluating and selecting remedial actions, using data gathered during the remedial investigation to: define the objectives of the remedial program for the site and broadly develop remedial action alternatives; perform an initial screening of these alternatives; and perform a detailed analysis of a limited number of alternatives which remain after the initial screening stage.

Remedial Design - Once a remedial action has been selected, technical drawings and specifications for remedial construction at a site are developed, as specified in the final RI/FS report. Design documents are used to bid by consulting engineers with experience in inactive hazardous waste disposal site remedial actions.

Construction - PRP selects contractors and supervises construction work to carry out the designed remedial alternative. Construction may be as straightforward as excavation of contaminated soil with disposal at a permitted hazardous waste facility. On the other had, it may involve drum sampling and identification, complete encapsulation, leachate collection, storage and treatment, groundwater management, or other technologies. Construction costs may vary from several thousand dollars to many millions of dollars, depending on the size of the site, the soil, groundwater and other conditions, and the nature of the wastes.

Monitoring/Maintenance - Denotes post-closure activities to insure continued effectiveness of the remedial actions. Typical monitoring/maintenance activities include quarterly inspection by an engineering technician; measurement of level of waste in monitoring wells; or collection of groundwater and surface water samples and analysis for factors showing the condition of waster, presence of toxic substances, or other indicators of possible pollution from the site. Monitoring/maintenance may be required indefinitely at many sites.

Consent Order - A legal and enforceable negotiated agreement between the Department and responsible parties where responsible parties agree to undertake investigation or cleanup or pay for the costs of investigation and cleanup work at a site. The order includes a description of the remedial actions to be undertaken at the site and a schedule for implementation.

Contract - A legal document signed by a contractor and the Department to carry out specific site remediation activities.

Contractor - A person or firm hired to furnish materials or perform services, especially in construction projects.

Delisting - Removal of a site from the state Registry based on study which shows the site does not contain hazardous wastes.

Potentially Responsible Party (PRP) Lead Site - An inactive hazardous waste site at which those legally liable for the site have accepted responsibility for investigation problems at the site, and for developing and implementing the site's remedial program. PRPs include: those who owned the site during the time wastes were placed, current owners, past and present operators of the site and those who generated the wastes placed at the site. Remedial programs developed and implemented by PRPs generally result from an enforcement action taken by the State and the costs of the remedial program are generally borne by the PRP.

Ranking System - The United States Environmental Protection Agency uses a hazard ranking system (HRS) to assign numerical scores to each inactive hazardous waste site. The scores express the relative risk or danger from the site.

Responsible Parties - Individuals, companies (e.g. site owners, operators, transporters or generators of hazardous waste) responsible for or contributing to the contamination problems at a hazardous waste site. PRP is a potentially responsible party.

Site Classification - The Department assigns sites to classifications established by state law, as follows:

* Classification 1 - A site causing or presenting an imminent danger of causing irreversible or irreparable damage to the public health or environment. Immediate action is required.

* Classification 2 - A site posing a significant threat to the public health or environment. Action is required

* Classification 2a - Temporary classification assigned to sites that have inadequate and/or insufficient data for inclusion in any of the other classifications. Most

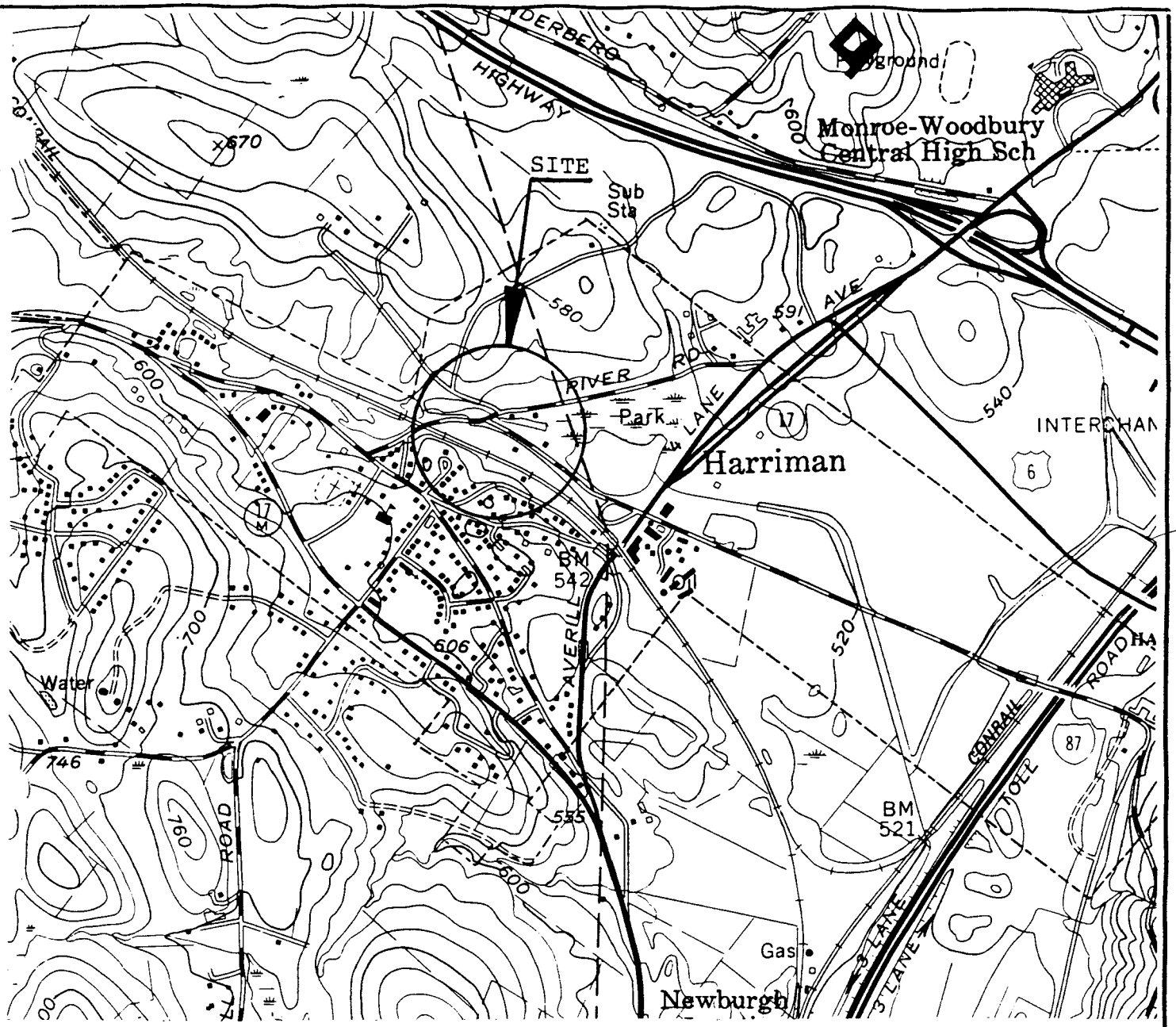
likely the site will require a Preliminary Site Assessment to obtain more information. Based on the results, the site would then be reclassified or removed from the Registry.

* Classification 3 - A site which has hazardous waste confirmed, but not a significant threat to the public health or environment. Action may be deferred.

* Classification 4 - A site which has been properly closed. Requires continued management.

* Classification 5 - A site which has been properly closed, with no evidence of present or potential adverse impact. No further action is required.

State-Lead Site - An inactive hazardous waste site at which the Department has responsibility for investigating problems at the site and for developing and implementing the site's remedial program. The Department uses money available from the State Superfund and the Environmental Quality Bond Act of 1986 to pay for these activities. The Department has direct control and responsibility for the remedial program.



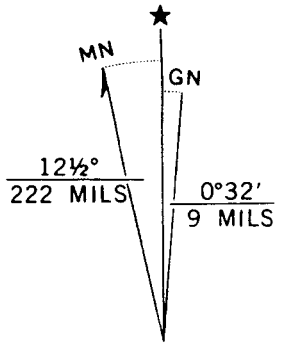
UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

MONROE QUADRANGLE
NEW YORK–ORANGE CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

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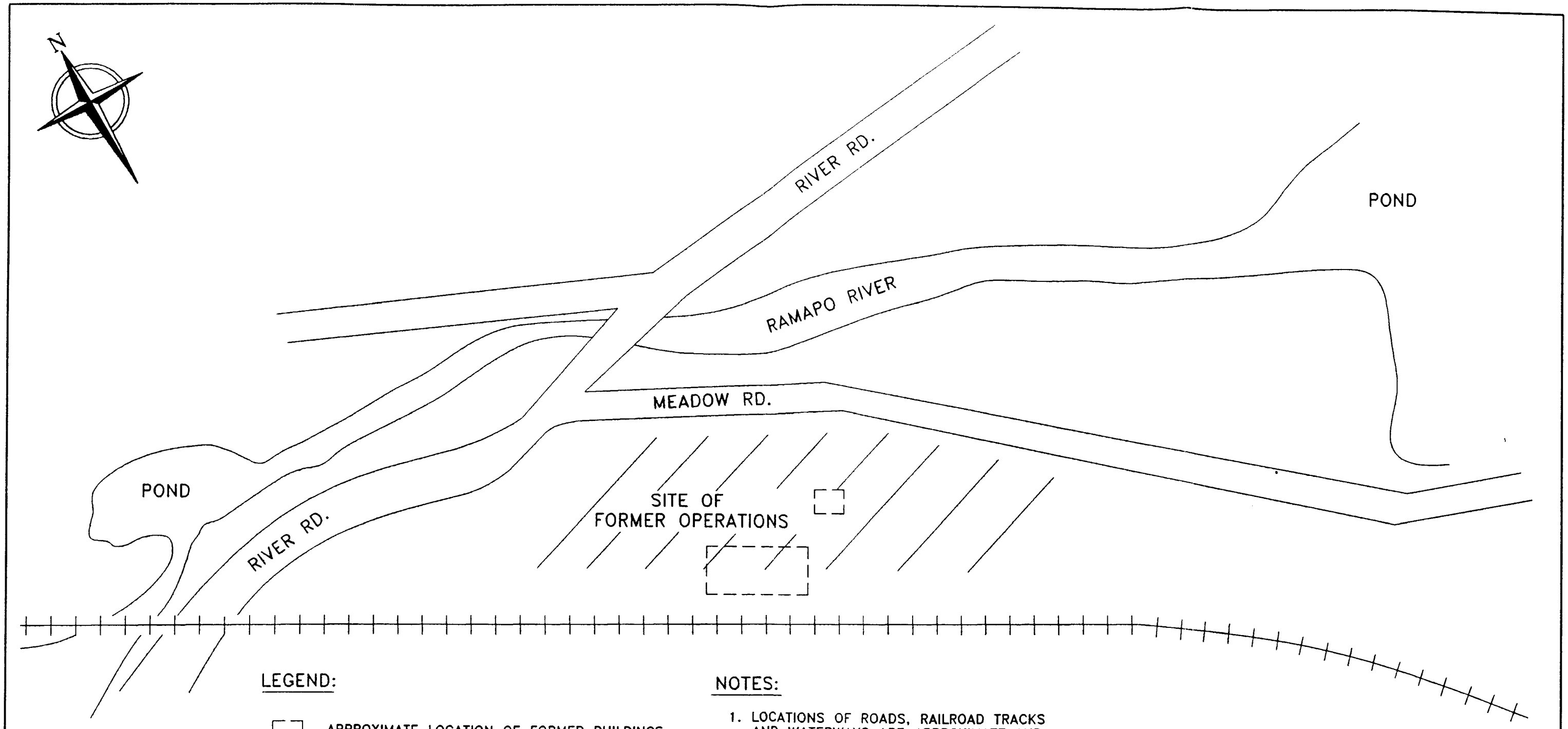
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CONTOUR INTERVAL 20 FEET



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Environment & Infrastructure

FIGURE 1
REGIONAL LOCATION MAP
GAESS INACTIVE HAZARDOUS
WASTE DISPOSAL SITE
HARRIMAN, NY



LEGEND:

APPROXIMATE LOCATION OF FORMER BUILDINGS

CONRAIL RIGHT OF WAY

NOTES:

1. LOCATIONS OF ROADS, RAILROAD TRACKS AND WATERWAYS ARE APPROXIMATE AND ARE DERIVED FROM ORANGE COUNTY TAX MAPS.

SCALE IN FEET

0 100' 200'

NO.	REVISIONS	MADE	CHK	DATE

	NAMES	DATE
DRAWN:	B.E.M.	1/6/93
DESIGN:		
CHECKED:		
PE:		
APP'D:		
APP'D:		
APP'D:		

CWM
CHEMICAL WASTE
MANAGEMENT INC.

FIGURE 2
SITE LOCATION MAP
GAESS SITE
HARRIMAN, NY

SEC DONOHUE
Environment & Infrastructure

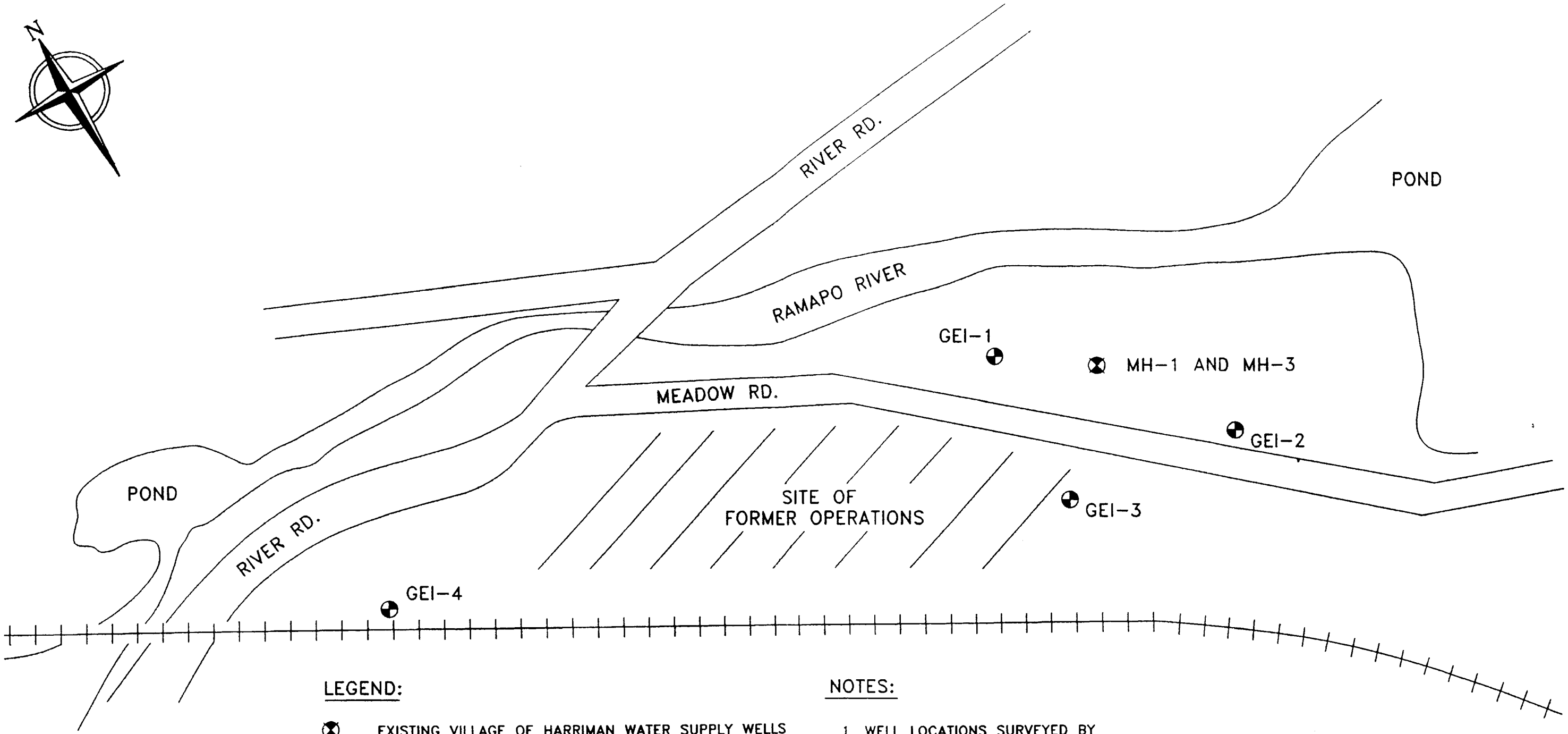
PROJECT NUMBER P1093 DATE

SECD DWG NUMBER P1093P01 FILE NUMBER

CLIENT DWG NUMBER SHEET NUMBER

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PLOT DATE:



LEGEND:

- EXISTING VILLAGE OF HARRIMAN WATER SUPPLY WELLS
- MONITORING WELL/PIEZOMETER
- CONRAIL RIGHT OF WAY

NOTES:

1. WELL LOCATIONS SURVEYED BY GEO-ENGINEERING, INC.
2. LOCATIONS OF ROADS, RAILROADS TRACKS AND WATERWAYS ARE APPROXIMATE AND ARE DERIVED FROM ORANGE COUNTY TAX MAPS.

SCALE IN FEET

0 100' 200'

NO.	REVISIONS	MADE	CHK	DATE

	NAMES	DATE
DRAWN:	B.E.M	1/6/93
DESIGN:		
CHECKED:		
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APP'D:		
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APP'D:		

CWM
CHEMICAL WASTE
MANAGEMENT INC.

FIGURE 3
EXISTING WELL LOCATIONS
GAESS SITE
HARRIMAN, NY

SEC DONOHUE
Environment & Infrastructure

PROJECT NUMBER P1093 DATE

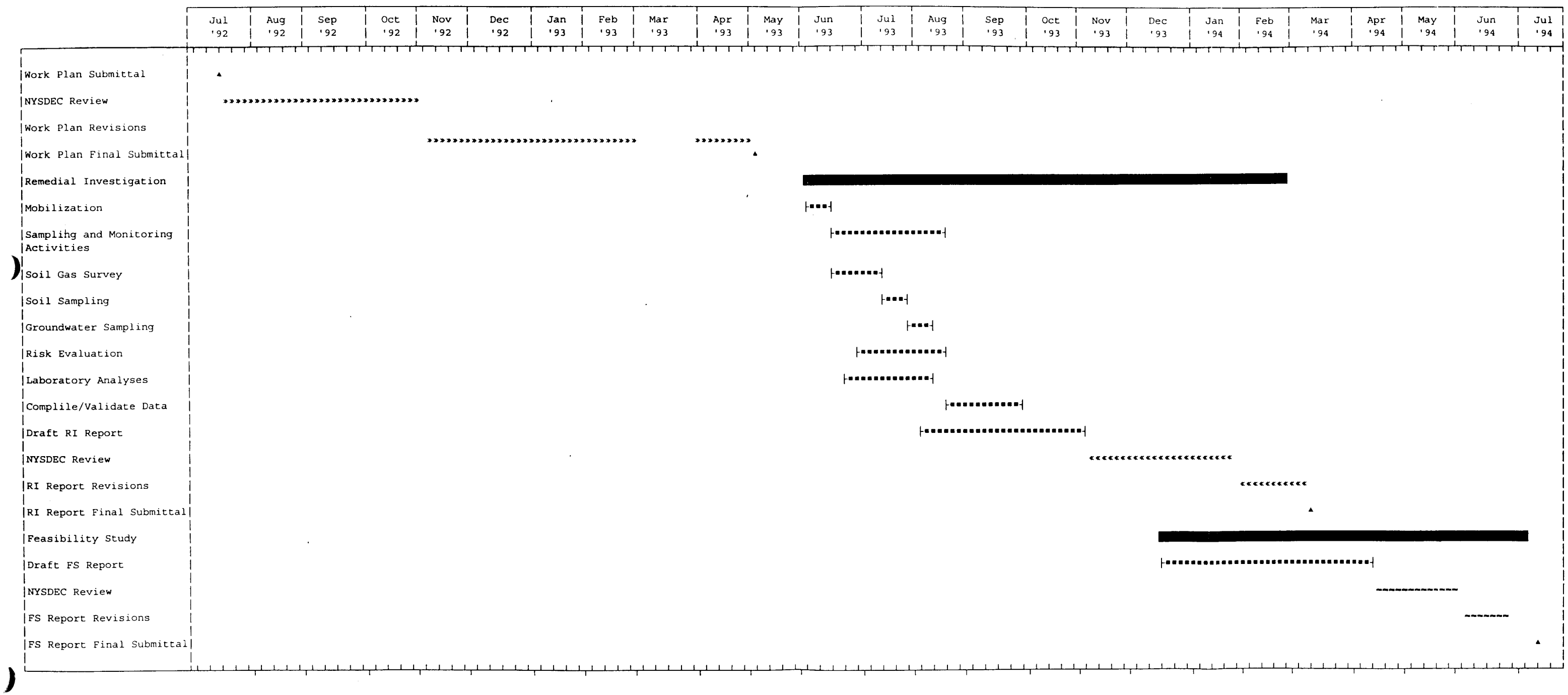
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PLOT DATE:

FIGURE 4
Gaess Site
Proposed RI/FS Schedule and Tasks

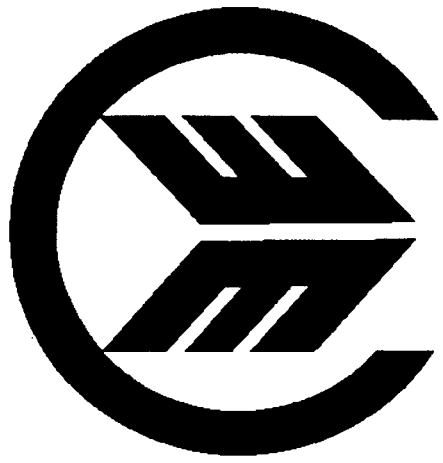


▲ = Milestone

Gaess Inactive Hazardous
Waste Disposal Site
Harriman, New York
Site Number 336018

Field Sampling Plan

Prepared For
Chemical Waste Management, Inc.



February 1993

Prepared By

SEC DONOHUE
Environment & Infrastructure

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3	Analytical Methods

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2	Site Location Map
3	Proposed Soil Gas Survey
4	Proposed Sediment, Soil, and Groundwater Sampling Locations
5	Existing Monitoring Wells
6	Chain of Custody
7	Sample Label
8	Request for Analysis
9	Sampling Shipping Form
10	Daily Quality Control Report
11	Field Data Information Log for Groundwater Sampling
12	Headspace Analysis Form
13	Daily Report
14	Daily Production Summary Drilling and Well Installation Activities
15	Test Boring Report
16	Proposed RI/FS Schedule and Tasks

1.0 INTRODUCTION

This Field Sampling Plan (FSP) has been prepared to describe the sample collection, rationale, location, and procedures for the Remedial Investigation (RI) to be conducted at the Gaess Site. located in the Village of Harriman, New York. The regional location of the site is shown on Figure 1 in Attachment 1. The site location map is shown on Figure 2 in Attachment 1.

1.1 OBJECTIVES

Field sampling will be conducted as part of the RI in order to evaluate the requirements for further remedial activities. Site contamination will be characterized with respect to soil and groundwater.

The Field Sampling Plan includes the following information:

- Sampling rationale and locations
- Sample designations
- Sampling equipment and procedures
- Sample handling and analysis
- Sample team organization
- Sampling schedule

1.2 SCOPE OF SAMPLING ACTIVITIES

SEC Donohue's (SECD) Remedial Investigation/Feasibility Study (RI/FS) Work Plan for the site describes the scope of the sampling activities.

The site characterization monitoring activities are:

- Another round of groundwater sampling at the two existing monitoring wells GEI-3 and GEI-4;
- Sampling of the site soils at specific locations;
- Surface water and sediment sampling;
- Performing a soil gas survey on flood plain;
- Performing a geophysical survey across the flood plain;
- Possible additional soil sampling and monitoring well installations pending the results of the soil gas and geophysical surveys.

2.0 SAMPLING RATIONALE AND LOCATIONS

The sampling rationale and locations for the Gaess Site are described in the Sampling Plan, Section 6.0, of the RI/FS Work Plan.

The site sampling plan is based on previous investigations, operational history of the site, and discussions with NYSDEC personnel. Sample locations for the site soils, soil gas and groundwater will be at the sample points presented on Figure 3 and 4 in Attachment 1.

3.0 SAMPLE DESIGNATIONS

Sample designations are essential to the data management process. The sample identification procedures must be consistent, logical and documented to ensure the integrity of the data. All samples collected during the confirmatory sampling will be identified through a system of numbering and labelling as described below.

Groundwater samples collected from monitoring wells will be designated with the prefix GEI- followed by the well number (i.e., GEI-1).

Soil samples collected will be designated with the prefix SP- followed by the designated number (i.e., SP-1)

Soil Gas Survey samples will be designated with the following point number (i.e., SG-1).

Surface water and sediment samples will be designated with the following point number (i.e., SW-1, SED-1).

4.0 SAMPLING EQUIPMENT AND PROCEDURES

This section describes the various sampling equipment and procedures which will be used during the RI Sampling Program. All sample containers will be supplied in a virgin state by the contract laboratory. Table 1 in Attachment 2 presents sample container descriptions / requirements for both aqueous and soil samples.

Additional field QA/QC samples are required for collection and analysis according to the requirements of Table 2 in Attachment 2.

4.1 SOIL SAMPLING

Soil sampling methods will be utilized at four site locations:

> Between previous sample locations B-6 and B-7, downhill from B-7 and in the center of the triangle formed by previous sample locations B-8, B-9 and B-10. A fourth location will be selected for background samples. Additional locations may be sampled pending the results of the soil gas survey.

Procedures are presented below. Sampling, labeling, storage and transportation procedures are described in Section 5.0.

4.1.1 General Site Soils

Borings will be drilled at predetermined locations to collect soil samples for analysis of volatile organic compounds with one sample from each boring also analyzed for the Target Compound List (TCL) and Target Analyte List (TAL) parameters as described in the RI/FS Work Plan.

The soil borings will be drilled using a truck-mounted drilling rig equipped with 3 1/2-inch ID, hollow-stem augers. The soil samples will be collected with split-spoons driven through the hollow-stem of the augers. Soil samples will be collected continuously by driving a 24-inch carbon steel split-spoon in accordance with ASTM D-1586-67. Soils from the split-spoon samples will be classified according to the Unified Soil Classification System in the field by the site geologist.

The drilling rig and all drilling equipment (tools, rods and augers) will be steam cleaned prior to drilling and between soil borings. Split-spoons used to collect soil samples will be decontaminated by steam cleaning. During drilling operations, an organic vapor analyzer (OVA) or photoionization detector (PID) will be used to monitor the breathing zone for organic vapors. Health and safety considerations are discussed in detail in the Health and Safety Plan (HASP).

The required soil samples will be collected in the following manner. When the hollow-stem augers are just above the target depth zone to be sampled, a split-spoon sampler will be driven 24 inches below the bottom of the augers to collect the sample. Once the split-spoon has been retrieved, the sampler will don new gloves before opening the split-spoon. Equal portions of soil from each spoon will be placed in the container. A stainless-steel spoon will be used to pack the sample into the container to prevent air voids. Excess soil will be removed from the container mouth before the septa lid is placed on the container.

4.2 GROUNDWATER SAMPLING

Groundwater Monitoring Wells GEI-3, and GEI-4 will be sampled for TCL volatile organics and TAL Metals. Existing monitoring well locations are shown in Figure 4. Information for each well will be recorded in the Field Data Information Logs. New laboratory grade gloves will be donned by sampling personnel before work begins on each well. The gloves will be changed as needed during purging and sampling activities.

Each well will be purged prior to sampling to remove stagnant water which is not representative of formation water. Usually three to five well volumes are removed. One well volume will be calculated by the following formula:

$$V = \Pi * r^2 * h$$

where:

V	=	volume of water in well
Π	=	3.14159
r	=	radius of well casing
h	=	height of water column

The height of the water column is determined by subtracting the depth to water from the total well depth. The depth to water will be determined using an electronic water level tape. The well depth will be determined using a stainless-steel tag bar suspended from a graduated tape. The water level tape and tag bar will be decontaminated between wells by washing the probe in tap water with laboratory grade detergent, rinsing with tap water and a final rinse with deionized water.

Measurements of indicator parameters (temperature, pH, turbidity and conductivity) will be measured periodically while the well is being purged. The pH and conductivity meter will be calibrated each day and the results of the calibration recorded in the field sampling log book. When the indicator parameters are stable and three to five well volumes have been removed, the well will be sampled. Otherwise purging of the well will continue until the parameters are stable. A parameter is considered stable if the last three consecutive measurements are within ten percent of the average of the last three measurements. For wells which do not recover, the well will be purged until dry and a sample collected as soon as enough water enters the well to allow a sample to be collected.

A Geomon-gas actuated sampler will used to purge and sample the wells. The sampler is activated by utilizing either an oil-less air compressor or laboratory grade nitrogen gas. The gas is entered into the unit, flow controlled by a regulator, which displaces the water up a teflon tube to the surface.

After purging the required amount of water from the well, the well will be sampled by evacuating water from the Geomon pump sampling port directly into the sample container. Each VOA vial will be filled so that a positive meniscus forms above the edge of the container. After the cap is tightened, the vial will be inverted, gently tapped, and checked for air bubbles. If bubbles are present, the cap will be removed and another meniscus formed before recapping the vial. The method will be repeated until no air is entrapped in the vial. The sample containers for metals will contain preservatives supplied by the analytical laboratory.

4.3 SURFACE WATER AND SEDIMENT SAMPLING

Surface water and sediment samples from the Ramapo River were collected during the Phase I & II investigations. A second round of confirmatory surface water and sediment sampling will be performed. The samples will be collected from the same locations as those collected in the Phase II investigation. Sediment samples will be collected in still-water areas of the surface water, where sediments have been deposited, using a bucket auger. The bucket auger will be

decontaminated between sampling locations using the same procedures as for the boring water sampling equipment. The surface water samples will be collected directly into the sample containers. The proposed sampling locations are shown on Figure 4 in Attachment 1. These samples will be analyzed for volatile organic compounds and cyanide.

4.4 SOIL GAS SURVEY

4.4.1 Field Collection Procedures

Soil gas samples will be collected on the floodplain at 50-foot centers. The soil gas survey will be completed using the Petrex passive soil gas survey technology. The survey is completed by installing Petrex samplers into the ground at each point on the grid. The method of sampling over time, enhances the sensitivity and the risk of obtaining false negatives are minimized, even in adverse weather conditions or in low permeability soil.

The sampler consists of two collectors, each a ferromagnetic wire coated with an activated carbon adsorbent in a screw top glass culture tube. Each sampler is typically placed in a shallow hole, 14-18 inches deep. The hole is backfilled and the location is marked. The sampler is left in the ground from one to thirty days, then retrieved and sealed for transportation back to the laboratory for analysis.

The Petrex soil gas sampling technique is adaptable to various surface conditions commonly encountered within survey areas. These surfaces typically include concrete, asphalt, grass, and gravel. Two installation methods are routinely utilized to adapt to these surface conditions.

The first method utilizes a coring shovel for sampler installations in grass or otherwise loosely consolidated soil conditions. The shovel cores a 14 inch deep by 2 inch diameter hole in the surface soils. Petrex soil gas samplers are placed (open end down) at the bottom of each core hole. The samplers are then backfilled with an aluminum foil plug and the original excavated soil. To complete installation, sample locations are marked with a ribbon flagging and a number pin flag, as well as entered into a field notebook and plotted on a field map.

The second method of sampler installation utilizes an electric rotary hammer, equipped with an 18 inch by 1.5 inch diameter drill bit, for sampler installations under concrete, asphalt, or otherwise consolidated conditions. A hole is drilled through the surface to the dimensions of the drill bit equipped to the rotary hammer. Petrex soil gas samplers are placed at the bottom of

each drilled hole. For retrievel purposes, a cleaned galvanized steel wire is attached to each sampler. Aluminum foil is used to plug each hole to approximately two inches below grade. Then each hole is capped to grade with hydraulic cement. The hydraulic cement serves as protection from the external surface environment.

Time calibration samplers are included in Petrex soil gas surveys. These samplers are included as a means of monitoring the loading rates of volatile and semivolatile organic compounds (VOCs and SVOCs) emanating from the soil gas at a survey area onto the Petrex collectors. During Petrex sampler installation, two sets of three to five time calibration samplers are also installed at survey sample locations that best represent the range of soil gas response for the survey area. These representative locations are determined based on previous soils and/or groundwater studies and other site specific conditions such as gradient and potential source areas.

The first set of time calibration samplers are generally retrieved with a week or less following the intial installation and the second set one week later.

Petrex soil gas samplers are retrieved following a time period that has allowed for the soil gas emanating from the subsurface environment of the survey area to equilibrate with the installed Petrex samplers. This time integration period is determined for each Petrex soil gas survey based on time calibration data or site conditions. Retrieval operations are dependent on surface conditions and routinely consist of the following two methods.

The first method applies to grass covered or loosely consolidated soil conditions. A trowel is utilized to expose the backfilled samplers; then with a pair of tongs, the samplrs are brought to the surface. At the surface, the sampers are sealed, cleaned, and labeled. Following retrieval, all debris are gathered adn the core hole is backfilled with original material.

The second method applies to concrete, asphalt, or other consolidated surface conditions. A hammer and chisel is utilized to remove the hydraulic cement plug and expose the sampler. By means of the pre-attached retrieval wire, the sampler is brought to the surface. At the surface, the retrieval wire is removed and the sampler is sealed, cleaned, and labeled.

Following retrieval, each drill hole is backfilled and patched with cement or asphalt.

When the determination from the time test tubes is favorable for the complete survey, all the tubes are removed and sent to the Northeast Research Institute's (NERI) laboratory for data analysis by Curie-point desorption Mass Spectrometer. The compounds detected at each sampling

point are identified and the relative response for a compound or mixture at each sample location is displayed in color coded contour maps. The soil gas map prepared by NERI will indicate the nature and extent of contamination, and can reveal source areas and potential migration pathways.

4.4.2 Laboratory Procedures

The adsorbed compounds are desorbed and analyzed with a Curie point pyrolizer in tandem with a mass spectrometer. The Curie point wire acts as a heating element for desorbing the adsorbed compounds when coupled with radio frequency in the mass spectrometer inlet system. Quality assurance is maintained by tuning the mass spectrometer with an internal standard to maintain correct mass assignment and peak resolution. In addition, the mass spectrometer is monitored every 25 samples to assure low level background readings. Identification of compounds is done by comparing mass spectra of the survey samples to a reference library of spectra of the pure compounds suspected of being present within the survey area.

4.5 DECONTAMINATION PROCEDURES

All field sampling equipment and drilling tools will be decontaminated in an area specifically designated for this purpose. The decontamination site will be located in an area near where surface soils are expected to be clean based on preliminary site characterization data. All decon fluids and wastes will be collected and contained in drums.

Drill rigs, support vehicles, and associated drilling tools and equipment will be steam cleaned on-site, prior to commencement of drilling, to reduce the potential of cross-contamination. Down-hole drilling equipment and tools will be steam cleaned between boreholes and covered in plastic sheeting until use. Excess soil on the drill rigs and support vehicles will be removed by steam cleaning between boreholes as needed.

Sampling equipment (split spoons, trowels and mixing bowls, etc.) to be used at multiple sampling locations will be cleaned in the field between each use. The standard decontamination protocol for all sampling equipment is provided below:

1. Scrub equipment thoroughly with a soft bristle brush in a phosphate-free laboratory soap and tap water solution.

2. Rinse equipment thoroughly with tap water.

3. Rinse equipment with a 10 percent (at least) nitric acid solution. If sampling for metals, all metal sampling equipment will be rinsed with a 10 percent NITRIC Acid Solution. If metals analysis is not required. This step is omitted.

4. Rinse equipment thoroughly with tap water.

5. Rinse equipment thoroughly with deionized water.

6. Place equipment on plastic or aluminum foil or drying rack and allow to air dry for 5 to 10 minutes.

7. Wrap equipment in one layer of aluminum foil. Roll edges of foil into a "tab" to allow for easy removal.

4.6 DOCUMENTATION

A field logbook shall be maintained by field personnel during all field activities. Logbook entries shall be made with indelible ink, and entries shall be as descriptive and detailed as possible, yet remain factual and objective. The beginning of each daily entry shall include the following information:

- Date
- Time
- Weather conditions
- Personnel on site
- Level of personal protection
- Description and sketch of site
- Signature of person making entry in logbook

The cover of the logbook shall be labelled with the name of the person and company in charge of the book, the project name and number, and the dates of field activity duration.

Entries concerning each sample shall contain information regarding the location of sampling, sample identification number, time of sample collection, analytical parameters, analytical laboratory, field parameter measurements, and any field observations.

To assure consistency, standard forms will be used to document activities in the field. These standard forms will include the following:

- Chain of Custody
- Request for Analysis
- Sample Label
- Sampling Shipping Form
- Daily Quality Control Report
- Field Data Information Log for Groundwater Sampling
- Headspace Analysis Form
- Daily Report
- Daily Production Summary Drilling and Well Installation Activities
- Test Boring Report

Standard forms will be completed in the field by the field personnel. These forms will then be submitted to the Project Manager for technical review. After review and approval, all completed forms will be submitted for final publication.

Copies of these forms are shown on Figures 6 through 15 in Attachment 1.

5.0 SAMPLE HANDLING AND ANALYSIS

This section describes the sample handling and analysis procedures for all media sampled and includes the analytical testing programs; sample containers, preservation, packaging and documentation; and containment and disposal of wastes.

5.1 ANALYTICAL TESTING PROGRAM

All analytical fractions, parameters, and methods are those of the USEPA CLP Statement of Work for Inorganic (Document Number ILMO 2.0) and Organic (Document Number OLM 01.0) Analyses.

The analytical fractions include volatile organics and metals for groundwater samples and volatile organic compounds, TCL and TAL parameters for soils. The analytical methods for the parameters discussed above are presented in the Quality Assurance Project Plan (QAPP) and Table 3. Field screening for temperature, pH, turbidity, and specific conductance of aqueous samples, and of volatile vapor headspace for subsurface soil samples will also be conducted.

5.2 SAMPLE CONTAINERS AND PRESERVATION

Sample containers will be received from the analytical laboratory in a virgin state. A specific listing of sample containers, preservatives, and laboratory holding times is provided in the QAPP.

5.3 SAMPLE PACKAGING AND SHIPMENT

The following procedures are conducted during sample handling and shipping, and are recorded in a project field log book, sample chain-of-custody form, and request-for-analysis form, as indicated below.

Samples are packed for shipping in waterproof ice chests and coolers. The sample containers may be individually sealed in "Zip-lock" or other plastic bags, prior to packing them in the cooler with vermiculite, bubble wrap, or styrofoam packing. Commercial ice packs are placed with the samples in the cooler to maintain the samples at a temperature of about 4° Celsius during shipping.

The chain-of-custody form that identifies the samples is signed as "relinquished" by the principal sampler or responsible party. A request-for-analysis form that identifies the samples and

instructs the laboratory on their analysis, is also completed by the sampler or responsible party. Both forms are sealed in a waterproof plastic bag and are placed inside the cooler, typically by taping the bag to the inside of the cooler.

Following packing, the cooler lid is sealed with strapping tape. A custody seal is signed and dated and affixed to the cooler, across the seal of the lid, and covered with clear tape.

The sample coolers are typically shipped by overnight express carrier to the laboratory. A copy of the bill of lading is retained by SECD and becomes part of the sample custody documentation. Concurrent with shipping, the sampler completes a sample shipping form for reporting by telephone to the laboratory that receives the samples.

5.4 SAMPLE DOCUMENTATION AND TRACKING

After sample collection, all sample containers will be labelled with an identification number that uniquely identifies the sample. The sample identification number shall be logged in the field log book, along with the following information:

- sampling personnel
- date and time of collection
- field sample location and depth (if appropriate)
- observations on ambient conditions
- type of sampling (composite or grab)
- method of sampling
- sampling matrix or source
- results of field screening
- intended analyses
- preservation method
- observations of significant characteristics of the sample
- observations of significant affect to the sampling procedure

Sample Identification is discussed in Section 3.0. Samples shipped to the laboratory will have information transcribed to a sample chain-of-custody form.

5.5 CONTAINMENT AND DISPOSAL OF WASTES

Decontamination rinsate will be containerized and stored on-site pending the results of chemical analyses. Investigation derived waste will remain in storage until the analytical results are reviewed and criteria for release or disposal has been developed. Containers will be labelled with the location, date of containerization, personnel responsible, and field observations of conditions. If chemical analyses of the investigation derived wastes do not contain detectable concentrations of contaminants, the materials will be disposed at the site. If contaminants are present, the materials will be disposed appropriately.

6.0 SAMPLING TEAM AND SCHEDULE

This section presents the sampling team responsible for completing the work described in this plan, and the anticipated project schedule.

6.1 SAMPLING TEAM

A sampling team will be comprised of the Project Manager, Field Manager, and several technicians. The responsibilities of each team member are explained below.

The Project Manager for sampling and analysis will be Mr. Richard Sheehan, P.G. Mr. Sheehan will provide technical direction to the field staff and ensure compliance with the contractual, technical, and financial requirements of the sampling tasks.

The Field Manager will be responsible for the actual implementation of all field activities. This individual will provide coordination between the Project Manager and technicians. The Field Manager will manage any subcontractors, implement the Health and Safety Plan, provide scheduling and cost control, and oversee all field activities.

Technicians will be responsible for field activities. These individuals will follow proper decontamination procedures, proper equipment operation, sample collection and shipment, and documentation of field activities. Field personnel will also be responsible for following all health and safety procedures while working in the field.

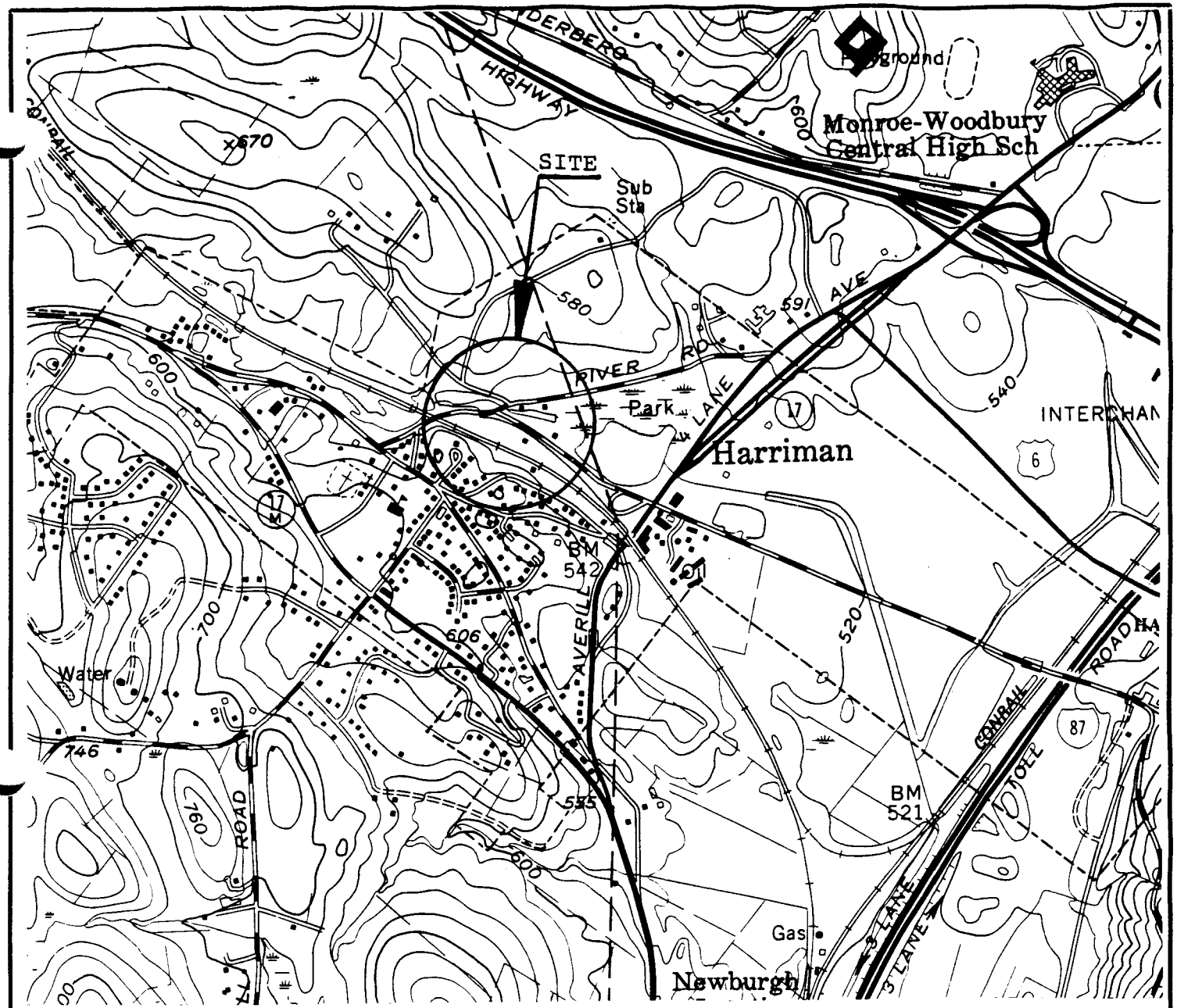
Analytical laboratory services will be provided by Enseco Environmental Laboratory in Somerset, New Jersey, an approved NYSDEC-ELAP-CLP laboratory. Enseco will maintain this certification for the duration of the project.

6.2 SAMPLING SCHEDULE

Field sampling activities will begin upon NYSDEC approval of the RI/FS Work Plan. The field work is estimated to take three months, with data compilation and report generation to be completed after the field work. The proposed RI/FS project schedule is shown on Figure 16 in Attachment 1.

ATTACHMENT 1

FIGURES



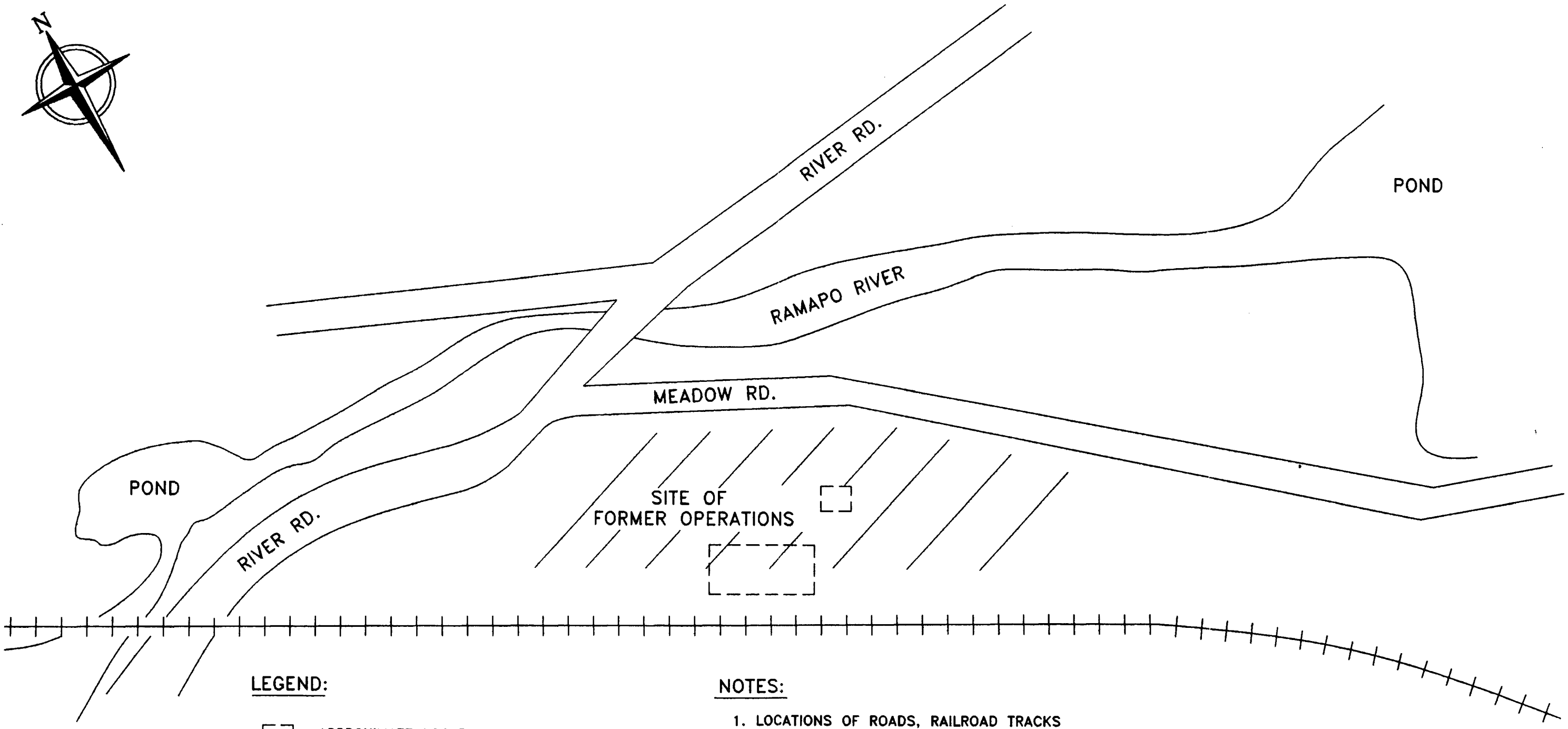
UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

MONROE QUADRANGLE
NEW YORK–ORANGE CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 5 0 1 KILOMETER

CONTOUR INTERVAL 20 FEET



LEGEND:

APPROXIMATE LOCATION OF FORMER BUILDINGS

CONRAIL RIGHT OF WAY

NOTES:

1. LOCATIONS OF ROADS, RAILROAD TRACKS AND WATERWAYS ARE APPROXIMATE AND ARE DERIVED FROM ORANGE COUNTY TAX MAPS.

SCALE IN FEET

0 100' 200'

NO.	REVISIONS	MADE	CHK	DATE

	NAMES	DATE
DRAWN:	B.E.M.	1/6/93
DESIGN:		
CHECKED:		
PE:		
APP'D:		
APP'D:		
APP'D:		

CWM
CHEMICAL WASTE
MANAGEMENT INC.

FIGURE 2
SITE LOCATION MAP
GAESS SITE
HARRIMAN, NY

SEC DONOHUE
Environment & Infrastructure

PROJECT NUMBER P1093 DATE

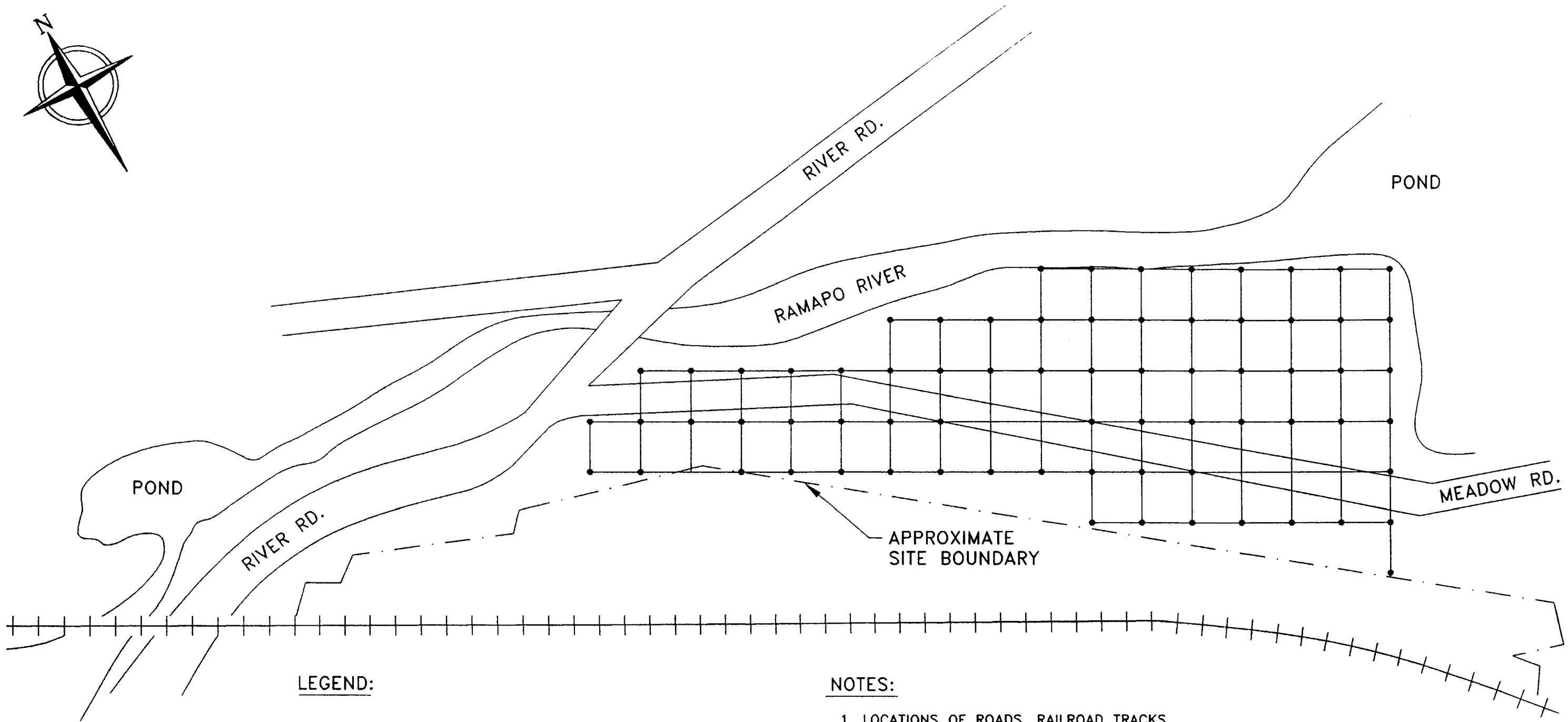
SECD DWG NUMBER P1093P01 FILE NUMBER

CLIENT DWG NUMBER SHEET NUMBER

CAD FILE NAME: C:\P1093\P1093P01.DWG

The drawings, specifications and other documents prepared by the Engineer for this project are instruments of the Engineer's service for use solely with respect to this project and, unless otherwise provided, the Engineer shall be deemed the author of these documents and shall retain all common law, statutory and other reserved rights, including the copyright.

PLOT DATE:



LEGEND:

- SOIL GAS SURVEY SAMPLING GRID POINT
- APPROXIMATE SITE BOUNDARY
- CONRAIL RIGHT OF WAY

NOTES:

1. LOCATIONS OF ROADS, RAILROAD TRACKS AND WATERWAYS ARE APPROXIMATE AND ARE DERIVED FROM ORANGE COUNTY TAX MAPS.

SCALE IN FEET

0 100' 200'

NO.	REVISIONS	MADE	CHK	DATE

	NAMES	DATE
DRAWN:	B.E.M.	1/6/93
DESIGN:		
CHECKED:		
PE:		
APP'D:		
APP'D:		
APP'D:		

CWM
CHEMICAL WASTE MANAGEMENT INC.

FIGURE 3
PROPOSED SOIL GAS SURVEY
GAESS SITE
HARRIMAN, NY

SEC DONOHUE
Environment & Infrastructure

PROJECT NUMBER P1093 DATE

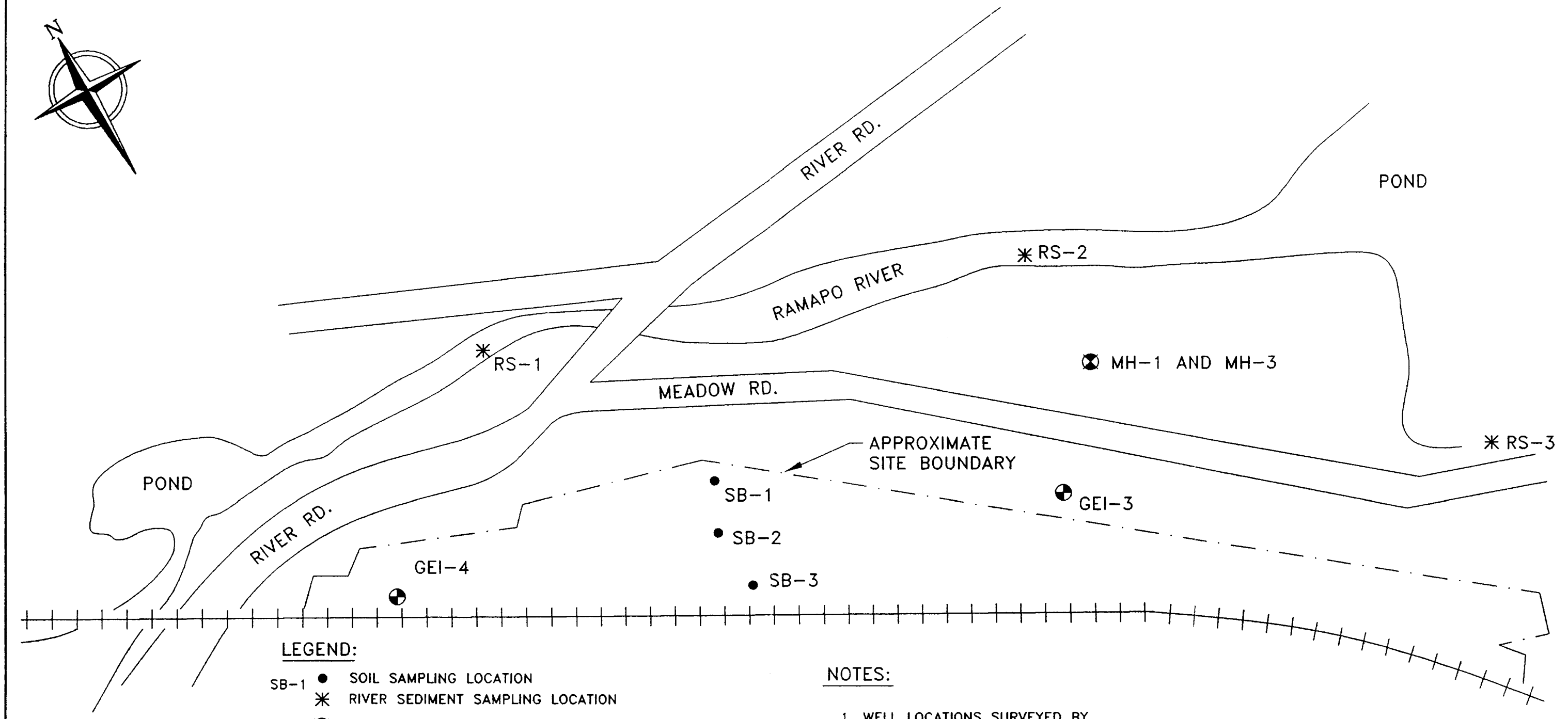
SECD DWG NUMBER P1093P06 FILE NUMBER

CLIENT DWG NUMBER SHEET NUMBER

CAD FILE NAME: C:\P1093\P1093P06.DWG

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PLOT DATE:



LEGEND:

- SB-1 ● SOIL SAMPLING LOCATION
- ✳ RIVER SEDIMENT SAMPLING LOCATION
- ⊗ EXISTING VILLAGE OF HARRIMAN WATER SUPPLY WELLS
- GEI-4 ◒ MONITORING WELL/PIEZOMETER
- — · — APPROXIMATE SITE BOUNDARY
- —+++— CONRAIL RIGHT OF WAY

NOTES:

1. WELL LOCATIONS SURVEYED BY GEO-ENGINEERING, INC
2. LOCATIONS OF ROADS, RAILROADS TRACKS AND WATERWAYS ARE APPROXIMATE AND ARE DERIVED FROM ORANGE COUNTY TAX MAPS.

SCALE IN FEET

0 100' 200'

NO.	REVISIONS	MADE	CHK	DATE

	NAMES	DATE
DRAWN:	B.E.M.	1/6/93
DESIGN:		
CHECKED:		
PE:		
APP'D:		
APP'D:		
APP'D:		

CWM
CHEMICAL WASTE
MANAGEMENT INC.

FIGURE 4
PROPOSED SEDIMENT, SOIL AND
GROUNDWATER SAMPLING LOCATIONS
GAESS SITE HARRIMAN, NY

SEC DONOHUE
Environment & Infrastructure

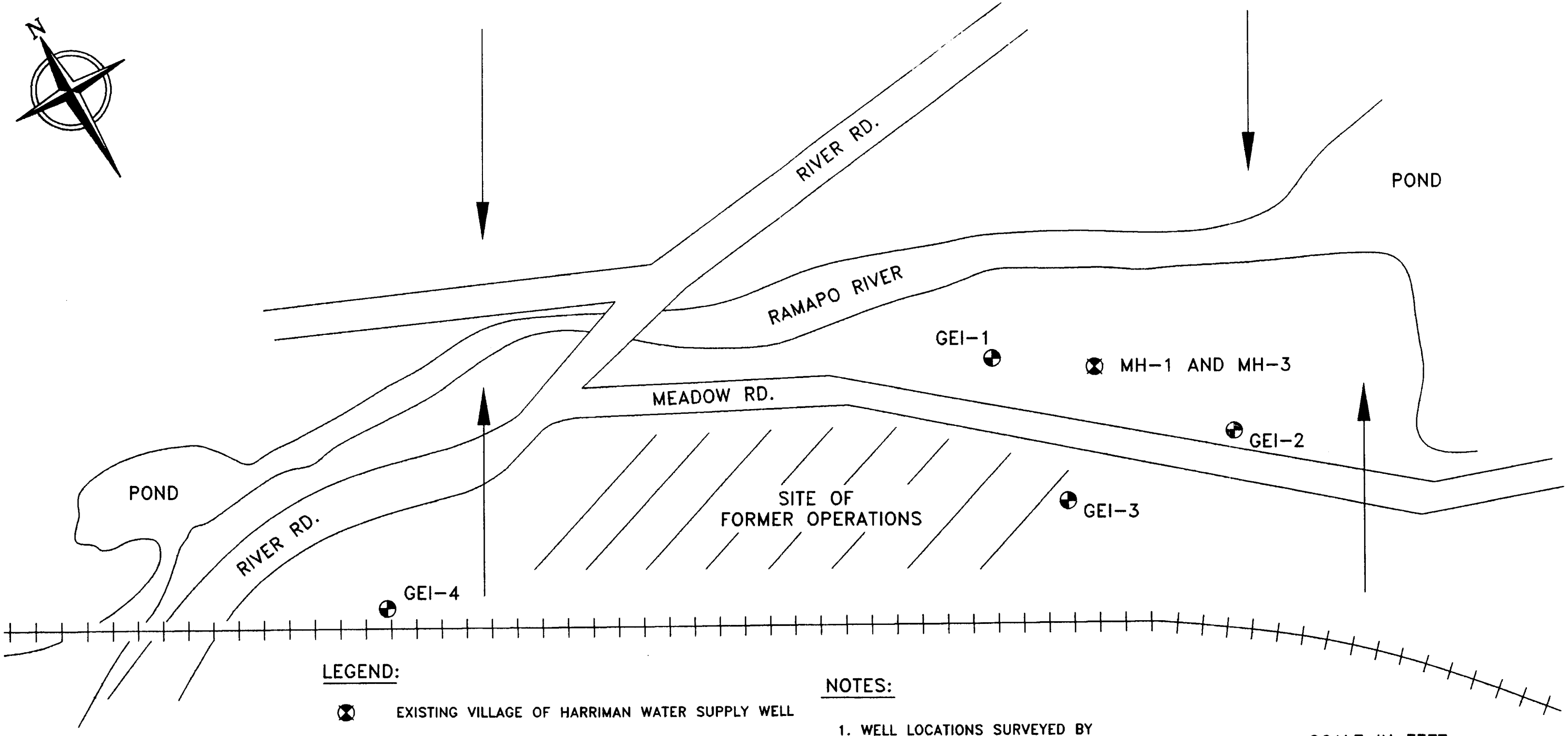
PROJECT NUMBER P1093 DATE

SECD DWG NUMBER P1093P07 FILE NUMBER

CLIENT DWG NUMBER SHEET NUMBER

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PLOT DATE



LEGEND:

- EXISTING VILLAGE OF HARRIMAN WATER SUPPLY WELL
- MONITORING WELL/PIEZOMETER
- CONRAIL RIGHT OF WAY
- APPROXIMATE DIRECTION OF GROUNDWATER FLOW

NOTES:

1. WELL LOCATIONS SURVEYED BY GEO-ENGINEERING, INC.
2. LOCATIONS OF ROADS, RAILROADS TRACKS AND WATERWAYS ARE APPROXIMATE AND ARE DERIVED FROM ORANGE COUNTY TAX MAPS.

SCALE IN FEET

0 100' 200'

NO.	REVISIONS	MADE	CHK	DATE

NAMES	DATE
DRAWN:	
DESIGN:	
CHECKED:	
PE:	
APP'D:	
APP'D:	
APP'D:	

CWM
CHEMICAL WASTE
MANAGEMENT INC.

FIGURE 5
EXISTING WELL LOCATIONS
GAESS SITE
HARRIMAN, NY

SEC DONOHUE
Environment & Infrastructure

PROJECT NUMBER | DATE

SECD DWG NUMBER | FILE NUMBER

CLIENT DWG NUMBER | SHEET NUMBER

D FILE NAME:

The drawings, specifications and other documents prepared by the Engineer for this project are instruments of the Engineer's service for use solely with respect to this project and, unless otherwise provided, the Engineer shall be deemed the author of these documents and shall retain all common law, statutory and other reserved rights, including the copyright.

PL

FIELD ACTIVITY FORMS

Chain Of Custody Record

Page ____ Of ____

Sirrine Job No. ____

Project/Location:

Client Name:

Collected By:

Sample ID	Date	Time	COMP	GRAB	WELL	Sample Location	# Of Containers	Sample Analysis (x)																				Remarks
								pH, Sp. Cond.	F P	TOC	TOX	Cl, Fl, SO4	F	NITRATES	F P	VOC	P	METALS	P F	PESTICIDE	HERBICIDE	PHENOL	P	ACID/B/N Ext.	COLIFORM	P	CYANIDE	P	F P F P F P F P	

F - Filtered P - Preserved

Analytical Program:
CWA SDWA CLP RCRA

Custody Transfers Prior To Receipt By Lab

	Relinquished By/(Signed) (Organization)	Received By/(Signed) (Organization))	Date	Time
1.				
2.				
3.				

Sample Delivery Details/Laboratory Receipt

Delivered Directly To Lab ☐ Shipped ☐

Method Of Shipment: _____ Airbill # _____

Analytical Lab: _____ Location: _____

Received By Lab By: _____ Date: _____ Time: _____
(Signature)

Additional Remarks:
(Condition Upon Lab Receipt, Etc.)

Rev 10-90

Original Report - White; Client Copy - Yellow; Laboratory Copy - Pink; File Copy - Gold

SEC DONOHUE
Environment & Infrastructure

FIGURE 6
CHAIN OF CUSTODY
GAESS INACTIVE HAZARDOUS
WASTE DISPOSAL SITE
HARRIMAN, NY

SEC DONOHUE
Environment & Infrastructure

DATE: _____ TIME: _____
COLLECTED BY: _____
JOB NUMBER: _____
JOB NAME: _____
SAMPLE ID: _____
MATRIX: _____
ANALYSIS: _____
PRESERVATIVES: _____

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Environment & Infrastructure

FIGURE 7
SAMPLE LABEL
GAESS INACTIVE HAZARDOUS
WASTE DISPOSAL SITE
HARRIMAN, NY

SEC DONOHUE
Environment & Infrastructure

REQUEST FOR ANALYSIS

Page ___ of ___

- This form must accompany samples - Do Not send under separate cover
- Separate forms should be completed for each shipping container

PROJECT NAME: _____
SEC JOB NO.: _____
PROJECT MANAGER: _____
BILLING ADDRESS: SIRRINE ENVIRONMENTAL CONSULTANTS
P.O. BOX 24000
GREENVILLE, SC 29616

SAMPLE SHIPMENT DATE: _____
SHIPPED TO: _____
LAB NAME: _____
LOCATION: _____
LAB CONTACT: _____
LAB PHONE: _____
MODE OF SHIPMENT: _____
AIRBILL NO.: _____

(Job number must be included on all invoices)

SAMPLE NO.	SAMPLE TYPE	SAMPLE VOLUME	PRESERVATIVE	REQUIRED TESTING PROGRAM	SPECIAL INSTRUCTIONS

TURNAROUND TIME REQUIRED: (Turnaround time must be arranged with lab prior to shipment)
NORMAL _____ RUSH _____ (Subject to rush service charge)

POSSIBLE HAZARD IDENTIFICATION: (Please indicate if samples are hazardous materials and/or suspected to contain high levels of chemical compounds.) LOW CONCENTRATION/ENVIRONMENTAL SAMPLES ONLY _____

MEDIUM OR HIGH CONCENTRATION SAMPLES/DOT HAZ MAT CLASSIFICATION _____ OTHER _____ (Please specify)

SAMPLE DISPOSAL :
RETURN TO CLIENT _____ DISPOSAL BY LAB _____

FOR LAB USE ONLY
RECEIVED BY: _____ DATE/TIME _____

SEC 12/89

Original Report - White; Laboratory Copy - Yellow; File Copy - Pink

SEC DONOHUE
Environment & Infrastructure

FIGURE 8
REQUEST FOR ANALYSIS
GAESS INACTIVE HAZARDOUS
WASTE DISPOSAL SITE
HARRIMAN, NY

SHIPMENT INFORMATION

(Field to Lab by Telephone)

Date of Shipment: _____

Laboratory Destination: _____

Laboratory Project Contact: _____
(Name) (Telephone Number)

Number Containers Shipped: _____

Mode of Shipment: _____

Shipment Number(s): _____

Time of Shipment: _____

Date/Time of Shipping Info Release to Lab: _____

Signature of Releaser: _____

NOTE: PROVIDE THIS INFORMATION TO RECEIVING LABORATORY AS SOON AS POSSIBLE AFTER SAMPLES ARE SHIPPED.

SEC DONOHUE
Environment & Infrastructure

FIGURE 9
SAMPLING SHIPPING FORM
GAESS INACTIVE HAZARDOUS WASTE DISPOSAL SITE
HARRIMAN, NY

DAILY QUALITY CONTROL REPORT

JOB NUMBER _____ DATE _____ REPORT NUMBER _____

PROJECT & LOCATION _____

WEATHER _____ TEMPERATURE RANGE _____ WIND _____

SEC PERSONNEL ON SITE _____ TIME ON SITE _____

SUMMARY OF SITE ACTIVITIES _____

LEVEL OF HEALTH & SAFETY PROTECTION _____

INSTRUMENTATION USED _____

CALIBRATION(S) PERFORMED _____

INSTRUMENT PROBLEMS/REMEDIES _____

SAMPLES COLLECTED* _____

SAMPLE COLLECTION METHOD(S) _____

QUALITY CONTROL SAMPLES* _____

ADDITIONAL REMARKS _____

* INDICATE SAMPLE MEDIA: GROUND WATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I.D. NUMBERS.

SIGNATURE: _____

SEC DONOHUE
Environment & Infrastructure

FIGURE 10
DAILY QUALITY CONTROL REPORT
GAESS INACTIVE HAZARDOUS WASTE DISPOSAL SITE
HARRIMAN, NY

Field Data Information Log for Ground Water Sampling

Page ____ of ____

Date (yr/mo/day) _____

Field Personnel _____

Site Name _____

SEC Job # _____

Well ID # _____

____Upgradient ____Downgradient

Weather Conditions _____

Air Temperature _____ °C

Total Well Depth (TWD) = _____ 1/100 ft

Depth to Ground Water (DGW) = _____ 1/100 ft

Length of Water Column (LWC) = TWD - DGW = _____ 1/100 ft

1 Casing Volume (OCV) = LWC x _____ = _____ gal

5 Casing Volumes = _____ gal = Standard Evacuation Volume

Method of Well Evacuation _____

Method of Sample Collection _____

Total Volume of Water Removed _____ gal

Casing Diameter _____ Inches

Casing Material _____

Measuring Point Elevation _____ 1/100 ft

Height of Riser (above land surface) _____ 1/100 ft

Land Surface Elevation _____ 1/100 ft

Screened Interval _____ 1/100 ft

Dedicated Pump or Bailer YES ____ NO ____ Type ____

Steel Guard Pipe Around Casing YES ____ NO ____

Locking Cap YES ____ NO ____

Protective Post/Abutment YES ____ NO ____

Well Integrity Satisfactory YES ____ NO ____

Well Yield LOW ____ MODERATE ____ HIGH ____

Remarks _____

FIELD ANALYSES

VOLUME PURGED (gallons)							
TIME (military)							
pH (S.U.)							
Eh (mV)							
Sp. Cond. (µmhos/cm)							
Water Temp. (°C)							
TURBIDITY (subjective) *							

* (1) Clear (2) Slight (3) Moderate (4) High

COMMENTS/OBSERVATIONS: _____

fldinfo 10/87

SEC DONOHUE
Environment & Infrastructure

FIGURE 11
FIELD DATA INFORMATION LOG
FOR GROUNDWATER SAMPLING
GAESS INACTIVE HAZARDOUS
WASTE DISPOSAL SITE
HARRIMAN, NY

HEADSPACE ANALYSES

JOB NUMBER _____

PROJECT: _____

CLIENT: _____

LOCATION: _____

INSTRUMENT USED: _____

DATE SAMPLED _____

DATE ANALYZED _____

ANALYST _____

EXPLORATION NUMBER	SAMPLE NUMBER	DEPTH (FT)	SAMPLE TYPE	SAMPLE READING (PPM)*	BACKGROUND READING (PPM)*	AMBIENT AIR TEMP. (F)	REMARKS **

* PPM represents concentration of detectable volatile and gaseous compounds in parts per million of air.

** Indicate time elapsed from sampling or removing samples from cooler.

SEC DONOHUE
Environment & Infrastructure

FIGURE 12
HEADSPACE ANALYSIS FORM
GAESS INACTIVE HAZARDOUS WASTE DISPOSAL SITE
HARRIMAN, NY

DAILY REPORT

JOB NUMBER: _____ DATE: _____ REPORT NUMBER: _____

PROJECT & LOCATION: _____

CLIENT: _____ SEC FIELD REPRESENTATIVE: _____

SUBCONTRACTOR: _____

SUBCONTRACTOR PERSONNEL ON SITE: _____

BRIEF SUMMARY OF WORK PERFORMED: _____

START TIME	STOP TIME	DESCRIPTION OF ACTIVITIES; REMARKS	TIME SPENT*

TIME SPENT BY SUBCONTRACTOR ON HOURLY RATE PAY ITEMS.

FIELD REPRESENTATIVES' SIGNATURE: _____ DATE: _____

SEC DONOHUE
Environment & Infrastructure

FIGURE 13
DAILY REPORT
GAESS INACTIVE HAZARDOUS WASTE DISPOSAL SITE
HARRIMAN, NY

SEC DONOHUE

DAILY PRODUCTION SUMMARY
DRILLING AND WELL INSTALLATION ACTIVITIES

PAGE _____ OF _____

FILE NO. | PROJECT LOCATION | DATE: _____ TO: _____

BORING NO.	DAILY PRODUCTION FROM:	DAILY PRODUCTION TO:	DATE	MOB./ DEMOB.	HSA FT.	ROTARY FT.	EXTRA S.S.	RISER FT.	SCREEN FT.	COARSE SAND FT.	FINE SAND FT.	PELLETS FT.	GROUT FT.	DECON. HR.	STAND BY HR.	LABOR HR.

TEST BORING REPORT

BORING NO.

PROJECT: _____
CLIENT: _____
CONTRACTOR: _____
EQUIPMENT USED: _____

JOB NO: _____
PAGE NO: _____
LOCATION: _____
ELEVATION: _____
DATE START: _____
DATE FINISH: _____
DRILLER: _____
PREPARED BY: _____

GROUND WATER		DEPTH TO:				CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE			
					SIZE ID			
					HAMMER WT			
					HAMMER FALL			

DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS

BLOWS/FT.	DENSITY
0 - 4	VERY LOOSE
5 - 10	LOOSE
11 - 30	MEDIUM DENSE
31 - 50	DENSE
51+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0 - 2	VERY SOFT
3 - 4	SOFT
5 - 8	MEDIUM STIFF
9 - 15	STIFF
16 - 30	VERY STIFF
31+	HARD

SAMPLE ID.	
S	SPLIT SPOON
T	TUBE
U	UNDISTURBED PISTON
G	GRAB SAMPLE
X	OTHER
NR	NO RECOVERY

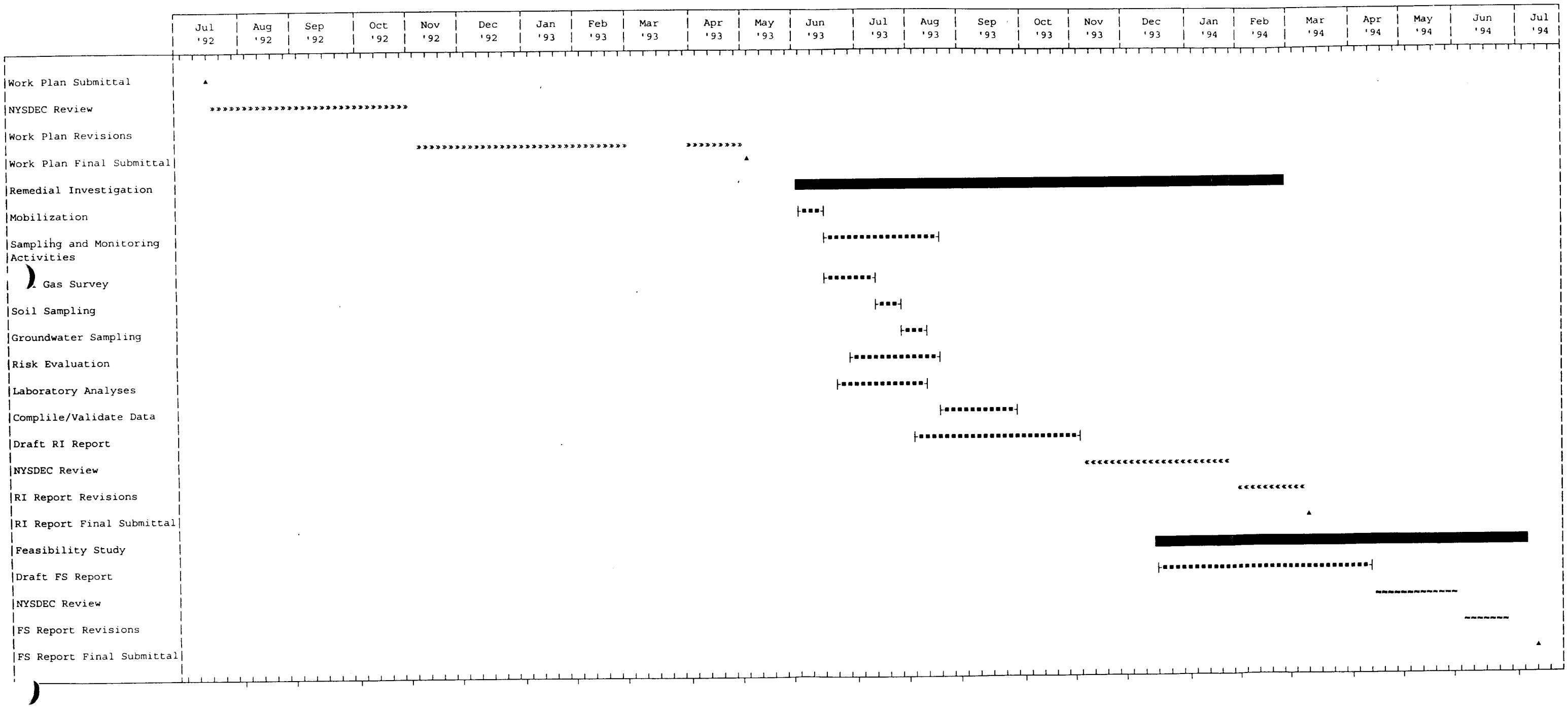
COMPONENT %	
MOSTLY	50 - 100%
SOME	30 - 45%
LITTLE	15 - 25%
FEW	5 - 10%
TRACE	<5%

GROUND WATER ABBREV.
WD - WHILE DRILLING
NE - NOT ENCOUNTERED
UR - NOT READ
BORING NO.

SEC DONOHUE
Environment & Infrastructure

FIGURE 15
TEST BORING REPORT
GAESS INACTIVE HAZARDOUS WASTE DISPOSAL SITE
HARRIMAN, NY

FIGURE 16
Gaess Site
Proposed RI/FS Schedule and Tasks



▲ = Milestone

ATTACHMENT 2

TABLES

TABLE 1

SAMPLE CONTAINERS, PRESERVATIVES, AND HOLDING TIMES

Matrix	Parameters	Container	Preservation	Maximum Holding Times[2]	
				Extraction	Analysis
Water	Volatiles	3x40ml G, Septa vial	Ice to 4°C	--	10 days
	TAL Metals	1x1 L P	5 ml 1:1 HNO_3 Ice to 4°C	--	6 mo[2]
Soils	Volatiles	2x125 ml G, Septa Vial	Ice to 4°C	--	7d
	TCL Semivolatiles (PAHS)/Pest/PCBs	1x500 ml G	Ice to 4°C	5d	40d[3]
	TAL Metals/Cyanide	1x250 ml G, Septa Vial	Ice to 4°C	--	6 mo[1]

[1] 26 days for mercury, 12 days for cyanide

[2] From VTSR - Validated Time of Sample Receipt

[3] Following Extraction

PPL Priority Pollutant

P Plastic

G Glass

TAL Target Analyte List

TCL Target Compound List

PAH Polycyclic Aromatic Hydrocarbons

TABLE 2

MINIMUM QA/QC SAMPLES FOR FIELD SAMPLING

MEDIA	FIELD DUPLICATES	FIELD BLANK	TRIP BLANK	INTER-LAB SPLIT SAMPLE
Aqueous	One in twenty	One in twenty or, each day of sampling	One per day of sampling	When required to meet objectives
Soil	One in twenty	One in twenty or, each day of sampling		When required to meet objectives

TABLE 3

ANALYTICAL METHODS

Parameters	Sample Matrix	Technique	Methodology
Volatiles	water/soil	Purge & Trap GC/MS	EPA CLP Organic SOW (Document Number OLM01.8)
Metals	water/soil	ICP and AA (1)	EPA CLP Inorganic SOW (Document Number ILM02.0)
Semivolatiles	Soil	GC/MS	EPA CLP Organic SOW (Document Number OLM01.8)
Pesticides/PCBs	Soil	GC/EC	EPA CLP Organic SOW (Document Number OLM01.8)

GC - Gas Chromatography
MS - Mass Spectroscopy
ICP - Inductively Coupled Plasma
AA - Atomic Absorption
EC - Electron Capture

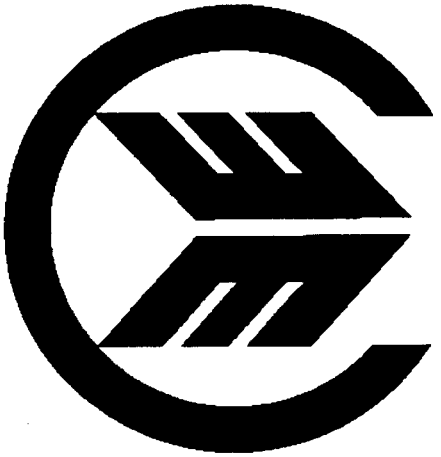
(1) AA technique may be required for selected metals in water samples so that detection limits area below drinking water standards (i.e., MCLs)

Gaess Inactive Hazardous Waste Disposal Site Harriman, New York

Site Number 336018

Health and Safety Plan

Prepared For
Chemical Waste Management, Inc.



February 1993

Prepared By

SEC DONOHUE
Environment & Infrastructure

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APPENDIX A PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS

1.0 COORDINATION AND RESPONSIBILITY

The SEC Donohue (SECD) Project Manager must not allow work to begin at a hazardous waste site until a Site-Specific Health and Safety Plan (HASP) has been provided to all field personnel. Before visiting the work site, all personnel must attend a site-specific briefing session, to be conducted by the Health and Safety Director (HSD) or his/her designee, on the potential site hazards and specific requirements of the HASP, including training in the proper function and operation of all monitoring and personal protective equipment. The overall responsibility for the health and safety of project personnel lies with the Project Manager. The Site Health and Safety Officer (HSO) will be responsible for ensuring that the Site-Specific Health and Safety Plan is complied with during site remediation operations. If there is any question whether an unplanned occurrence on site may compromise health and safety, the SECD HSO has the authority to interrupt operations and to remove all personnel from the area. If practical, the Project Manager and HSD should be consulted before any operation is interrupted. If work is stopped due to any health and safety concern, immediate attention should be given by health and safety personnel, working in cooperation with the Project Manager, to identify and correct the cause of concern as quickly as possible. Any such incident should be fully documented by the Site SECD HSO in a report to the SECD HSD and Project Manager. In the event of a work stoppage, the client must be notified as soon as possible, and kept apprised of progress in resolving the incident until normal operations are resumed.

NOTE: REFER TO PAGE 23 FOR PRIMARY EMERGENCY CONTACT NUMBERS.

2.0 SITE DESCRIPTION AND HISTORY

The Gaess Site is located in the Village of Harriman, Orange County, New York. The site is situated approximately one quarter mile west of New York State Highway Route 17, off of Meadow Road, southeast of the Ramapo River and adjacent to the right of way of the Conrail Corporation. In 1962, the site was leased from the Erie-Lackawana Railroad (Conrail predecessor) by John Kalodziejski, who operated the Harriman Sewage Disposal Company at the site until 1972 when he subleased the site to Gaess Environmental Services (Gaess). Gaess and its successor, SCA Chemical Services (SCA), operated a waste handling transfer station on the site until 1978. In June 1980, wastes were discovered abandoned on the site by a NYSDEC Task Force. These wastes were contained in two industrial tank truck trailers and various other waste containers. Following an investigation of the site an additional tank truck trailer, a vacuum

tank truck and four, 55-gallon drums were discovered buried at the site.

In April 1981, a Consent Agreement was signed between SCA and NYSDEC. This agreement initiated a cleanup of the site under the direction of the NYSDEC. The containers, the wastes contained in them and suspected contaminated soils were removed from the site by SCA in May through July of 1981 under the supervision of the NYSDEC.

SCA retained GeoEngineering Inc. in September, 1984 to perform a site hydrogeological investigation. During the week of October 15, 1984, two piezometers designated as GEI-1 and GEI-2, and two groundwater monitoring wells, designated GEI-3 and GEI-4 were constructed on the site. These wells, and the Village of Harriman water supply wells (MH-1 and MH-3) were sampled on November 29, 1984. The results of this sampling along with the results of the hydrogeological investigation were documented in a report prepared by GeoEngineering for Chemical Waste Management (CWM) entitled "Hydrogeological Investigation and Monitoring Plan" dated January, 1985. CWM became involved with the site following the purchase of SCA in September, 1984.

In October 1990, CWM was contacted by the NYSDEC regarding contamination found in the Village of Harriman wells MW-1 and MH-3. The Harriman wells were sampled by the Village of Harriman on July 19, 1990. The analytical results indicated that in the shallow water supply well, designated MH-1, trichloroethene (TCE) was present at a concentration of 6.7 parts per billion (ppb) and the deep water supply well, designated MH-3, contained TCE at a concentration of 0.76 ppb. The NYSDOH Drinking Water Standards for Principal Organic Contaminants (POC) is five (5) ppb for TCE.

CWM responded to the NYSDEC notification by performing a Phase I investigation to determine if the Gaess site could be the source of the contamination detected in the Village of Harriman water supply wells. CWM retained Sirrine Environmental Consultants, Inc. (Sirrine) to re-sample MH-1 and MH-3 as well as the upgradient Village of Harriman main water supply well on January 16, 1991. Sirrine also collected two surface water samples from the adjacent Ramapo River on the same date. The results of the Phase I investigation were documented in a report dated March 1991. The results of the samples collected as part of the Phase I Investigation indicated the presence of 1,1,1-Trichloroethane (1,1,1-TCA) and TCE above the detection limits of 0.5 ppb in three of the seven samples collected. Using USEPA Methods 502.1 and 503.1, EnviroTest Laboratories determined that MH-1 contained 1.2 ppb of 1,1,1-TCA and 14 ppb and

16 ppb (the 16 ppb concentration was determined using USEPA Method 503.1) of TCE and MH-3 contained 0.69 ppb and 1.6 ppb of TCE. The results also indicated the presence of 1,1,1-TCA in monitoring well (GEI-4) in a concentration of 4.8 ppb.

Upon completion of the Phase I investigation, the NYSDEC notified CWM of the need to further investigation the Gaess Site. The Phase II investigation was performed to characterize the soils in and around the former Gaess site operations area to determine if residual soil contamination existed. A secondary purpose of the Phase II investigation was to determine if TCE contamination present in the Village of Harriman water supply well (MH-1) was the result of a release from the Gaess site.

River sediment samples collected during the Phase II investigation did not indicate a presence of TCE or 1,1,1-TCA in the Ramapo River or the associated pond. The soil sampling and the soil gas survey (SGS) performed in the area of the former site operations determined the presence of contaminants at concentrations below the NYSDEC levels for human ingestion of soil.

The Phase II investigation at the Gaess site found levels of TCE and 1,1,1-TCA in the groundwater. The groundwater samples contained concentrations of TCE and 1,1,1-TCA above the 5 ppb limit for NYSDOH drinking water standards (GHP-1 and GHP-3 contained 8.2 ppb of 1,1,1-TCA and 8.9 ppb of TCE, respectively). UG-2 did indicate the presence of benzene, toluene, ethylbenzene and m-xylene. Benzene was the only contaminant in UG-2 which was present at a concentration above the NYSDOH limit of 0.5 ppb, at a concentration of 0.53 ppb. This contamination may have been associated with oil staining on the ground surface in the location where sample UG-2 was collected. In addition, the on-site monitoring well GEI-4 installed by Geo-Engineering as part of their 1985 hydrogeologic investigation was resampled as part of the Phase I investigation and indicated the presence of 1,1,1-TCA at a concentration of 4.8 ppb.

In December 1991, the NYSDEC and CWM entered into a IRM Order on Consent Agreement which required CWM to develop and construct a treatment system for drinking water pumped from the Village of Harriman water supply well. Similarly, CWM entered into a separate agreement with the Village of Harriman in December, 1991 which covers installation, operation and maintenance of an air stripper unit.

3.0 SITE CONDITIONS

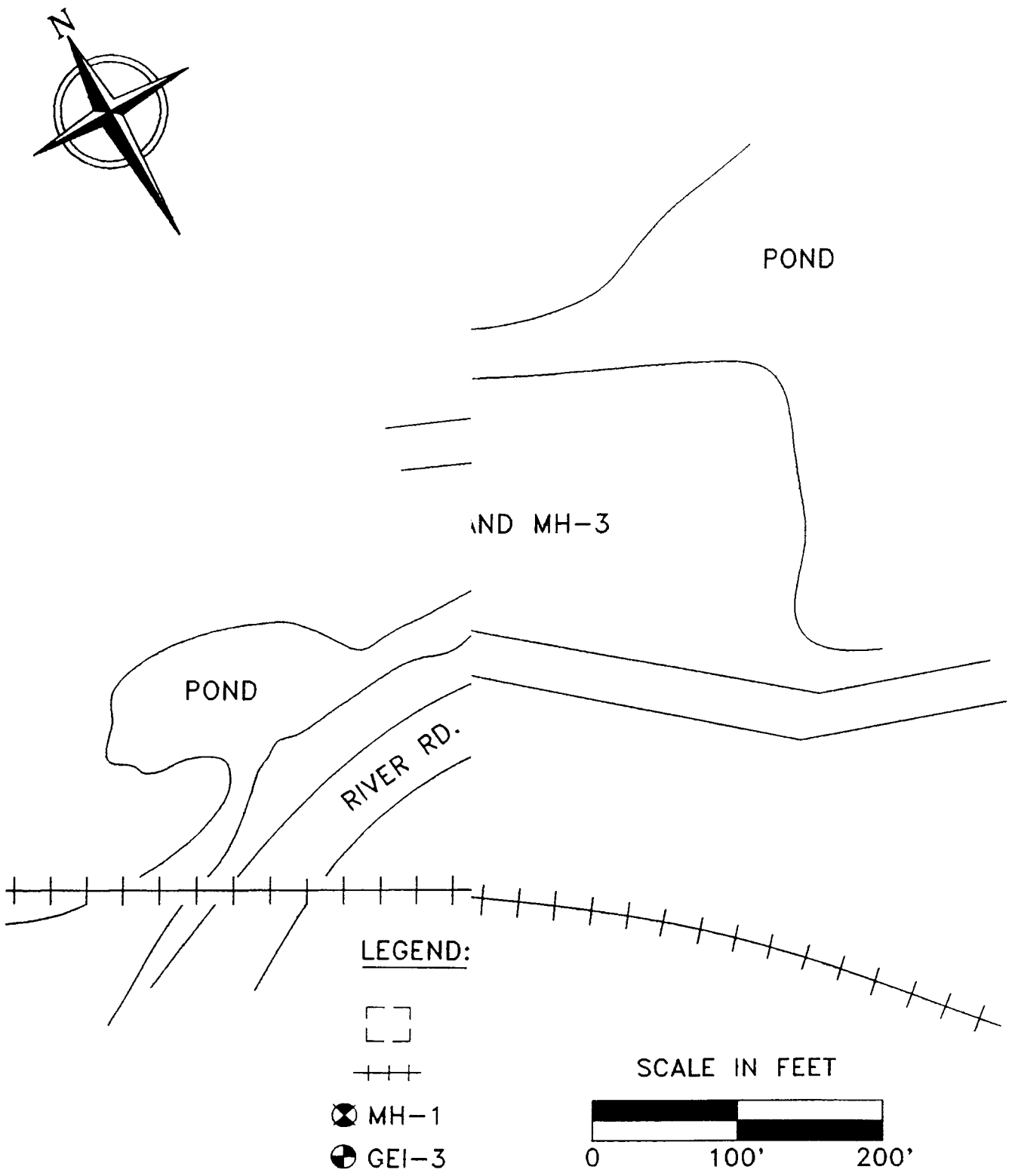
The conditions at the Gaess Site are documented in the January, 1985 GeoEngineering, Inc. Hydrogeologic Investigation and Monitoring Plan document. The location of former site operations relative to surrounding landmarks is shown on Figure 1. The site is situated on a plateau which drops off rapidly to the northeast toward the river. The topography rises rapidly to the southwest on the other side of the adjacent railroad right of way. In summary, the site soil profile, descending from ground surface is comprised of 0-10 feet of fill, 15-40 feet of pervious granular materials and 2-15 feet of glacial till which overlies a limestone and dolomite bedrock. The bedrock surface rises rapidly from the river area to the southwest (bedrock at GEI-1 is 33 feet deep and at GEI-3, 26 feet deep) toward the site. Shallow groundwater flows under unconfined conditions in the layered granular conditions above the bedrock in the site area. The natural shallow groundwater gradient in the area of the Gaess site is gentle and to the northeast with discharge to the Ramapo River. When the shallow village well (MH-1) is pumped, the shallow groundwater gradient is steepened and directed toward the well. Water also appears to be drawn from the river to the village well during pumping.

The site groundwater monitoring wells (GEI-3 and GEI-4) were sampled along with the shallow village well on November 29, 1984 for priority pollutant compounds. These results indicated that TCE was present only in the village shallow well (13 ppb). Because GEI-3 is situated directly between the site of former operations and the village well, and contained no detectable TCE contamination, GeoEngineering, Inc. concluded in the Hydrogeologic Investigation and Monitoring Plan that the site was not the source of the TCE contamination. It was also concluded that it was possible that the Ramapo River was the source of TCE contamination because water is drawn from it when the village well is pumping.

3.0 SITE CONDITIONS

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NO.	REVISIONS

SEC DONOHUE
Environment & Infrastructure

T NUMBER P1093	DATE
WG P1093P01	FILE NUMBER
DWG	SHEET NUMBER

The drawings, specifications and other docum ct to this project and, unless otherwise provided, the Engineer shall including the copyright.

PLOT DATE:

4.0 PROJECT DESCRIPTION

The purpose of the Remedial Investigation (RI) is to determine if the TCE contamination found in the Harriman Village backup well has resulted from a release from the closed Gaess site. A secondary purpose of the RI is to further characterize the soils in and around the former site operation location to determine if residual soil contamination exceeds NYSDEC Cleanup Guidelines. To meet the goals of the RI, CWM proposes to perform a soil gas survey (SGS) to determine if TCE and volatile organics are contained in the soils in the floodplain located downhill from the site and obtain additional soil samples in the former operations area. Because TCE is the contaminant of concern, the SGS samples will be analyzed for TCE. The SGS samples will also be analyzed for volatile organic contaminants.

In addition to the SGS, CWM proposes to collect groundwater samples from the existing monitoring wells. Groundwater samples will be analyzed for volatile organic compounds (USEPA Method 502.1).

5.0 HAZARD ASSESSMENT

Previous site investigations have identified TCE as the site contaminant of concern. Table 5.1 TCE exposure limits applicable to workplace exposures, respectively. The American Conference of Governmental Industrial Hygienist (ACGIH) Threshold Limit Values (TLV) for the work environment are given for volatile chemicals. Two TLV standards are presented for each chemical. The Time Weighted Average (TWA) is the time-weighted average concentration for a normal eight (8) hour work day and a forty (40) hour work week. The Short-Term Exposure Limit (STEL) is a fifteen (15) minute time-weighted average exposure that should not be exceeded at any time during a work day even if the eight (8) hour time-weighted average is within the TLV. Also presented, when available, is the Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit (PEL) and the National Institute for Occupational Safety and Health (NIOSH) Recommended Exposure Limits (REL). The PEL values are presented either as an eight (8) hour TWA, ceiling (Ceil) limit, and/or a peak limit. The ceiling value indicates the upper limit acceptable excursions above the TWA except for a maximum peak value that may be allowed for a specific duration within eight (8) hour or shorter increment as indicated. The REL values are presented either as an 10-hour TWA, short-term exposure limit (STEL) and/or Ceil limit. The Immediate Danger to Life and Death (IDLH) value represents a maximum of concentration from which one could escape within thirty (30)

minutes without any escape-impairing symptoms or any irreversible health effects. Other relevant health-based information that applies to this health and safety plan or to the employee's right-to-know is discussed under contaminant specific toxicity summaries.

TABLE 5.1

TCE INHALATION EXPOSURE LIMITS

TLV-TWA	TLV-STEL	PEL-TWA	PEL-STEL	REL-TWA	REL-STEL	IDLH
50 ppm	200 ppm	50 ppm	200 ppm	25 ppm	Carcinogen	1000 ppm, Carcinogen

TRICHLOROETHENE

($CHClCCl_2$, Ethylene Trichloride, Ethinyl Trichloride, Trichloroethylene, TCE)

Trichloroethene is a colorless, nonflammable, non-corrosive liquid with a "sweet" odor characteristic of some chlorinated hydrocarbons. Decomposition of trichloroethylene, due to contact with hot metal or ultraviolet radiation, forms products including chlorine gas, hydrogen chloride, and phosgene. Dichloroacetylene may be formed from the reaction of alkali with trichloroethylene. TCE is primarily used as a solvent in vapor degreasing. It is also used for extracting caffeine from coffee, as a drycleaning agent, and as a chemical intermediate in the production of pesticides, waxes, gums, resins, tars, paints, varnishes, and specific chemicals such as chloroacetic acid.

Exposure to trichloroethene vapor may cause irritation of the eyes, nose, and throat. The liquid, if splashed in the eyes, may cause burning irritation and damage. Repeated or prolonged skin contact with the liquid may cause dermatitis. Acute exposure to trichloroethene depresses the central nervous system exhibiting such symptoms as headache, dizziness, vertigo, tremors, nausea and vomiting, irregular heart beat, sleepiness, fatigue, blurred vision, and intoxication similar to that of alcohol. Unconsciousness and death have been reported. Alcohol may make the symptoms of trichloroethene overexposure worse. If alcohol has been consumed, the overexposed worker may become flushed. TCE addiction and peripheral neuropathy have been reported. Recent reports indicate that exposure to trichloroethylene may induce liver tumors in mice.

TLV:	50 ppm TWA, 200 ppm STEL
PEL:	50 ppm TWA, 200 ppm STEL
REL:	25 ppm TWA
IDLH:	1000 ppm
DESCRIPTION:	Colorless liquid with a chloroform-like odor
SOLUBILITY:	0.4%
FLASH POINT:	None
IONIZATION POTENTIAL:	11.00 eV
VAPOR PRESSURE:	19 mm Hg @ 20C
LEL:	11%
UEL:	41%
RESPIRATOR CARTRIDGE BREAKTHROUGH TIME:	55 minutes at 1000 ppm
HNu SENSITIVITY:	89% with a 10.2 eV lamp
OVA SENSITIVITY:	70%

6.0 QUALITATIVE RISK ANALYSIS

The site data indicates a potential for field personnel to be exposed to TCE during sampling activities. Inhalation, ingestion and skin adsorption exposure pathways for TCE may be associated with site operations. Headaches, dizziness and respiratory irritation may develop during minor exposures. Acute exposures may result in central nervous system depression and cardiac irregularities. Repeated skin contact with contaminated soils and/or water may produce severe dermatitis.

During dusty/windy conditions, workers outside the exclusion zone may be at risk of exposure. If personal protective clothing or gloves receive rips, cuts, or tears during site activities, exposure to TCE may occur. Support personnel may be exposed from equipment and samples due to improper or inadequate decontamination. Proper use of industrial hygiene and personal protective equipment accompanied by sound hygiene practices outlined in this HASP will minimize the potential risks at this site. However, failure of equipment or an individual to adhere to guidelines outlined in this document may increase the potential risk.

7.0 COMMUNITY HEALTH AND SAFETY

Prior to the project start up, the Harriman Police and Fire Departments will be notified by the site HSO. The perimeter of each work site will be identified with hazard tape. The site HSO will restrict access to all non-authorized individuals. Each site worker and authorized visitor must sign an entry/exit log and provide documentation of appropriate OSHA hazardous waste site training, medical clearance and respirator fit test. If the required documentation is not available or has expired, the site HSO will instruct the site worker or visitor to leave the work area immediately. If needed, the site HSO will contact the Harriman Police Department to escort the non-authorized individual from the work site.

In case of a site emergency, all site work will cease and the site HSO will evacuate the work area. If the site emergency warrants, the Harriman Police and Fire Department will be contacted immediately. Evacuation routes will be developed prior to project start up. Evacuation routes, emergency contacts and telephone numbers and other applicable health and safety information will be provided to all site personnel by the site HSO. Each authorized visitor will receive a briefing by the site HSO prior to work site entry.

If free product exists or environmental monitoring indicates breathing zone concentrations exceeding 5 ppm, the site HSO will perform continuous down wind perimeter monitoring. At maintained perimeter concentrations (5 minutes or longer) of 5 ppm, all site work will cease and the local authorities will be notified immediately. If perimeter monitoring indicates levels below 5 ppm, monitoring frequency can be downgraded to screening performed at one-hour intervals.

8.0 ENVIRONMENTAL MONITORING

During site sampling operations, site personnel will conduct continuous environmental monitoring with a Photo Ionization Detector (PID) or a Flame Ionization Detector (FID). At a maintained reading of 15 ppm in the breathing zone, all personnel must wear a half-mask respirator equipped with organic vapor/HEPA combination cartridges. If breathing zone samples exceed 100 ppm, respiratory protection must be up-graded to include full-face respirators equipped with organic vapor/HEPA combination cartridges. If environmental monitoring indicates concentrations above 5 ppm in the breathing zone (human health) and/or at the source (flammability), all personnel must evacuate the work area and notify the SECD HSO. After 15 minutes, to allow the toxic/combustible gas to dissipate, the site HSO will collect additional readings while approaching the sampling/drilling site. If levels are below 5 ppm, work may resume at this location. For levels still at or above 5 ppm, the site SECD HSO must direct work activities to a different location.

Table 8.1
Respiratory Protection Trigger Values

Up to 15 ppm	No Respiratory Protection
15 ppm to 100 ppm Or Upon Dusty Conditions	Half-mask Respirator equipped with Organic Vapor/HEPA Combination Cartridges
100 ppm - 700 ppm Or Upon Splash Conditions	Full-face Respirator equipped with Organic Vapor/HEPA Combination Cartridges

9.0 PERSONAL PROTECTIVE EQUIPMENT (PPE)

During visible dusty conditions, all site personnel shall wear tyvek protective clothing and dust goggles. Full-face respiratory protection is optional under visible dusty conditions. This up-grade would provide better respiratory protection and maximum eye protection from dust particles. If wet conditions or free-product exist, saranex protective clothing must be worn by sampling personnel. Chemical resistent gloves must be worn during all sampling activities. If the chemical resistent glove is torn or cut during sampling activities, sampling personnel shall wear a protective cotton over-glove. During noisy conditions, hearing protection shall be worn. A hard hat shall be worn during drilling operations occurring within thirty (30) feet of the drill platform. The following Personal Protective Equipment (PPE) items must be available to all personnel:

- Tyvek Suits (Dusty Conditions)
- Saranex Suits (Wet Conditions)
- Neoprene Boots (Steel Toe)
- Nitrile Gloves
- Cotton Over-gloves
- Ear Plugs (Noisy Conditions)
- Hard Hat
- Fire Extinguisher
- CB Radio
- Decon Sprayers
- Drink Cooler
- Eyewash (15 Minute)
- Goggles (Dusty Conditions)
- First Aid Kit

A summary of required non-respiratory PPE is contained in Appendix A.

10.0 HEAT STRESS

When the body temperature rises, the body seeks to dissipate the excess heat. The major disorders due to heat stress are heat cramps, heat exhaustion, and heat stroke. Heat cramps are painful spasms which occur in the muscles of workers who sweat profusely in the heat and drink

large quantities of water, but fail to replace the body's lost salts and electrolytes.

Heat exhaustion is characterized by extreme weakness or fatigue, dizziness, nausea, and headache. In serious cases, a worker may vomit or lose consciousness. The skin is clammy and moist, complexion pale or flushed, and the body temperature can be normal or slightly higher than normal. Treatment consists of rest in a cool place and replacement of body water lost by perspiration. Mild cases may recover spontaneously with this treatment. Severe cases may require care for several days. There are no permanent effects.

Heat stroke is caused by the breakdown of the body's heat regulating mechanism. The skin is very dry and hot with a red or bluish appearance. Unconsciousness, mental confusion, or convulsions may occur. Without quick and adequate treatment, the result can be death or permanent brain damage. Medical assistance should be given quickly. The person should be moved to a cool place. Body heat should be reduced artificially by soaking the person's clothes with water and fanning them. The following steps can be taken to reduce heat stress:

- Acclimate the body.
- Drink more liquids to replace body water lost during sweating.
- Increase salt consumption (salt tablets are not recommended).
- Wear personal cooling devices.
- Wear supplied air suits or respirators equipped with a vortex tube that cools the air being supplied.

The Heat Stress Exposure Limits table found in the reference section of this document illustrates heat stress exposure limits for use with the Botsball heat stress measuring instrument. The temperatures listed in the table are the maximum allowable under the circumstances noted. If work is performed at an observed temperature higher than is indicated in the table, heat stress injury may result. The activity must be reduced to the proper level as indicated on the chart.

11.0 ACCIDENT PREVENTION

Instructing respective employees in safe work practices and emergency procedures is the responsibility of SECD and any subcontractor(s). SECD shall provide the subcontractor(s) with the HASP, for information only. Adherence to the standard safety operating procedures and practices described in Section 11 shall be required to minimize the risk of accidents resulting

injury or excessive chemical exposure.

If work is performed at temperatures higher than is indicated in the heat stress table, heat stress injury may result. The activity must be reduced to the proper level as indicated on the table.

12.0 STANDARD OPERATING SAFETY PROCEDURES AND CONTROLS

These operating procedures are designed to reduce the risks of inadvertent or accidental chemical exposure or injury during field operations.

Personal Precautions

- Be familiar with all standard operating procedures and adhere to all instructions and requirements in the unit-specific safety plan.

- Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand-to-mouth transfer and ingestion of material is prohibited in the Exclusion and Contamination Reduction Zones. However, a supply of cold water and disposable cups will be located in the decontamination area such that employees will have access to water with only removal of gloves, hat, and respirator where used.

- Contact lenses will not be worn in the Exclusion and Contamination Reduction Zones.

- Hands and face must be thoroughly washed upon leaving the work area. Whenever decontamination procedures for outer garments are in effect, the entire body should be thoroughly washed as soon as possible after the protective garment is removed.

- No facial hair which interferes with a satisfactory respirator fit of the mask-to-face-seal is allowed on personnel required to wear respirators.

- Avoid contact with contaminated or suspected contaminated surfaces. Whenever possible, avoid walking through puddles, pools, mud, etc. Avoid kneeling or sitting on the ground, equipment or drums.

- Personal articles shall be prohibited in any contaminated area.

- Medicine and alcohol can exacerbate the effects from exposure to toxic chemicals. Alcoholic beverage intake should be minimized or avoided on off work hours during field operations. Prescribed drugs should not be taken by personnel on site operations where the potential for absorption, inhalation, or ingestion of toxic substances exists unless specifically approved by a qualified physician. Do not work when ill.

- Be alert to potential health and safety hazards.

Operational Requirements

- All personnel going on-site shall be adequately trained and thoroughly briefed on anticipated hazards, equipment to be worn, safety practices to be followed, emergency procedures, and communications.

- Respiratory protective devices and/or protective clothing appropriate to the designated levels of protection shall be worn by all personnel going into areas designated for wearing protective equipment.

- Personnel on-site shall use the buddy system when wearing respiratory protective equipment.

- Visual and/or voice contact shall be maintained between pairs on-site. Entry team members shall remain close together to assist each other during emergencies.

- During continual operations, on-site workers shall act as safety backup to each other. Off-site personnel shall provide emergency assistance.

- Personnel should practice new or unfamiliar operations prior to doing the actual procedure.

Drilling Safety

Drilling safety is the responsibility of each member of the drilling crew. Standard operating safety procedures shall comply with guidelines/recommendations specified in the Drilling Safety Guide (National Drilling Federation)[2], the Manual of Recommended Safe Operating Procedures

and Guidelines for Water Well Contractors and Pump Installers (National Water Well Association)[3] or other recognized drilling industry safety guidelines.

13.0 DECONTAMINATION CONTROL MEASURES

Site work zones shall be established to reduce the accidental spread of hazardous substances by workers or equipment. The flow of personnel and equipment among these zones shall be controlled through designated access and egress points by the Site SECD HSO. Control zones shall be delineated on a site map.

A. Site Organization and Control

Site organization and control will be established and maintained according to the recommendations set forth in USEPA's "Standard Operating Safety Guide," November 1984, and the NIOSH/OSHA/USCG/USEPA "Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities," October, 1985. Three general areas of operation shall be established to reduce the risk of personnel exposure to hazardous substances. The three areas are:

- Exclusion Zone (Zone A)
- Contamination Reduction Zone (Zone B)
- Support Zone (Zone C)

The dimensions of each area and the safe working distances between each area shall be balanced against practical work considerations and existing field conditions.

Exclusion Zone

The Exclusion Zone is generally defined as the area of approximately 1 boom radius from the well holes, or the area that is contaminated or will be unavoidably contaminated by site operations. Since this area shall be considered contaminated, all personnel within the area must use the prescribed levels of personal protection. A checkpoint shall be established at the periphery of the Exclusion Zone to regulate the flow of personnel and equipment in and out of the area. The initial Exclusion Zone boundary (hotline) is based upon subsequent observations and/or measurements. Any change in the protection level

specified by the original HASP shall be approved by the SECD HSD and the client's contracting officer before being initiated. The hotline shall be well-defined by geographical or physical boundaries and shall be physically secure.

As defined in this HASP, there may be some areas where the use of respiratory protection is not required during normal work activities. Respirators should be immediately available for use, however, should a potential hazard become evident. These areas are identified by the following characteristics:

- No known airborne hazards are present and there is little or no potential for release of hazardous airborne contaminants,

- Work operations preclude splashing of hazardous materials.

Hard hats are required in the exclusion zone. Any item taken into the Exclusion Zone shall be considered to be contaminated until carefully inspected by the site SECD HSO and/or decontaminated. All vehicles, equipment, instruments and materials taken into the Exclusion Zone shall remain in the zone until no longer needed.

Contamination Reduction Zone

The Contamination Reduction Zone (Zone B) shall serve as a buffer between the Exclusion Zone and the Support Zone, and is intended to prevent the spread of contaminants from work areas. All decontamination procedures shall be conducted within this area, along a defined corridor.

The boundary between the Support Zone and Contamination Reduction Zone is the contamination control line. This boundary separates the area of possible contamination from clean areas. Entry into the Contamination Reduction Zone from the Support Zone will be through a controlled access point. Personnel entering this area shall be wearing the prescribed personal protective equipment. Exit from the Contamination Reduction Zone requires the removal of any suspected or known contaminants through compliance with established decontamination procedures.

Support Zone

The Support Zone (Zone C) shall consist of a staging area in a non-contaminated or clean area. It shall contain the command post for field operations, a first aid station, and other elements necessary to support site activities. Normal work clothes and safety shoes are worn in this area. Location of access points and the command post shall be based upon favorable wind direction, topography and site accessibility, when conditions allow.

- Wind direction - Preferably, the command post should be located upwind of the site Exclusion Zone. However, wind direction shift and other conditions may be such that the ideal location based upon wind direction does not exist.

- Topography - The terrain, i.e., woods, water or hills, and available space may limit selection of command post sites.

Modifications to Site Control

The use of the three-area designation with access/exit control points coupled with established decontamination procedures provides reasonable assurance against the translocation of contaminants. This system of control is based on a "worst case" situation.

Less stringent site control and decontamination procedures may be utilized based upon field activities and results of monitoring data. Any modification shall be authorized by the SECD HSD and authorized by the site SECD HSO.

B. Decontamination Procedures

Safe personal hygiene practices are discussed in Section 10, Standard Operating Safety Procedures and Controls. Decontamination shall be performed under the supervision of the site HSO. Personnel and portable field equipment decontamination shall be carried out in the contamination reduction corridor. When working in the Exclusion Zone, care should be taken to avoid contamination of equipment (particularly instruments) whenever possible. Drill rigs, other heavy equipment and ancillary tools will be cleaned at the heavy equipment decontamination area within the Exclusion Zone and adjacent to the Hotline. Critical zones and areas shall be variously identified and delineated with surveyor's tape.

For all exit from the Exclusion Zone, decontamination stations shall consist of:

1. Equipment drop
2. Boot, glove and respirator wash
3. Boot, glove, and respirator rinse
4. Protective clothing disposal (into 55-gallon drum or other suitable container)
5. Respirator wash and rinse
6. Hand and face wash and rinse

Monitoring instruments and protective equipment shall be decontaminated if the equipment has been in contact with the ground or splashed with contaminated water, mud or other material. Decontamination solution shall consist of detergent and water. Rinse solution shall be potable water. Decontamination and rinse solutions shall be disposed on site under the supervision of the site SECD HSO.

Decontamination of drill rigs, vehicles, equipment and ancillary tools and sampling devices shall consist of removal of contaminated soil and mud, and steam cleaning. All vehicles and equipment shall be cleaned before relocation to and use at any other sampling site or work area.

C. Medical Emergencies

For physical injuries, first aid treatment shall be given at the site, depending upon the seriousness of the injury. The victim should undergo decontamination, if necessary, unless such procedures interfere with necessary treatment. In life-threatening situations care shall be instituted immediately. Protective clothing shall be removed or cut away if this will not cause delays, interfere with treatment, or aggravate the problem. If contaminated protective clothing cannot be removed, wrap the victim in clean materials to help prevent contamination of medical personnel and ambulances.

For chemical exposure emergencies, decontamination procedures shall be followed unless severe medical problems requiring life sustaining measures are evident.

D. First Aid

In the event of injury, the emergency shall be handled according to the procedures described in the Emergency Procedures Section. First aid kits shall be maintained at the control access point between the decontamination and support zones and in support vehicles.

If the victim cannot be safely moved from the contamination area, first aid necessary to stabilize the victim for safe transport shall be administered at the accident location. Appropriate decontamination of all clothing and equipment shall be followed upon leaving the contaminated area.

E. Inhalation Protection

For any site chemical exposure emergency, respirators equipped with organic vapor/HEPA combination cartridges shall be required before entering any area where organic vapors exceed 15 ppm as determined by an PID or FID. If the organic vapor concentrations are unknown, all site personnel shall use air-supplied respirators when entering any area to rescue a victim suspected of being exposed to excessive organic vapors.

14.0 EMERGENCY PROCEDURES

Some risk of personal injury or chemical exposure is inherent in hazardous waste site activities. These risks and the effects of unpredictable events such as injury, chemical exposure, fire or explosion shall be minimized by:

- Adhering to good work practices,
- Using personal protective equipment appropriate for existing field conditions,
- Performing adequate monitoring of individuals and ambient field conditions,
- Staying alert both to personal performance and to that of co-workers.

An emergency situation is considered to exist if:

- Any member of the field crew is injured in an accident,
- Any member of the field crew experiences or exhibits any adverse effects or symptoms

of chemical exposure,

- Safety monitoring indicates site conditions more hazardous than anticipated or that an immediate danger to life or health exists.

A. General Emergency Procedures

- In the event that any member of the field crew experiences any adverse effects or symptoms of exposure while on the scene, the entire field crew shall immediately halt work and act according to the instructions provided by the site SECD HSO.

- The discovery of any condition that would suggest the existence of a situation more hazardous than anticipated, shall result in the evacuation of the field team and re-evaluation of the hazard and the level of protection required.

- In the event that an accident occurs, the site SECD HSO is to complete an Accident Report. Follow-up action shall be taken to correct the situation that caused the accident.

B. Personal Injury

Site personnel are trained in American Red Cross first aid procedures and shall administer appropriate first aid treatment, including Cardiopulmonary Resuscitation (CPR), in emergency situations. The following general emergency procedures shall be carried out in the event of injury:

1. Notify the SECD HSO of the incident.

2. If the victim can be moved safely, remove from the contaminated zone to the decontamination zone using established control points.

3. Administer first aid.

4. Transport victim to nearest hospital or emergency medical center or call for ambulance transport, as appropriate.

NOTE: The site SECD HSO shall direct the removal of injured personnel from the contaminated zone and shall approve any necessary deviation from established decontamination procedures. Such deviation shall be based upon the severity or life threatening nature of the injury.

5. Notify the SECD HSD of the incident and describe the emergency response actions taken.

C. Chemical Exposure

Before entering the contaminated zone, all site personnel shall be thoroughly acquainted with the types of toxic/hazardous chemicals present on site and their potential concentrations. The following general procedures shall be followed for chemical exposure emergencies:

1. Move the victim from the immediate area of exposure or contamination, taking precautions to prevent additional exposure of other individuals.

2. Notify the site SECD HSO of the exposure incident.

3. If victim can be moved safely, proceed to the decontamination zone through established control points.

4. Decontaminate clothing or remove if safe to do so.

   - For skin or eye contact, thoroughly wash affected areas with water (eyes should be flushed for at least 15 minutes).

   - For inhalation exposure, ensure that victim has adequate fresh air.

5. Administer additional first aid treatment as appropriate.

6. Transport victim to nearest hospital or emergency medical center or call for ambulance transport as appropriate.

7. Notify the SECD's HSD of the incident and describe the emergency response actions taken.

NOTE: The SECD HSO shall direct the removal of injured personnel from the contaminated zone and shall approve any necessary deviation from established decontamination procedures. Such deviation shall be based upon the security or life threatening nature of the injury.

D. Fire or Explosion

In the event of a fire or explosion:

1. Immediately evacuate injured personnel and leave the area,
2. Administer first aid as appropriate,
3. Notify emergency services,
4. Notify the Sirrine Health and Safety Director.

E. Primary Emergency Contacts

The appropriate contact(s) from the following list shall be made for all emergency situations.

Primary Emergency Contacts	Telephone
Fire - Rescue	(914) 294-7711
Hospital	(914) 928-2341
Police	(914) 782-6644

Call 911 During An Emergency

For ambulance, fire or police contacts, give the name of the road and the nearest intersection. In the event no telephone can be reached, Channel 9 can be accessed with a Citizens' Band (CB) Radio for emergency assistance.

Notify the client contact and the SECD HSD after primary emergency contacts have been made. The PPE Manager should be contacted if unforseen circumstances require the immediate procurement of additional personal protective equipment.

Attending emergency physicians should be given the telephone number of the SECD Medical Director to obtain immediate access to an employee's medical records and for consultation purposes.

The telephone number of these secondary contacts are listed below:

Project Contact	Telephone
Betty Schnee SECD Health & Safety Director	(803) 234-3043
Eric Olson SECD PPE Manager and Emergency Equipment Procurement	(803) 234-8929 (803) 297-3102
Linwood Zoller, MD SECD Medical Director	(803) 242-4122

G. Spill Control Contingency Plan

Solid materials that are spilled will be scooped up, placed in appropriate containers and held for disposal. Wherever possible, samples will be obtained from above the liquid level in all tanks and barrels to limit spill potential. Appropriate temporary spill containment will be erected prior to sampling any liquid containing vessel from below the liquid level. Spilled liquids will be neutralized or containerized and held for disposal. Prior to spill clean up, the SECD HSD will be consulted to assure that employees are protected during the work.

15.0 TRAINING OF PERSONNEL

To remain in compliance with OSHA regulations, all personnel whose duties include participation in job-related activities on these sites, must be able to document "a minimum of 40 hours of initial instruction off the site, and a minimum of three days of actual field experience under the direct supervision of a trained, experienced supervisor." Site-specific training shall be carried out by the site SECD HSO entry to the site. This shall consist of a

review of the specific hazards of concern, risks, symptoms of exposure and an overview of the SHERP to include delineation of work zones, access, decontamination protocols, safety procedures and emergency contacts.

Any personnel not initially cleared for site entry will be provided a similar briefing at the site by the SECD HSO before admittance into the Exclusion Zone is permitted.

The OSHA regulations provide that if previous training can be demonstrated equivalent to the OSHA initial training requirements, this shall be considered as meeting those requirements. Equivalent training includes the training that employees might have already received from actual, on-site work experience.

16.0 MEDICAL SURVEILLANCE

Sirrine Environmental Consultants, Inc., is providing medical surveillance support for numerous ongoing operations. The Medical Surveillance Program is the core element of the SECD HASP that provides for employee assurance as well as liability protection. The intent of this program is to detect deleterious consequences of occupational exposure to hazardous substances and physical stresses, particularly those associated with the work environment at hazardous waste sites. The Surveillance Program is designed to monitor specific physiological conditions and mechanisms that may be affected by non-episodic exposure as well as to provide acute or episodic medical care as needed.

At a hazardous waste site, the most obvious threat to workers may be the potential exposure to hazardous chemicals. A rational, well managed PPE Program will minimize these exposures to the extent that exposure remains within safe limits. Medical surveillance is necessary, however, for several reasons. First, no matter how diligent are the training, supervision and maintenance efforts, incorrect use and the malfunction of PPE remain possible. In addition, no one piece of protective equipment is capable of providing protection against all threats, and no PPE is capable of providing absolute protection against even one threat, or for prolonged periods of time at a given level of threat. Finally, there are the less obvious threats inherent in the use of PPE. These include the inhibition and added physiological burden of wearing suits, gloves, boots, respirators, etc., while performing other tasks that of themselves may be strenuous. Also, vapor barrier protective clothing can prevent evaporation of sweat thus causing metabolic heat

to be stored in the body and creating the threat of heat injury.

The SECD Medical Surveillance Program has been developed using OSHA, NIOSH, EPA, CDC, USCG, university, and industrial data sources to address the categories of hazards outlined above, and specifically in those manifestations that may be encountered in hazardous waste operations by SECD personnel.

All personnel working on these sites will have had a pre-employment physical examination conducted by an occupational health physician and, on the basis of this examination, will have been certified as being fit for duty on potentially hazardous sites. This examination consists of a minimum of the following items:

Assessments
Health history
Anthropomorphic measurements
    Height
    Weight
Pulse
Respiration
Blood pressure
Sensory screening
    Vision
    Hearing
General assessment
    Physical
    Social
    Psychological
    Nutritional

Immunization
    Tetanus (if not immunized within past 10 yrs.)
Procedures
Hgb/Hct
Urine
WBC

Electrocardiograph (if over 50 years of age or indicated by physiological condition)
Multi-Chem profile

Diagnostic Multi-Chem Profile

A/G Ration	GGT
Albumin	Globulin
Alkaline Phosphatase	Glucose
ALT (SGPT)	Iron
AST (SGOT)	LDH
Bilirubin, Total	Phosphorus
BUN	Potassium
BUN/Creatinine Ratio	Protein, Total
Calcium	Sodium
Chloride	Triglycerides
Cholesterol	Uric Acid
Creatinine	

Chest X-ray, pa. and lat.
Pulmonary function (spirometry) exam

In additional to the pre-employment and annual examinations, the SECD Medical Surveillance Program includes provisions for pre-placement, periodic and exit examinations for specific sites with identifiable hazards of high potential exposure levels. However, at these sites, the hazard assessment and risk analysis presented in Sections 4 and 5 of this SHERP do not indicate health risks sufficient to warrant this additional monitoring beyond the baseline medical data maintained by the standard program.

Unscheduled medical examinations will be conducted, however, in the unlikely event of unusual exposures or accidents.

All medical records are maintained with the SECD Medical Director and are accessible, within the limits of the Privacy Act, through written requests to the SECD HSD.

1 RECORDKEEPING

SECD shall maintain logs and reports sufficient to document the implementation and execution of the personnel protection program. This documentation shall consist of medical surveillance files, training files, daily logs and accident reports.

Medical Surveillance

Confidential medical surveillance files are maintained by the SECD HSD. These files document employee participation in the medical surveillance program and fitness to work on hazardous sites. The SECD Medical Director maintains medical records. Access to these files and records is controlled by the HSD.

Training

Documentation of employee training is maintained in SECD Health and Safety files under the direction of the SECD HSD. These files document employee attendance, level of training and follow-up or refresher instruction.

Work Logs

Daily work logs shall be maintained by the site SECD HSO. Copies of daily logs shall be forwarded to the Contracting Officer on request. The daily log shall contain:

- Date,
- Area(s) or site(s) worked,
- List of employees by area and hours exposed,
- Personal protective equipment utilized by employees,
- Results of monitoring tests,
- Waste materials removed from work area(s),
- List of equipment decontaminated,
- Description of special or unusual events or incidents, including all first aid treatments not otherwise reportable.

Daily work logs shall be checked and approved by the site SECD HSO. Any incident resulting in a work stoppage shall be fully documented in a report prepared by the site SECD HSO and submitted to the SECD HSD.

Accident Reporting

In addition to descriptions in the daily log and work stoppage reports, any accident and/or chemical exposure incident shall be investigated, analyzed and documented in an accident investigation report submitted to the SECD HSD. This process shall be applicable to both SECD and all subcontractors. These reports, prepared by the site SECD HSO in consultation with the SECD HSD, shall contain a full description and analysis of the incident, including exposure work-hours and a log of occupational injuries and illnesses (OSHA Form 200 or equivalent as prescribed by 29 CFR 1904).

Formal accident reports shall be prepared for any diagnosed illness or injuries that result in a lost work day or fatality. The accident report shall identify all contributing causes and recommend future hazard control measures to reduce the risk of recurrence.

Persons on site are responsible for reporting all injuries as soon as possible to the site SECD HSO or the SECD HSD.

18.0 JOB EXPOSURE REPORT

The SECD HSO shall complete the attached Job Exposure Report Form and deliver it to the SECD HSD at the termination of field activities on the site, in the event of assignment of a new SECD HSO at an intermediate point during site activities, or at the ends of discrete phases of prolonged field activities. The intent of Job Exposure Reports is to provide documentation of actual and/or suspected job-related exposures for use by the SECD Medical Director in making decisions on appropriate periodic examination procedures.

Each Job Exposure Report shall be countersigned by the Project Manager who should ensure appropriate compliance with this procedure. In addition, all Job Exposure Reports are reviewed by a Certified Industrial Hygienist to ensure that any actual exposures are adequately defined to provide appropriate guidance to the SECD Medical Director.

JOB EXPOSURE REPORT

Project Name _____ Project Number _____

Site Location_____

_____

Employees on-site:

Name	Site Function	Dates of Site Participation
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Were all PPE, monitoring and decontamination procedures carried out in accordance with the provisions of the Site Health and Safety Plan?

Yes _____ No _____

If no, please state how procedures varied from provisions of the Health and Safety Plan, the justification or authority if appropriate, the dates of variance, and if the variance resulted in any known or suspected chemical or radiological exposure. If additional space is needed, please continue on the back of this form.

Please describe any known or suspected exposure that may have occurred during the period of site activities from accidents, unanticipated incidents or failures of personal protective equipment.

HSO Signature

Witness

_____ Date _____ _____

Project Manager

_____ Date _____ _____

APPENDIX A

PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS

FULL BODY PROTECTION

XX	Tyvek - no boots or hood (dusty conditions)
	Tyvek - boots and hood attached (dusty conditions)
XX	Saran coated Tyvek - no boots or hood (wet/splash conditions)
	Saran coated Tyvek - boots and hood attached (wet/splash condition)
	Other _____
	_____

HEAD PROTECTION

XX	Safety Hard Hat
	Hard Hat Liner
	Splash/Rain Hood
	Hair Covering

EYES AND FACE PROTECTION

	Face Shield
	Splash Hood
XX	Safety Glasses (drilling operations)
XX	Goggles (dusty conditions)
	Sweat Bands (optional)

HEARING PROTECTION

	Ear Plugs (noisy conditions)
	Ear Muffs
	Both Plugs and Muffs

EQUIPMENT

XX OVA
XX HNu or TIP II
_____ Combustible Gas Indicator (CGI)
_____ CGI with H2S Monitor
_____ Radiation Survey Meter
_____ Detector Tubes _____
_____
_____
_____

_____ Other _____

FREQUENCY OF MONITORING

XX Continuously (sampling operations)
_____ Every 15 Minutes (sampling operations)
_____ Every 30 Minutes
_____ Every Hour
_____ Other _____

RESPIRATORY PROTECTION LIMITS

15 ppm, Upper Limit Without Respirator
100 ppm, Upper Limit With Half-Mask Respirator
700 ppm, Upper Limit With Full-Face Respirator

NOTE: ABOVE UPPER LIMIT WITH FULL-FACE REQUIRES SITE EVACUATION CONCENTRATION PRESENTS EXPLOSION AND FLAMMABILITY POTENTIAL

HAND PROTECTION

XX	Nitrile Gloves
XX	Neoprene Gloves
	Vinyl - PVC Gloves
	Viton Gloves
	Silver Shield Gloves
	Kevlar Gloves
XX	Cotton Over-Gloves
	Insulated Work Gloves
	Other _____

FOOT PROTECTION

	Regular Leather Work boots
	Plain
	Steel-Toe
	Steel-Shank
	Insulated
	Neoprene Overshoe
	Ankle High
	Calf High
XXXX	Neoprene Boot
	Plain
XX	Steel-Toe
	Steel-Shank
XXXX	PVC Boot
	Plain
XX	Steel-Toe
	Steel-Shank
	Butyl Rubber Boot
	Plain
	Steel-Toe
	Steel-Shank
	Other _____

GENERAL

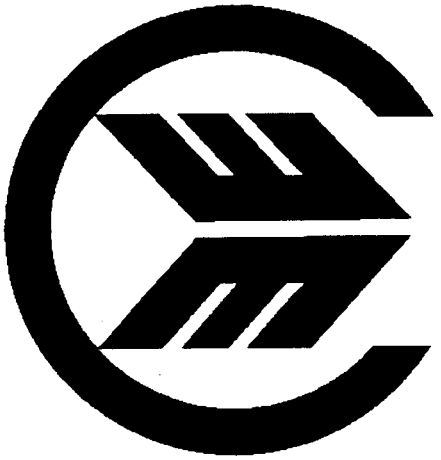
_____	Knife
_____	Flashlight
_____	Safety Belts
_____	Safety Harness
_____	Lifeline
_____	Cooling Jacket
_____	Life Jacket
XX	Eyewash
_____	Spray Bottle - Container
XX	Fire Extinguisher
_____	Thermometer
_____	Botsball
XX	First Aid Kit
_____	Disposal Bags
_____	Cooler with electrolyte replacing drink
XX	Cooler with Water

COMMENTS:

Gaess Inactive Hazardous
Waste Disposal Site
Harriman, New York
Site Number 336018

Quality Assurance Project Plan

Prepared For
Chemical Waste Management,Inc.



February 1993

Prepared By

SEC DONOHUE
Environment & Infrastructure

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APPENDICES

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LIST OF ACRONYMS

AA	Atomic Absorption
CLP	Contract Laboratory Program
DQO	Data Quality Objective
Enseco	Enseco Laboratories
USEPA	United States Environmental Protection Agency
FID	Flame Ionization Detector
GC/MS	Gas Chromatography/Mass Spectrometry
ICP	Inductively Coupled Plasma
NYSDEC	New York State Department of Environmental Conservation
LIMS	Laboratory Information Management System
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PARCC	Precision, Accuracy, Representativeness, Completeness, and Comparability
PE	Performance Evaluation
PID	Photoionization Detector
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
RAS	Routine Analytical Service
RPD	Relative Percent Difference
RSD	Relative Standard Deviation
SOP	Standard Operating Procedures

1.0 INTRODUCTION

This Quality Assurance Project Plan (QAPP) is being prepared as part of the Remedial Investigation/Feasibility Study (RI/FS) for the Gaess Site, Harriman, Orange County, New York. The QAPP has been developed in accordance with the following United States Environmental Protection Agency (USEPA) documents:

- "Interim Guidelines and Specifications For Preparing Quality Guidance",
- "NEIC Policies and Procedures Manual" (May 1978, revised November 1984),
- "Data Quality Objectives for Remedial Response Activities" (March 1987),
- "Laboratory Data Validation Functional Guidelines for Organic Analysis" (OLM01.1.1), and
- "Laboratory Data Validation Functional Guidelines for Inorganic Analysis" (ILM 01.0).

2.0 BACKGROUND AND SITE DESCRIPTION

In 1962, the site was leased from the Erie-Lackawana Railroad (Conrail predecessor) by John Kalodziejski, who operated the Harriman Sewage Disposal Company at the site until 1972 when he subleased the site to Gaess Environmental Services (Gaess). Gaess and its successor, SCA Chemical Services (SCA), operated a waste handling transfer station on the site until 1978. In June, 1980 wastes were discovered abandoned on the site by a NYSDEC Task Force. These wastes were contained in two industrial tank truck trailers and various other waste containers. Following an investigation of the site an additional tank truck trailer, a vacuum tank truck and four, 55-gallon drums were discovered buried at the site.

In April 1981, a Consent Agreement was signed between SCA and NYSDEC. This agreement initiated a cleanup of the site under the direction of the NYSDEC. The containers, the wastes contained in them and suspected contaminated soils were removed from the site by SCA in May through July of 1981 under the supervision of the NYSDEC.

SCA retained Geo-Engineering Inc. in September, 1984 to perform a site hydrogeological investigation. During the week of October 15,1984, two piezometers designated as Geo-Engineering, Inc.-one (1) GEI-1 and Geo-Engineering, Inc.-two (2) GEI-2, and two groundwater monitoring wells, designated Geo-Engineering, Inc.-three (3) GEI-3 and Geo-Engineering, Inc.-four (4) GEI-4 were constructed on the site. These wells, and the Village of Harriman water supply wells Mary Harriman wells (MH-1 and MH-3) were sampled on November 29, 1984. The results of this sampling along with the results of the hydrogeological investigation were documented in a report prepared by GeoEngineering for Chemical Waste Management (CWM) entitled "Hydrogeological Investigation and Monitoring Plan" dated January, 1985. This report was not approved by NYSDEC. CWM became involved with the site following the purchase of SCA in September, 1984.

In October 1990, CWM was contacted by the NYSDEC regarding contamination found in the Village of Harriman wells MH-1 and MH-3. The Harriman backup wells were sampled by the Village of Harriman on July 19,1990. The analytical results indicated that in the shallow water supply well, designated MH-1, trichloroethene (TCE) was present at a concentration of 6.7 parts per billion (ppb) and the deep water supply well, designated MH-3, contained TCE at a concentration of 0.76 ppb. The New York State Department of Health (NYSDOH) Drinking Water Standards for Principal Organic Contaminants (POC) is five (5) ppb for TCE.

CWM responded to the NYSDEC notification by performing a Phase I investigation to determine if the Gaess site could be the source of the contamination detected in the Village of Harriman water supply wells. CWM retained Sirrine Environmental Consultants, Inc. (Sirrine) to re-sample MH-1 and MH-3 as well as the Village of Harriman main water supply well on January 16, 1991. Sirrine also collected two surface water samples from the adjacent Ramapo River on the same date. The results of the Phase I investigation were documented in a report dated March, 1991. The results of the samples collected as part of the Phase I Investigation indicated the presence of 1,1,1-Trichloroethane (1,1,1-TCA) and TCE above the detection limits of 0.5 ppb in three of the seven samples collected. Using USEPA Methods 502.1 and 503.1, EnviroTest Laboratories determined that MH-1 contained 1.2 ppb of 1,1,1-TCA and 14 ppb and 16 ppb (the 16 ppb concentration was determined using USEPA Method 503.1) of TCE and MH-3 contained 0.69 ppb and 1.6 ppb of TCE. The results also indicated the presence of 1,1,1-TCA in the monitoring well GEI-4 in a concentration of 4.8 ppb.

Upon completion of the Phase I investigation, the NYSDEC notified CWM of the need to further investigation the Gaess Site. The Phase II investigation was performed to characterize the soils in and around the former Gaess site operations area to determine if residual soil contamination existed. A secondary purpose of the Phase II investigation was to determine if trichloroethene (TCE) contamination present in the Village of Harriman water supply well (MH-1) was the result of a release from the Gaess site.

River sediment samples collected during the Phase II investigation did not indicate a presence of TCE or 1,1,1-TCA in the Ramapo River or the associated pond. The soil sampling and the soil gas survey (SGS) performed in the area of the former site operations determined the presence of contaminants at concentrations below the NYSDEC levels for human ingestion of soil.

The Phase II investigation at the Gaess site found low levels of TCE and 1,1,1-TCA in the groundwater. The downgradient groundwater samples contained concentrations of TCE and 1,1,1-TCA above the 5 ppb limit for NYSDOH drinking water standards (GHP-1 and GHP-3 contained 8.2 ppb of 1,1,1-TCA and 8.9 ppb of TCE, respectively). Although the groundwater samples did not indicate a presence of either TCE or 1,1,1-TCA, UG-2, which is located upgradient from the other wells did indicate the presence of benzene, toluene, ethylbenzene and m-xylene. Benzene was the only contaminant in UG-2 which was present at a concentration above the NYSDOH limit of 0.5 ppb, at a concentration of 0.53 ppb. This contamination may have been associated with oil staining on the ground surface in the location where sample UG-2 was collected. In addition, the on-site monitoring well (GEI-4) installed by Geo-Engineering as part of their 1985 hydrogeologic investigation was resampled as part of the Phase I investigation and indicated the presence of 1,1,1-TCA at a concentration of 4.8 ppb.

In December 1991, the NYSDEC and CWM entered into a IRM Order on Consent Agreement which required CWM to develop and construct a treatment system for drinking water pumped from the Village of Harriman water supply well. Similarly CWM entered into a separate agreement with the Village of Harriman in December, 1991 which covers installation, operation and maintenance of an air stripper unit.

2.2 PROJECT OBJECTIVES

Quality Assurance (QA) is the review and oversight of environmental data to assure that the data generated have the required quality. A QA program is a system of documented checks that ensures the authenticity and validity of the environmental data.

The QAPP describes the management policies, objectives, principles, and procedures which will be used to produce data of known and acceptable quality.

The activities associated with the collection of physical and chemical data include sampling, analysis, and data manipulation that can affect the validity of data. The activities that collect data for USEPA use will follow a formal QA program which adheres to the USEPA requirements. These requirements are defined by the use of Data Quality Objectives (DQOs) in Section 4.0.

3.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

3.1 PROJECT TEAM ORGANIZATION

The project manager will be responsible for the coordination of the overall project. This individual will be the main contact with the client and will be responsible for cost estimates and schedule projections. The project manager will review field activity procedures and provide senior technical oversight throughout the duration of the project.

The QA Coordinator is responsible for monitoring and auditing management and technical systems, data quality objectives (DQOs), and performance evaluations.

The Field Staff will be responsible for field activities. These individuals will follow proper decontamination procedures, proper equipment operation, sample collection and shipment, and documentation of field activities. Field personnel will also be responsible for following all health and safety procedures while working in the field.

Quality assurance auditing and monitoring will be conducted on a regular basis by SEC Donohue (SECD) personnel. The personnel assigned QA responsibilities will be familiar with the QAPP. They will also be qualified to observe and evaluate procedures. While implementing their responsibilities, QA personnel will have access to all work areas. They will have the freedom to identify potential quality problems; initiate, recommend, or provide solutions to quality problems through designated channels; verify implementation of solutions; and ensure that further processing or action is controlled until proper disposition of unsatisfactory conditions has occurred. Quality assurance personnel shall have access to project management and corporate management as required to resolve problems or coordinate quality concerns.

3.2 ASSIGNED PERSONNEL

Mr. Richard V. Sheehan, P.G. is the Project Manager. The Project Manager will be responsible for the preparation of baseline plans and for the performance of the work elements that comprise this project. The Project Manager will be responsible for the tracking of manpower and monetary expenditures during the course of the project and will ensure that resource utilization

is within the established budget. The Project Manager will report to the Project Coordinator and will provide him with the controls necessary to keep the project on schedule.

Mr. Richard G. Habrukowich, Ph.D., P.E. is the Quality Assurance Coordinator. The Quality Assurance Coordinator will monitor the quality and procedural aspects of all efforts from sampling through storage, transportation, analysis and presentation of data. The duties will also include formal audits of field and analytical procedures to document that each aspect of the project is performed in accordance with the appropriate protocol and the project work plan.

3.3 ORGANIZATION AND RESPONSIBILITIES OF THE LABORATORY

Enseco Laboratories (Enseco) in Somerset, New Jersey will perform the analytical testing for this program. The QA effort at Enseco is administered by the Director of QA and Technology who manages the Corporate QA Office. The Director of QA and Technology reports directly to the President and has the responsibility for overseeing and regulating all laboratory functions. The Corporate QA Director reports to the Director of QA and Technology and has the responsibility of the day-to-day functions of the QA office. The QA Office operates independently of all areas generating analytical data to ensure complete objectivity in the evaluation of laboratory operations.

The implementation of the QA program within each individual Enseco laboratory is administered by the Division QA Director. The Division QA Director reports to both the Corporate QA Director and to the General Manager, who manages the laboratory. In addition, all scientists within the organization play a vital role in assuring the quality of their work. The responsibilities within the organization are described below.

3.3.1 Corporate Quality Assurance Office

The QA effort within Enseco is directed by the Corporate QA Director under the management of the Director of QA and Technology to carry out the responsibilities of the department.

The Corporate QA Director under the direction of the Director of QA and Technology is responsible for:

- Developing and implementing a Corporate QA program that ensures that all data generated in Enseco laboratories are scientifically sound, legally defensible, and of known precision and accuracy;

- Monitoring the QA Plan to ensure compliance with QA objectives in all Enseco laboratories;

- Developing and implementing new QA procedures within the corporation to improve data quality;

- Conducting audits and inspections of all Enseco laboratories on a regular basis, reporting the results of those audits to management, and applying corrective actions as needed to ensure compliance with the Enseco QA Plan;

- Coordinating the distribution of Performance Evaluation (PE) samples to all Enseco laboratories on a routine basis, evaluating the results of those samples, reporting to management, and applying corrective actions as needed to ensure that all Enseco laboratories are able to generate data that meet the DQOs defined in the QA Plan;

- Establishing databases that accurately reflect the performance of each of the Enseco laboratories;

- Directing Division QA Directors in the implementation of the Enseco QA Plan within individual facilities;

- Chairing the Enseco QA Committee, a working committee which includes all of the Division QA Directors and deals with QA issues on an ongoing basis;

- Coordinating certification programs within Enseco;

- Conducting seminars on QA issues for both clients and laboratory staff; and

- Promoting sound QA practices within the environmental regulatory and analytical communities.

3.3.2 Divisional Quality Assurance Departments

Each Divisional QA Department is managed by a QA Director. The QA Director reports directly to the General Manager and indirectly to the Corporate QA Director. The QA Director is supported by a QA staff within the laboratory.

The Division QA Director is responsible for:

- Implementing Enseco QA policies;

- Monitoring the implementation of the QA Plan within the laboratory to ensure complete compliance with QA objectives;

- Conducting in-house audits to identify potential problems and ensure compliance with written Standard Operating Procedures (SOPs);

- Performing statistical analyses of QC data and establishing databases that accurately reflect the performance of the laboratory;

- Prescribing and monitoring corrective actions;

- Serving as the in-house client representative on all project inquiries involving data quality issues;

- Monitoring the preparation and verification of analytical standards;

- Assisting chemists in the writing of SOPs;

- Reporting the status of the laboratory QA program to the Corporate QA Director with formal and informal communications;

- Maintaining records and archives of all quality control (QC) data, PE results, audit comments, and customer inquiries concerning data quality;

- Assuring that the laboratory staff has access to current SOPs;

- Monitoring laboratory performance in the areas of holding times, turn-around times, and meeting contractual obligations;

- Conducting seminars on QA issues for clients and laboratory staff;

- Preparing QAPPs when needed;

- Assisting the Corporate QA office in the writing of QA policies and procedures;

- Serving as a member of the Enseco QA Committee; and

- Auditing subcontractors.

3.3.3 Divisional Management

The managers and supervisors who direct the analytical work at each laboratory are directly responsible for ensuring that all employees reporting to them are complying with the Enseco QA Plan.

Laboratory management is responsible for:

- Actively supporting the implementation of the Enseco QA Plan within the laboratory;

- Maintaining accurate SOPs and enforcing their use in the laboratory;

- Maintaining a work environmental that emphasizes the importance of data quality; and

- Providing management support to the Corporate and Divisional QA departments.

3.3.4 Divisional Personnel

All laboratory personnel involved in the generation and reporting of data have a responsibility to understand and follow the Enseco QA Plan.

Laboratory personnel are responsible for:

- Having a working knowledge of the Enseco QA Plan;

- Ensuring that all work is generated in compliance with the Enseco QA Plan;

- Performing all work according to written SOPs;

- Ensuring that all documentation related to their work is complete and accurate; and

- Providing management with immediate notification of quality problems.

4.0 QUALITY ASSURANCE OBJECTIVES FOR MEASUREMENT OF DATA

4.1 CHARACTERISTICS OF DATA QUALITY

This QA program addresses both field and laboratory activities. The measurement of QC includes the PARCC parameters (i.e., precision, accuracy, representativeness, comparability, and completeness). The procedures described herein are designed to obtain PARCC data for each analytical method and field procedure. To ensure that quality data continues to be produced, systematic checks must show that test results remain reproducible and that the methodology is actually measuring the quantity in each sample. The PARCC parameters are indicators of data quality and are described below.

All laboratory chemical data will be generated by Enseco which is an active participant in the USEPA CLP. USEPA-approved contract laboratories have an in-place program for data reduction, validation, and reporting as discussed in Section 9.0. The reliability and credibility of analytical laboratory results can be corroborated by the inclusion of a program of scheduled replicate analyses, analyses of standard or spiked samples, and, as necessary, the cooperative analyses of split samples with agency laboratories. Regularly scheduled analyses of known duplicates, standards, and spiked samples are a routine aspect of data reduction, validation, and reporting procedures. All data generated during the Gaess RI will be validated by SEC independently of any laboratory data validation.

Specific QA measurements will be addressed to satisfy the QA objectives. These measurements include precision, accuracy, representativeness, completeness, and comparability.

4.1.1 Precision

Whereas accuracy measures the average properties of an analytical method, precision examines the spread of the reported values about their mean. The spread of reported values refers to how different the individual reported values are from the average reported value. Precision is a measure of the magnitude of errors which can be measured in a variety of ways. A simple measure of precision is the standard deviation.

Precision is commonly determined from duplicate samples; thus, precision is usually expressed as relative percent difference (RPD) or relative standard deviation (RSD). These quantities are defined as follows:

$$RPD = \frac{|X_1 - X_2|}{(X_1 + X_2)/2} * 100$$

where X_1 and X_2 are the reported concentrations for each duplicate sample

$$RSD = (100/\sqrt{2}) * [2|X_1 - X_2|/(X_1 + X_2)]$$

4.1.2 Accuracy

Accuracy measures the bias in a measurement system and is difficult to measure for the entire data collection activity. Sources of error are the sampling process, field contamination, preservation, handling, sample matrix, sample preparation, and analysis techniques. Sampling accuracy may be assessed by evaluating the results of rinsate and trip blanks, and analytical accuracy may be assessed through use of known and unknown QC samples and spike samples.

Accuracy values can be presented in a variety of ways. The average error is one way; however, more commonly accuracy is presented as percent bias or percent recovery. Percent bias is a standardized average error; that is, the average error divided by the actual or spiked concentration and converted to a percentage. Percent recovery provides the same information as percent bias. Since accuracy is often determined from spiked samples, laboratories commonly report accuracy as

$$\% \ Recovery = \frac{R}{S} * 100$$

where S = spiked concentration
R = reported concentration

Percent bias can then be found by

$$\% \ Bias = \% \ Recovery - 100.$$

4.1.3 Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Representativeness is a qualitative parameter which is most concerned with the proper design of the sampling program. The representativeness criterion is best satisfied by making certain that sampling locations are selected properly and a sufficient number of samples are collected.

Representativeness is addressed by describing sampling techniques and the rationale used to select sampling locations. Sampling locations can be biased (based on existing data, instrument surveys, observations, etc.) or unbiased (completely random or stratified-random approaches). Either way, the rationale used to determine sampling locations must be explicitly explained.

Representativeness can be assessed by the use of duplicate samples. By definition, duplicate samples are collected so that they are equally representative of a given point in space and time. In this way, they provide both precision and representativeness information.

4.1.4 Completeness

Completeness is defined as the percentage of measurements made which are judged to be valid measurements. The completeness goal is essentially the same for all data uses in that a sufficient amount of valid data be generated. It is important that critical samples are identified and plans implemented to achieve valid data for them.

Almost no historical data on the completeness achieved by individual methods exists. However, CLP caliber data has been found to be 80-85 percent complete on a nationwide basis. This can be extrapolated to indicate that Level III, IV and V analytical techniques will generate data that are approximately 80 percent complete. Levels I and II would be expected to have lower completeness levels. However, since they are on-site measurement techniques providing results in real-time or after minimal delay, invalid measurements can be repeated easily. Thus, a high degree of completeness can be achieved with these analytical levels.

4.1.5 Comparability

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. Sample data should be comparable with other measurement data for similar samples and sample conditions. This goal is achieved through using standard techniques to collect and analyze representative samples and reporting analytical results in appropriate units. Comparability is limited to the other PARCC parameters because only when precision and accuracy are known can data sets be compared with confidence.

4.2 DATA QUALITY OBJECTIVES AND LEVELS

To generate data that will meet the project objectives, it is necessary to define the types of decisions that will be made, identify the intended use of the data, and design a data collection program. Data Quality Objectives are defined as an integrated set of thought processes which define data quality requirements based on the intended use of the data. Data Quality Objectives are necessary in obtaining sufficient data of known defensible quality for the intended use. The

DQO process, based on the intended use of the data, will assist in determining the appropriate quantitation, detection, and reporting limits, analytical methods, and sample handling procedures.

An analysis of all data collected during this program will be performed to assure that the quality procedures (i.e. QAPP) have been followed and the quantity of data will adequately support the intended use of the data as described in the USEPA's Data Quality Objectives for Remedial Response Activities (March 1987). The QA/QC evaluation will determine whether the data meet the requirements of the QAPP and will include an analysis of laboratory data as described in USEPA's Laboratory Data Validation Functional Guidelines for Inorganics Analysis and Laboratory Data Validation Functional Guidelines for Organic Analysis.

Data collected during this program will be used for a number of purposes with varying levels of confidence required. The primary objectives of this program are to:

- Further characterize the presence and extent of chemical residue in the ground water and subsurface soils.

- Supplement existing chemical data in order to identify any remaining site areas that must be addressed in order to meet NYSDEC guidelines.

Specific data to be obtained and its use in meeting the project objectives stated above are as follows:

- Quality of ground water and chemical composition of soils.

Different data uses may require different levels of data quality. The levels of data quality to be utilized in this investigation for the various project objectives are presented in Table 1. A summary of the project specific DQOs is provided in Table 2. The five levels of data quality established by the USEPA are defined as follows:

- Level I — Field screening or analysis using portable instruments. Results are usually limited to volatile compounds, often not compound-specific, and not quantitative but can indicate presence or absence. Results available immediately.

- Level II — Field screening or analysis using more sophisticated portable instruments. The quality of data generated is highly variable, depending on the use of suitable calibration standards, reference materials, sample preparation equipment, and the training of the operator. Results available almost immediately.

- Level III — All analyses performed in an off-site laboratory that may or may not follow CLP procedures. Quality assurance/quality control and documentation are less rigorous than CLP protocols. Results delayed.

- Level IV — CLP Routine Analytical Services (RAS). All analyses are performed in an off-site CLP laboratory following CLP procedures. Quality assurance/quality control protocols and documentation are rigorous. Results delayed.

- Level V — Analysis by Non-Standard methods. All analyses are performed in an off-site laboratory that may or may not be a CLP laboratory. CLP Special Analytical Services (SAS) are Level V.

5.0 QUALITY ASSURANCE/QUALITY CONTROL PROCEDURES FOR FIELD ACTIVITIES

5.1 GENERAL CONSIDERATIONS

Field activities affect data quality and any deviation from SOPs will be documented. Activities affecting data quality include sample management, reagent/standard preparation, decontamination, sample collection, field measurements, equipment calibration and maintenance, corrective action, and waste disposal which are discussed in this QAPP.

5.2 SAMPLE CONTAINERS, PRESERVATION, AND STORAGE

Sample containers will be furnished by the laboratory or will be supplied by a commercial laboratory supply vendor. Container, preservation, and storage requirements are presented in Table 3.

5.3 DECONTAMINATION

The decontamination area will be established in an area of the site considered to be free from contamination. Equipment and personnel decontamination activities will be centralized in this area. All cleaning activities will take place in the designated areas. The decontamination water will be collected. Prior to arrival on-site, all down-hole drilling equipment will be steam cleaned. Equipment used for drilling and sampling will be decontaminated prior to each use in accordance with the following cleaning procedures:

1. Drill rigs and all support equipment will be free from excess grease, oils, and caked-on soils from previous work prior to arrival at the site. Equipment which leaks fuel, coolant, and lubricants will be removed from the site and repaired prior to use.

2. Equipment or materials not used immediately after decontamination will be placed on a plastic sheet, covered with plastic and secured to avoid potential contamination.

3. Clean with tap water and phosphate-free laboratory detergent, (Liquonox or equivalent) using a brush if necessary to remove particular matter and surface films.

4. Rinse thoroughly with tap water.

5. Rinse thoroughly with deionized water.

6. Final rinse with organic-free water.

7. Wrap sampling equipment completely with aluminum foil, shiny side out, to prevent contamination if equipment is to be stored or transported.

8. Equipment such as pumps, flow lines, etc. will be flushed thoroughly with potable water from a treated municipal supply prior to use.

Clean, disposable gloves will be worn while handling sampling equipment or downhole tools during the final stages of decontamination. Pesticide grade isopropanol and organic free water will be stored in either glass or Teflon containers and applied via Teflon squeeze bottles or decanted directly from their storage containers. Deionized water will be stored in plastic containers and applied via plastic pump sprayers or decanted directly from the storage container.

5.4 DOCUMENTATION/DATA MANAGEMENT

Data management involves maintaining and controlling field data, laboratory analytical data, and any other data relevant to the project. Bound field log books will be used for recording field data. Entries in the field log book will be dated and the time of entry will be recorded. Sample collection data as well as visual observations will be documented in the field log book. Any sample collection equipment, field analytical equipment, and equipment used to make physical measurements will be identified in the field log book. Calculations, results, and calibration data for field sampling, field analytical, and field physical measurement equipment will be recorded also. Once completed, the field log book will become part of the project file.

Office data management will involve establishing and maintaining a project file. The project file will consist of the following sections and subsections.

Office data management will involve establishing and maintaining a project file. The project file will consist of the following sections and subsections.

- Administrative
  - External and Internal Correspondence
  - Notes/Minutes of Meetings and Phone Conversations
  - Personnel, Organization and Responsibilities
  - Planning and Scheduling
  - QA Auditing and Inspection Reports

- Engineering
  - Field Sampling
  - Project Operations
  - Calculations

- Analytical Data
  - Laboratory
  - Field

- Procurement
  - Contract/Purchase Order
  - Change Order
  - Bid Evaluations

- Drawings

The project file will be maintained by document control personnel using a documentation log for each section. All project related information will first be routed to the SEC Donohue (SECD) Project Manager who will be responsible for routing the information to appropriate personnel.

6.0 SAMPLE CUSTODY

Sample collection and sample custody are designed so that field custody of samples is fully and continuously maintained and documented. These procedures provide complete identification and documentation of the sampling event and the sample chain-of-custody from shipment of sample bottleware, through sample collection, to receipt of the samples by the subcontracted laboratory. When used in conjunction with the laboratory's custody procedures and the sample bottleware documentation, these data establish full legal custody and allow complete traceability of a sample from preparation and receipt of sample bottleware to sample collection, preservation, and shipping, through laboratory receipt, sample analysis, and data validation.

6.1 SAMPLE IDENTIFICATION AND DOCUMENTATION

After sample collection, all sample containers will be labelled with an identification number that uniquely identifies the sample. The sample identification number shall be logged in the field notebook, along with the following information:

- sampling personnel
- date and time of collection
- field sample location and depth (if appropriate)
- observations on ambient conditions
- type of sampling (composite or grab)
- method of sampling
- sampling matrix or source
- results of field screening
- intended analyses
- preservation method
- observations of significant characteristics of the sample
- observations of significant affect to the sampling procedure

Sample Identification is discussed in Section 6.2.1.2. Samples shipped to the laboratory will have information transcribed to a sample chain-of-custody form as shown in Figure 1.

6.2 FIELD CUSTODY PROCEDURES

Field custody procedures are described below as two groups: (1) sample collection procedures that document the sample identification, sampling personnel, sample collection procedures, sample preservation, and ambient conditions during sampling activities; and (2) sample shipment procedures that document handling, packing, and shipping of samples to the laboratory.

The persons responsible for sample custody, and a brief description of their duties, are:

- Laboratory Representative or Commercial Supplier - verifies that the bottleware is certified clean; arranges for bottleware shipment to field sampling personnel or our equipment shop;

  SEC Donohue Field Sampling Personnel receives samples; verifies samples to sample chain-of-custody form.

- SEC Donohue Equipment Manager - receives and stores bottleware that is shipped from a laboratory or a commercial supplier; relinquishes bottleware to field sampling personnel;

- SEC Donohue Field Staff - receive sample bottleware from laboratory or our equipment shop; inspects bottleware for physical integrity; retains bill of lading from shipping courier as documentation of transfer of bottleware; collects and preserves samples; retains bottleware and samples under custody until sample shipment; relinquishes samples to shipping courier or to laboratory representative.

- SEC Donohue Project Manager - Verifies reported laboratory analyses to the sample chain-of-custody form; assures that chain-of-custody documentation is incorporated into the project file.

6.2.1 Sample Collection

The following procedures are conducted during sample collection activities, and are recorded in a project field notebook and on the sample chain-of-custody form (Figure 1), as indicated below.

6.2.1.1 Field Log Book

Sampling personnel will use a bound field log book with moisture resistant pages to record pertinent sampling information with waterproof ink. The log book identifies project name, project number, project manager and telephone number, and principal street address or geographic location of the site. Daily field activities and sampling information are entered in the logbook on dated, initialed, and serially-numbered pages. Corrections are made to entries by initialed and dated line-out deletions. A diagonal line is drawn across the remaining blank space of the last page of each day's entry. Each day's entry is signed and dated by the author.

6.2.1.2 Sample Identification

A unique identification number will be assigned to each sample. This number is typically an alphanumeric sequence or integer that serves as a mnemonic or acronym to identify the sample. Specific sample identification procedures are described in the Field Sampling Plan. All information pertaining to a particular sample is referenced by its identification number that is recorded on the sample bottleware, in the field notebook, and on the sample chain-of-custody form.

A typical sample label is shown in Figure 2. Following sample collection, the sample label is completed in waterproof ink with the appropriate information as shown. The completed label is then typically secured to the sample container with clear, wide tape.

6.2.1.3 Sample Containers

SEC Donohue (SECD) uses sample containers furnished by the subcontracted laboratory or a commercial supplier. SEC Donohue (SECD) verifies that the laboratory has

approved cleaning procedures in their own QAPP, or that the commercial supplier furnishes laboratory grade, certified clean containers. The source and lot numbers of sample containers used in the sampling event are recorded in the project field log book for each sample collected. The lot number may be used to trace the bottleware preparation and certification of cleanliness when the containers are shipped from our equipment manager. When bottleware is shipped directly from the supplier to the field, a formal chain-of-custody is not normally initiated. In this instance, the airway bill receipt or packing slip serves as the initiation of chain-of-custody.

6.2.1.4 Sample Location, Sample Media, and Intended Parameters

The specific sampling location of each sample is recorded with each sample identification number in the field log book and on the sample chain-of-custody form. Sampling locations are typically referenced to a site location map from the Field Sampling Plan. Other location references may be distance and bearing from a prominent landmark.

The type of sample media is recorded with the sample identification number in the field log book and on the chain-of-custody form.

Laboratory analyses to be conducted on the sample are recorded with the sample identification number in the field log book and on the chain-of-custody form.

6.2.1.5 Date, Time, Personnel, and Ambient Conditions

The date and time of sampling preparation and collection, and personnel who conducted sampling are recorded with the sample identification number in the field notebook and on the chain-of-custody form. The names of visitors and any other persons on site are also recorded in the field log book. Sampling personnel also record in the field log book the ambient weather conditions and other conditions at the sampling location that may affect sample collection, the apparent representativeness of the sample, or sample analysis.

6.2.1.6 Preliminary Sampling Activities

Sampling personnel will record in the field log book the preparation activities that may be pertinent to the sampling event at each sampling location. For ground-water sampling, this documentation may include the well construction materials and diameter of the riser pipe; the apparent integrity of the well at the surface; the volatile vapor concentrations in the well riser, breathing zone, and background; total depth of the well, the water level, and water column volume; presence of a light, non-aqueous phase liquid; the calculated well purge volume and actual volume purged; and the field monitoring results of purge water (pH, specific conductance, turbidity and temperature).

For soil sampling, this documentation may include information on presence of surface staining, water logging or ponding; proximity to roads or waste piles; apparent upgradient physiographic or hydrogeologic features of significance; background volatile vapor concentrations, the depth the samples were collected from, and the drilling method, equipment, and materials (such as drilling mud) that were used to construct the boring.

For water sampling, this documentation may include construction of plumbing and tap; holding tank volume; the flow rate of purge water, and the volume purged the field monitoring results of purge water (pH, specific conductance, turbidity and temperature), the amount of time the well was allowed to purge, and the flow rate when the sample was collected.

6.2.1.7 Sample Collection

Sampling personnel will record in the field log book the type of equipment used to purge and conduct sampling, the order of sample collection (typically from most sensitive to least sensitive parameter), field screening results measured during sampling collection (such as vapor headspace readings of soil samples), special collection procedures (such as field filtering), and aberrations to sampling procedures. Duplicate quality control samples, as described in Section 10, will have the same information recorded in the field log book.

Following collection of the sample, the sample identification number and other information on the sample label will be verified to the entry in the field log book. Sample identification number, time, and date of collection will be recorded on the chain-of-custody form.

Following sample labeling verification, the sample will be placed in a cooler with ice packs and maintained in the sampler's presence or in a secure location for the remainder of the daily sampling activities, or until custody is transferred to another responsible party. A sample is considered to be in a person's custody whenever it is in a person's physical possession, when it is in view of the sampler or responsible party, or when it is in a secure location. Custody of a sample is also maintained when the sample is shipped in a container that is properly sealed against tampering with custody seals.

6.2.1.8 Quality Control Sample Collection

Information on QC samples is also recorded in the field notebook, on the sample bottleware label, and on the chain-of-custody form. Duplicate samples have the same information recorded as a regular sample. Trip blanks and rinsate blanks have most of this same information recorded, with the exception that sample location and sample screening and preliminary activities are not applicable. The trip blank is also referenced to the actual samples that it accompanies in shipment and handling. Rinsate blanks are also referenced to the specific decontaminated sampling equipment that they are obtained from. A detailed discussion of QC Samples is presented in Section 10.

6.3 SAMPLE MANAGEMENT

The following procedures are conducted during sample handling and shipping, and are recorded in a project field log book, sample chain-of-custody form, and request-for-analysis form, as indicated below.

6.3.1 Sample Packing

Samples are packed for shipping in waterproof ice chests and coolers. The sample containers may be individually sealed in "Zip-lock" or other plastic bags, prior to

packing them in the cooler with vermiculite, bubble wrap, or styrofoam packing. Wet ice sealed in "Zip-lock" or other plastic bags (to inhibit cross contamination of samples by meltwater) or ice packs are placed with the samples in the cooler to maintain the samples at a temperature of about 4° Celsius during shipping.

The chain-of-custody form (Figure 1) that identifies the samples is signed as "relinquished" by the principal sampler or responsible party. A request-for-analysis form (Figure 3) that identifies the samples and instructs the laboratory on their analysis, is also completed by the sampler or responsible party. Both forms are sealed in a waterproof plastic bag and are placed inside the cooler, typically by taping the bag to the inside lid of the cooler.

Following packing the cooler lid is sealed with strapping tape. A custody seal is signed and dated and is affixed about two corners of the cooler, across the seal of the lid, and is additionally covered with clear tape.

6.3.2 Sample Shipping

The sample coolers are typically shipped by overnight express carrier to the laboratory. A copy of the bill of lading is retained by SEC Donohue (SECD) and becomes part of the sample custody documentation. Concurrent with shipping, the sampler completes a sample shipping form (Figure 4) for reporting by telephone to the laboratory that receives the samples.

6.4 LABORATORY CUSTODY PROCEDURES

Upon receipt by Enseco, samples proceed through an orderly processing sequence specifically designed to ensure continuous integrity of both the sample and its documentation.

All samples are received by Enseco's Sample Control Group and are carefully checked for label identification, and completed, accurate chain-of-custody records. Each sample is then assigned a unique laboratory identification number through a computerized Laboratory Information Management System (LIMS) that stores all identifications and essential information. The LIMS system tracks the sample from storage through the laboratory system until the analytical process

is completed and the sample is returned to the custody of the Sample Control Group for disposal. Access to all Enseco laboratories is restricted to prevent any unauthorized contact with samples, extracts, or documentation.

Sample bottles provided to the client by Enseco are transmitted under custody.

7.0 QUALITY ASSURANCE AND QUALITY CONTROL PROCEDURES

7.1 CALIBRATION PROCEDURES AND FREQUENCY

7.1.1 Laboratory Instruments and Equipment

All instruments and equipment utilized from sample custody to sample disposition are included in Table 4. The table includes the name, quantity, and model number of all the instruments and equipment.

7.1.1.1 Standard/Reagent Preparation

A critical element in the generation of quality data is the purity/quality and traceability of the standard solutions and reagents used in the analytical operations. Enseco continually monitors the quality of reagents and standard solutions through a series of well-documented procedures.

Primary reference standards and standard solutions used by Enseco are obtained from the National Institute of Standards and Technology, an USEPA Cooperator Supplier, or other reliable commercial sources to ensure the highest purity possible. All standards and standard solutions are catalogued to identify the supplier, lot number, purity/concentration, receipt/preparation date, preparer's name, method of preparation, expiration date, and all other pertinent information.

Standard solutions are validated prior to use. Validation procedures can range from a check for chromatographic purity to verification of the concentration of the standard using a standard prepared at a different time or obtained from a different source. Stock and working standards are checked regularly for signs of deterioration, such as discoloration, formation of precipitates, or change in concentration. Care is exercised in the proper storage and handling of standard solutions, and all containers are labeled as to compound, concentration, solvent, expiration date, and preparation data (initials of preparer/date of preparation).

Reagents are examined for purity by subjecting an aliquot or subsample to the analytical method in which it will be used; for example, every lot of dichloromethane (for organic extractables) is analyzed for undesirable contaminants prior to use in the laboratory.

7.1.1.2 Instrument Calibration and Tuning

Calibration of instrument is required to ensure that the analytical system is operating correctly and functioning at the proper sensitivity to meet established reporting limits. Each instrument is calibrated with standard solutions appropriate to the type of instrument and the linear range established for the analytical method. The frequency of calibration and calibration verification and the concentration of calibration standards are determined by the manufacturer's guidelines, the analytical method, or the requirements of special contracts.

Gas Chromatography/Mass Spectrometry (GC/MS)

Each day prior to analysis of samples, the instrument is tuned with bromofluorobenzene for volatile compounds and decafluorotriphenylphosphine for semivolatile compounds or other tune criteria as specified by the method used. No samples are analyzed until the instrument has met the tuning criteria of the method.

In general, the instrument is then calibrated for all target compounds. An initial calibration curve is produced to define the working range to establish criteria for identification. This initial calibration is evaluated on a daily basis to ensure that the system is within calibration. If the daily standard does not meet the established criteria, the system is recalibrated.

Chromatography

The field of chromatography involves a variety of instrumentation and detection systems. While calibration standards and acceptance criteria vary depending on the type of system and analytical methodology required for a specific analysis, the general principles of calibration apply uniformly. Each chromatographic system is calibrated prior to performance of analyses. Initial calibration consists of determining the working range,

establishing limits of detection, and establishing retention time windows. The calibration is checked on a daily basis to ensure that the system remains within specifications. In addition, continuing calibrations are performed at frequencies required by the method used. If the calibration checks do not meet established criteria, corrective action is taken which may include recalibration and reanalysis of samples. The procedures include examination of instrument performance and analysis information, consultation with the Supervisor and a decision path to determine if recalibration and reanalysis of samples back to the previous acceptable calibration check is warranted.

Metals

Metals analysis basically involves two types of analytical instrumentation: inductively coupled argon plasma emission spectroscopy (ICP) and atomic absorption spectroscopy (AA).

Each ICP is calibrated prior to any analyses being performed using criteria prescribed in the CLP protocol. The calibration is then verified using standards from an independent source. The working range of the instrument is established once every quarter using a linear range verification check standard. No values are reported above this upper concentration value without dilution.

A calibration curve is established daily by analyzing a minimum of two standards, one of which is a calibration blank. The calibration is monitored throughout the day by analyzing a Continuing Calibration Blank and a Continuing Calibration Verification standard. If the verification standard does not meet established criteria, corrective action must be performed. The procedures include examination of instrument performance and analysis information, consultation with the Supervisor and a decision path to determine if recalibration and reanalysis of samples back to the previously acceptable calibration check is warranted.

An interelement check standard is analyzed at the beginning and end of each analytical run, to verify that interelement and background correction factors have remained constant. Results outside of the established criteria trigger reanalysis of samples.

Each AA unit is calibrated prior to any analyses being conducted. A calibration curve is prepared with a minimum of a calibration blank and three standards and then verified with a standard that has been prepared from an independent source at a concentration near the middle of the calibration range. The calibration is then verified on an ongoing basis with a calibration blank and a midpoint calibration standard. If the ongoing calibration standard does not meet established acceptance criteria, corrective action must be performed. The procedures include examination of instrument performance and analysis information, consultation with the Supervisor and a decision path to determine if recalibration and reanalysis of samples back to the previously acceptable calibration check is warranted. All samples are spiked to verify the absence of matrix effects or interferences. The method of standard additions or sample dilution is used when matrix interferences are present.

Wet Chemistry

The field of conventional, non-metals analysis (wet chemistry) involves a variety of instrumental and wet chemical techniques. While calibration and standardization procedures vary depending on the type of system and analytical methodology required for a specific analysis, the general principles of calibration apply universally. Each system is calibrated prior to analyses being conducted. Calibration consists of defining the working range by use of a series of standard solutions, establishing limits of detection, and identifying potential interferences. The calibration is checked on an ongoing basis to ensure that the system remains within specifications. If the ongoing calibration check does not meet established criteria, corrective action must be performed. The procedures include examination of instrument performance and analysis information, consultation with the Supervisor and a decision path to determine if recalibration and reanalysis of samples back to the previous acceptable calibration check is warranted. Continuing calibrations are not performed for non-instrumental methods such as Total Dissolved Solids.

7.1.2 Field Procedures

The quality assurance objectives for the calibration of field screening procedures are summarized in Table 5. Criteria for accuracy and precision are provided.

7.1.2.1 Field Equipment Standards

Field equipment calibration standards are received, stored, prepared, and used following procedures that allow tracing of the standard from suppliers, through storage and preparation, to instrument calibration and use of the instrument in the field. These procedures are described below.

Receipt and Traceability

Small amounts of standards are received on an as-needed basis. These standards are stored according to the suppliers specifications, with the lot number or supplier's identification number, the date that the standard was received, and the expiration date of the standard written on the standard storage container.

Sources and Preparation

Standards for their field instruments are received directly from the equipment manufacturer, analytical laboratory, or commercial laboratory supplier. Standards are received either pre-prepared or are prepared as needed, typically in association with instrument calibration. When the instrument is calibrated, the standard's lot number or product identifier, expiration date, and preparation date is recorded in the instrument log book. This procedure references instrument calibration to a specific standard and date of standard preparation.

7.1.2.2 Field Equipment Calibration Procedures

Calibration procedures for the field instruments are summarized in Table 6 and are described below.

pH Meters

- Presto-Tek Model DSPH-3

The Presto-Tek model DSPH-3 pH meter is calibrated in the following manner:

(1) Rinse the pH probe in distilled water;

(2) Insert probe in #7 buffer solution;

(3) Adjust the CALibration potentiometer until the digital display reads 7.00;

(4) Rinse probe, and insert in #4 or #10 buffer solution, whichever is more close to the expected pH of the samples;

(5) Adjust the SLOPE potentiometer until the digital display reads 4.00 or 10.00, per the respective buffer.

- Yokogawa Model PH51

The Yokogawa Model PH51 pH meter is calibrated in the following manner:

(1) Set the instrument to MEASure mode;

(2) Rinse the probe in water;

(3) Insert probe in #7 buffer solution;

(4) Measure the temperature of the buffer, and adjust instrument temperature scale;

(5) Adjust STD dial until the scale shows 7.00;

(6) Rinse probe in water;

(7) Insert probe in #4 or #10 buffer, whichever is closest to the expected pH of the samples;

(8) Measure the temperature of the buffer, and adjust instrument temperature scale;

(9) Adjust SLOPE dial until the scale shows 4.00 or 10.00, per the respective buffer.

Turbidity Meters

Hach Model 16800 Portalab Turbidimeter

Calibrate by checking with formazin solution followed by standardization procedure.

1. Turn the instrument off and check the mechanical zero setting. Adjust the screwdriver adjustment control on the meter face if necessary to obtain a zero-NTU reading.

2. Press the power switch to ON and perform a battery check by pressing the BATT CHECK switch and verifying that the meter indicates in the BATTERY CHECK area. If not, charge the battery pack.

3. Place the focusing template into the cell holder. The focusing template will block all light from reaching the detector and allow the instrument to be zeroed electronically in Steps 4 and 5.

4. Press the 1.0 range switch and adjust the ZERO control for a reading of zero NTU.

5. Press the 10 range switch and verify that the meter still indicates zero NTU. Readjust the ZERO control if necessary.

6. Remove the focusing template and place the appropriate Gelex secondary standard for the turbidity range to be used into the cell holder. Use the index mark on the standard to orient the vial in the same position each time, thereby eliminating variation due to rotation.

Specific Conductance Meters

- Presto-Tek Model DSPH-3

The Presto-Tek Model DSPH-3 specific conductance meter is calibrated in the manner described below for specific conductance values less than 2000 micromhos/centimeter:

(1) Rinse probes, wipe off, and allow to air dry;

(2) Measure the conductance in air; it should read 0.00;

(3) If meter does not read 0.00, adjust the ZERO potentiometer to show 0.00;

(4) Immerse the probe in the 100 or 1413 buffer;

(5) Adjust the SPAN potentiometer so that the instrument shows 100 or 1413, respectively;

(6) For samples with a specific conductance greater than about 2000 micromhos/centimeter, a buffer approximating the sample specific conductance should be used for in item 4, above.

- Yokogawa Model SC51

The Yokogawa Model SC51 specific conductance meter is calibrated in the following manner:

(1) Set the measuring switch to CELL ADJ;

(2) Set the instrument in COND mode;

(3) Set the range selector switch to 2m;

(4) Verify that the display shows the value of the cell constant, that is shown on the electrode assembly;

(5) If the values do not agree, adjust the CELL ADJ dial until the display shows the cell constant value.

Organic Vapor Analyzers

- Foxboro OVA Model 128

The Foxboro OVA Model 128 flame ionizing detector (FID) is calibrated by the factory every six to nine months, or whenever the instrument is serviced by the manufacturer. No shop calibration of the instrument is conducted by SEC Donohue (SECD). The instrument is zeroed daily to background levels.

- HNu Model PI 101

The HNu model PI 101 photoionizing detector (PID) is calibrated in the following manner:

(1) With the instrument on, connect the cylinder of calibration gas to the probe;

(2) Check the response of the instrument to the gas;

(3) Adjust the SPAN potentiometer so that the instrument displays the concentration of the calibration gas;

(4) If the SPAN potentiometer setting is less than 1.0, 8.5, or 2.0 for the 9.5, 10.2, and 11.7 eV lamps, respectively, then the instrument is out of specification and must be returned to the manufacturer for repair.

- Photovac TIP II

The Photovac TIP II photoionizing detector is calibrated in the following manner:

(1) Turn the machine on, and let it warm up;

(2) Turn the lock rings down to release the ZERO and SPAN controls;

(3) Hand tighten the manufacturer's supplied gas bag adaptor to the instrument's inlet;

(4) Open the gas bag valve;

(5) Adjust the SPAN control so that the instrument shows the labeled concentration of the calibration gas;

(6) If more than one division of the SPAN control was changed, then adjust the ZERO control to background to clean air;

(7) If more than one division of the ZERO control was changed, then iteratively repeat steps 5 and 6 until the SPAN and ZERO adjusts require a change of less than one division.

(8) Lock the ZERO control while sampling clean or background air;

(9) Lock the SPAN setting while sampling calibration gas; the instrument is now calibrated.

7.1.2.3 Calibration Frequency

At a minimum, calibration and maintenance intervals for field instruments will be those recommended by the respective manufacturers, unless experience dictates a shorter interval. When the manufacturer does not specify a calibration interval for the equipment, the interval will be established in writing by the user of such equipment and approved by the Sampling and Analysis Task Manager. Adherence to the calibration schedule is mandatory. The fact that these calibrations may be performed by an outside source does not exempt the user from the responsibility for identifying, monitoring, and controlling calibration intervals and ensuring that maintenance checks are made on time.

Documentation of field instrument calibrations will be the responsibility of the Sampling and Analysis Task Manager. All calibration records shall be maintained in the field log book. In addition, the following information shall be recorded in the log book and on the Daily Quality Control Report shown in Figure 5.

- Equipment type (e.g., pH meter)
- Manufacturer and model number
- Serial number
- Recommended calibration frequency
- Date of latest calibration
- Dates of field measurement (use)
- Name of person who calibrated instrument
- Calibration standards used
- Source of calibration standards

Entries in the log book will be made at the beginning of each sampling or measuring effort and when each instrument is calibrated. All documentation in the log book will be made in ink. If an error is made, corrections will be made by crossing a line through the error and entering the correct information.

Changes will be dated and initialed. No entries will be obliterated or rendered unreadable. Records will be kept for all instruments requiring calibration.

8.0 ANALYTICAL METHODS

8.1 CHEMICAL ANALYSIS

This section presents the analytical fractions, parameters, and methods associated with this program. All analytical fractions, parameters, and methods are those of the USEPA CLP Statement of Work for Inorganic (Document Number ILMO 2.0) and Organic (Document Number OLM 01.0) Analyses.

The analytical fractions include volatile organics and metals. The fractions are presented in Table 7. Table 7 also includes the respective laboratory required Detection/Quantitation Limits. The analytical methods for the parameters discussed above are presented in Table 8.

8.2 FIELD SCREENING

Field screening for temperature, pH, turbidity and specific conductance of aqueous samples, and of volatile vapor headspace for subsurface soil samples will be conducted. Method number references are shown in Table 5. Equipment used for field screening is shown in Table 6. Field screening procedures are described below.

8.2.1 Water Temperature

To field screen aqueous samples for temperature, the analog thermometer is cleaned and inspected for cracks and gaps in the liquid. The thermometer is then immersed in the sample and swirled in the liquid so that the thermometer bulb is completely covered by the sample. The thermometer remains in the sample until the temperature reading stabilizes, typically for no more than one minute. The temperature is read directly off the instrument in degrees Celsius or Fahrenheit to the nearest 0.5 degree. These data are recorded in the field log book and on the field data information log for ground-water samples (Figure 6).

8.2.2 Water pH

To field screen aqueous samples for pH, the pH meter is inspected, and is allowed to equilibrate to ambient temperatures. The instrument is calibrated (as described in Section 7.0), and the probe is rinsed with tap water. On non-temperature compensating instruments, the temperature setting must be tuned to the sample temperature. The probe is then simply inserted into the sample so that the sensing area is fully covered by the sample. The pH values is sensed instantaneously by the instrument and is read directly off the analog or digital scale (to $\pm$ 0.1 pH units), as the log (to the base 10) of the hydrogen ion concentration of the sample. These data are recorded in the field notebook and on the field data information log for ground-water samples (Figure 6).

8.2.3 Water Specific Conductance

To field screen aqueous samples for specific conductance, the analog meter is inspected for cracks, and is allowed to equilibrate to ambient temperatures. The instrument is then calibrated (as described in Section 7.0), and the probe is rinsed with deionized water. On instruments that are not temperature compensating, the temperature setting must be tuned to the approximate temperature of the sample. The probe is then simply inserted into the sample so that the sensing area is fully covered by the sample. The specific conductance value is sensed instantaneously by the instrument and is read directly off the analog or digital scale, as micromhos per centimeter. For results less than 1000 micromhos/centimeter, the values are read to the nearest 10 units; for results greater than 1000 micromhos/centimeter, the values are read to the nearest 100 units. These data are recorded in the field notebook and on the field data information log for ground-water samples (Figure 6).

8.2.4 Turbidity

To field screen aqueous samples for turbidity, ensure that the instrument has been standardized recently and that the span control has not been changed since standardization. With the instrument turned off, check the mechanical zero setting. Press the power switch and BATT CHECK switch and verify that the meter indicates within the BATTERY CHECK area. If it does not, recharge the battery pack. Press the

appropriate range switch. Select the range that will exceed the expected turbidity of the sample under test. Place the focusing template into the cell holder and adjust the ZERO control for a reading of zero NTU. Remove the focusing template. Note: If the instrument will be used in the 100 range, place the cell riser into the cell holder before inserting the test sample. When using the 1 and 10 ranges, the cell riser must not be used. Fill a clean sample cell to the white line with the sample to be measured and place it into the cell holder. Use the white dot on the sample cell to orient the cell in the same position each time. Cover the sample cell with the light shield and alow the meter to stabilize. Read the turbidity of the sample.

8.2.5 Soil Volatile Vapor Headspace

Soil volatile vapor headspace screening will be conducted in the following manner with a calibrated flame ionizing detector, or a photo ionizing detector:

(1) soil is placed in a clean 16 ounce jar, so that the jar is about half-filled;

(2) the jar is sealed with aluminum foil and a tight rubber band; no holes shall be allowed in the foil cap, and the foil shall be tight against the mouth of the jar;

(3) the soil in the jar is brought to equilibrium for a period of about 10 minutes;

(4) following the 10 minute period the headspace is sampled with a FID in survey mode, by piercing the aluminum foil cap with a small hole, and inserting the FID tip into the headspace. The volatile vapor concentration is read directly off the analog scale of the FID. A PID may be used if the equivalent response of the PID is known. Operating procedures for the FID and PID are described in Section 8.2.5.

These data are recorded in the field log book and on the Headspace Analysis Form (Figure 8). No background value corrections are made for these jarred headspace

readings. Other readings made in ambient air will be corrected for the background concentrations.

8.2.6 Organic Vapor Analyzers

- Foxboro OVA Model 128

The Foxboro OVA model 128 FID, is operated in the following manner:

(1) inspect the instrument for cracks, and assure that it has been calibrated;

(2) connect the probe/readout assembly to the unit;

(3) connect the probe extension to the probe assembly; check for tight seal;

(4) place INSTR/BATT switch to "test" position; verify that battery is charged;

(5) place INSTR/BATT switch to the "on" position; allow warm-up of 5 minutes;

(6) turn the PUMP SWITCH on;

(7) place CALIBRATE SWITCH to "X1" mode;

(8) adjust CALIBRATE ADJUST knob to zero the meter to clean background air (or use a charcoal filter on the probe to obtain clean air);

(9) open hydrogen TANK VALVE (observe pressure of approximately 150 psi for each hour of intended operation);

(10) open hydrogen SUPPLY VALVE (observe pressure of 8 to 12 psi);

(11) wait approximately one minute; depress IGNITER BUTTON for a few seconds (and no more than 5 seconds) until flame ignites; observe "kick" of meter needle; the instrument is now ready for use.

(12) measure a volume of air for volatile vapors by placing the probe for about 3 to 6 seconds in the volume that is to be sampled.

Shutdown procedure of the OVA is:

(1) close the hydrogen TANK VALVE;

(2) close the hydrogen SUPPLY VALVE;

(3) place INSTR switch to "off";

(4) wait 5 seconds, so that lines bleed; place PUMP switch to "off";

(5) the instrument may remain connected temporarily or be disconnected for packing and shipment.

- HNU Model P1 101

The HNU P1 101 photoionizing detector is operated in the following manner:

(1) inspect the instrument for cracks, and assure that it has been calibrated;

(2) connect probe to handle/light source;

(3) connect handle/light source to the instrument;

(4) turn the function switch to BATT position and verify that battery is charged;

(5) turn the function switch to STANDBY mode and zero the instrument to clean background air;

(6) select desired measurement scale; the instrument is now ready for use;

(7) measure a volume of air for volatile vapors by placing the probe for about 2 to 4 seconds in the volume that is to be sampled.

Shutdown procedure of the HNU is:

(1) turn function switch to "off";

(2) remove probe/handle assembly;

(3) the instrument may remain connected temporarily or be disconnected for packing and shipment.

- TIP Model II

The Photovac TIP Model II is operated in the following manner:

(1) inspect the instrument for cracks, and assure that it is calibrated;

(2) press power switch "on";

(3) unlock ZERO and SPAN controls;

(4) set SPAN control to 5;

(5) lock SPAN control;

(6) sample clean, background air;

(7) adjust ZERO control to read 0.00;

(8) lock ZERO control, and confirm that reading remains at 0.00; the instrument is now ready for use;

(9) measure a volume of air for volatile vapors by placing the probe for about 2 to 4 seconds in the volume that is to be sampled.

Shutdown procedure for the TIP is simply to turn the power switch to the "off" position.

9.0 DATA REDUCTION, VALIDATION, AND REPORTING

9.1 LABORATORY

9.1.1 Data Reduction and Validation

All analytical data generated within Enseco laboratories are extensively reviewed prior to report generation to assure the validity of the reported data. The data validation process consists of data generation, reduction, and three levels of documented review, as described below (also see Figure 5). In each stage, the review process is documented by the signature of the reviewer and the date reviewed.

The analyst who generates the analytical data has the prime responsibility for the correctness and completeness of the data. All data are generated and reduced following protocols specified in laboratory SOPs. Each analyst reviews the quality of his or her work based on an established set of guidelines. The analyst reviews the data package to ensure that:

- Sample preparation information is correct and complete;
- Analysis information is correct and complete;
- The appropriate SOPs have been followed;
- Analytical results are correct and complete;
- QC samples are within established control limits;
- Blanks are within appropriate QC limits;
- Special sample preparation and analytical requirements have been met; and

- Documentation is complete (e.g., all anomalies in the preparation and analysis have been documented, anomaly forms are complete; holding times are documented, etc.).

The data reduction and validation steps are documented, signed and dated by the analyst. This initial review step, performed by the analyst, is designated Level 1 review. The analyst then passes the data package to an independent reviewer, who performs a Level 2 review.

Level 2 review is performed by a supervisor or data review specialist whose function is to provide an independent review of the data package. This review is also conducted according to an established set of guidelines and is structured to ensure that:

- Calibration data are scientifically sound, appropriate to the method, and completely documented;
- QC samples are within established guidelines;
- Qualitative identification of sample components is correct;
- Quantitative results are correct;
- Documentation is complete and correct (e.g., anomalies in the preparation and analysis have been documented; anomaly forms are complete; holding times are documented, etc.);
- The data are ready for incorporation into the final report; and
- The data package is complete and ready for data archive.

Level 2 review is structured so that all calibration data and QC sample results are reviewed and all of the analytical results from 10% of the samples are checked back to the bench sheet. If no problems are found with the data package, the review is complete. If any problems are found with the data package, an additional 10% of the samples are

checked to the bench sheet. The process continues until no errors are found or until the data package has been reviewed in its entirety.

An important element of Level 2 review is the documentation of any errors that have been identified and corrected during the review process. Enseco believes that the data package submitted by the analyst for Level 2 review should be free of errors. Errors that are found are documented and transmitted to the appropriate supervisor. The cause of the errors is then addressed with additional training or clarification of procedures to ensure that quality data will be generated at the bench.

Level 2 data review is also documented and the signature of the reviewer and the date of review recorded. The reviewed data are then approved for release and a final report is prepared.

Before the report is released to the client, the data are reviewed for completeness and to ensure that the data meet the overall objectives of the project. This review is labeled Level 3 and is typically done by the Program Administrator.

Each step of this review process involves evaluation of data quality based on both the results of the QC data and the professional judgement of those conducting the review. This application of technical knowledge and experience to the evaluation of the data is essential in ensuring that data of high quality are generated consistently.

In addition to the three levels of review discussed above, the Divisional QA department randomly audits 5% of all projects reported. The QA audit includes verifying that holding times have been met, calibration checks are adequate, qualitative and quantitative results are correct, documentation is complete, and QC results are complete and accurate. During the review, the QA department checks the data from 20% of the samples back to the bench sheet. If no problems are found with the data package, the review is complete. If any problems are found with the data package, an additional 10% of the samples are checked to the bench sheet. The process continues until no errors are found or until the data package has been reviewed in its entirety.

9.1.2 Data Reporting

A variety of reporting formats, from computerized data tables, to complex reports discussing regulatory issues, to a CLP-deliverables package, are available from Enseco. In general, Enseco reports contain:

General Discussion: Description of sample types, tests performed, any problems encountered and general comments are given.

Analytical Data: Data are reported by sample or by test. Pertinent information including dates sampled, received, prepared, and extracted are included on each results page. The Enseco reporting limit for each analyte is also given.

Laboratory Performance QC Information: The results (Percent Recovery and Relative Percent Difference) of the Laboratory Control Samples analyzed with the project are listed, together with the control limits. Also, the analytical results for method blanks generated during analysis of organic and metals parameters are given.

Matrix-Specific QC Information: Results of any sample duplicates, matrix spikes, matrix spike duplicates or other project-specific QC requested by the client are also reported.

Methodology: Reference for analytical methodology used is cited.

Custom Services: Special services including data interpretation special consultation, and raw data packages (when requested) are included.

The forms found in Appendix A will be used for reporting.

9.2 FIELD ACTIVITIES

9.2.1 Data Reduction

Field screening information that is read directly from the field instruments are:

- temperature, from field grade thermometers.
- pH, from automatically temperature compensating pH meters.
- turbidity, from field turbidimeters
- specific conductance, from automatically temperature compensating specific conductance meters.
- total volatile organic vapor concentration, from organic vapor analyzers.

Data reduction for temperature compensation is necessary only for the Yokogawa specific conductance meter, Model SC51. For this instrument, the apparent measurement value and the actual sample temperature are entered into a table in the users manual. The actual value of specific conductance is then directly read from the applicable table.

Data reduction for background levels of total volatile organic vapors is conducted by the field staff. This operation is conducted by subtracting the background level from the apparent measured level (note, however, that background data reduction is not conducted on jarred or bagged headspace samples).

All field screening and data reduction information is recorded by the field staff in the project field log book, or, when required by specific projects, on dedicated forms.

9.2.2 Data Integrity

Integrity of information and data on field activities is maintained by SEC Donohue (SECD). Integrity of the field sample custody is accomplished by the field staff,

according to the sample custody procedures discussed in Section 6.0. This information is generated in the field and recorded in the project field log book and on the sample chain-of-custody form, is verified before sample shipping, and is confirmed at the subcontract laboratory upon their receipt of the samples. As discussed in Section 11.0, the proper performance of these procedures is audited by the Project Manager and the Quality Assurance Coordinator.

Integrity of daily field instrument calibrations is accomplished by the field staff according to instrument calibration procedures discussed in Section 7.0. The equipment manager is informed of instrument calibration problems so that he may initiate instrument replacement and repair. The equipment manager is also responsible for acquisition and storage of calibration standards, preventive maintenance, and periodic manufacturers calibration of field instruments.

Integrity of field data calculations and documentation entries is the responsibility of the field staff and the Quality Assurance Coordinator.

9.2.3 Data Validation

Validation of information and data on field activities is conducted as a QC procedure by SEC Donohue (SECD).

The Project Manager and Quality Assurance Coordinator review laboratory results and field data before allowing use of the data for conducting the site assessment of contaminant distributions and magnitudes. The field instrument QC measurements are reviewed to assure the accuracy and precision of the field screening measurements. This information is used to qualify the field screening results. Field log books and chain-of-custody forms are cross checked to each other and to the laboratory results to assure conformity of sample identification numbers. This information is compared to results of duplicate and blank samples, and to information on field conditions at the time of sample collection in order to qualify the sample analytical results.

9.2.4 Data Reporting

Final reports are typically generated as minor revisions to draft reports. The revisions are typically based on comments from the client and from the regulatory agency, when applicable on the draft report.

A draft report is generated under the direction of the Project Manager, who assigns report tasks to SEC Donohue (SECD) personnel as a function of their expertise and the complexity of data analysis and interpretation. The report task analyst is responsible for entry of laboratory and field data to the report. This information is verified by the Project Manager or the report's principal authority, who cross check the data values contained in the report to the field log book, sample chain-of-custody forms, and reported laboratory results. The principal authority or Project Manager then assembles the report sections from the task analysts and reviews and edits the assembled sections for agreement and logical consequence of the interpretations. The draft report is then reviewed in-house by a senior level scientist for QC. Changes to the draft report may be made based on this senior level QC review. Following senior level review, the draft report is delivered to the client, and to the regulatory agency. Following client and regulatory review, the draft report is revised to a final report. The final report is then submitted to the client and to the regulatory agency.

9.2.5 Data Storage

Field and laboratory data are stored in hard copy and floppy disk format (when applicable) as part of the project file. Additional backup copies of this information are stored in the Project Manager's, data analyst's, and principal authority's files for working purposes. This information is retained in the project file until project completion and closeout. Upon project closeout, all records are archived for permanent storage.

9.3 DATA VALIDATION

All data generated is reviewed by a third party to document analytical data quality and determine if data quality is sufficient for the intended use of the data. The process consists of the assessment of the acceptability or validity of the project data with respect to the project goals and data requirements. The data are screened, checked, audited, reviewed and interpreted.

10.0 FIELD AND LABORATORY QUALITY CONTROL CHECKS

10.1 FIELD QUALITY CONTROL CHECKS

Quality control checks in the field will include the collection of field QC samples and QC checks of field screening instruments. These QC checks are described below.

10.1.1 Field Quality Control Samples

Field QC samples will include field duplicates, rinsate blanks, and trip blanks. The following sections define each QC sample and provides the collection frequency and analytical requirements. A summary of the sampling analytical, and quality control program is presented in Table 9.

10.1.1.1 Field Duplicates

Duplicate samples collected in the field provide precision information for the entire measurement system including sample acquisition, homogeneity, handling, shipping, storage, preparation, and analysis. Samples for duplicate analyses will be selected at random by the Sampling and Analysis Task Manager, and submitted blind to the laboratory for analyses. Duplicate analyses will be performed for one out of every 20 investigative samples for each matrix. More frequent collection of duplicates will occur if deemed necessary by the Sampling and Analysis Task Manager. Duplicate samples will be analyzed for the parameters of the primary sample (i.e., the sample which is being duplicated).

10.1.1.2 Rinsate Blanks

Rinsate blanks are defined as samples which are obtained by pouring analyte-free or deionized water through sample collection equipment (bailer, pump, auger, etc.) after decontamination, and placing it in appropriate sample containers for analysis. These samples are used to determine if decontamination procedures have been sufficient. Rinsate samples will be collected from all major sampling devices. Rinsate samples will be alternately collected from the various sampling devices to provide a representative

indication of the success of field cleaning procedures. Rinsate blanks will be submitted at the rate of one for every 20 investigative samples for each matrix being sampled. More frequent collections of rinsate blanks will occur if deemed necessary by the Sampling and Analysis Task Manager. These samples will be analyzed for volatiles.

10.1.1.3 Trip Blanks

Trip blanks are prepared in the laboratory, shipped with the sample containers to the Site, and are kept with the investigative samples throughout the sampling event. They are then packaged for shipment with the other samples and submitted for analysis. A trip blank will be included with each shipment of samples requiring volatile analysis. Trip blanks will be analyzed for the volatiles.

10.1.2 Quality Control Checks of Field Instruments

Proper measurement of accuracy and precision of field instruments is verified by daily instrument calibration and QC checking procedures described in Section 7.0. This information is recorded in the field log book and the Daily Quality Control Report (Figure 5). This information is reviewed daily by the Sampling and Analysis Task Manager who audits the accuracy and precision of the field screening instruments. This information is also audited weekly by the Project Manager.

10.2 ENSECO LABORATORY QUALITY CONTROL CHECKS

The Enseco QA/QC program monitors data quality with internal QC checks. Internal QC checks are used to answer two questions:

1) Are laboratory operations "in control," (i.e., operating within acceptable QC guidelines), during data generation?

2) What effect does the sample matrix have on the data being generated?

The first question is answered by Laboratory Performance QC. Laboratory performance QC is based on the use of a standard, control matrix to generate precision and accuracy data that are

compared, on a daily basis, to control limits. This information, in conjunction with method blank data, is used to assess daily laboratory performance.

The second question is addressed with Matrix-Specific QC. Matrix-Specific QC is based on the use of an actual environmental sample for precision and accuracy determinations and commonly relies on the analysis of matrix spikes, matrix duplicates, and matrix spike duplicates. This information, supplemented with field blank results, is used to assess the effect of the matrix and field conditions on analytical data.

Laboratory Performance QC is provided as a standard part of every routine Enseco analysis. Matrix-Specific QC is available as an option and is specified based on the types of matrices to be analyzed and the DQOs and regulatory requirements of the project.

A brief summary of the QC samples follows.

10.2.1 Method Blank

Method blanks, also known as reagent, analytical, or preparation blanks, are analyzed to assess the level of background interference or contamination which exists in the analytical system and which might lead to the reporting of elevated concentration levels or false positive data.

As part of the standard Enseco QC program, a method blank is analyzed with every batch of samples processed. A method blank consists of reagents specific to the method which are carried through every aspect of the procedure, including preparation, clean-up, and analysis. The results of the method blank analysis are evaluated, in conjunction with other QC information, to determine the acceptability of the data generated for that batch of samples.

Ideally, the concentration of target analytes in the blank should be below the reporting limit for that analyte. In practice, however, some common laboratory solvents and metals are difficult to eliminate to the part-per-billion levels commonly reported in environmental analyses. Therefore, criteria for determining blank acceptability must be

based on consideration of the analytical techniques used, analytes reported, and reporting limits required.

For organic analyses, the concentration of target analytes in the blank must be below the reporting limit for that analyte in order for the blank to be considered acceptable. An exception is made for common laboratory contaminants (methylene chloride, acetone, 2-butanone, and phthalate esters) which may be present in the blank at up to 5 times the reporting limit and still be considered acceptable. This policy is consistent with the CLP policy and has been established in recognition of the fact that these compounds are frequently found at low levels in method blanks due to the materials used in the collection, preparation, and analysis of samples for organic parameters.

For metals and Wet Chemistry analyses, where the reporting limits are typically near the Instrument Detection Limit (IDL), the policy is that the concentration of the target analytes in the blank must be below two times the reporting limit. If the blank value for a target analyte lies below the reporting limit, the reporting limit for that analyte in the associated samples is unaffected. If the blank value lies between the reporting limit and two times the reporting limit, the reporting limit for that analyte in the associated samples is raised to the level found in the blank. A blank containing an analyte(s) above two time the reporting limit is considered unacceptable unless the lowest concentration of the analyte in the associated samples is at least ten times the blank concentration (as per CLP protocol) or the concentration of the analyte in all samples associated with the blank is below the reporting limit.

In addition, for Wet Chemistry tests, the method SOP directs how the blank is treated. Generally, a reagent blank is used both to zero the equipment and as one of the calibration standards. If a preparation step is required for the analysis, then a prep blank is also analyzed to determine the extent of contamination or background interference. The concentration found in the prep blank is subtracted from the concentration found in any associated sample prior to calculating the final result when specified by the method. Blanks have no application or significance for some Wet Chemistry parameters (e.g. pH).

If the blank does not meet acceptance criteria, the source of contamination must be investigated and appropriate corrective action must be taken and documented.

Investigation includes an evaluation of the data to determine the extent and effect of the contamination on the sample results. Corrective actions may include reanalysis of the blank and/or repreparation and reanalysis of the blank and all associated samples.

For organic and metals analyses, and selected Wet Chemistry tests, method blank results are reported with each set of sample results. Sample results are not corrected for blank contamination unless required by the analytical method. Occasionally, due to limited sample volume or other constraints, the laboratory reports data associated with the unacceptable blank. In these cases, the reporting limit for each analyte contained in the blank is raised to the level found in the blank for all sample results associated with that blank.

10.2.2 Matrix Spikes and Matrix Spike Duplicates

A Matrix Spike (MS) is an environmental sample to which known concentrations of analytes have been added. The MS is taken through the entire analytical procedure and the recovery of the analytes is calculated. Results are expressed as percent recovery. The MS is used to evaluate the effect of the sample matrix on the accuracy of the analysis.

A Matrix Spike Duplicate (MSD) is an environmental sample that is divided into two separate aliquots, each of which is spiked with known concentrations of analytes. The two spiked aliquots are processed separately and the results compared to determine the effects of the matrix on the precision and accuracy of the analysis. Results are expressed as RPD and percent recovery.

10.2.3 Surrogate Recoveries and Standard Additions

Surrogates are organic compounds which are similar to the analytes of interest in chemical behavior, but which are not normally found in environmental samples. Surrogates are added to samples to monitor the effect of the matrix on the accuracy of the analysis. Results are reported in terms of percent recovery.

Enseco routinely adds surrogates to samples requiring GC or GC/MS analysis and reports these surrogate recoveries. The laboratory does not control its operations based on surrogate recoveries in environmental samples. As discussed earlier in this section, Enseco controls its operations based on the results of Laboratory Control Samples. The surrogate recoveries are primarily used by the laboratory to assess matrix effects. However, obvious problems with sample preparation and analysis (e.g. evaporation to dryness, leaking septum, etc.) which can lead to poor surrogate spike recoveries must be ruled out prior to attributing low surrogate recoveries to matrix effects.

Standard Additions (SA) is the practice of adding a series of known amounts of an analyte to an environmental sample. The fortified samples are then analyzed and the recovery of the analytes calculated. The practice of SA's is generally used with metal and wet chemistry to determine the effect of the sample matrix on the accuracy of the analyses.

10.3 NORTHEAST RESEARCH INSTITUTE, INC. QA/QC

Two Petrex samplers, each containing a single collector wire, are included with each Petrex soil gas survey as travel blanks. These blanks are analyzed with the survey samplers to indicate whether there may have been contamination introduced to the survey samplers during installaton or shipment. If compounds other than normal atmospherics (e.g., CO_2, H_2O, N_2, and Ar) are detected on the blanks, then blank subtraction may be performed on the survey's data set. This process, an intial step to data interpretation, involves the correction of ion flux values of the detected blank contaminants from the entire survey's data set. The resulting ion flux values are provided on the relative flux maps.

10.3.1 MASS SPECTROMETER TUNING

An Extranuclear Quadrupole Mass Spectrometer or similar instrument, equipped with a Curie-point pyrolysis/thermal desorption inlet, is used for collector analysis. Mass assignment and resolution are manually adjected using a Perfluorotributylamine (PFTBA) standard or a built-in tuning program, depending on the instrument. A linear correction, based onthe known spectrum of PFTBA, is calculated. This correction is applied to a second PFTBA spectrum. If correct mass (M/Z) values are obtained, the operator proceeds to the next tuning step. If not, Step 1 is repeated until correct masses are obtained.

Peak intensity ratios are set from the major peaks in the PFTBA spectrum using the following values:

MassSpectrum(M/Z)Intensities69=100%131=48%+/-5%219=50%+/-5%

During tuning, the ion signal for mass (M/Z) 69 of PFTBA is measured at a preset sample pressure and detector voltage and compared to previous values at the same setting.

Electron energy is set to 70 electron volts. All other operating parameters, such as scans, scan range, and mass offset, are established in the computer program. These values may only be changed by the laboratory manager.

Tuning is performed at the beginning of a run so that an individual survey is analyzed at the same set of instrument conditions. The samplers are analyzed in random order.

10.3.2 LABORATORY ANALYSIS

Periodic machine background and blank Petrex collecor analyses are performed to assure that there is nocarry-over between successive samplers. If there are peaks present which are not related to atmospheric gases, the supervisor is notified and the mass spectrometer is shut down and cleaned as necessary.

A written sample number record is kept during the analysis to prevent accidental cross numbering.

The mass spectrometer control program contains appropriate "flag statements" that prompt the operator with a warning if an input sample number has already been analyzed. The operator then checks the current number, along with the disk storage location of the previously entered number to identify the true numbering situation.

10.3.3 COMPOUND IDENTIFICATION

Compound identification is based on molecular weight, compound fragmentation, and isotope distribution, as applicable. Each VOC exhibits a unique mass spectral signature. NERI maintains a large library of spectra of individual compounds, accessible by computer. In addition,the company maintains a large library of mass spectra of commonly used chemical mixtures; e.g., gasolines, diesels, industrial oils and solvents, coatings, plastics, etc. These are used to assist in both compound and mixture identifications.
The ion count response of an indictor peak(s), representative of the compound and away from interference by other compounds, is extracted for data presentation and mapping.

10.3.4 INTERPRETATION OF SOIL GAS DATA

Soil gas data (including Petrex) reflect volatile and semivolatile organics collected at a point in the near surface. The sources of these volatile organics may be in the stratigraphic column and /or in groundwater below the surface spills, deposition, or migration into the deeper vadose zone, and groundwater. The soil gas survey reveals the areal extent of contamination and is the optimum guide in identifying areas in order to develop a vertical profile, including the drilling of soil borings and monitoring wells.

Soil gas data are always semi-quantitative in that multiple sources in soil and/or groundwater cannot be differentiated. However, the higher ion responses are representative of higher concentrations in the subsurface, given that geologic conditions are relatively consistent.

Due to chemical differences between individual compound, including their ability to both adsorb and desorb from the charcoal Petrex collector element, it is invalid to compare the compound ion count at one sampling location to that of another compound.

Patterns of compound distribution in the soil gas, as detected at the surface, can be strongly influenced by irregularities in the near surface and subsurface environment through which the soil gas diffuses. These irregularities include subsurface man-made structures, such as concrete foundations, drainage systems, and wells, and such naturally occuring structures as fractured and unfractured bedrock, clay, and shale lenses.

Other factors influencing the soil gas signal include ground and surface water; the free carbon content of soils, microbiotic activity in the soil, and naturally occuring structures as fractured and unfractured bedrock, clay, and shale lenses.

Other factors influencing the soil gas signal include ground and surface water, the free carbon content of soils, microbiotic activity in the soil, and natural and synthetic ground cover.
All of these factors indicate that the most powerful use of soil gas data is in reconnaisssance; identifying and mapping the relative abundance of the widest array of chemical species adn mixtures. Efforts to relate soil gas response directly to groundwater or soil contaminat concentrations is generally not regarded as productive owing to the assumptions that are required for heterogeneity and source distribution.

10.3.5 RELATIVE RESPONSE DETERMINATION AND MAPPING

The relative response values are reported as the ion counts of indicator peaks for any given compound or mixture. Sample locations on a base map are digitized as X-Y coordinates and ion counts for the reported compounds are plotted at respective locations.

Mapping of the ion counts occurs after contour intervals for each compound or component class are determined. In order to establish the contour intervals, factors such as statistical analysis of ion count distribution, physiochemical considerations, and component-source material relationships (if known) are taken into account for each compound or class, in each area, on an individual basis. Each map is then contoured by hand. The resultant contour zones for each compound or component class in each area are color coded on a relative basis depending on whether the data are interpreted to be of high, moderate to high, moderate, etc., intensity. The response values found on each of the flux maps are color coded and contoured on this basis.10.3

11.0 PERFORMANCE AND SYSTEMS AUDITS

SEC Donohue (SECD) conducts both performance and systems audits of field screening and sampling activities. Routine audits of Enseco's laboratory operations are conducted both internally and externally in order to assure that the QC program objectives are achieved and maintained. Following is a discussion of both field and laboratory audits.

11.1 PERFORMANCE AND SYSTEMS AUDITS OF FIELD ACTIVITIES

11.1.1 Systems Audits

Systems audits of SEC Donohue's (SECDs) field operations are conducted to assure that proper field screening and sampling procedures are selected and executed in the field for the particular media and analytes of interest to the project.

Proper selection of field screening and sampling methods is audited by the QA Coordinator who reviews the QAPP prepared for the project under the direction of the Project Coordinator. The QA program manager audits the QAPP to verify that it has adequately identified the sampling media and analytes of interest, and that the proper field screening, sampling methods, and laboratory analytical methods have been selected to obtain representative samples for the appropriate analyses.

Proper execution of the field screening and sampling procedures is audited by the Project Manager and the QA Coordinator who audit these project operations on a regular basis over the life of the project through review of the field log book and audit forms.

The model and serial numbers of the field screening instruments and their daily calibration results are identified and documented by the field staff in the field log book and the "Daily Quality Control Report" form. The sampling procedures, the number of samples collected for each medium, and the number of QC samples obtained are also recorded on this form and in the field log book. Volatile vapor headspace readings are recorded in both the field log book and on the "Headspace Analyses" report form. Ground-water purging and sampling information is recorded on the "Field Data Information Log for Ground-Water Sampling" form in the field log book.

This information is reviewed regularly by the Project Manager and the QA Coordinator so that systematic project-specific problems with field screening and sampling may be rapidly identified, and remedial action or operational changes initiated during the life of the project. In addition, these findings are reported to the QA Coordinator on a regular basis, who compiles and analyzes these findings. On the basis of this information and discussion with project managers, the QA Coordinator identifies systematic difficulties and problems with the field screening and sampling procedures that may be modified or eliminated from future programmatic operational requirements, and recommends such changes to the Project Manager.

11.1.2 Performance Audits

Performance audits of field screening and sampling activities are conducted through SEC Donohue's field instrument calibration procedures and sample QC samples.

Proper measurement accuracy of field screening instruments is verified by daily and periodic instrument calibration procedures described in Section 7.0. This information is recorded in the field log book, the instrument log book, and on the "Daily Quality Control Report" form. This information is reviewed by the QA Coordinator, who audits the calibration accuracy of a field screening instrument and consequent field screening accuracy.

The laboratory analytical results on the rinsate blanks are the performance audit of the equipment decontamination procedures. Rinsate blanks found to be contaminated with analytes significantly above "non-detect" levels indicate that the equipment decontamination procedures are poor or unacceptable. These analytical results are reviewed by the Project Manager and the QA Coordinator to assess the performance and adequacy of equipment decontamination procedures.

The suitability of the samples for proper laboratory analysis is the performance audit of the sample collection procedures. Volatiles possessing free air, insufficient sample volume for analysis, or improper preservation of samples will be noted by the analytical laboratory. Such reports of samples unsuitable for analysis will indicate that the sampling procedures are poor or unacceptable. These analytical results are reviewed by

the Project Manager and the QA Coordinator to assess the performance and adequacy of sample collection procedures.

11.2 PERFORMANCE AND SYSTEM AUDITS OF THE LABORATORY

Enseco laboratories participate in a variety of federal and state programs, (including the EPA CLP), that subject each of the laboratories to stringent system and performance audits on a regular basis. A system audit is a review of laboratory operations conducted to verify that the laboratory has the necessary facilities, equipment, staff and procedures in place to generate acceptable data. A performance audit verifies the ability of the laboratory to correctly identify and quantitate compounds in blind check samples submitted by the auditing agency. The purpose of these audits is to identify those laboratories that are capable of generating scientifically sound data. Enseco is certified to perform environmental analyses under programs administered by the U.S. Department of Energy, U.S. Air Force, U.S. Navy, and over 20 states.

In addition to external audits conducted by certifying agencies or clients, Enseco regularly conducts the following internal audits:

- Quarterly systems audits conducted by the Divisional QA Director.
- Periodic (at least yearly) audits conducted by the Corporate QA Office.
- Special audits by the Divisional QA Director or Corporate QA Office when a problem is suspected.

Enseco laboratories also routinely analyze check samples as described below:

- Laboratory Control Samples (duplicate control samples, single control samples, and method blanks) are analyzed at a frequency equal to at least 10% of the total number of samples analyzed.
- All Enseco laboratories participate in the analyses of EPA check samples provided under the Water Supply and Water Pollution Performance Evaluation Studies. The results of

these PE samples are tabulated by the Corporate QA Office to identify performance trends within the Enseco laboratories.

- The majority of the Enseco laboratories are CLP laboratories and thus analyze organic and/or inorganic CLP PE samples on a quarterly basis. The results of these analyses are also tabulated and evaluated by the Corporate QA Office.

- The laboratories participate in multiple state certification programs (including New York, New Jersey and California) which require that PE samples be analyzed periodically.

- Blind check samples from an independent commercial firm are sent to the laboratories periodically by the Corporate QA Office. The frequency and type of samples sent are based on problem areas identified by evaluation of tabulated PE results.

The results of these check samples are used to identify areas where additional training is needed or clarification of procedures is required.

12.0 PREVENTIVE MAINTENANCE

12.1 PREVENTIVE MAINTENANCE OF FIELD SCREENING INSTRUMENTS

Most of SEC Donohue's (SECDs) field instruments operate by solid-state circuitry that are designed for field use. Little preventive maintenance of the instruments is regularly required, other than cleaning. Specific preventive maintenance procedures are described below, and are shown in Table 10.

Each field screening instrument has its own log book that is carried in the instrument case. Preventive maintenance actions, with the exception of battery recharging, are documented in each instrument's log book by the equipment manager or the person conducting the maintenance in the field.

12.1.1 pH Meters

Preventive maintenance of these instruments requires periodic cleaning, battery replacement, and storage of the probe in a neutral buffer solution.

12.1.2 Turbidity Meters

Preventative maintenance of these meters requires periodic cleaning, battery charging, lamp alignment and focusing, and calibration.

12.1.3 Specific Conductance Meters

Preventive maintenance of these instruments requires periodic cleaning and battery replacement.

12.1.4 Organic Vapor Analyzers

12.1.4.1 Foxboro OVA Model

Preventive maintenance of the Foxboro OVA is conducted by the manufacturer at six to nine month intervals. Other preventative maintenance measures are battery charging and cleaning of the instrument.

12.1.4.2 HNu Model PI 101

Preventive maintenance of the HNu consists of battery charging and cleaning of the instrument. Cleaning of the ultraviolet (UV) lamp and the ion chamber is conducted on an as-needed basis, whenever the instrument behaves erratically, or shows unstable, drifting, or non-repeatable readings.

12.1.4.3 Photovac TIP II

Preventive maintenance of the TIP consists of battery charging and cleaning of the instrument. Cleaning of the UV lamp and replacing the dust filter is conducted on as-needed basis, whenever the instrument behaves erratically, or shows unstable, drifting, or non-repeatable readings. Should the TIP draw water into the probe, the instrument must be promptly disassembled and the lamp and detector must be cleaned. The air pump must also be allowed to run until water ceases to be discharged from the vent hole.

12.2 PREVENTIVE MAINTENANCE OF LABORATORY

To minimize downtime and interruption of analytical work, preventive maintenance is routinely performed on each analytical instrument. Designated laboratory personnel are trained in routine maintenance procedures for all major instrumentation. When repairs are necessary, they are performed by either trained staff or trained service engineers employed by the instrument manufacturer.

Each laboratory has detailed SOPs on file that describe preventive maintenance procedures and schedules. The laboratories also maintain detailed log books documenting the preventive maintenance and repairs performed on each analytical instrument.

13.0 LABORATORY PROCEDURES USED TO ASSESS DATA QUALITY AND DETERMINE REPORTING LIMITS

13.1 DATA QUALITY ASSESSMENT

The effectiveness of a QA program is measured by the quality of data generated by the laboratory. Data quality is judged in terms of its precision, accuracy, representativeness, completeness and comparability as presented in Section 4.0. These terms are described by Enseco as follows:

13.1.1 Precision

Precision is the degree to which the measurement is reproducible. Precision can be assessed by replicate measurements of duplicate control samples, reference materials, or environmental samples. Enseco routinely monitors precision by comparing the RPD between duplicate control sample measurements with control limits established at plus three standard deviations from the mean RPD of historical duplicate control sample data.

Precision is frequently determined by comparison of replicates. The standard deviation of "n" measurements of "x" is commonly used to estimate precision.

Standard deviation is calculated as follows:

$$s = \sqrt{\frac{1}{n-1} \sum_{i=1}^{n} (x_i - \bar{x})^2}$$

where a quantity "x" (e.g., a concentration) is measured "n" times.

The relative standard deviation, which expresses standard deviation as a percentage of the mean, is generally useful in the comparison of three or more replicates (although it may be applied in the case of n = 2).

$$RSD = 100\ (s/\bar{x})$$

where: RSD = relative standard deviation
s = standard deviation
$\bar{x}$ = mean

In the case of duplicates, the RPD between the two samples may be used to estimate precision.

$$RPD = \frac{|D_1 - D_2|}{(D_1 + D_2)/2} \times 100$$

where: RPD = relative percent difference
D_1 = first sample value
D_2 = second sample value (duplicate)

13.1.2 Accuracy

Accuracy is a determination of how close the measurement is to the true value. Accuracy can be assessed using laboratory control samples, standard reference materials, or spiked environmental samples. Unless specified otherwise in special contracts, Enseco monitors accuracy by comparing laboratory control sample results with control limits established at plus or minus three standard deviation units from the mean of historical laboratory control sample results.

The determination of the accuracy of a measurement requires a knowledge of the true or accepted value for the signal being measured. Accuracy may be calculated in terms of percent recovery as follows:

$$Percent\ Recovery = \frac{x}{T} \times 100$$

where: x = the observed value of measurement
T = "true" value

13.1.3 Representativeness

Representativeness is the degree to which data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition. Analytical data should represent the sample analyzed regardless of the heterogeneity of the original sample matrix. Enseco strives to accommodate all sample matrices. Some samples may require analysis of multiple phases to obtain representative results.

13.1.4 Completeness

Completeness is a measure of the amount of valid data obtained from a measurement system compared with the amount that was expected to be obtained under normal conditions.

To be considered complete, the data set must contain all analytical results and data specified for the project. In addition, all data are compared to project requirements to ensure that specifications were met. Any deviations are reported in the report narrative.

The percent completeness for each set of samples can be calculated as follows:

$$Completeness = \frac{valid\ data\ obtained}{total\ data\ planned} \times 100\%$$

13.1.4 Comparability

Comparability expresses the confidence with which one data set can be compared to another data set measuring the same property. Comparability is ensured through the use of established and approved analytical methods, consistency in the basis of analysis (wet weight, volume, etc.), consistency in reporting units (ppm, ppb, etc.), and analysis of standard reference materials.

13.2 REPORTING LIMITS

Assuring the validity of quantitative measurements at low concentrations is an extremely difficult technical problem. With regulatory action levels being pushed lower and lower, the validity of any given measurement becomes even more important. The consequences of false positive or false negative data can be significant.

Enseco routinely reports results below the reporting limit as Not Detected (ND) because, by definition, the reliability of the data at that level is questionable. Reporting limits are adjusted for sample dilution.

14.0 CORRECTIVE ACTION FOR UNACCEPTABLE QUALITY CONTROL DATA

14.1 FIELD ACTIVITIES

All technical staff shall be responsible for reporting all suspected technical nonconformances by initiating a nonconformance report of any issued deliverable or document. All staff shall be responsible for reporting all suspected QA nonconformances by initiating a nonconformance report.

The QA Coordinator will be responsible for ensuring that corrective actions for nonconformances are implemented by:

- Evaluating all reported nonconformances
- Controlling additional work on nonconforming items
- Determining disposition or action to be taken
- Maintaining a log of nonconformances
- Reviewing nonconformance reports
- Evaluating disposition or action taken
- Ensure nonconformance reports are included in the final site documentation in document control

Any staff member who discovers or suspects a nonconformance, which is an identified or suspected deficiency in an approved document, is responsible for initiating a nonconformance report.

The QA Coordinator shall ensure that no additional work, which is dependent on the nonconforming activity, is performed until the nonconformance report is corrected.

14.2 LABORATORY

When errors, deficiencies, or out-of-control situations exist, the QA program provides systematic procedures, called "corrective actions," to resolve problems and restore proper functioning to the analytical system.

Laboratory personnel are alerted that corrective actions may be necessary if:

- QC data are outside the acceptable windows for precision and accuracy;
- Blanks, duplicate control samples or single control samples contain contaminants above acceptable levels;
- Undesirable trends are detected in spike recoveries or RPD between duplicates;
- There are unusual changes in detection limits;
- Deficiencies are detected by the QA department during internal or external audits or from the results of performance evaluation samples; or
- Inquiries concerning data quality are received from clients.

Corrective action procedures are often handled at the bench level by the analyst, who reviews the preparation or extraction procedure for possible errors, checks the instrument calibration, spike and calibration mixes, instrument sensitivity, and so on. If the problem persists or cannot be identified, the matter is referred to the laboratory supervisor, manager and/or QA department for further investigation. Once resolved, full documentation of the corrective action procedure is filed with the project records.

15.0 QUALITY ASSURANCE REPORTS TO MANAGEMENT

15.1 FIELD ACTIVITIES

Comprehensive records shall be maintained to provide evidence of QA activities. Procedures for recording all aspects of the QA program will be written and placed on file. Appropriate personnel will be trained in the use of these procedures.

The proper maintenance of QA records is essential to provide support in evidentiary proceedings. The original QA records will be kept in the QA Coordinator's records.

Access to working files will be restricted to project personnel. Access to all files containing QA records will be restricted to listed personnel as shown on the limited access form. Upon termination of an individual task or work assignment, working files will be processed for storage as QA.

15.2 LABORATORY

Enseco's reporting system is a valuable tool for measuring the overall effectiveness of the QA program. It serves as an instrument for evaluating the program design, identifying problems and trends, and planning for future needs. Divisional QA Directors submit extensive monthly reports to the Corporate QA Director, the Director of Quality Assurance and Technology, the General Manager and the President. These reports include:

- The results of internal systems audits including any corrective actions taken;
- Performance evaluation scores and commentaries;
- Results of site visits and audits by regulatory agencies and clients;
- Performance on major contracts, (including CLP);
- Problems encountered and corrective actions taken;

- Holding time violations;
- Comments and recommendations; and
- A summary of the 5% QA data audits conducted.

The Corporate QA Director regularly reports on the status of the QA Program to the President and each General Manager. These reports summarize the information gathered through the laboratory reporting system and contain a thorough review and evaluation of laboratory operations throughout Enseco.

15.3 DATA USABILITY REPORT

The data usability report is a report compiled by the project quality assurance officer to assess the data collected at the site with regard to the project data quality objectives.

The project QAO will evaluate each data point and analytical results for consistency with previous data rounds, potential field or laboratory contamination, compliance to protocol or subcontract requirements and usability of data.

The report will provide justification for usage of both compliant and non-compliant data noted in the data validation reports, make recommendations for resampling or selection for different and/or additional data points, and expansion or deletion of analytical parameter lists.

The usability report will be generated and submitted to NYSDEC for review prior to the generation and submission of the RI report.

TABLE 1

DATA QUALITY LEVELS
FOR SPECIFIC PROJECT OBJECTIVES

Project Objectives	Objective Approach	Data Collection	Data Quality Level
Health and Safety	On-Site Monitoring	Organic Vapor Concentration (FID or PID)	1
Nature and Extent of Contamination	Ground-Water Sampling and Analysis	Chemical Composition Water Quality (Field Parameters)	4 2
	Soil Sampling and Analysis	Chemical Composition	4

TABLE 2
SUMMARY OF DATA QUALITY OBJECTIVES

Activity	Groundwater/Surfacewater[2]	Subsurface Soils/Sediments[2]
Contaminants of Concern	TCL Volatiles TAL Metals	TCL Volatiles TAL Metals
Level of Concern	Above Background	Above Background
Required Quantitation/Detection Limit	CRQL	CRQL/CRDL
Staff Requirements	Hydrogeologist	Hydrogeologist
Sample Type	Grab	Grab, Composite
Total Number of Samples	2	TBD
QA/QC Samples	Refer to Section 10	Refer Section 10
Background Samples	None	TBD
Sampling Procedures	GEOMON Gas-Actuated Sampler	Split Spoon/Bucket Auger
Analytical Methods	See Table 9	See Table 9
Level 1 Field Screening	OVA (FID or PID)	OVA (FID or PID)
Level 2 Field Analyses/ Non-EPA Methods	pH/Conductivity/Turbidity Meter Thermometer	---
Level 3 Confirmational	---	---
Level 4 Confirmational via EPA CLP	EPA CLP RAS	EPA CLP RAS

Note:

TBD - To be determined by field headspace.

[2] - Surfacewater/sediment will be analyzed for volatiles and cyanide.

TABLE 3
SAMPLE CONTAINERS, PRESERVATIVES, AND HOLDING TIMES

Matrix	Parameters	Container	Preservation	Maximum Holding Times[2]	
				Extraction	Analysis
Water	Volatiles	3x40ml G, Septa vial	Ice to 4°C	--	7 days
	TAL Metals	1x1 L P	5 ml 1:1 HNO_3 Ice to 4°C	--	6 mo[2]
Soils	Volatiles	2x125 ml G, Septa Vial	Ice to 4°C	--	7d
	TCL Semivolatiles (PAHS)/Pest/PCBs	1x500 ml G	Ice to 4°C	5d	40d
	TAL Metals/Cyanide	1x250 ml G, Septa Vial	Ice to 4°C	--	6 mo[1]

[1] 26 days for mercury, 12 days for cyanide
[2] From VTSR - Validated Time of Sample Receipt
P Plastic
G Glass
TAL Target Analyte List
TCL Target Compound List
PAH Polycyclic Aromatic Hydrocarbons

TABLE 4
ENSECO'S INSTRUMENTS AND EQUIPMENT

NAME	QUANTITY	MODEL #
INSTRUMENTS FOR ORGANIC PREP LAB April 1, 1990		
Roto Evap.	2	Hoake Buchler PTEE-16N
Cooler (Neslab)	3	CFT-33
Vacuum Pump	2	Speedaire 2Z866
Convential Oven	2	VWR 1330F/1350G
Orbit Shaker	1	Lab-Line 3520
Mettler Balance Scale	3	PM4600
Steam Bath	3	Cole Palmer
Refrigerator	1	Kelvinator UC50R-FMS
Analytical Scale	1	Mettler AE-260-S
GP Centrifuge	1	Beckman 355952
Stirrer-Hot Plate	1	VWR 58849-001
Magnetic Stirrer	1	VWR 58935-250
Vortex Blender	1 1	VWR 58220-1 VWR 33BL79
Organomation N-Evap	2	Meyer 111
Hewlett Packard GC	1	5890A
HP Integrator	1	HP3396A
Hydrogen Generator	1	Packard B7525
Sonicator	2	Ultrasonics W385
Blue M Oven	1	TLG-36-10-2
Millipore Water Purifier	1	07875-C
Refrigerator	1	VWR R415F
Refrigerator	2	VWR Explosion-proof
INSTRUMENTS FOR ORGANIC GC LAB April 1, 1990		
GC	3 1 1	HP5890 HP5890/FID HP5890 VOA #1

TABLE 4 (Continued)
ENSECO'S INSTRUMENTS AND EQUIPMENT

NAME	QUANTITY	MODEL #
	1 1	HP5890 VOA #2 (leased) Varian 3700 HS
GC (Continued)	1 1 1	Varian 3700 HC 3300 Tracor 540
Purge and Trap	1 1 1	Tekmar ALS Tekmar LSC Tekmar ALS 2016 Tekmar LSC 2000 OI 4460 LSCM rev B
Headspace Sampler	1	HP19395 A
IR	1	Perkin Elmer 1420
HPLC	1	Waters 700 WISP Waters 600 SDS Waters 600E Waters 484 Absorb. Det. Waters 470 Flour. Det.
INSTRUMENTS FOR WET CHEMISTRY LAB April 1, 1990		
Instrument ID SPEC-001	Spectro-photometer 1	Milton-Roy Spectronic 301 Sipper/Flowcell Accessory
Instrument ID DO-001	Dissolved Oxygen Meter 1	YSI Model 50 w/ss probe
Instrument ID PH-001	pH/mV Meter 1	Beckman Model pH11 Bausch & Lomb Microscope
Instrument ID PH-001/ISE	1	pH ISE Meter Orion Modek EA 920
Instrument ID IC-0001	1	Dionex Model 5500C
Analytical Balance	1	Mettler AE260
Top-Loading Balance	1	Mettler PM4600

TABLE 4 (Continued)
ENSECO'S INSTRUMENTS AND EQUIPMENT

NAME	QUANTITY	MODEL #
Laboratory Oven	2	VWR (Forced Air)
Centrifuge	1	Beckman GP
Vacuum Pumps	2	VWR
Incubator	1 2	Lab-Line BOD Vista Aluminum-block
Refrigerator	1	Kelvinator
Sanitizer	1	Clean-Ray
Hot Plate Hot Plate/Stirrer	1 1	Thermolyne (12x12) Corning
Stirrer	1	Magnetic
Mixer	1	Vortexer
QA DEPARTMENT April 1, 1990		
Weights: NBS Class 'S'	1 1 1 2	Troemner Beckerloy S/S Troemner Troemner
Thermometers: NBS Certified	1 1 1	ERTCO -1 to 52 C, 0.1 C ERTCO -1 to 101 C, 0.1 C Fisher -1 to 201 C, 0.2 C
INSTRUMENTS FOR METALS PREP April 1, 1990		
Mercury Analyzer	1	Spectro Products
Flash Point Tester	1	Pensky Martens
Forced Air Oven	1	VWR
Top Loader Balance	2	Mettler PM4600
Wrist Action Shaker	1	Burrell 75
Water System	1	Milli-Q
Laboratory Carts	4	
Hot Plate Stirrer	1	Corning
Controller/Stirrer	1	Cole-Palmer
Hot Plate	4	Thermolyne
Stir Park Stirrers	4	Cole-Palmer

TABLE 4 (Continued)
ENSECO'S INSTRUMENTS AND EQUIPMENT

NAME	QUANTITY	MODEL #
Regulators	6	Matheson
Mercury Analyzer	1	Spectro Products (on loan from ERCO)
Instrument ID TURB-001	Turbidimeter 1	Hach Model 2100A
Instrument ID COND-001	Conductance Meter 1	YSI Model 32
INSTRUMENTS FOR METALS ANALYSIS June 1, 1990		
Spectrophotometer Graphite Furnace AA	5	Perkin Elmer 5100
ICP		Jarrell Ash
Furnace	3	Zeeman 5100
Controller	3	HGA 600
Auto Sampler	5	AS-60 Jarrell Ash
Power Supply	3	EDL
Computer	5	Epson Equity III+ Epson Equity III+ NEC Powermate I NEC Powermate 26+ AST
Printer	5	Epson EX-800 IBM NEC Pinwriter P2200XE P2200
Mouse	3	Logitech
Coolflow Refrig. Regulators	3	Neslab
Generator	1	RF
Samplechanger	1	ISC-240
Channel	1	N+1

TABLE 4 (Continued)
ENSECO'S INSTRUMENTS AND EQUIPMENT

NAME	QUANTITY	MODEL #
INSTRUMENTS FOR INSTRUMENT GROUP April 1, 1990		
Instrument ID FIA-001	Two-Channel Lachat Quickchem System: 10	Autosampler Peristaltic Pump Injection Module, 2-Chan. Detector Chasis and 2 Colorimeters Heating Bath Interface Box IBM PS/2 Computer Color Monitor Keyboard Okidata Printer
Instrument ID TOX-001	MCI Model TOX-10 Analyzer: 4	Absorbtion Module Microcoulometer Furnace Controller Cell Housing
Instrument ID TOC-001	O.I. Corp. Model 700 TOC Analyzer: 3	Autosampler, septum-pier. Analyzer with POC Option Okidata Printer
Instrument ID IC-0001	1	Dionex Model 5500 C
INSTRUMENTS FOR MOBILE LABORATORY April 1, 1990		
Atomic Absorption Spectophotometer	1	Perkin Elmer - 2380
Gas Chromatograph	1	Hewlett Packard - 5890-A
PID/Hall Detector FID Detector	1 1	 2413

TABLE 4 (Continued)
ENSECO'S INSTRUMENTS AND EQUIPMENT

NAME	QUANTITY	MODEL #
Sample Concentrator Lamp Power Supply Electrolytic Conductivity Detector	1 1 1	O.I. Corp. - 4460A O.I. Corp. 4430 O.I. Corp. - 4420 A ELCD
Hot Plate Hot Plate	1 1	Corning Corning
pH Meter and Temp. Probe	1	M107
Centrifuge	1	Multifuge
Analytical Balance	1	Satorius - PT-120
INSTRUMENTS FOR GC/MS - VOA LAB 9/26/90		
MS	4	HP-5970
GC	4	HP5890A
Terminal	7	HP-150II
Printer	6	HP-2934A
Laser Printer	1	HP33440A
Keyboard	9	(7) HP-46021A (2) NEC APC-H410E
Tape Drive	2	HP-9144A
Scan Box	4	HP-59824A
DWC Drive	2	HP-7959B
Micro 24 Computer	2	HP-2434A
Digital Tape Unit	1	HP-7970E
Autosampler	4 4	Tekmar LSC-2000 Tekmar ALS-2016
Autosampler Heater	4	Tekmar
Personal Computers	2	NEC APCIV
Monitors	2	NEC Multisync II
Refrigerator	4	Kelvinator VC50R/29000 Kelvinator VC50R/17000 Kelvinator VC50R/17000 VWR Scientific RY86863-2H

TABLE 4 (Continued)
ENSECO'S INSTRUMENTS AND EQUIPMENT

NAME	QUANTITY	MODEL #
INSTRUMENTS FOR GC/MS - SEMI-VOA LAB 9/26/90		
MS	3	HP5970
GC	3	HP5890A
Terminal	7	HP-150-II
Printer	8	(7) HP2934A (1) HP2235A
Laser Printer	1	HP33440A
Keyboards	11	(8) HP-26021A (3) NEC APC-H410E
Personal Computers		NEC APCIV
Monitor		NEC Multisync II
Controllers	3	HP-18594A
Tray	3	HP-18596A
Tower	3	HP-18593A
Tape Drive	2	HP-9144A
Disc Drive	2	HP-7959B
Scan Box	3	HP-59824A
Micro 24 Computer	2	HP-2434A
Digital Tape Unit	1	HP-71P7979
9 Track Mag Tape Drive	1	HP-7974
Refrigerators	2	Kelvinator VC50R/17000 VWR Scientific RY86863-2H
INSTRUMENTS FOR GC/MS - WORK CELL 9/26/90		
MS	2	HP-5970
GC	2	HP5890A
Terminal	3	HP-150II
Printer	3	HP-2934A
Keyboard	4	(3) HP-46021A Access EP3435XTAT
Tape Drive	1	HP-9144A
Scan Box	2	HP-59824A

TABLE 4 (Continued)
ENSECO'S INSTRUMENTS AND EQUIPMENT

NAME	QUANTITY	MODEL #
DWC Drive	1	HP-7959B
Micro 24 Computer	2	HP-2434A
Digital Tape Unit	1	HP-7979A
Autosampler	2 2	Tekmar LSC-2000 Tekmar ALS-2016
Autosampler Heater	2	Tekmar
Personal Computers	1	Access Micro Systems
Monitors	1	NEC Multisync 2A
Refrigerator	2	Baxter Cryofridge

TABLE 5

QUALITY ASSURANCE OBJECTIVES FOR FIELD SCREENING METHODS

Analyte	Matrix	Method	Precision	Accuracy
Temperature	Water	Any high quality mercury-filled thermometer or thermistor with analog or digital read-out device (1); U.S. EPA Method 170.1 (6).	Not determined (1)	Not determined (1)
pH	Water	Electromagnetically using either a glass electrode in combination with a reference potential or a combination electrode, and a pH meter (1); U.S. EPA Method 150.1 (6).	±0.1 pH unit (1) in laboratory test ±0.5 pH unit in field conditions	±0.1 pH unit (1) in laboratory test ±0.5 pH unit in field conditions
Specific Conductance	Water	Measured by use of a self-contained conductivity meter, wheatstone bridge-type or equivalent (1); U.S. EPA Method 120.1 (6).	±1% of true value (1) in laboratory test ±5% of true value in field conditions	±1% of true value (1) in laboratory test ±5% of true value in field conditions
Turbidity	Water	Nephalometric detection by passing a light beam through a sample.	±1% of full scale	±1% of full scale
Organic Vapor HNu P1 101	Air	Measures concentration of trace volatile gases present in the atmosphere by photoionization (2).	Characteristic of particular species of gas being ionized (2)	Relative to calibration gas used; will not detect methane; range can be adjusted (3)
Organic Vapor Photovac TIP II	Air	Measures concentration of trace volatile gases present in the atmosphere by photoionization (4).	Characteristic of particular species of gas being ionized (4) Span setting can be adjusted	Relative to calibration gas used; will not detect methane (3)
Organic Vapor OVA 128	Air	Measures concentration of trace volatile gases present in the atmosphere by flame ionization (5).		±20% of Individual Full Scale (5)

References:

(1) U.S. EPA SOP and Quality Assurance Manual, Region IV, April 1, 1986
(2) HNu P1 101 Instruction Manual
(3) A Compendium of Superfund Field Operations Methods, EPA 5401/P-87/001
(4) Photovac Tip II Air Analyzer Users Manual
(5) Instruction Manual Model OVA 128 Century Organic Vapor Analyzer
(6) U.S. EPA Methods for Chemical Analysis of Water and Wastes, 3rd Edition, 1979.

TABLE 6

CALIBRATION AND FREQUENCY FOR FIELD SCREENING EQUIPMENT

Instrument	Manufacturer/Model	Purpose	Calibration	Frequency	Accept/Reject Criteria
Thermometer	Fisher Scientific	Measure temperature of a solution	Verified to a NBS-certified thermometer	Annually	
pH Meter	Presto-Tek/DSPH-3	Measure pH of a water sample	Buffered at a minimum of two points that bracket expected pH of the samples and that are approximately three pH units or more apart.	Daily before use; Every tenth sample, i.e., 3 samples - calibrate once; 12 samples calibrate twice.	±0.5 pH unit of buffer value
pH Meter	Yokogawa/PH51	Measure pH of a water sample	Buffered at a minimum of two points that bracket pH of the samples and that are approximately three pH units or more apart.	Daily before use; Every tenth sample, i.e., 3 samples - calibrate once; 12 samples calibrate twice.	±0.5 pH unit of buffer value
Specific Conductance Meter	Presto-Tek/DSPH-3	Measure specific conductance of a water sample	Check meter with two standard solutions 100 and 1413 μmhos/cm.	Daily before use; Every tenth sample, i.e., 3 samples - calibrate once; 12 samples calibrate twice.	5% of buffer value
Specific Conductance Meter	Yokogawa/SC51	Measure specific conductance of a water sample	Check meter with two standard solutions 100 and 1413 μmhos/cm.	Daily before use; Every tenth sample, i.e., 3 samples - calibrate once; 12 samples calibrate twice.	5% of buffer value
Turbidity	Hach 16800	Measure turbidity of a water sample	Based on Formazin	Daily followed by standardization.	±0.02 - 0.75 NTU

TABLE 7
VOLATILE COMPOUND LIST
(EPA Method 502.1)

Volatiles	CAS Number	Minimum Required Detection Limits Water ug/L
1. Chloromethane	74-87-3	0.5
2. Bromomethane	74-83-9	0.5
3. Dichlorodifluoromethane	75-71-8	0.5
4. Vinyl Chloride	75-01-4	0.5
5. Chloroethane	75-00-3	0.5
6. Methylene Chloride	75-09-2	0.5
7. Trichlorofluoromethane	75-69-4	0.5
8. 1,1-Dichloroethene	75-35-4	0.5
9. Bromochloromethane	74-97-5	0.5
10. 1,1-Dichloroethane	75-34-3	0.5
11. Trans-1,2-Dichloroethene	156-59-4	0.5
12. cis-1,2-Dichloroethene	156-59-4	0.5
13. Chloroform	67-66-3	0.5
14. 1,2-Dichloroethane	107-06-2	0.5
15. 2,2-Dichlorproprane	590-20-7	0.5
16. Dibromomethane	74-95-3	0.5
17. 1,1,1-Trichloroethane	71-55-6	0.5
18. Carbon Tetrachloride	56-23-5	0.5
19. Bromodichloromethane	75-27-4	0.5
20. 1,2-Dichloropropane	78-87-5	0.5
21. 1.1-Dichloropropene	563-58-6	0.5
22. Trichloroethene	79-01-6	0.5
23. 1,3-Dichloroproprane	142-28-9	0.5
24. Dibromochloromethane	124-48-1	0.5
25. 1,1,2-Trichloroethane	79-00-5	0.5
26. 1,2-Dibromoethane	106-93-4	0.5
27. Bromoform	75-25-2	0.5
28. 1,1,1,2-Tetrachloroethane	630-20-6	0.5
29. 1,2,3-Trichloropropane	96-18-4	0.5
30. 1,1,2,2-Tetrachloroethane	79-34-5	0.5
31. Tetrachloroethene	127-18-4	0.5
32. Chlorobenzene	108-90-7	0.5
33. Bromobenzene	108-86-1	0.5
34. 2-Chlorotoluene	95-49-8	0.5
35. 4-Chlorotoluene	106-43-4	0.5
36. 1,3-Dichlorobenzene	541-73-1	0.5
37. 1,2-Dichlorobenzene	95-50-1	0.5
38. 1,4-Dichlorobenzene	106-46-7	0.5
39. cis-1,3-Dichloropropene	10061-01-5	0.5
40. trans-1,3-Dichloropropene	10061-02-6	0.5

TABLE 8
METAL ANALYTE LIST

Volatiles	Contract Required Detection Limits (1) For Water
1. Antimony	0.05 mg/l
2. Arsenic	5.0 ug/l
3. Beryllium	0.005 mg/l
4. Cadmium	0.005 mg/l
5. Chromium	0.01 mg/l
6. Copper	0.01 mg/l
7. Lead	5.0 ug/l
8. Mercury	0.04 ug/l
9. Nickel	0.04 mg/l
10. Selenium	5.0 ug/l
11. Silver	0.01 mg/l
12. Thallium	10.0 ug/l
13. Zinc	0.01 mg/l

Notes:

(1) Higher detection limits may only be used in following circumstances. If the sample concentration exceeds five times the detection limit of the instrument or method in use, the value may be reported even though the instrument or method detection limit may not equal the Dectection limit. This is illustrated in the example below:

For Lead:

Method in use = ICP
Instrument Detection LImit (IDL) = 40
Sample Concentration = 220
Contract Required Detection Limit (CRDL) = 3

TABLE 9

ANALYTICAL METHODS

Parameters	Sample Matrix	Technique	Methodology[2]
Volatiles	water/soil	Purge & Trap GC/MS	CLP VOA 91-1
Metals	water/soil	ICP and AA (1)	CLP Metals
Semivolatiles	Soil	GC/MS	CLP SVA 91-2
Pesticides/PCBs	Soil	GC/EC	CLP Pest/PCB 91-3

GC - Gas Chromatography
MS - Mass Spectroscopy
ICP - Inductively Coupled Plasma
AA - Atomic Absorption
EC - Electron Capture

(1) AA technique may be required for selected metals in water samples so that detection limits area below drinking water standards (i.e., MCLs)

(2) NYSDEC ASP December 1991

TABLE 10

SAMPLING AND QUALITY CONTROL PROGRAM

Confirmatory Sampling

Sample Type	Sample Locations	Sample Frequency	Volatiles	Metals	TCL/TAL	Quality Control Samples (1)	
						Field Duplicate (2)	Rinsate Blank (3)
Subsurface Soils	4	one time	(4)		4	1	1
Groundwater	2	one time	2	2		1	0
Surfacewater/ Sediment	3	one time	3			1	1

Note: (1) A trip blank for volatile analysis will be submitted with each shipment that includes a request for volatile analysis.

(2) Field duplicates will be analyzed for the paramters being requested on the primary sample.

(3) Rinsate blanks collected during the subsurface soils sampling will be analyzed for the parameters being requested on the primary sample.

(4) Total number of samples submitted for laboratory analysis will be determined partially be field headspace.

TABLE 11

PREVENTIVE MAINTENANCE OF FIELD SCREENING INSTRUMENTS

Instrument	Activity	Frequency
Presto-Tek pH Meter	cleaning battery replacement	as needed as needed
Yokogawa pH meter	cleaning battery replacement	as needed as needed
Presto-Tek specific conductance meter	cleaning battery replacement	as needed as needed
Yokogawa specific conductance meter	cleaning battery replacement	as needed as needed
Hach Turbidimeter	cleaning battery charging lamp adjustment	as needed as needed as needed
Foxboro OVA FID	cleaning factory servicing	as needed every 6 to 9 months
HNu PID	cleaning clean UV lamp clean ion chamber	as needed as needed as needed
Photovac TIP	cleaning clean UV window replace dust filter	as needed as needed as needed

Chain Of Custody Record

Page _____ Of _____

Sirrine Job No. _____

Project/Location:

Client Name:

Collected By:

Sample ID	Date	Time	COMP	GRAB	WELL	Sample Location	# Of Containers	Sample Analysis (x)																										Remarks
								pH, Sp. Cond.	F	P	TOC	F	P	TOX	F	Cl, Fl, SO4	F	P	NITRATES	P	F	P	VOC	METALS	PESTICIDE	HERBICIDE	PHENOL	P	ACID/B/N Ext.	COLIFORM	P	CYANIDE	P	F	P	F	P	F	P	

F - Filtered P - Preserved

Analytical Program:
CWA SDWA CLP RCRA

_____

Custody Transfers Prior To Receipt By Lab

	Relinquished By/(Signed) (Organization)	Received By/(Signed) (Organization))	Date	Time
1				
2				
3				

Sample Delivery Details/Laboratory Receipt

Delivered Directly To Lab ☐ Shipped ☐

Method Of Shipment: _____ Airbill # _____

Analytical Lab: _____ Location: _____

Received By Lab By: _____ Date: _____ Time: _____
(Signature)

Additional Remarks:
(Condition Upon Lab Receipt, Etc.)

Rev 10-90

Original Report - White; Client Copy - Yellow; Laboratory Copy - Pink; File Copy - Gold

SEC DONOHUE
Environment & Infrastructure

FIGURE 1
CHAIN OF CUSTODY
GAESS INACTIVE HAZARDOUS
WASTE DISPOSAL SITE
HARRIMAN, NY

SEC DONOHUE
Environment & Infrastructure

DATE: _____ TIME: _____
COLLECTED BY: _____
JOB NUMBER: _____
JOB NAME: _____
SAMPLE ID: _____
MATRIX: _____
ANALYSIS: _____
PRESERVATIVES: _____

SEC DONOHUE
Environment & Infrastructure

FIGURE 2
SAMPLE LABEL
GAESS INACTIVE HAZARDOUS WASTE DISPOSAL SITE
HARRIMAN, NY

SEC DONOHUE
Environment & Infrastructure

REQUEST FOR ANALYSIS

Page ___ of ___

- This form must accompany samples - Do Not send under separate cover
- Separate forms should be completed for each shipping container

PROJECT NAME: _____
SEC JOB NO.: _____
PROJECT MANAGER: _____
BILLING ADDRESS: SIRRINE ENVIRONMENTAL CONSULTANTS
P.O. BOX 24000
GREENVILLE, SC 29616

SAMPLE SHIPMENT DATE: _____
SHIPPED TO: _____
LAB NAME: _____
LOCATION: _____
LAB CONTACT: _____
LAB PHONE: _____
MODE OF SHIPMENT: _____
AIRBILL NO.: _____

(Job number must be included on all invoices)

SAMPLE NO.	SAMPLE TYPE	SAMPLE VOLUME	PRESERVATIVE	REQUIRED TESTING PROGRAM	SPECIAL INSTRUCTIONS

TURNAROUND TIME REQUIRED: (Turnaround time must be arranged with lab prior to shipment)
NORMAL _____ RUSH _____ (Subject to rush service charge)

POSSIBLE HAZARD IDENTIFICATION: (Please indicate if samples are hazardous materials and/or suspected to contain high levels of chemical compounds.) LOW CONCENTRATION/ENVIRONMENTAL SAMPLES ONLY _____

MEDIUM OR HIGH CONCENTRATION SAMPLES/DOT HAZ MAT CLASSIFICATION _____ OTHER _____ (Please specify)

SAMPLE DISPOSAL :
RETURN TO CLIENT _____ DISPOSAL BY LAB _____

FOR LAB USE ONLY RECEIVED BY: _____ DATE/TIME _____

SEC 12/89 Original Report - White; Laboratory Copy - Yellow; File Copy - Pink

SEC DONOHUE
Environment & Infrastructure

FIGURE 3
REQUEST FOR ANALYSIS
GAESS INACTIVE HAZARDOUS
WASTE DISPOSAL SITE
HARRIMAN, NY

SHIPMENT INFORMATION

(Field to Lab by Telephone)

Date of Shipment: _____

Laboratory Destination: _____

Laboratory Project Contact: _____
(Name) (Telephone Number)

Number Containers Shipped: _____

Mode of Shipment: _____

Shipment Number(s): _____

Time of Shipment: _____

Date/Time of Shipping Info Release to Lab: _____

Signature of Releaser: _____

NOTE: PROVIDE THIS INFORMATION TO RECEIVING LABORATORY AS SOON AS POSSIBLE AFTER SAMPLES ARE SHIPPED.

SEC DONOHUE
Environment & Infrastructure

FIGURE 4
SAMPLING SHIPPING FORM
GAESS INACTIVE HAZARDOUS WASTE DISPOSAL SITE
HARRIMAN, NY

DAILY QUALITY CONTROL REPORT

JOB NUMBER _____ DATE _____ REPORT NUMBER _____

PROJECT & LOCATION _____

WEATHER _____ TEMPERATURE RANGE _____ WIND _____

SEC PERSONNEL ON SITE _____ TIME ON SITE _____

SUMMARY OF SITE ACTIVITIES _____

LEVEL OF HEALTH & SAFETY PROTECTION _____

INSTRUMENTATION USED _____

CALIBRATION(S) PERFORMED _____

INSTRUMENT PROBLEMS/REMEDIES _____

SAMPLES COLLECTED* _____

SAMPLE COLLECTION METHOD(S) _____

QUALITY CONTROL SAMPLES* _____

ADDITIONAL REMARKS _____

* INDICATE SAMPLE MEDIA: GROUND WATER, SURFACE WATER, SOIL OR SEDIMENT; SAMPLE TYPE: COMPOSITE, GRAB, SPLIT, DUPLICATE, RINSATE; AND SAMPLE I.D. NUMBERS.

SIGNATURE: _____

SEC DONOHUE
Environment & Infrastructure

FIGURE 5
DAILY QUALITY CONTROL REPORT
GAESS INACTIVE HAZARDOUS WASTE DISPOSAL SITE
HARRIMAN, NY

Field Data Information Log for Ground Water Sampling

Page ____ of ____

Date (yr/mo/day) _____

Field Personnel _____

Site Name _____

SEC Job # _____

Well ID # _____

____ Upgradient ____ Downgradient

Weather Conditions _____

Air Temperature _____ °C

Total Well Depth (TWD) = _____ 1/100 ft

Depth to Ground Water (DGW) = _____ 1/100 ft

Length of Water Column (LWC) = TWD - DGW = _____ 1/100 ft

1 Casing Volume (OCV) = LWC x _____ = _____ gal

5 Casing Volumes = _____ gal = Standard Evacuation Volume

Method of Well Evacuation _____

Method of Sample Collection _____

Total Volume of Water Removed _____ gal

Casing Diameter _____ Inches

Casing Material _____

Measuring Point Elevation _____ 1/100 ft

Height of Riser (above land surface) _____ 1/100 ft

Land Surface Elevation _____ 1/100 ft

Screened Interval _____ 1/100 ft

Dedicated Pump or Bailer YES ____ NO ____ Type ____

Steel Guard Pipe Around Casing YES ____ NO ____

Locking Cap YES ____ NO ____

Protective Post/Abutment YES ____ NO ____

Well Integrity Satisfactory YES ____ NO ____

Well Yield LOW ____ MODERATE ____ HIGH ____

Remarks _____

FIELD ANALYSES

VOLUME PURGED (gallons)							
TIME (military)							
pH (S.U.)							
Eh (mV)							
Sp. Cond. (µmhos/cm)							
Water Temp. (°C)							
TURBIDITY							

COMMENTS/OBSERVATIONS: _____

fldinfo 10/87

SEC DONOHUE

FIGURE 6
FIELD DATA INFORMATION LOG
FOR GROUNDWATER SAMPLING
GAESS INACTIVE HAZARDOUS
WASTE DISPOSAL SITE
HARRIMAN, NY

HEADSPACE ANALYSES

JOB NUMBER _____

PROJECT: _____

CLIENT: _____

LOCATION: _____

INSTRUMENT USED: _____

DATE SAMPLED _____

DATE ANALYZED _____

ANALYST _____

EXPLORATION NUMBER	SAMPLE NUMBER	DEPTH (FT)	SAMPLE TYPE	SAMPLE READING (PPM)*	BACKGROUND READING (PPM)*	AMBIENT AIR TEMP. (F)	REMARKS **

DAILY REPORT

JOB NUMBER: _____ DATE: _____ REPORT NUMBER: _____

PROJECT & LOCATION: _____

CLIENT: _____ SEC FIELD REPRESENTATIVE: _____

SUBCONTRACTOR: _____

SUBCONTRACTOR PERSONNEL ON SITE: _____

BRIEF SUMMARY OF WORK PERFORMED: _____

START TIME	STOP TIME	DESCRIPTION OF ACTIVITIES; REMARKS	TIME SPENT*

TIME SPENT BY SUBCONTRACTOR ON HOURLY RATE PAY ITEMS.

FIELD REPRESENTATIVES' SIGNATURE: _____ DATE: _____

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FIGURE 8
DAILY REPORT
GAESS INACTIVE HAZARDOUS WASTE DISPOSAL SITE
HARRIMAN, NY

SEC DONOHUE

DAILY PRODUCTION SUMMARY
DRILLING AND WELL INSTALLATION ACTIVITIES

PAGE _____ OF _____

FILE NO. | PROJECT LOCATION | DATE: _____ TO: _____

BORING NO.	DAILY PRODUCTION FROM:	DAILY PRODUCTION TO:	DATE	MOB/ DEMOB.	HSA FT.	ROTARY FT.	EXTRA S.S.	RISER FT.	SCREEN FT.	COARSE SAND FT.	FINE SAND FT.	PELLETS FT.	GROUT FT.	DECON. HR.	STAND BY HR.	LABOR HR.

TEST BORING REPORT

BORING NO.

PROJECT: _____
CLIENT: _____
CONTRACTOR: _____
EQUIPMENT USED: _____

JOB NO: _____
PAGE NO: _____
LOCATION: _____
ELEVATION: _____
DATE START: _____
DATE FINISH: _____
DRILLER: _____
PREPARED BY: _____

GROUND WATER		DEPTH TO:				CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE			
					SIZE ID			
					HAMMER WT			
					HAMMER FALL			

DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS

BLOWS/FT.	DENSITY
0 - 4	VERY LOOSE
5 - 10	LOOSE
11 - 30	MEDIUM DENSE
31 - 50	DENSE
51+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0 - 2	VERY SOFT
3 - 4	SOFT
5 - 8	MEDIUM STIFF
9 - 15	STIFF
16 - 30	VERY STIFF
31+	HARD

SAMPLE ID.	
S	SPLIT SPOON
T	TUBE
U	UNDISTURBED PISTON
G	GRAB SAMPLE
X	OTHER
NR	NO RECOVERY

COMPONENT %	
MOSTLY	50 - 100%
SOME	30 - 45%
LITTLE	15 - 25%
FEW	5 - 10%
TRACE	<5%

GROUND WATER ABBREV.
WD - WHILE DRILLING
NE - NOT ENCOUNTERED
UR - NOT READ
BORING NO.

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Environment & Infrastructure

FIGURE 10
TEST BORING REPORT
GAESS INACTIVE HAZARDOUS WASTE DISPOSAL SITE
HARRIMAN, NY

APPENDIX A
FORMS USED FOR DATA REPORTING

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE IDENTIFICATION AND ANALYTICAL REQUIREMENT SUMMARY

CUSTOMER SAMPLE CODE	LABORATORY SAMPLE CODE					
		*VOA GC/MS	*BNA GC/MS	*VOA GC	*PEST PCB	*OTHER

* Check Appropriate Boxes

* CLP, Non-CLP
* MSL, Priority Pollutant

MATRIX	VOLATILE ANALYSIS METHOD # AND NUMBER OF SAMPLES	METALS ANALYSIS METHOD # AND NUMBER OF SAMPLES	BASE/NEUTRAL/ ACID EXTRACTABLES METHOD # AND NUMBER OF SAMPLES	PESTICIDE/PCB METHOD # AND NUMBER OF SAMPLES	OTHER
GROUNDWATER					
SOIL					
LEACHATE					
SLUDGE					
AIR					
FIELD BLANKS					
TRIP BLANKS					
DUPLICATES					
LABORATORY QA/QC					

GROUP #	DATE	ASP PROTO #	SAMPLE NO.	MATRIX	VOA COMPLIANCY	BNA COMPLIANCY	PEST/PCB COMPLIANCY	METALS COMPLIANCY	CN	TOTALS PHENOLS	PAGE # IN THE CLP	NON-COMPLIANCE

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY

INORGANIC ANALYSES

LABORATORY SAMPLE CODE	MATRIX	ANALYTICAL PROTOCOL	DIGESTION PROCEDURE	MATRIX MODIFIER	DIL/CONC FACTOR

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY

VOA

ANALYSES

SAMPLE ID	MATRIX	DATE COLLECTED	DATE REC'D AT LAB	DATE EXTRACTED	DATE ANALYZED

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY

ORGANIC ANALYSES

SAMPLE ID	MATRIX	ANALYTICAL PROTOCOL	EXTRACTION METHOD	AUXILARY CLEAN UP	DIL/CONC FACTOR

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY

B/N A

ANALYSES

SAMPLE ID	MATRIX	DATE COLLECTED	DATE REC'D AT LAB	DATE EXTRACTED	DATE ANALYZED

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY

PESTICIDE/PCB

ANALYSES

SAMPLE ID	MATRIX	DATE COLLECTED	DATE REC'D AT LAB	DATE EXTRACTED	DATE ANALYZED

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY

INORGANIC ANALYSES

SAMPLE ID	MATRIX	METALS REQUESTED	DATE RECEIVED	DATE DIGESTED	DATE ANALYZED

APPENDIX B
RESUME OF QUALITY ASSURANCE COORDINATOR

RICHARD G. HABRUKOWICH, Ph.D., P.E.
MANAGER, ENGINEERING

EDUCATION:

Ph.D., Environmental Science, Rutgers University, New Brunswick, New Jersey, 1980

M.S., Environmental Science, Rutgers University, New Brunswick, New Jersey, 1974

B.S., Chemical Engineering, Rutgers University, New Brunswick, New Jersey, 1971

REGISTRATION:

Professional Engineer, Pennsylvania, 1982
Diplomate, American Academy of Environmental Engineers

RESPONSIBILITIES:

Mr. Habrukowich is Engineering Manager for SEC Donohue's Northeast Regional Office. He is responsible for all regional engineering and design projects in the areas of water, wastewater, air, solid and hazardous wastes. Projects include investigative studies, assessments, surveys, as well as conceptual and detail designs of remediation plans (closures, ground water treatment, waste characterization, minimization, etc.) treatment systems (industrial wastewater, sludges, hazardous waste, and ground water, etc.) and construction management.

EXPERIENCE:

August, 1990 to Present - SEC-Donohue

Engineering Manager providing administrative and technical support to professional staff and manager of major projects in the areas of water, wastewater, solid waste and hazardous waste management. Project management also includes client interaction and development of regulatory/permitting strategies particularly for RCRA and Superfund regulated projects. A summary of recent projects is listed below:

Chemical Waste Management, Inc., Model City Facility, New York

Project Manager for the Upgrade of Leachate Treatment System to achieve discharge criteria established by Third Third Land Ban regulations. Projects included treatability studies, system design, permit modification, NYSDEC interfacing, construction management and systems start-up as well as O & M Manuals.

Major contaminants included PCBs, metals, volatile organics (both polar and non - polar).

Chemical Waste Management, Inc.-ReSolve Superfund Site, Massachusetts

Technical manager in the engineering design of a 150 gpm groundwater dewatering and treatment system. The project included the design of metals removal system, Fe and Mn oxidation unit, clarification and filtration units, air stripper for volatile organics removal and GAC units to capture VOC emission and remove PCBs from the liquid effluent stream. EPA and MADEP interface to prepare and establish permit equivalency for the groundwater treatment system.

Confidential Client-Tenafly, New Jersey

Project Manager for the design of groundwater extraction and treatment system for the removal of Fe, Mn and volatile organics (particularly TCA) as part of ECRA closure. Project included hydrogeologic analysis, extraction system design, treatment system design, NJDEP interfacing and permitting.

Chemical Waste Management, Inc.-Village of Harriman, New York

Project Manager in the investigation of suspected NYSDEC Superfund Site. As part of consent order, designed and permitted air stripper as part of remediation for municipal drinking water supply.

Chemical Waste Management, Inc.-Keafe Site, New Hampshire

Technical Manager assisting CWM in the remediation of a Superfund Site. Specific duties included state and EPA submittals, regulatory interface and design assistance for a pump, treat and re-injection system. Iron, manganese and VOCs were compounds of concern.

Chemical Waste Management, Inc.-Vickery, Ohio

Project Manager for the closure of contaminated lagoons including closure plan and modification, Ohio EPA interface, submittals, construction management/QA oversight of remedial contractor and clean closure criteria/sampling verification. Project involved stabilization and removal of contaminated material from lagoons into RCRA designed closure cell.

Confidential Client, North Carolina

Project Manager to investigate recycling, reuse, recovery or disposal options of NaCl brine by-product from the manufacturing of a new plastic product. Study included process investigation, transformation of salt to HCl, Cl_2 and NaOH for reuse as well as salt purification for sale to dyestuffs industry.

Chemical Waste Management, Inc.-Bog Creek Farm, Howell Township, New Jersey

Project Manager assisting CWM in project submittals in remediation of Superfund Site then included soil incineration and groundwater/incinerator blowdown treatment. Duties also involve NJDEP interface, permit equivalency negotiations and submittals.

1988 to 1990 - Chemical Waste Management, Inc., ENRAC Division

General Manager of the remedial action group responsible for financial, sales, marketing, and operations for a staff of over 150 people, whose activities include the following site services: drum removals, soil exhumation/excavation; tank removal/decontamination; building decontamination/demolition; groundwater remediation; water treatment-surface water/groundwater; lagoon closures; on-site treatment; general construction and engineering.

Lackawanna Site, Old Forge, Pennsylvania - $17 million Superfund remedial action.

Burnt Fly Bog, Marlboro, New Jersey - $18 million PCB cleanup.

Heleva Landfill, Olmrod, Pennsylvania - $6 million capping project.

Bog Creek Farm, New Jersey - $15 million on-site incineration project.

1978 to 1988 - Roy F. Weston, Inc.

Engineering Consultant/Designer providing technical support to EPA related Superfund projects and various industrial clients. Provided supervision of 66 multi-disciplinary professionals.

September 1987 to May 1988 - Roy F. Weston, Inc.

Program Manager of R&AC Contract ($45 million) providing technical support to EPA on related Superfund projects throughout the United States. Provided supervision to over 50 multi-disciplinary professionals.

September 1983 to August, 1987 - Roy F. Weston, Inc.

Regional Manager responsible for overall technical and financial management of Cherry Hill, New Jersey office supporting the U.S. EPA Region III, Emergency Response, Removal/Cleanup program.

May 1978 to August 1983 - Roy F. Weston, Inc.

Technical Director for project management and project engineering in the areas of water, wastewater, air, solid and hazardous waste including conceptual, process, detail design as well as construction management.

1971 to 1978 - Princeton Aqua Science, New Brunswick, New Jersey

Project Engineer in investigation and evaluation of industrial wastewater streams and wastewater treatment facilities.

1973 to 1977 - Rutgers University

Research Intern, Department of Environmental Science. Investigation of the feasibility of land application and sewage sludge with regard to environmental constraints.

MEMBERSHIPS:

American Institute of Chemical Engineers
Water Pollution Control Federation

MILITARY SERVICE: None

TOTAL YEARS OF EXPERIENCE: 17