COMPREHENSIVE REMEDIAL INVESTIGATION

Draft

FOR

WEST SAYVILLE DRY CLEANERS

61 West Main Street
West Sayville, New York

Site No.: 152200

PREPARED FOR

NEW YORK STATE DEPARTMENT OF
ENVIRONMENTAL CONSERVATION
625 BROADWAY
ALBANY, NEW YORK 12233-7016

PREPARED BY

BERNINGER ENVIRONMENTAL, INC.

BEi

January 2011

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1.0 INTRODUCTION

The following document serves as a Comprehensive Investigation Work Plan for investigation work executed as per the issuance of the Remedial Investigation Work Plan (RI Work Plan)developed pursuant to the requirements of an executed Order on Consent (August 31, 2006) between the New York State Department of Environmental Conservation (NYSDEC), Division of Environmental Remediation (DER), and West Sayville Dry Cleaners, the Respondent. The subject property is listed on the NYSDEC DER Registry of Inactive Hazardous Waste Disposal Sites in New York State as Site Number 152200 with a Classification of 2 pursuant to ECL 27-1305. The site is located at 61 West Main Street, Hamlet of West Sayville, New York , fully described as Tax Map No. 500 -407-4-17.(Figures-1 and 2) An IHWDS Remedial Investigation Work Plan was directed as part of the Order on Consent to determine the nature and extent of site contamination and off-site migration pathways in order to allow a decision by the NYSDEC DER regarding remedial action required to be undertaken at said site and/or off-site areas. This document provides a description of the investigational work performed and completed as set forth in the approved March 2007 IHWDS Remedial Investigation Work Plan.

1.1 Purpose

The purpose of the IHWDS Remedial Investigation was to:

- Determine the nature and delineate the areal and vertical extent of contamination in all media for each area of concern or emanating from the site;
- Delineate the surface and subsurface environmental media, including topography and depth to groundwater;
- Identify the source(s) of contamination, migration paths and actual or potential receptors of contamination on or through air, soil, sediment, groundwater, surface water, utilities and structures at the site without regard to property boundaries;
- Collect and evaluate all necessary data to evaluate the actual and potential impact to public health and the environment;
- Collect data to facilitate selection and design of remedial action alternatives; and
- Identify collected data needed for monitoring natural attenuation, potential feasible cleanup technologies and presumptive remedies.

2.0 SITE HISTORY

2.1 Physical Site Description

Site Name: West Sayville Dry Cleaners
Owner: Thomas Costa
Operator: T.& R. Custom Service, Inc.
Location: 61 West Main Street, West Sayville, New York
Latitude 40:44'15 Longitude 73.6'15
Remedial Investigation Agreement: IHWDS Site No.:152200

The current site development consists of a one-story masonry building that is approximately 2,100 ft^2 in size, with a partial basement that occupies approximately 75 percent of the footprint of the site. The property consists of an elongate rectangular tax lot (See Figure 2), with an approximate fronting of 26 feet along the north side of West Main Street. The elongate axis of the subject property extends 110 feet in a north-south direction for a total of 2,860 ft^2. The building occupies the front 85 feet (75 percent) of the property footprint, abutting West Main Street. The front of the parcel is a concrete sidewalk and curb area maintained by the Hamlet of West Sayville or the Town of Islip. The rear of the parcel is a grassed area approximately 8 feet long and 26 feet wide that abuts off-site residential fencing to the north, east and west.

2.2 Site History and Land Use

All available environmental data has been summarized and excerpts provided with this work plan in Section 3.0. BEI had reviewed records submitted from a Freedom of Information request for the Suffolk County Department of Health Services (SCDHS) and the Town of Islip files. The records available within the SCDHS and Town of Islip files are also summarized and provided in this report. Therefore, this work plan provides a summary of all known environmental site conditions at or emanating from the site at the time of preparation of this work plan.

The subject site is a dry cleaner located in a commercial area of the Hamlet of West Sayville, Town of Islip, New York (see Figures 1 and 2). The commercially-developed property approximately 0.07 acres in size is located on the north side of West Main Street, Sayville, New York. It is one of many retail or commercial establishments located along West Main Street. A Town of Islip Building Division Certificate confirms the date of construction of the building as circa 1935. It was built as

a detached downtown row store. An oil burner plumbing permit exists (ECN-668734) dated November 17, 1967. A part of the store was demolished (Permit ECN-438497 dated July 2, 1979); this was associated with a permit to repair fire damage in the store (FUN 438497) also dated July 2, 1979 with a certificate of occupancy. The repair was for a 16 foot by 22 foot extension at the rear of the building. The plumbing permit also lists one water closet and one sink. Zoning indicated on historic documents indicates BUS (BD) - Business (downtown district).

The current site development consists of a one-story approximately 2,100 ft^2 building currently used for a dry cleaning operation utilizing 4th generation machinery. According to the current property owner and operator, Mr. Tom Costa, the property was occupied for use as a dry cleaning facility since circa 1983-1984.The current owner purchased the property in 1993, approximately ten years after the property's establishment of use as a dry cleaners. A 3rd generation machine was reportedly in use prior, from an unknown time period, up until 1995-96. The 4th generation machine was installed in 1998 and is still in use under permit No. NYD987031044.

Town of Islip records indicate Anthony and Marie Mazalla as past owners (circa May 1982). Electrical boxes and switches in the basement of the building indicate a former use of the subject property as a delicatessen and food storage/retail facility. Historic Sanborn Maps made available for the property indicate that the configuration of the study site has been consistent since 1949. Prior to that time (circa early 1900's), a smaller store was present that occupied the center of the parcel. The Sanborn Maps did not depict historic site uses. Therefore, based upon limited information available, the building was always used for commercial purposes, with use as a delicatessen for some time prior to 1982-1983. After 1982-1983, the property use has consistently been for dry cleaning operations.

2.3 Adjacent Property Land Use

The area surrounding the subject property has been and is currently used for retail and commercial purposes as well as residential housing to the north. In particular, the adjacent property's current uses include:

North: Rear grassed yard of dry cleaners followed by a residentially-developed parcels to the northwest and northeast.

South: West Main Street, followed by the West Sayville Fire House and Fireman's Training Center and elongate associated landscaped areas. A wetlands area (Green Creek) is located to the southeast.

East: Directly to the east is commercial establishments such as Dutch Door Realty and residential uses.

West: Directly to the west are commercial establishments such as patio area for Brocks Bar & Grill (bar itself) followed by Sonline Realty, PS2 Engineer Power & Design, Cross Island Meats, Sayville Bike Works, LNV Fuel and DCAP Insurance; These stores comprise a complete strip of commercial establishments all the way west to Cherry Avenue.

2.4 Geographic Setting

Published literature sources were used to identify the geographic area encompassing the West Sayville Dry Cleaners facility. Literature sources concluded that the Laurentide continental ice sheet deposited two major terminal moraines on Long Island during the Wisconsinan stage of the Pleistocene Epoch. These moraines formed two lines of hills that trend generally east-west along Long Island. The subject property occupied by the West Sayville Dry Cleaners lies within the outwash plain, located south of the Ronkonkoma moraine.

2.5 Regional and Local Geology

The Suffolk County portion of Long Island is underlain by a generally sea-ward thickening wedge of Late Cretaceous-Upper Pleistocene age unconsolidated strata forming three aquifers. These unconsolidated deposits overlie a south-southeastward-dipping impermeable basement of Pre-Cambrian crystalline bedrock. The sedimentary strata, from oldest to youngest, includes the Lloyd Aquifer, the Raritan Clay confining unit, the Magothy Aquifer and the Upper Glacial Aquifer (at the land surface). These three water-bearing strata comprise Long Island's sole source aquifer system. Intermittent clay layers such as the Gardiners Clay, where present, may act as local confining layers, separating portions of the aquifer or in some areas, the Upper Glacial Aquifer from the Magothy

Aquifer. The Magothy Aquifer is the principal source of potable drinking water in Suffolk County. The scope of work set forth in this investigation work plan is focused only on the Upper Glacial Aquifer.

Direction and rate of groundwater flow are controlled by the rate and distribution of water entering and leaving the system, the geometry of the system and the distribution of water transmitting and storage properties of the system. Based upon a projection from review of Suffolk County Water Table Maps, local groundwater flow direction is expected to be to the southeasterly direction. Published literature values for estimated average hydraulic conductivity for the Upper Glacial Aquifer is 270 feet per day horizontal with rates of 27 feet per day for vertical flow. Previous site investigatory work performed by others (see Section 3.0) has determined the depth to the water table within the Upper Glacial Aquifer as approximately 5 feet below grade surface (bgs).

2.5.1 Surficial Geology

Based upon a review of the Soil Survey of Suffolk County from the United States Department of Agriculture Soil Conservation Service Issued April 1975, the surface soils within the study area is classified as Cut and Fill land. Cut and Fill land, gently sloping (CuB). Cut and Fill land is made up of areas that have been altered in grading operations for housing development, shopping centers and similar non-farm uses. Generally, the initial grading consists of cuts and fills for streets or parking lots. During this phase, excess soil material is stockpiled for final grading and top dressing around houses or other buildings.

Areas of Cut and Fill land contain deep cuts in or near the sandy substratum of the soil or sandy fills of 28 inches or more. Generally, cuts are so deep or fills so thick that identification of soils by series is not possible. The soil material making up the upper 40 inches of this unit contains as much as 12 inches of sandy loam, loam or silt loam in some places. The 28 inches that remain are loamy fine sand or coarser textured material. Cut and Fill land is generally associated with Carver and Plymouth soils. The soil material that remains after grading operations are complete, has low available moisture capacity, is droughty, and is low to very low in natural fertility.

Cut and Fill land, gently sloping (CuB) - This unit is made up of level to gently sloping areas that have been cut and filled. Slopes range from 1 to 8 percent; and because of final grading around houses and other buildings, slopes generally are complex.

2.6 Topography

The subject site is located approximately 10 feet above the National Geodetic Vertical Datum (NGVD) of 1929 (Figure 1 - Site Location and Topographic Map (USGS Sayville Quadrangle)). The land surface is relatively flat. A topographic low area is present to the southeast, which is the area that drains to the Green Creek, about 1,300 feet to the southeast.

2.7 Water Supply

As required by the NYSDEC DER, BEI conducted a receptor assessment that included determining the presence of public or private supply wells and/or production wells located within a one-mile radius of the subject site. Public water supply wells were researched from available records from the SCWA. Other private supply wells which pump at least 45 gallons per minute are required by Region I of the NYSDEC to be permitted; these records were researched.

A review of the aforementioned records indicated that the Suffolk County Water Authority (SCWA) is the sole distributer of potable water in the area of the subject site. Two well fields exist within an approximate area of two miles from the subject property, within the SCWA "Sayville, Bluepoint and Bayport" Town of Islip Distribution Area. One well field located to the northwest (upgradient) identified as the Montauk Highway Well field is 1.78 miles from the study site. The second well field (Lakeville Avenue Well field) is more than 2 miles away, to the northeast, also upgradient. No private or other potable supply wells were identified within a one mile radius of the subject site based upon available records. Therefore, based upon this information, there are no public water supply receptors that are considered to be a possible receptor relative to the study parcel.

2.8 Drainage Pattern

The subject property is located within the boundaries of Hydrogeologic Zone VII: South Shore Shallow Flow Discharge System. Zone VII is located south of the Magothy recharge zone on the South Shore and discharges to Nassau and western Suffolk South Shore bays where tidal exchange

facilitates the dilution and dispersion of contaminants. Zone VII is a shallow flow zone, thus contamination from activities in Zone VII will mainly affect the Glacial aquifer. Zone VII contains a number of streams that feed the South Shore bays. These streams are important recreationally, ecologically and as a freshwater source to South Shore bays.

The area around the building is predominately occupied by the building footprint with the exception of the rear grassed area. Stormwater runoff is via overland flow to a catch basin located in the public right-of-way, along the north side of West Main Street, to the south of the building. The subject property is located about 1,300 feet to the northwest of the creek.

2.9 Infrastructure

Information on site infrastructure were available from municipal records, historic records, property owner knowledge and current site inspection. A site sketch was developed from a Suffolk County tax map, historic surveys, municipal records and site reconnaissance performed in October 2006 (See Figure 3a). A SCWA public municipal water supply serves the subject property and adjoining areas. Overhead electric lines were observed providing service to the cleaners. A natural gas valve was noted in the sidewalk area, adjacent to the front of the building. According to available records, municipal sanitary wastewater sewers are not available or in use at the facility.

A basement steel hatch door is present to the east of the front doorway. This hatch leads to a partial basement that underlies the front (south) of the subject property. The basement is used for storage of maintenance equipment for the property. The basement floor consisted of poured concrete in good condition. No evidence of dry cleaning operations were noted inside the basement during the inspection on October 2006 to the present day. No odors or staining or other suspect conditions were present. An-out-of-service fuel oil heating system was present; reportedly a former No.2 fuel oil above ground storage tank (AST) had formerly been present in the basement (evidence of fill and vent pipes through the building foundation wall). A crawl space underlies the remainder (rear) of the building. The crawl space was observed to have a soil (unpaved) floor. Numerous waste piping and steam piping were observed, in addition to insulation and other site related utilities.

BEI observed a former septic pool present underlying the floor in an office space at the rear of the

building. This septic pool had been tested previously and reportedly no remediation was required. The septic is no longer connected; however former wastewater piping could be observed in the crawlspace. A small vegetated yard is present at the extreme rear that is approximately 8 feet long and the same width of the parcel. Right-of-ways exist on the west and east sides of the building which provide access to the rears of the adjoining commercial properties. The piping and equipment (soil vent wells and groundwater piezometers, roof-mounted blower units, etc.) associated with a Soil Venting System (SVE) system installed in 2005 by BEI are observable at the rear of the facility.

An oil-fired heating system is used for heating purposes. A 250-gallon Roth No. 2 plastic fuel Above Ground Storage Tank (AST) was identified within a building enclosure located at the rear (northwestern corner) of the building. The boiler is present interior at the rear of the property, in a separate room to the west of the dry cleaning machine. The boiler serves to provide steam to the presses, which in turn incidentally provides heat for the building. This according to the property owner is sufficient for heating purposes. Wastewater from washing machines discharge to the municipal wastewater system in addition to sanitary wastewater. Stormwater runoff is transported from the roof via a gutter system to the land surface for infiltration and/or runoff into the municipal piping.

The interior of the building is divided into a counter area (located in the front, parallel to West Main Street), clothing racks, clothing storage areas, work areas that include steam presses and in the extreme rear were the following: a fourth generation dry cleaning machine, washing machines and a boiler room. No dumpster was noted to be present at the property; no historic dumpster location was identified by knowledgeable site personnel.

3.0 SUMMARY OF PAST INVESTIGATIONS

Records available to Berninger Environmental, Inc. (BEI) were obtained from a Freedom of Information Search from the Suffolk County Department of Health Services (SCDHS) offices, Town of Islip Building Department, and from work performed by BEI at the subject property as well as the property owner files. A summary of the prior environmental investigations or remedial work performed at the West Sayville Dry Cleaners is provided below. To BEI's knowledge this provides a comprehensive list of all existing relevant reports with titles, authors and description of results as required by the Consent Order relative to a records search report.

Soil Excavation Activities September 2000, February 2001 and August 2002

Three sets of soil excavation activities were implemented by J.C. Broderick & Associates and others according to SCDHS records available to BEI.[1] This program consisted of the removal of impacted soil at the rear of the building. A total of twenty-two 55-gallon drums were reportedly removed for off-site transport and disposal. According to SCDHS records, the excavation activities failed to remove the contaminant source in its entirety. BEI's review of SCDHS data indicated that the remediation consisted of the removal of soil adjacent to a pipe which had received flow from a former floor drain inside the building. The area of excavation was primarily located directly exterior to the rear exit door. Soil removal also apparently extended to the interior of the building, under the slab on grade concrete floor. Cracks were noted where the concrete floor had failed due to excessive excavation. SCDHS files review provided a record of soil endpoint data and disposal characterization analytical testing data. The endpoint soil testing data revealed 6,900 parts per billion (ppb) tetrachloroethylene (PCE) in an excavation sidewall sample and 590,000 ppb in another side wall sample (under the doorway). The SCDHS IHWS fact sheet on the site also indicates that PCE was present in groundwater at the rear of the facility at 330 *ug*/L.

December 2002 - BEI Soil Boring Investigation Program

Two soil borings were installed behind the building in the area of the former sampling locations performed previously by SCDHS. These borings were extended to the underlying groundwater and

[1]Records available from the NYSDEC Class II listing Inactive Hazardous Waste Disposal Report

samples of the groundwater were collected for laboratory analysis. PCE and Trichloroethylene (TCE) were reported at the GP-1 (east) sampling location at respective concentrations of 56.2 *u*g/L and 7.5 *u*g/L. PCE and TCE were reported at the GP-2 (west) sampling location at respective concentrations of 275 *u*g/L and 60.8 *u*g/L. Based upon this study, BEI recommended the installation of a Soil Vapor Extraction (SVE) System. This information was documented in a report dated December 06, 2002. Various correspondence, in addition to a Remedial Action Plan (RAP), was present in SCDHS files regarding details in the design of the SVE system, air permit modifications required, etc. The facility currently operates under NYSDEC air permit facility ID: 1-4728-03147.

December 2004 to present - BEI Soil Vapor Extraction (SVE) System

A SVE system was approved by the SCDHS on January 18, 2005. The system installation was delayed due to access issues until May 16, 2005. Two VES wells were installed to a depth of approximately 9.5 feet below grade surface (bgs) with a 4.5 foot screen to address the contamination in the unsaturated soil column. One VES well was installed just outside the rear door of the cleaners within two feet of the wall. The second VES well was located inside the building in front of the 4th generation cleaning machine along the east wall. This was the area where the highest soil gas readings were reported.

Two groundwater piezometer wells were also installed as part of the overall work. These were located within ten feet of the VES wells. After completion of the wells, a six (6) mil plastic vapor barrier was placed a couple of inches below the grade level soil and covered with soil to prevent the VES wells from pulling fresh air from grade (short circuiting of air flow). The VES wells were determined to have an effective radius of about 10 feet relative to remediation of the impacted area.

Ongoing vent stack emission data (VES exhaust) was present in the SCDHS files and consisted of the analysis of air samples via tedlar bag for Volatile Organic Compounds (VOCs) by EPA Method 601. PCE was noted as 3,763 *u*g/m^3 in SCDHS readings and non-detect by EPA Method 601. SVE well No. 1 reported PCE at 396 *u*g/m^3 while SVE well No. 2 reported 18,462 *u*g/m^3 for samples collected on June 21, 2005 and split with SCDHS for analysis. On May 16 and 23, 2005, respectively, the VES stack emissions reported 12,000 ppbv and 370 ppbv for PCE.

November 2005 SCDHS Indoor Air Sampling of Adjoining Property

Indoor air sampling was performed by the SCDHS in November 2005 from the Dutch Door Realty Company. Air samples were collected in the office area and meeting room. PCE concentrations ranged from 539 ug/m^3 to 721 ug/m^3 with lesser concentrations of TCE 4.0 to 124 ug/m^3.

October 2005 SCDHS Groundwater Sampling of Monitoring Wells on Downgradient Property

Records were available relative to groundwater sampling of three monitoring wells located within the right-of-way for the West Sayville Fire District property. The easternmost well (WS-1) reported 15 ug/L of PCE while the western monitoring well (WS-2) reported 12 ug/L of PCE. The westernmost well (WS-3) reported 2.4 ug/L of PCE. Other VOCs were present; same were at lower concentrations that provided in the NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1, Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, April 2000, revised 2004.

Due to the presence of concentrations of volatiles (PCE and its degradation products) that exceeded NYSDEC standards for on-site soil and groundwater with the potential for migration of contaminated groundwater off-site and the presence of indoor air impacts at an abutting property, the property became listed as an Inactive Hazardous Waste Site No. 3-60-059 with a Classification of "2" pursuant to ECL 27-1305. Therefore, further investigation was required to determine the extent of on-site contamination and to evaluate potential human health exposures as per the NYSDOH letter dated January 4, 2006.

4.0 EXPOSURE ASSESSMENT

As dictated by the NYSDEC DER, a qualitative human health exposure assessment has been conducted. In order to perform a qualitative exposure assessment, site conditions are characterized in order to evaluate whether a site poses an existing or potential hazard to the exposed or potentially exposed population. Site characterization involves a review of sampling data for exposed media and an evaluation of the physical conditions of the contaminant sources or physical hazards near the site which may pose an additional health risk to the community. If the original source is unknown, the environmental media (soil, air, water, etc.) is evaluated at its point of exposure.

According to site data, residual concentrations of dry-cleaning related VOCs are present in a remedial area located exterior to the rear of the building. An SVE system was installed to address the residual contamination at the rear of the building and any soil gas that may be present or currently active. Indoor air sampling in November 2005 revealed indoor air quality issues (PCE at 539 ug/m^3 to 721 ug/m^3) at the real estate office adjoining to the east. This data was collected prior to the installation and operation of the SVE system. Post remediation testing has been conducted in March 2010 at the reality office and the results have dropped significantly (45 ug/m^3) due to the operation of the SVE system. Groundwater impacts were quantified on-site (330 *u*g/L of PCE) with lower concentrations of PCE (12 to 15 *u*g/L) within the right-of-way, to the south, toward the unoccupied training grounds for the West Sayville Fire District. The subject property is about 1,300 feet to the northwest of the tributary/headwaters for Green Creek.

The historic data were evaluated in a three-step process in the performance of a qualitative exposure assessment. The first step in this analysis was the identification of potential exposure pathways. Second, concentrations of the chemicals of concern were assigned to the exposure points for each pathway based on the site data. Third, if applicable, the exposure point concentrations were compared to acceptable levels to determine if those concentrations could pose an unacceptable risk to human health.

4.1 Exposure Pathways Analysis

An exposure pathway describes the means by which an individual may be exposed to contaminants originating from a site. An exposure pathway has five elements: (1) a contaminant source; (2) contaminant release and transport mechanisms; (3) a point of exposure; (4) a route of exposure; and (5) a receptor population.

An exposure pathway is complete when all five elements of an exposure pathway are documented; a potential exposure pathway exists when any one or more of the five elements comprising an exposure pathway is not documented. An exposure pathway may be eliminated from further evaluation when any one of the five elements comprising an exposure pathway has not existed in the past, does not exist in the present and will never exist in the future.

At this time, the known site media containing contaminants is the presence of dry-cleaning related VOCs in the subgrade soils directly exterior to the rear of the building (currently being addressed via a SVE system), as well as some in indoor air quality issues at an adjoining property to the east. Potential exposure pathways for VOCs such as those associated with dry cleaning operations can include: 1) inhalation of indoor or outdoor air containing VOCs that volatilized from underlying soils and/or groundwater; 2) ingestion of groundwater; 3) discharge of groundwater to surface water with subsequent exposures; and 4) impacts to sediment within the stream and associated exposure to flora and fauna within the creek. The soil contact exposure pathway was also evaluated for completeness of assessment. Potential receptors for each of these exposure pathways are identified below.

4.1.1 *Soil Contact Exposure Pathways*

Previous investigations identified concentrations of elevated VOCs located within soils exterior and limitedly under the rear of the building. No VOCs have been quantified in surface soils. The rear of the property has limited access and is limited to employees, tenants or trespassers. Interior to the building, soil areas are covered with concrete flooring or other flooring. Soil sampling has been conducted exterior to the rear of the building and at the interior of the building behind and in front of the dry-cleaning

machine and also west of the machine. A total of two soil samples were collected exterior to the rear of the building and an additional three samples were collected in the dry-cleaning equipment room near the rear of the building. Laboratory samples for all of the above mentioned soil boring locations tested non-detect for all dry-cleaning related media of concern.

No significant contact with the site soils is expected beneath the building or at exterior areas under current conditions or in the future. If the building is razed or expansion requiring additional foundation structures made, exposure to these soils is possible, but no concerns (e.g., no other soil source areas) relative to same have yet to be identified based upon recent investigation studies conducted in September of 2010. Additionally, an SVE system is currently operating to address residual soil impacts. Therefore, no present exposure exists but a potential exposure nonetheless still exists and has been minimized due to the operation of the SVE.

4.1.2 *Inhalation Exposure Pathways*

For inhalation exposures, potential receptors under current and future conditions would include workers and customers at the site as well as possible occupants of several adjoining commercial businesses and residential homes. No occupied structures have been identified downgradient (southeast). Downgradient areas consist of the fireman's training center which is only used on a periodic basis. Farther downgrade of that facility is uninhabitable areas associated with Green Creek.

The potential exposure pathway at the site itself is the inhalation of indoor and outdoor air by site workers or customers and business workers and/or customers. The wooden floor interior was observed to be in fair to good condition and a portion of the property (front) is concrete-paved. Exterior to the store front is a concrete sidewalk and West Main Street is paved with a combination of concrete and macadam. The rear sides of the property abut other businesses and share party walls or open area (bar to the west). The rear area is partially vegetated; this area is accessible on a restricted basis for workers

only. The rear of the property abuts landscaped residential lots; however, the closest structures appear to be storage structures or garages.

Impacts to the indoor air quality at the eastern neighboring property have been previously quantified, in addition to elevated soil gas to the southeast, along West Main Street. These data preceeded the installation and operation of a SVE system at the subject property. The inhalation of outdoor air and/or soil gas migration pathway has been re-evaluated under the remedial investigation. The potential exposure pathway of the inhalation of indoor air at adjoining structures has also been further evaluated under the remedial investigation for air quality testing conducted in March of 2010. (March 2010 air testing; September 2010 soil and groundwater testing) In March of 2010 a complete indoor/outdoor air and soil gas investigation was conducted at all neighboring properties that had the potential to be subject to inhalation exposure. A total of four establishments were sampled including; Brocks Bar and Grill to the west, Dutch Door Reality directly adjacent to the cleaner, The Sayville Running Comp. to the east and finally the West Sayville Fire House across the street to the southwest. Each of these establishments had 24 hour air testing conducted via 6 liter summa canisters setup approximately 4 feet above floor level representative of the natural breathing zone and sub-slab samples were also collected at a 24 hour interval via summa canister. The Dutch Door Reality was the only building where indoor air levels exceeded Matrix Guidelines set forth by the New York State Department of Health. PCE concentrations for the indoor air at Dutch Door were detected at 45 ug/m3 and sub-slab concentrations were detected at 28 ug/m3. Matrix 2 guidelines for PCE detected above 30 ug/m3 require that reasonable and practical actions be taken to identify the source of contamination and reduce exposure. BEI believes that the source of contamination is actually the exhaust from the SVE stack because of it's close proximity to the realty building. The SVE exhaust is entering through the back of the Dutch Door Realty building and/or through duct work from the heating/cooling system having direct effect on the indoor air quality. Reasonable mitigation efforts should include extending the height of the exhaust stack from the dry-cleaning roof and re-routing the vapors so that

the emission migration will no longer enter into the presented pathways. Follow-up testing at the Dutch Door Realty can than be conducted to evaluate the successfulness of the mitigative measures. Other measures may be undertaken if these presented are unsuccessful. The indoor air concentrations detected in the realty office are lower than the sub-slab readings therefore concluding that the contaminant source is not a direct result of soil vapor beneath the buildings foundation but the result of an outside source.(SVE exhaust) Although the exposure pathway is currently complete the concentration levels of PCE in the indoor air are not of any health threat to the receptor population due to the fact that the PCE quantified is much less than the NYSDOH air guidance value of 100 ug/m3. Therefore, reasonable and practical actions will be undertaken to reduce exposure and eliminate the completed pathway.

4.1.3 *Groundwater Ingestion Pathway*

It has been confirmed that potable water is supplied to the area by the municipal water authority which consists of groundwater obtained from deep supply wells located more than 1.8 miles and upgradient of the subject property. Therefore, due to the distance between the potable water supply areas and the study site, and their respective location upgradient, no potentially affected downgradient potable water supply has been identified at this time. It is unknown if any downgradient private potable water supply wells exist that are not required to be registered with the NYSDEC. A scope of work has been completed as part of the remedial investigation to evaluate groundwater (on-site and off-site) and no significant concentrations of dry-cleaning related media has been discovered that could be of any negative influence to any potable water supply therefore, ingestion of groundwater is not a completed or potential exposure pathway.

4.1.4 *Discharge of Groundwater to Surface Water Pathway*

Shallow groundwater from the site either discharges to or receives recharge from the proximate creek. Relatively low concentrations of VOCs were quantified at the off-site location at the south side of West Main Street. The hydrodynamics of this shallow discharge system have not been established and likely varies on a seasonal basis and

with tidal fluctuation. No surface water impacts have been quantified; as mentioned above off-site groundwater sampling has been conducted south of main street and in the area of the creek concluding that no significant concentrations of dry-cleaning related media are present, therefore discharge of groundwater to a surface water pathway is not a completed exposure.

4.2 Exposure Assessment Summary

An initial exposure assessment was performed based upon prior data at the subject property. However, an SVE system has been in operation since 2006 and is currently in operation. Since the installation of the SVE system the current concentrations of the environmental media have significantly decreased from what was previously quantified. Previous indoor air quality studies dating back to November of 2005 detected PCE concentrations as high as 700 ug/m3 in the Dutch Door Realty office. More recent studies conducted in March of 2010 show PCE concentrations of only 45 ug/m3 at the realty office. This major reduction of indoor air contamination can be directly attributed to the operation of the SVE system that was installed in May of 2005. The SVE continues to operate in the present day and is continuously removing harmful vapors from the site.

Therefore, all exposure pathways have been re-evaluated based upon current laboratory findings. The remedial investigation has concluded that no completed exposure pathways have been identified (with the exception of the inhalation pathway at the neighboring realty building) that warrant any further evaluation, although the potential for exposure always exists. This is subsequent to the tasks performed in the previously approved Investigation Work Plan.

Investigation results conclude that a Fish and Wildlife Impact Assessment will not be required.

5.0 Investigation Work Plan Objectives

The objective of this work plan is to provide a detailed description of work performed pertaining to the approved March 2007 Investigation Work Plan. Sample collection and analysis of site media has determined the extent of minor traces of tetrachloroethene (PCE) and/or its breakdown products present at the subject property. Horizontal and vertical delineation of contamination has been conducted to the satisfaction of the DER. The investigation has considered the potential for exposure impacts to sensitive receptors based upon the data developed from the overall investigation.

All remedial investigation activities have been performed in accordance with those requirements set forth in NYSDEC, DER "Draft Technical Guidance for Site Investigation and Remediation", December, 2000 (3/26/01). A surveyed site base map has been generated that includes all exterior sample locations located on the site base map.

5.1 Areas of Concern

The overall investigation included sampling of the following on-site locations: soil and groundwater at the exterior and interior rear of the building; groundwater downgradient relative to the rear of the building. Other site areas that required further evaluation were the property perimeters relative to the potential for off-site vapor migration(multiple off-site air and soil gas samples conducted at adjoining properties) and down gradient off-site groundwater evaluation in order to determine the horizontal and vertical extent of contamination, if any, located in the fire house training facility parking lot.

5.2 Remedial Investigation

BEI has defined the scope of the remedial investigation into specific tasks as follows:

Task 1 - Piezometer Installation/Groundwater Flow Calculation

Purpose: To confirm the localized direction of groundwater flow and other aquifer characteristics beneath the site, BEI has evaluated the locations of existing piezometers.

As there are three piezometers to the south, one adjacent to the rear of the facility and optional sufficient groundwater monitoring points are also available for purposes of establishing groundwater flow direction. Only one additional piezometer well was installed due to the lack of recovery present in the two existing piezometer wells located at the rear of the building. Surveying of the existing off-site wells and the newly installed piezometer well has been performed such that a groundwater elevation map could be generated. The measurement of associated groundwater elevation data has enabled BEI to produce a site-specific calculation of the direction of groundwater flow at the subject property. Please see the groundwater gradient map attached as(Figure- 7)

Specifications: The location and casing elevations have been determined by a surveyor. Depth to groundwater has been measured from each well to the nearest 0.01 foot using a sonic interface probe. The collected data has been used to generate a groundwater gradient map indicating the direction of groundwater flow. Figure 7 depicts the location of the five existing piezometers and the newly installed piezometer.

Task 2a - Indoor Air testing

BEI has sampled select building structures surrounding the subject property to evaluate the potential for indoor air quality concerns in occupied spaces. A total of four summa canisters have been used to collect air samples at the locations shown in Figures 5 over a 24 hour time period.

Purpose: The indoor air data will only provide information relative to current exposures, if any, within the adjacent commercial and residential structures regardless of source. Therefore, the indoor air quality data will be used to determine if remedial measures are necessary or an indoor air quality abatement plan is required. Sample collection procedures, quality assurance/quality control and equipment decontamination procedures are discussed in Section 6.0.

Specifications: Interior air sampling has been conducted by placing summa canisters 3-5 feet above grade (which is representative of the breathing zone) at the selected site locations for retrieval of air. Upon completion of each day's sample collection, the canisters were transported under strict chain-of-custody to a NYSDOH-ELAP certified laboratory for analysis by EPA Method TO-15 for Halogenated Organics (specifically tetrachloroethene and its breakdown products) at the locations shown on Figures 5.

Samples were collected at 4 neighboring properties surrounding the subject site including: Dutch Door Realty, Sayville Running Comp., Brocks Bar and Grill and the West Sayville Fire House. Indoor air samples have been collected and analyzed for each of these neighboring buildings and the results for the findings are discussed below.

Laboratory Results: West Sayville Fire House lab results showed non-detect for all dry-cleaner associated contaminants. Brocks Bar and Grill lab results detected PCE @ 2.98 ug/m3 which is well below the NYSDOH guidance value of 100 ug/m3. All other dry-cleaning related chemicals tested non-detect. Sayville Running Company lab results detected PCE @ 3.25 ug/m3 which is well below NYSDOH standards. All other dry-cleaning related chemicals tested non-detect. Dutch Door Realty detected PCE @ 45.0 ug/m3. All other chemicals were non-detected or below NYSDOH guidance values. Although the Dutch Door Realty indoor air concentration of 45 ug/m3 is well below the health departments guidance value of 100 ug/m3 it is above the Matrix 2 guidance value of 30ug/m3. Any concentrations that are at or above 30 ug/m3 require continued monitoring and reasonable acts of mitigation. The Dutch Door building sub-slab concentration tested lower for PCE (28 ug/m3) than the indoor air concentration of 45.0 ug/m3. This would lead us to believe that the indoor air is being impacted by an outside source. After further investigation into this matter BEI observed the dry-cleaning exhaust fan and the SVE exhaust stack to be located directly adjacent to the rear of the Dutch Door building. The exhaust from the SVE stack or dry-cleaning machine is most likely the cause for the indoor air readings being higher than the sub-slab readings. As discussed in the exposure assessment, the Dutch Door air conditioning ducts/heating

system vents are inhaling the exhaust vapors from the dry-cleaning vent and SVE stack which is located right next door at the rear of the building. Methods of mitigation are being taken into consideration as discussed in section 4.1.2 although no serious health risks are currently of concern.

Task 2b - Air, Sub-Slab and Soil Gas Investigation

Purpose: The main objective for determining concentrations of volatile organic compounds in soil gas is to assist in an evaluation of the potential for migration of vapors into off-site locations. One ambient outdoor air sample has been collected within the open space (outdoor dining area) between the grill/bar and the dry cleaners. A soil gas sample has also been collected within the rear of this area, adjacent to the machine area interior to the dry cleaners. Sub-slab samples were collected at the four buildings discussed in the indoor air section as well. (See sampling locations depicted on Figure-5.)

Specifications: With the Geoprobe equipped with a Post-Run Tubing System (PRT), the soil gas sample was collected from beneath the land surface at a depth of approximately 4-5 feet bgs or 2-3 inches below the slab for sub-slab in order to make a representation of vapors potentially migrating off-site. In instances where the collection of a Sub-Slab Vapor (SSV) sample was possible, the sample was collected from 2-3-inches below grade, directly under the slab surface. In the instance of the ambient sample, a summa cannister was set at a breathing height of 3-5 feet above grade and a regulator set for a minimum of 24 hour flow rate with the exception of the soil gas sample which was set for an 8 hour flow rate.

The boreholes were sealed at the land surface using quick dry cement. All samples were collected in 6 liter summa canisters for laboratory testing. Helium tracer gas was used for soil gas sampling with the exception of sub-slab, ambient and indoor air samples as described in Section 6.0.

Upon completion of each day's sample collection, the canisters were transported under strict chain-of-custody to a NYSDOH-ELAP certified laboratory for analysis by EPA Method TO-15 for Halogenated Organics (specifically tetrachloroethene and its breakdown products). Soil gas sampling or sub-slab locations were selected in order to provide relevant data at the subject property relative to the surrounding properties. The actual location of each sampling point was determined based on site constraints or field analytical data. The borings were abandoned by clean sand and bentonite grout to grade. Sample collection procedures, quality assurance/quality control and equipment decontamination procedures are discussed in Section 6.0.

Task 3 - Soil Investigation

Soil sampling has been performed at various areas interior to the building and other select site features to provide data on concentrations of tetrachloroethene and its breakdown products. The main focus of the soil investigation was the rear interior of the building near locations of possible former dry cleaning machines or chemical storage, or other unknown areas, etc. Three borings were installed within the rear portion interior of the subject property. (See Figure 6 for soil boring locations). Two additional borings were performed exterior to the rear of the building located down gradient of former and existing dry wells and septic pools. The final boring was conducted in the basement of the dry-cleaner directly down gradient from the former sanitary pool to confirm that the pool was free of contamination. If the pool was contaminated the likeliness for contamination present several feet downgradient would have been highly definitive.

Purpose: The main objective for determining the horizontal and vertical mass of soil contamination is to evaluate the following: the need for soil remediation; the potential for migration of contamination (if present) into groundwater and further evaluation of exposure pathway assessment in order to identify any unacceptable impacts to public health and the environment.

Specifications: Soil borings were installed through concrete, asphalt or other surfaces. BEI used a track mounted portable Geoprobe direct push sampling rig for the collection of soils exterior to the rear of the building. As needed, a portable geoprobe was used for the interior borings and the one boring conducted in the basement. A four foot long soil sampling container (dual tube sampling system) was attached to the drive rods for the collection of continuous undisturbed soil samples. The samples were protected in a PVC liner that prevents the loss of VOCs prior to field analysis. Each sample was opened and logged to document subsurface conditions including soil types and description of non-soil materials, field instrument measurements and depth to groundwater, when encountered. Additional documentation, if present, of soil mottling, presence of odor, vapors and soil discoloration was also accounted for. All soil samples were collected in both re-sealable plastic bags and in labeled soil jars which were stored in an ice packed cooler. Between each sampling event all equipment was decontaminated following the protocol outlined in Section 6.0. Once the soil samples in the sealable bags were screened for total volatile organic compounds by a MiniRae Model 2000 Photo-Ionizer (PID) detector, and a determination was reached as to which sample depths were to undergo laboratory analysis, corresponding sample jars were packed for shipping to a certified laboratory. Upon completion of screening, a minimum of one soil sample with the highest field measurement recorded at each boring or the deepest sample collected from a non-detection location was maintained in an ice packed cooler and transported under strict chain-of-custody to a state ELAP certified laboratory for analysis by EPA Method 8260 - Purgeable Organics by GC/MS plus Tentatively Identified Compounds (TICs) with NYSDEC ASP B deliverables. To determine the vertical extent of any contamination, soil sampling continued until field analyses results indicated either no PID readings above ambient air concentrations (background) or concentrations deemed insignificant in consultation with NYSDEC DER or groundwater was reached. The borings were abandoned with bentonite grout in the boring annular space to grade. All sampling points are accurately located on a site investigation base map.

Laboratory Results:

A total of six soil samples were collected from the site which are depicted in Figure-6. All samples, SB-1-6, did not possess any detections of the targeted dry-cleaning related media. Validated laboratory is attached as Appendix -G.

Task 4 - Groundwater Investigation

A full delineation of groundwater contamination has been conducted dependent upon the field investigation results defined in Task 3 - soil investigation, select borings were continued into the groundwater aquifer, using Geoprobe technology, interior to the building. Specifically, in soil borings that exhibited significantly elevated field PID responses, groundwater samples were collected at up to three vertical depths at selected off-site locations and at the aquifer surface for on-site sampling locations. All samples were collected using a track mounted Geoprobe direct push sampling rig.

A total of ten groundwater locations were sampled, 7 of which samples were obtained from three vertical depths particularly off-site. GW-1-4, GW-6 and GW-7 were collected at multiple depths from 14-16', 20-22' and 30-32'. Each of these samples were retrieved from the fire house parking lot directly down gradient from the subject site to the south. GW-5 was sampled at 16-18', 26-28' and 36-38'. The location of GW-5 is in the sidewalk directly in front of the dry-cleaner down gradient from any suspected contamination that may have migrated from the known source area at the rear of the building. GW-8 was collected at 10-12' south of the dry-cleaning equipment machine at the interior rear of the building. GW-9 was collected outside the rear of the building in the area of the old dry well at a depth of 12-14'. Finally, GW-10 was collected in the basement of the former dry-cleaner down gradient from the existing cesspool at a depth of 12-14' below ground level. GW-8-10 were collected at select soil boring locations where no PID readings were detected in soil samples, therefore, only one groundwater sample depth was required at the surface of the watertable based upon the in-field soil observations.

Purpose: Comparable groundwater data to soil data has been developed to characterize the lateral and vertical extent of any potential contaminant plume present at the subject property and further identify actual or potential impacts to sensitive receptors. The investigation also collected the necessary data to evaluate the feasibility of monitored natural attenuation (MNA), potential cleanup technologies and presumptive remedies. At least one upgradient groundwater sample was collected from either a temporary Geoprobe monitoring well or a piezometer if same is located at a desirable location. Down gradient water samples were collected from existing off-site monitoring wells located south of main street in-between the sidewalk and fire house parking lot for TEA analysis.

Specifications: With the Geoprobe equipped with a mill-slotted well point sampling tool groundwater samples were collected at the upper groundwater zone which varied from 10-14'+ feet bgs. Since tetrachloroethene is a dense non-aqueous fluid, groundwater grab samples were collected from the bottom of the mill slotted screen. This was achieved by lowering the new poly tubing through the probe rods to the bottom of the slotted screen with purging and sampled using a peristaltic pump with a low flow rate (less than 100 ml/minute). Two additional deeper groundwater samples were collected at off-site locations from the depths mentioned earlier in task 4. Please refer to Figures-4 and 6 for all groundwater sampling locations.

Upon completion, the borings were abandoned with a bentonite grout in the boring annular space to grade. Sample collection procedure, quality assurance/quality control and equipment decontamination procedures are discussed in Section 6.0.

BEI used a Hach Model 2500, Odyssey Spectrophotometer for the testing of terminal electron acceptors (TEA) in the groundwater samples collected from the monitoring wells. All of the groundwater samples were maintained per sample handling protocol and delivered to a NYSDOH-ELAP certified laboratory for confirmatory results for analysis by EPA Method 624 - TCL Purgeable Organics plus TICs with NYSDEC ASP

B deliverables. Please see appendix- F for TEA analysis results and appendix-H for Spectrophotometer Standard Operating Procedure (S.O.P).

Laboratory Results:

All ground water samples except GW-3 at 20-22' and GW-6 at 20-22' showed non-detections or concentrations below NYS TOGS groundwater standards for dry-cleaning related chemicals. GW-3 at 20-22' detected PCE at 20 ug/l and GW-6 at 20-22' detected PCE at 17 ug/l. Although these numbers are slightly above groundwater standards, natural attenuation should aid in degrading the minimal existing PCE to below standards or non-detect readings, especially ,based upon the fact that the TEA analysis revealed very good dissolved oxygen levels in off-site monitoring wells along with adequate terminal electron acceptors such as an abundance of sulfates and nitrates . Often times when chemical concentrations in groundwater are below 100 ug/l, the DEC will allow for naturally occurring bio-degradation to remediate what little contamination remains. Validated lab results and summary spread sheets are attached as Appendix-G.

5.3 SVE System Evaluation

Under the supervision of the Suffolk County Department of Health on March 4, 2010 BEI conducted an SVE system evaluation that included the following: influent/emission lab testing on the system, evaluation of back drafting conditions and post-mitigation indoor and outdoor air sampling.(discussed in Tasks- 2a-2b). During the evaluation BEI was able to diagnose a deficiency with the system's operation due to a clogged water knockout drum preventing adequate vacuum on each of the SVE wells. After the system was restored and once again fully operational, BEI decided to re-conduct the system evaluation at a later date. On March 24, 2010 BEI returned to the site to re-evaluate the system under proper operating conditions. All of the same protocol as mentioned above was followed in order to determine if the current SVE system was indeed removing vapors from the source area and at the same time, influencing the sub-slab of the dry-cleaner and the adjoining Dutch Door Reality building. A simple test was performed by drilling a 3/8" hole in the basement of the dry-cleaner and realty office. A magnahelic gauge was then connected and sealed to the hole while

the system was in full operation in order to see if any vacuum influence from the SVE was exhibited in either of the two basement sub-slabs. Test results concluded that no influence was detected in either the dry-cleaner basement or the reality office basement, which was previously expected. The system installed was only designed to remove vapors from the immediate source areas which include the back yard and the basement. The two SVE wells (SVE-1;basement and SVE-2; backyard) were vertically installed to a depth of approximately 9.5' bgs within the suspected zone of contamination. Two influent samples were collected from sample ports SVE-1 and SVE-2 in order to evaluate the level of contamination that is being extracted from each of the source locations. Two 1.8 liter summa canisters were connected to each of the sample ports(SVE-1 and SVE-2) in order to retrieve soil vapor samples for analysis by EPA method TO-15. The laboratory sampling results concluded that SVE-1 detected PCE at 814 ug/m3 and TCE at 5.37 ug/m3. SVE-2 detected PCE at 637 ug/m3 and TCE at 15.5 ug/m3. These results indicate that the SVE system is fully functional and adequately mitigating dry-cleaning related volatiles from the two source areas of the subject property. Previous stack emission samples collected in June 2005 tested PCE in SVE-2 as high as 18,462 ug/m3. Overall stack emissions in 2005 were tested as high as 12,000 ppbv which is effluent emissions on both SVE-1 and SVE-2 combined. It is quite clear that the SVE system has done a fantastic job in mitigating soils and removing soil vapor from the source areas at the site. As mentioned earlier in this report the system will continue to operate removing harmful soil vapor from the subject property until laboratory testing can otherwise prove that residual vapor no longer exists in the hot zones that are being addressed. BEI believes that monitoring and sampling of the system should be conducted on a quarterly basis which would include: PID readings of both SVE-1 and SVE-2 vapor wells including the overall effluent stack, Effluent stack emission sampling via Tedlar bag by EPA-Method TO-17 and a full system inspection to ensure all components of the system are operating up to standard. BEI would report all information to the NYSDEC until the department decides the site has been fully remediated. Appendix-A shows photos of evaluation being conducted.

5.4 Feasability Study

The previous investigation at the subject property did not find any significant source of contamination on or off-site in all the concerning environmental media. BEI has made suggestions in order to address the indoor air at the Dutch Door Realty by use of simple mitigative measures. The fact that no contamination or plume was discovered at the site means that BEI will not be recommending any remedial action. The continued use of the SVE system is the only recommended remedial action which intends to mitigate the remainder of contamination from in and around the source area. Therefore, a feasability study does not seem to be necessary, as the next step of the project should be geared towards soliciting closure.

6.0 QUALITY ASSURANCE / QUALITY CONTROL PROCEDURES

The Quality Assurance/Quality Control Procedures were developed to ensure that suitable and verifiable data results from sampling and analysis are maintained. To achieve this objective, the quality assurance procedures detailed in this section were adopted from NYSDEC, DER "Draft Technical Guidance for Site Investigation and Remediation", December, 2000 (3/26/01) and will be followed for all sampling and laboratory analysis activities.

6.1 Quality Assurance Requirements

A Quality Assurance Officer (QAO) will be assigned to a BEI staff member participating in the investigatory field program. The QAO will be responsible for conducting the investigation and/or remediation and will ensure suitable and verifiable data results from sampling and analysis. The duties of the QAO will follow Appendix 2A of the Quality Assurance Officer Guidelines in the DER. To achieve this objective the quality assurance procedures detailed in this section will be followed for all sampling and laboratory analysis activities. (See BEI Personnel in Appendix C).

6.2 Soil Gas, Sub-Slab, Indoor or Outdoor Air Sample Collection

The sub-slab or soil gas sampling will be conducted using a Geoprobe direct push sampling rig equipped with a Post-Run Tubing system. Once the desired depth is reached, new polyethylene tubing fitted with a PRT adaptor will be inserted down into the rods to the depth of the point holder and attached. The surface of the adapter will be sealed using a quick dry cement. All work will be performed in accordance with the most recent NYSDOH Soil Vapor Migration guidance document. This requires the use of a tracer gas such as helium for all soil gas samples to determine the amount, if any, of air circumvention. A tracer gas will be used with the exception of sub-slab samples, indoor and ambient air samples.

The soil gas will then be extracted through the polyethylene tubing under vacuum using a dedicated stainless steel summa canister. All other indoor or outdoor air samples will be collected using the dedicated pre-set regulator (minimum flow rate less than 200 mL per minute) into a dedicated laboratory-cleaned summa cannister. These samples will be set for sample collection of no less than

a 2 hour sample. The retrieved samples will be submitted for laboratory analysis for TO-14 VOC list constituents by EPA Method TO-15. The soil gas samples will be stored in a dark cooled container and delivered under strict chain-of-custody to a NYSDOH ELAP-certified lab.

6.3 Soil Sample Collection

Soil sampling will be conducted using a Geoprobe direct push sampling rig using a Discreet® sampling device. A new PVC liner is installed into the sampling barrel between each sampling event. The equipment (drive point, barrel, subs and adaptors) is decontaminated before each sample collection following NYSDEC, Sampling Guidelines & Protocols, 1991. The cleaning procedure will include the use of a standard laboratory grade phosphate-free detergent (Alconox) followed by a municipal-supplied tap water rinse. The retrieved samples will be placed in laboratory-supplied analyte-free containers. The samples will be stored in a cooler containing ice to maintain a temperature of 4° Celsius and delivered under strict chain-of-custody to a New York State Department of Health (NYSDOH) ELAP-certified laboratory providing Category B deliverables. All generated soil cuttings will be maintained in a DOT approved 55 gallon drum or retained on-site with the permission of the NYSDEC Case Manager upon field screening. Upon completion of the project a soil sample from the drum(s) will be analyzed for disposal by an NYSDOH-ELAP certified laboratory; disposition will be based upon these sample results.

To ensure quality control, one (1) field blank will be collected per 20 samples by rinsing the field equipment with organic-free water and submitting the rinse water in standard sample containers to a certified laboratory for analysis by EPA Method 8260. A Matrix Spike/Matrix Spike Duplicate (MS/MSD) will also be collected at a rate of one per twenty soil samples. The MS/MSD serves as a duplicate soil and groundwater sample for NYSDEC ASP-B deliverables. No trip blanks are required to be collected for soil samples for NYSDEC ASP-B deliverables.

6.4 Groundwater Sample Collection

Groundwater sampling will be conducted using a Geoprobe direct push sampling rig equipped with a mill-slotted well point sampling tool. Once the desired depth is reached, new polyethylene tubing fitted with a Tubing Check Valve System is inserted down into the rod to the depth of the slotted

point. In instances of sampling of a piezometer or existing well, new polyethylene tubing fitted with a Tubing Check Valve System will be used in conjunction with a peristaltic low-flow pump with a flow range of 60 ml/minute to 3 liters/minute after purging 3 to 5 times the approximate volume of the annular volume. Since tetrachloroethene is a dense non-aqueous fluid, groundwater grab samples will be collected from the bottom of the mill slotted screen. This will be achieved by lowering the new poly tubing through the probe rods to the bottom of the slotted screen with purging and sampled using a peristaltic pump with a flow range of 60 ml/minute to 3 liters/minute. The groundwater is then extracted through the polyethylene tubing by a peristaltic pump until 3 to 5 times the approximate volume in the probe rod has been purged. The retrieved samples will be placed in a laboratory supplied analyte free 40 ml vials. The samples will be stored in a cooler containing ice to maintain a temperature of 4° Celsius and delivered under strict chain-of-custody to a NYSDOH ELAP-certified laboratory providing Category B deliverables. Purged development water will be contained in a DOT approved 55 gallon drum. Upon completion of the project a liquid sample from the drum(s) will be analyzed for disposal by an NYSDOH ELAP-certified laboratory.

The equipment (drive point, well point, subs and adaptors) will be decontaminated before each sample collection following NYSDEC, Sampling Guidelines & Protocols, 1991. The cleaning procedure will include the use of a standard laboratory grade phosphate-free detergent (Alconox) followed by a municipal supplied tap water rinse.

To ensure quality control, one (1) field blank will be collected per 20 samples by rinsing the field equipment with organic-free water and submitting the rinse water in standard sample containers to a certified laboratory for analysis by EPA Method 8260.One trip blank sample will be collected per sampling day and will be analyzed for the same parameters as the field blank sample.

6.5 Laboratory Analysis Requirements

6.5.1 *Certification and Data Acceptance*

Laboratories performing analysis will conform to the following:

- For the analysis of any aqueous samples for a parameter or category of parameters for which laboratory certification exists pursuant to NYSDOH ELAP Certification, the laboratory will be certified for that specific parameter or category of parameters pursuant to NYSDOH ELAP Certification.
- For the analysis of non-aqueous samples using specific analytical methods contained in the EPA Publication SW-846, "Test Methods for Evaluating Solid Waste", third edition, update IIF, January 1995, as amended and supplemented, for a parameter or category of parameters for which certification exists pursuant to NYSDOH ELAP Certification, the laboratory will be certified for that specific parameter or category of parameters pursuant to NYSDOH ELAP Certification or, at a minimum, have obtained temporary approval to analyze regulatory samples pursuant to NYSDOH ELAP Certification.
    - For analysis of samples where Category B deliverables are required, NYSDOH ELAP CLP certification is required for the category of parameters to be analyzed for.

The DER will reject analytical data from any laboratory for which its certification for the parameter analyzed for has expired, decertified and/or suspended.

6.5.2 *Analytical Methods*

Except as provided below, analytical methods used will have been published in the most current NYSDEC Analytical Services Protocol (ASP) (e.g., ASP B). Where possible, the method selected must achieve a detection limit that is below the lowest standard or guidance value that applies to the media being sampled/analyzed for the contaminants that can reasonably be expected to be found.

If an analytical method as described above does not exist for a specific contaminant or parameter within a specific matrix, or if an analytical method as described above for a given contaminant or parameter is demonstrated to be inappropriate for the matrix analyzed, or the method cannot achieve a detection limit below the applicable

standard or guidance value, then the person responsible for conducting the investigation and/or remediation will:

- Select an appropriate method from another source;
- Document the rationale for selecting the method; and
- Develop a standard operating procedure for the method, including a quality control section.
- Exception: it is recognized that the analytical methods for semi-volatile compounds in soil frequently can not achieve detection limits below SCG levels. In these cases, method 8270 is acceptable irrespective of the detection limit.

  Methods acceptable to the DER will be utilized for the determination of the presence of free product in soil or water. Such methods include, without limitation, visual identification of sheens or other visible product, measurable thickness of product on the water table, the use of field instruments, ultraviolet fluorescence, soil-water agitation, centrifuging and hydrophobic dye testing.

- For contaminants that in their pure phase and at standard state conditions (20° Celsius to 25° Celsius and one atmosphere pressure) have densities greater than water, free product will be considered to be present if the contaminant is detected in groundwater at concentrations equal to or greater than one percent of the water solubility of the contaminant, if groundwater contains only that organic contaminant. If a mixture of such contaminants is present, then the effective water solubility of the contaminant should be estimated for this determination.

Gas chromatography methods with a mass spectrometer detector system should be used for analysis of semi-volatile contaminants (exclusive of herbicides, pesticides, and PCBs). Other chromatography methods (liquid chromatography, HPLC) with appropriate detector systems should be used for the analysis of organic analytes

amenable only to non-gas chromatographic methods. A mass spectrometer detector system is not required if the site has already been characterized to the extent that all contaminants are known.

6.5.3 *Specific Requirements*

Laboratories will follow all quality assurance/quality control procedures specified in the analytical methods.

Sampling methods, sample preservation requirements, sample handling times, decontamination procedure for field equipment and frequency for field blanks, field duplicates and trip blanks should conform to the NYSDEC Analytical Services Protocol (ASP), unless an alternate method/procedure has been approved.

Results from analysis of soils and sediments will be reported on a dry weight basis, except for those results required by the method to be otherwise reported.

6.5.4 *Sample Matrix Cleanup*

Acceptable sample matrix cleanup methods include, without limitation, those methods contained in the EPA Publication SW846 or the EPA "Contract Laboratory Statement of Work for Organics Analysis, Multi-Media, Multi-Concentration" in effect as of the date of sample analysis.

Sample matrix cleanup methods will be performed if:

- Petroleum contaminated soils, sediments or other solids are analyzed for semi-volatile organics and the method detection limits are elevated above the applicable remediation standard because of matrix interference;
- Gas chromatographic peaks are not adequately separated due to matrix interference. A peak will be considered inadequately separated when a rise in baseline or extraneous peaks interfere with:

- (1) the instrumental ability to correctly identify compounds present (including internal standards and surrogates), and/or;
  (2) the integration of peak area and subsequent quantization;
- So specified by the analytical method; or
- Matrix interferences prevent accurate quantization and/or identification of target compounds.

6.5.5 *Laboratory Data Deliverables*

Unless otherwise approved in advance by the DER, laboratory data deliverables should be as follows.

- Category B laboratory data deliverables as defined in the analytical services Protocol (ASP) should be submitted for initial and/or confirmatory (post remediation) samples and final delineation samples for all sites. In addition, a *Data Usability Summary Report* will be prepared by a party independent from the laboratory performing the analysis.

- Analytical results without all quality control documentation and raw data may be provided for all intermediate sampling events and for all long-term groundwater monitoring samples where the site has DER oversight, provided the following information is submitted:
  (1) A cover page, including facility name and address, laboratory name and address, laboratory certification number, if applicable, date of analytical report preparation and signature of laboratory director;
  (2) A listing of all field sample identification numbers and corresponding laboratory sample identification numbers;
  (3) A listing of all analytical methods used, including matrix cleanup method;
  (4) The method detection limit and practical quantization level for each analyte for each sample analysis;
  (5) All sample results including date of analysis;
  (6) All method blank results; and

(7) All chain of custody documentation.

- Upon written request, the DER may require that deliverables package be upgraded to a "Category B" data deliverables package for any sample analysis. If the backup documentation is not available to generate "Category B" deliverables or that the lab is not qualified to generate "Category B" deliverables (not ELAP-CLP lab), reanalysis or resampling and analysis is an option.
- Identify any analytical cleanup methods, where applicable.

6.5.6 *Analytical Parameter Requirements*

The following requirements apply for selection of analytical parameters:

- Samples from each area of concern should be analyzed for contaminants which may be present.
- Analysis of Target Compound List plus 30/Target Analyte List (TCL+30/TAL), petroleum hydrocarbons and pH should be conducted when contaminants in an area are unknown or not well documented, although a limited contaminant list may be used subject to the DER's approval.

6.5.7 *Petroleum Storage and Discharge Areas*

Sample analysis should be conducted pursuant to the requirements of STARS #1" Petroleum Contaminated Soil Guidance Policy." Samples taken in non-petroleum storage and discharge areas should be analyzed for the stored material. Analysis should be conducted using any gas chromatography method by a laboratory that is certified pursuant to NYSDOH ELAP for the category of parameters being analyzed for. Laboratory deliverables should be as specified in the method listed above.

6.5.8 *If Air Sampling is Required*

The quality assurance procedures specified in the method approved by the DER for the sampling should be followed. Quality assurance procedures should follow the guidelines or direction of the NYSDOH.

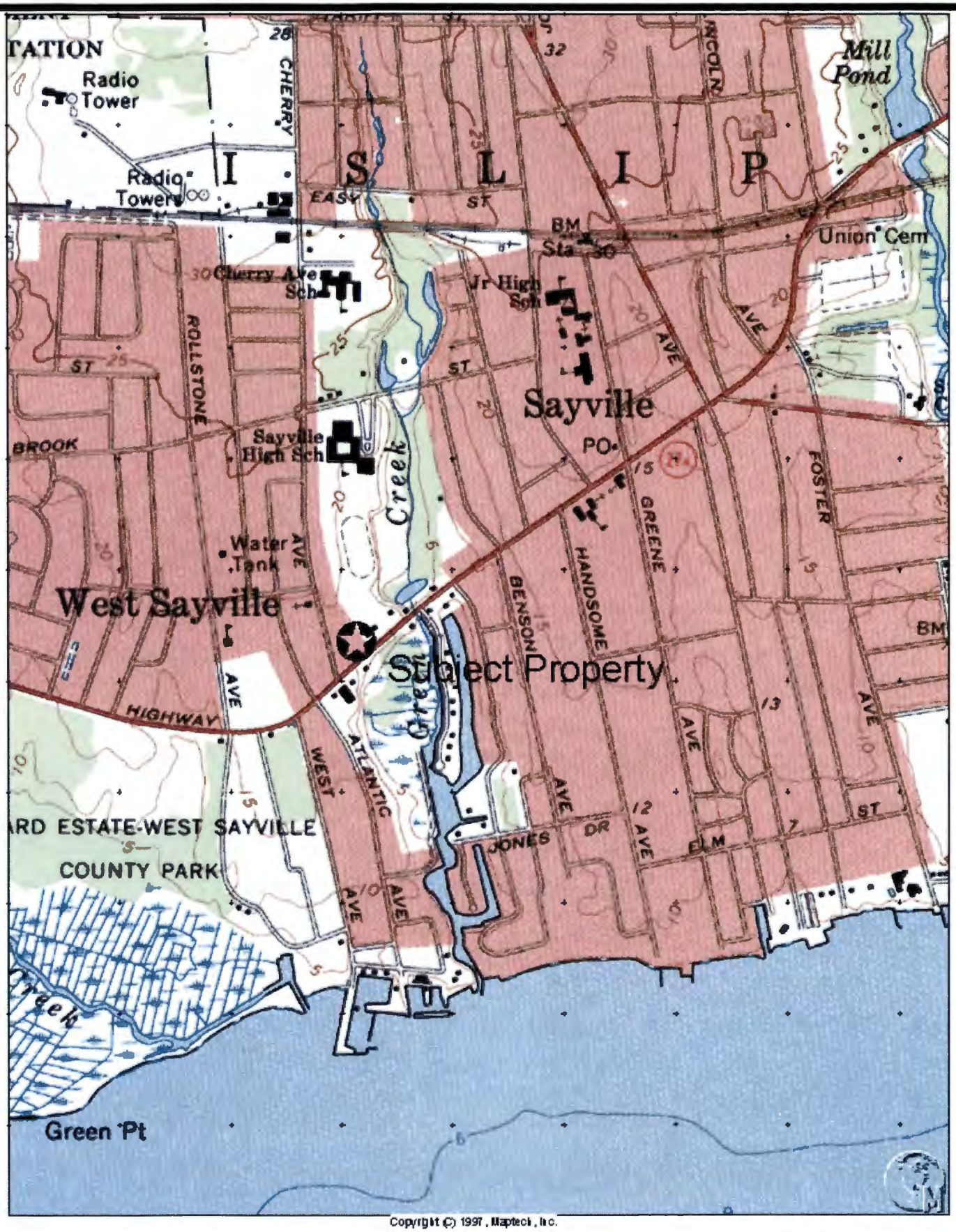
6.5.9 *Data Useability Analysis*

All samples submitted to a NYSDOH-ELAP certified laboratory for completion of a NYSDEC ASP B package will also be subjected to a *Data Useability Analysis* by a third party validator before use in the final investigation report and/or submission to the NYSDEC.

7.0 HEALTH AND SAFETY PLAN

A site specific Health and Safety Plan has been developed and is attached as Appendix E. The plan will be adhered to by all personnel involved in the investigation and/or remediation. Incorporated into the plan is a section on community health and safety with measures to ensure the public living and working near the site, including facility employees or visitors, are protected from exposure to site contaminants during intrusive activities or on-site treatment actions.

FIGURES

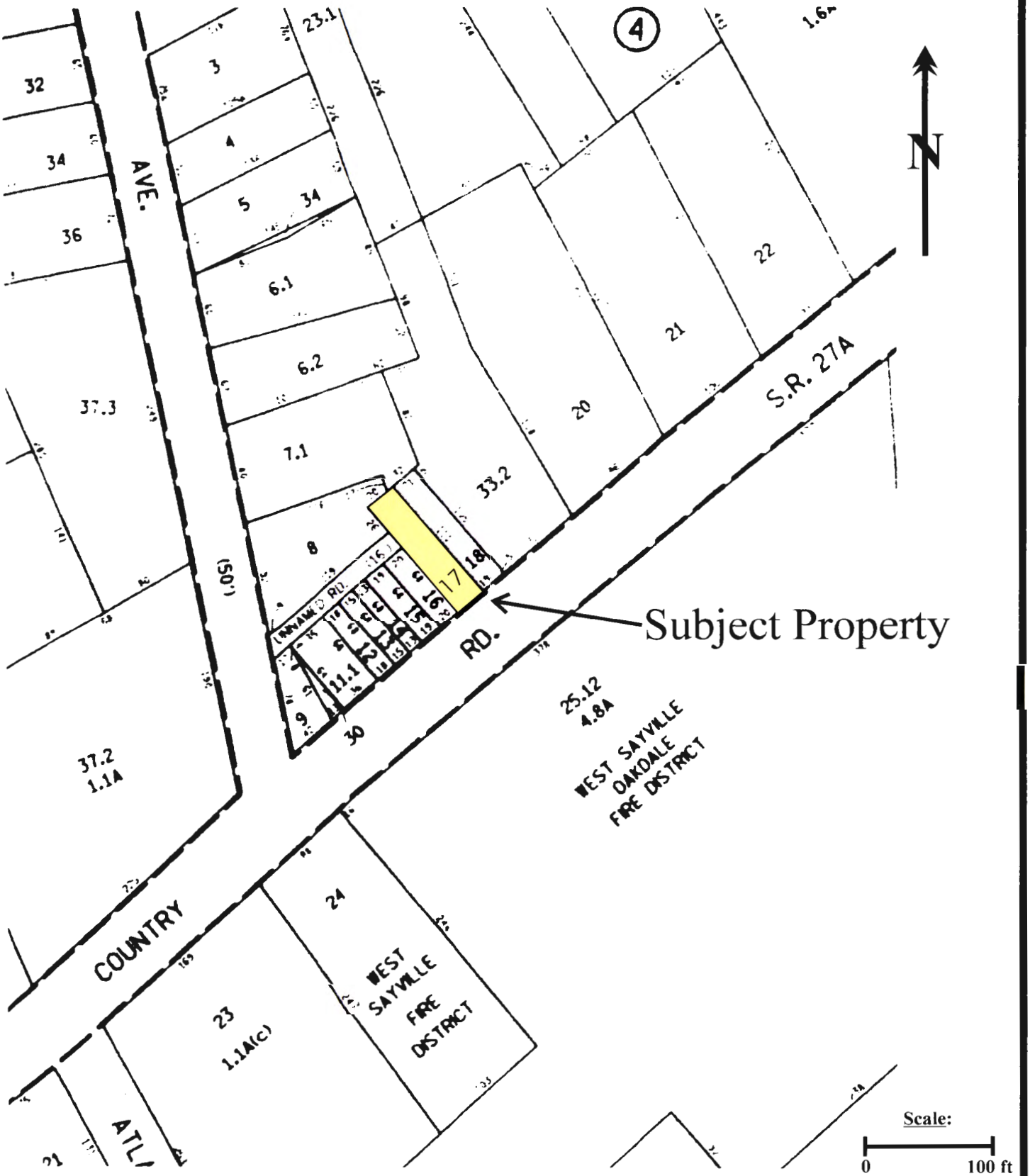


Source: USGS Topographic Map - Sayville, NY Quadrangle

Figure 1 - Site Location -USGS Topographic Map

West Sayville Dry Cleaners
61 West Main Street
West Sayville, New York
NYSDEC IHWDS Site No. 1-52-200

BEI BERNINGER ENVIRONMENTAL INC.
groundwater consultants and geologists
90-B Knickerbocker Avenue
Bohemia, New York 11716
Phone # (631) 589-6521
Fax #(631) 589-6528



Source: Excerpt of County of Suffolk Real Property Tax Service Agency Tax Map - District No. 0500 - Section No. 407 Property Map

Figure 2 - Suffolk County Tax Map

West Sayville Dry Cleaners
61 West Main Street
West Sayville, New York
NYSDEC IHWDS Site No. 1-52-200

BERNINGER ENVIRONMENTAL INC.
groundwater consultants and geologists
99-B Knickerbocker Avenue
Bohemia, New York 11716
Phone # (631) 589-6521
Fax #(631) 589-6528

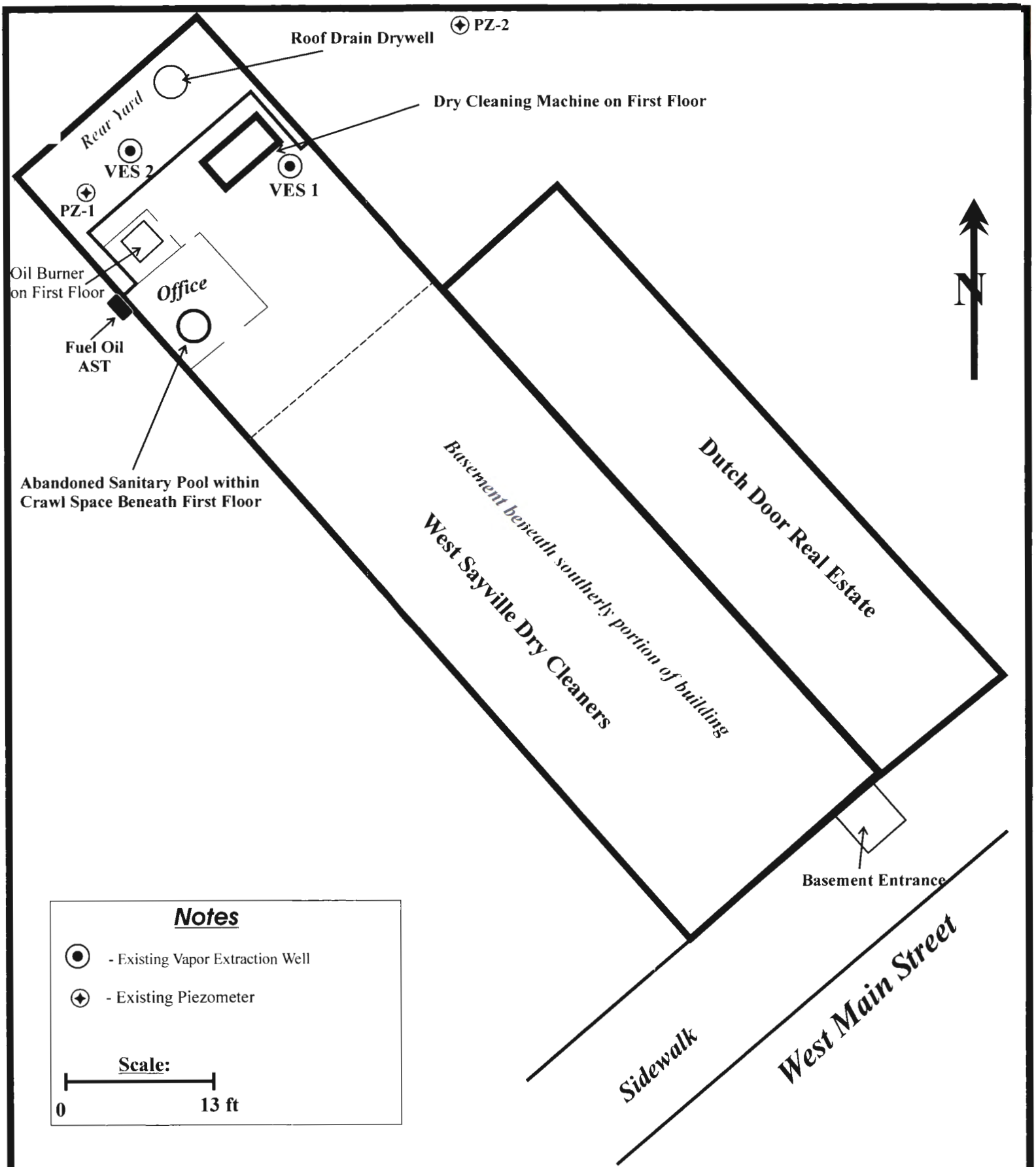


Figure 3a - Site Plan with Interior Details

West Sayville Dry Cleaners
61 West Main Street
West Sayville, New York
NYSDEC IHWDS Site No. 1-52-200

BERNINGER ENVIRONMENTAL INC.
groundwater consultants and geologists
90-B Knickerbocker Avenue
Bohemia, New York 11716
Phone # (631) 589-6521
Fax #(631) 589-6528

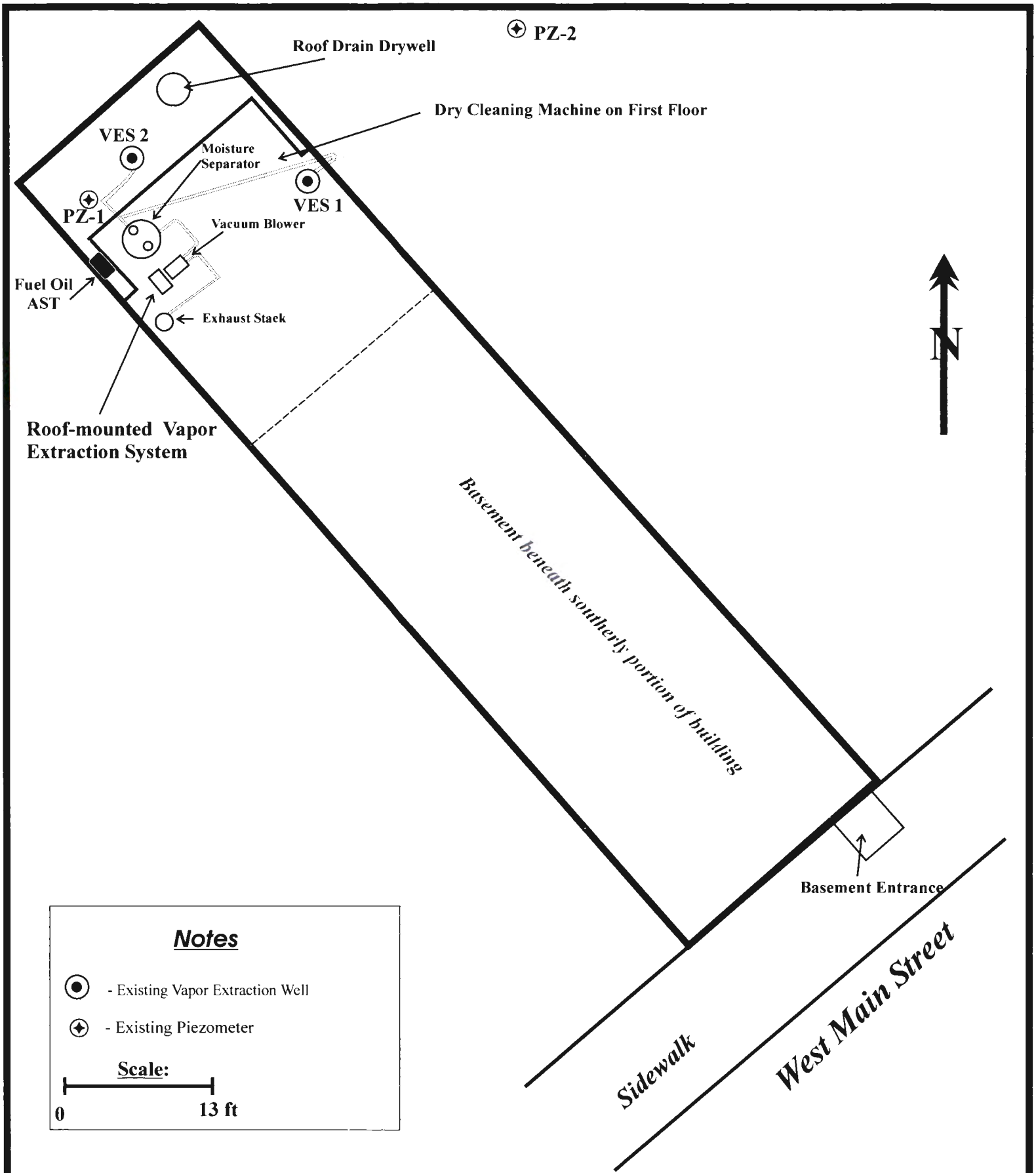


Figure 3b - Site Plan with Exterior Details

West Sayville Dry Cleaners
61 West Main Street
West Sayville, New York
NYSDEC IHWDS Site No. 1-52-200

BERNINGER ENVIRONMENTAL INC.
groundwater consultants and geologists
90-B Knickerbocker Avenue
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Phone # (631) 589-6521
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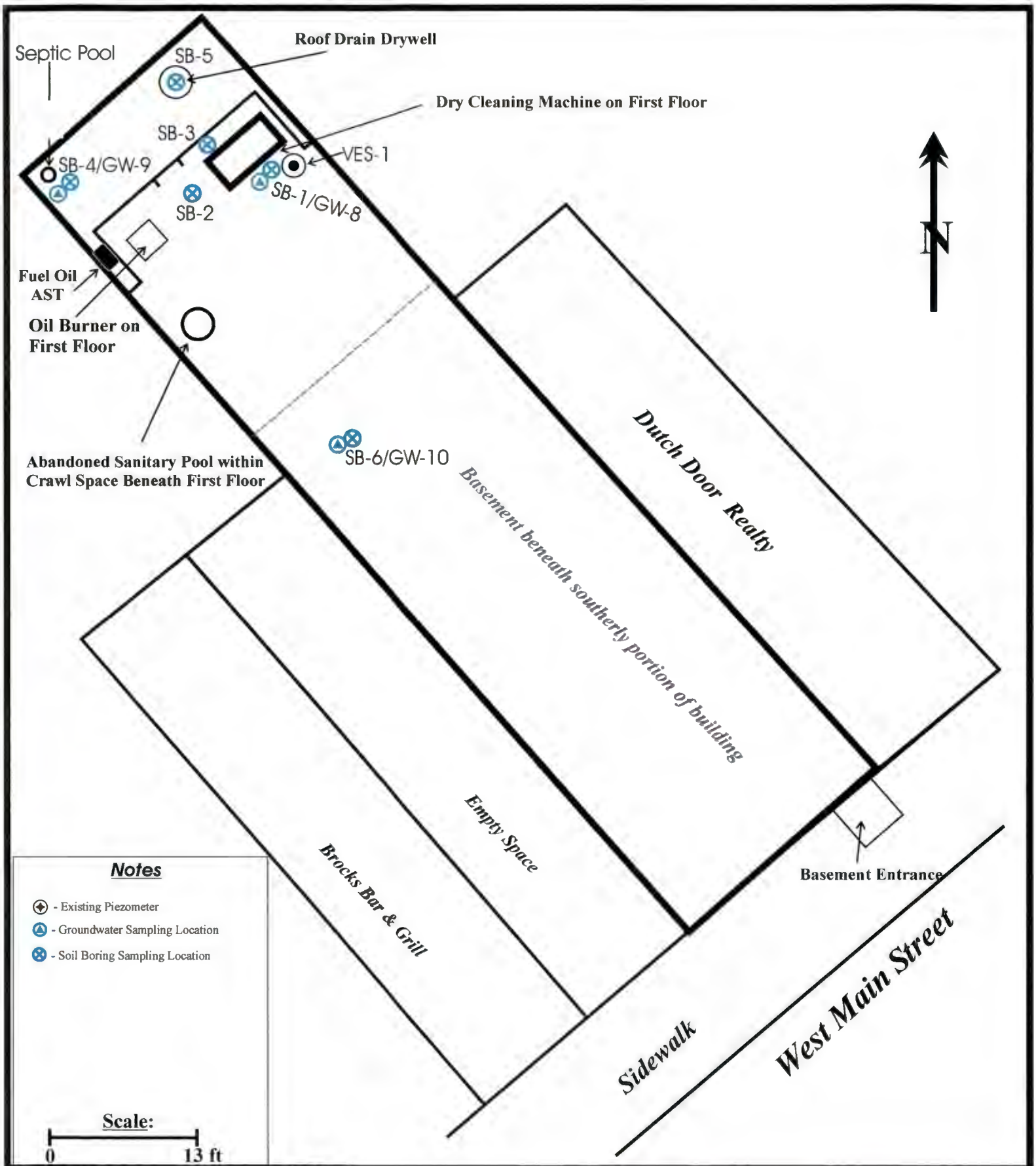


Figure 6 -Site Plan with Groundwater and Soil Sampling Locations

West Sayville Dry Cleaners
61 West Main Street
West Sayville, New York
NYSDEC IHWDS Site No. 1-52-200

BERNINGER ENVIRONMENTAL INC.
groundwater consultants and geologists
90-B Knickerbocker Avenue
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Figure 4- Site Plan with Off-Site Groundwater Sampling Locations and Off-Site Wells

West Sayville Dry Cleaners
61 West Main Street
West Sayville, New York
NYSDEC IHWDS Site No. 1-52-200

BERNINGER ENVIRONMENTAL INC.
groundwater consultants and geologists
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Figure 5- Site Plan with Indoor Air Quality test Locations Outdoor Air and Soil Gas Locations

West Sayville Dry Cleaners
61 West Main Street
West Sayville, New York
NYSDEC IHWDS Site No. 1-52-200

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groundwater consultants and geologists
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Groundwater Gradient Map
Well Locations
Figure-7

West Sayville Dry Cleaners
61 West Main Street
West Sayville, New York
NYSDEC IHWDS Site No. 1-52-200

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groundwater consultants and geologists
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DEC
Env. Mgmt
(631) 444-0200

APPENDIX A

Photographic Log





Sub-slab/Indoor Air Testing West Sayville Fire House March 2010





Sub-slab/Indoor Air Testing Dutch Door Realty





Sub-slab/Indoor Air Testing Sayville Running Co.





Sub-slab/Indoor Air Testing Brock's Bar and Grill





Effluent Stack Sampling with Summa Canisters





Effluent Stack Sampling with Summa Canisters





Effluent Stack Sampling with Summa Canisters





Sub-slab Influence Testing with Magnahelic Gauge





Sub-slab Influence Testing with Magnahelic Gauge





Pictures above; SVE system Evaluation





On-site Soil and Groundwater Sampling





On-site Soil and Groundwater Sampling





Off-site Soil and Groundwater Sampling





On-site Soil and Groundwater Sampling





Off-site Groundwater Sampling at West Sayville Fire House Parking





Off-site Groundwater Sampling at West Sayville Fire House Parking





Off-site Groundwater Sampling at West Sayville Fire House Parking









Off-site Groundwater Sampling at West Sayville Fire House Parking





Off-site Groundwater Sampling at West Sayville Fire House Parking



Off-site Groundwater Sampling at West Sayville Fire House Parking (cont'd)



Soil Gas Sampling at Brocks Bar Patio

APPENDIX B

Air Quality Log Sheets

Berninger Environmental Inc.
groundwater consultants and geologists
90-B Knickerbocker Avenue
Bohemia, New York 11716
Phone # (631) 589-6521
Fax # (631) 589-6528

Indoor Air Sample Log Sheet

SAMPLE IDENTIFICATION	OA-1 (Brocks Bar Patio)
DATE AND TIME OF SAMPLE COLLECTION	3/04/10
SAMPLING HEIGHT	4'
IDENTITY OF SAMPLERS	Butch/Justin
SAMPLING METHODS AND DEVICES	TO-15
DEPENDING UPON THE METHOD, VOLUME OF AIR SAMPLED	6Liter
IF CANISTERS ARE USED, VACUUM OF CANISTERS BEFORE AND AFTER SAMPLES COLLECTED	-4 in/Hg

SAMPLE IDENTIFICATION	Dutch Door Realty DDRIA-10'
DATE AND TIME OF SAMPLE COLLECTION	3/04/10
SAMPLING HEIGHT	4'
IDENTITY OF SAMPLERS	Butch/Justin
SAMPLING METHODS AND DEVICES	TO-15
DEPENDING UPON THE METHOD, VOLUME OF AIR SAMPLED	6Liter
IF CANISTERS ARE USED, VACUUM OF CANISTERS BEFORE AND AFTER SAMPLES COLLECTED	-4 in/Hg

SAMPLE IDENTIFICATION	Dutch Door Realty DDRSS-10'
DATE AND TIME OF SAMPLE COLLECTION	3/04/10
SAMPLING HEIGHT	sub-slab
IDENTITY OF SAMPLERS	Butch/Justin
SAMPLING METHODS AND DEVICES	TO-15
DEPENDING UPON THE METHOD, VOLUME OF AIR SAMPLED	6Liter
IF CANISTERS ARE USED, VACUUM OF CANISTERS BEFORE AND AFTER SAMPLES COLLECTED	-4 in/Hg

Berninger Environmental Inc.
groundwater consultants and geologists
90-B Knickerbocker Avenue
Bohemia, New York 11716
Phone # (631) 589-6521
Fax # (631) 589-6528

Indoor Air Sample Log Sheet

SAMPLE IDENTIFICATION	Sayville Running Comp. SRCIA-10'
DATE AND TIME OF SAMPLE COLLECTION	3/04/10
SAMPLING HEIGHT	4'
IDENTITY OF SAMPLERS	Justin/Butch
SAMPLING METHODS AND DEVICES	TO-15
DEPENDING UPON THE METHOD, VOLUME OF AIR SAMPLED	6 L
IF CANISTERS ARE USED, VACUUM OF CANISTERS BEFORE AND AFTER SAMPLES COLLECTED	-5 in/Hg

SAMPLE IDENTIFICATION	Sayville Running Comp. SRCSS-10'
DATE AND TIME OF SAMPLE COLLECTION	3/04/10
SAMPLING HEIGHT	sub-slab
IDENTITY OF SAMPLERS	Justin/Butch
SAMPLING METHODS AND DEVICES	TO-15
DEPENDING UPON THE METHOD, VOLUME OF AIR SAMPLED	6L
IF CANISTERS ARE USED, VACUUM OF CANISTERS BEFORE AND AFTER SAMPLES COLLECTED	-1 in/Hg

SAMPLE IDENTIFICATION	Brock's Bar and Grill BBGIA-10'
DATE AND TIME OF SAMPLE COLLECTION	3/04/10
SAMPLING HEIGHT	4'
IDENTITY OF SAMPLERS	Justin/Butch
SAMPLING METHODS AND DEVICES	TO-15
DEPENDING UPON THE METHOD, VOLUME OF AIR SAMPLED	6L
IF CANISTERS ARE USED, VACUUM OF CANISTERS BEFORE AND AFTER SAMPLES COLLECTED	-4 in/Hg

Berninger Environmental Inc.
groundwater consultants and geologists
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Bohemia, New York 11716
Phone # (631) 589-6521
Fax # (631) 589-6528

Indoor Air Sample Log Sheet

SAMPLE IDENTIFICATION	Brock's Bar and Grill BBGSS-10'
DATE AND TIME OF SAMPLE COLLECTION	3/04/10
SAMPLING HEIGHT	sub-slab
IDENTITY OF SAMPLERS	Justin/Butch
SAMPLING METHODS AND DEVICES	TO-15
DEPENDING UPON THE METHOD, VOLUME OF AIR SAMPLED	6L
IF CANISTERS ARE USED, VACUUM OF CANISTERS BEFORE AND AFTER SAMPLES COLLECTED	-4 in/Hg

SAMPLE IDENTIFICATION	West Sayville Fire House FireIA-10'
DATE AND TIME OF SAMPLE COLLECTION	3/25/10
SAMPLING HEIGHT	5'
IDENTITY OF SAMPLERS	Justin/Butch
SAMPLING METHODS AND DEVICES	TO-15
DEPENDING UPON THE METHOD, VOLUME OF AIR SAMPLED	6L
IF CANISTERS ARE USED, VACUUM OF CANISTERS BEFORE AND AFTER SAMPLES COLLECTED	-4 in/Hg

SAMPLE IDENTIFICATION	West Sayville Fire House FireSS-10'
DATE AND TIME OF SAMPLE COLLECTION	3/25/10
SAMPLING HEIGHT	sub-slab
IDENTITY OF SAMPLERS	Justin/Butch
SAMPLING METHODS AND DEVICES	TO-15
DEPENDING UPON THE METHOD, VOLUME OF AIR SAMPLED	6L
IF CANISTERS ARE USED, VACUUM OF CANISTERS BEFORE AND AFTER SAMPLES COLLECTED	-3 in/Hg

Berninger Environmental Inc.
groundwater consultants and geologists
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Bohemia, New York 11716
Phone # (631) 589-6521
Fax # (631) 589-6528

Soil Gas Sample Log Sheet

SAMPLE IDENTIFICATION	SGPATIO-10' (Brock's Bar Patio)
DATE AND TIME OF SAMPLE COLLECTION	3/04/10
SAMPLING DEPTH	4'
IDENTITY OF SAMPLERS	Justin/Butch
SAMPLING METHODS AND DEVICES	TO-15 Soil Gas
SOIL VAPOR PURGE VOLUMES	6L
VOLUME OF SOIL VAPOR EXTRACTED	27 in/Hg
IF CANISTERS USED, VACUUM OF CANISTERS BEFORE AND AFTER SAMPLES COLLECTED	st: -29 end: -2
APPARENT MOISTURE CONTENT (DRY, MOIST, SATURATED, ETC.) OF THE SAMPLING ZONE	Dry
PID READING AFTER SAMPLING	0.0

APPENDIX C

Air Quality DOH Questionnaires

Dutch Door Realty

OSR – 3

NEW YORK STATE DEPARTMENT OF HEALTH
INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY
CENTER FOR ENVIRONMENTAL HEALTH

This form must be completed for each residence involved in indoor air testing.

Preparer's Name Justin Halpin Date/Time Prepared 3/4/10

Preparer's Affiliation Beninger Envt. Inc Phone No. 631 589 6521

Purpose of Investigation IAQ

1. OCCUPANT:

Interviewed: Y / N

Last Name: Udell First Name: Pam

Address: 59 main St. W. Sayville, NY

County: Suffolk

Home Phone: _____ Office Phone: _____

Number of Occupants/persons at this location _____ Age of Occupants _____

2. OWNER OR LANDLORD: (Check if same as occupant ___)

Interviewed: Y / N

Last Name: _____ First Name: _____

Address: _____

County: _____

Home Phone: _____ Office Phone: _____

3. BUILDING CHARACTERISTICS

Type of Building: (Circle appropriate response)

Residential	Schcol	Commercial/Multi-use
Industrial	Church	Other: _____

If the property is residential, type? (Circle appropriate response)

Ranch	2-Family	3-Family
Raised Ranch	Split Level	Colonial
Cape Cod	Contemporary	Mobile Home
Duplex	Apartment House	Townhouses/Condos
Modular	Log Home	Other: 1 floor

If multiple units, how many? _____

If the property is commercial, type?

Business Type(s) Real state

Does it include residences (i.e., multi-use)? Y / N If yes, how many? _____

Other characteristics:

Number of floors 1 Building age 50 years

Is the building insulated? (Y) / N How air tight? Tight / (Average) / Not Tight

4. AIRFLOW

Use air current tubes or tracer smoke to evaluate airflow patterns and qualitatively describe:

Airflow between floors normal

Airflow near source normal

Outdoor air infiltration normal

Infiltration into air ducts normal

5. **BASEMENT AND CONSTRUCTION CHARACTERISTICS** (Circle all that apply)

a. Above grade construction:	wood frame	concrete	stone	brick Block
b. Basement type:	full	crawlspace	slab	other _____
c. Basement floor:	concrete	dirt	stone	other _____
d. Basement floor:	uncovered	covered	covered with _____	
e. Concrete floor:	unsealed	sealed	sealed with _____	
f. Foundation walls:	poured	block	stone	other _____
g. Foundation walls:	unsealed	sealed	sealed with _____	
h. The basement is:	wet	damp	dry	moldy
i. The basement is:	finished	unfinished	partially finished	
j. Sump present?	Y / N			
k. Water in sump?	Y / N / not applicable			

Basement/Lowest level depth below grade: 7 (feet)

Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, drains)

Minor Cracks in basement Floor.

6. **HEATING, VENTING and AIR CONDITIONING** (Circle all that apply)

Type of heating system(s) used in this building: (circle all that apply – note primary)

Hot air circulation	Heat pump	Hot water baseboard	
Space Heaters	Stream radiation	Radiant floor	
Electric baseboard	Wood stove	Outdoor wood boiler	Other _____

The primary type of fuel used is:

Natural Gas	Fuel Oil	Kerosene
Electric	Propane	Solar
Wood	Coal	

Domestic hot water tank fueled by: Gas

Boiler/furnace located in: Basement Outdoors Main Floor Other_____

Air conditioning: (Central Air) Window units Open Windows None

Are there air distribution ducts present? (Y) / N

Describe the supply and cold air return ductwork, and its condition where visible, including whether there is a cold air return and the tightness of duct joints. Indicate the locations on the floor plan diagram.

light

7. OCCUPANCY

Is basement/lowest level occupied? Full-time (Occasionally) Seldom Almost Never

Level	General Use of Each Floor (e.g., familyroom, bedroom, laundry, workshop, storage)
Basement	None
1st Floor	Real estate office
2nd Floor	
3rd Floor	
4th Floor	

8. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY

a. Is there an attached garage? Y (N)

b. Does the garage have a separate heating unit? Y (N) NA

c. Are petroleum-powered machines or vehicles stored in the garage (e.g., lawnmower, atv, car) Y (N) NA Please specify_____

d. Has the building ever had a fire? Y (N) When?_____

e. Is a kerosene or unvented gas space heater present? Y / (N) Where? _____

f. Is there a workshop or hobby/craft area? Y / (N) Where & Type? _____

g. Is there smoking in the building? Y / (N) How frequently? _____

h. Have cleaning products been used recently? Y / (N) When & Type? _____

i. **Have cosmetic products been used recently?** Y / N When & Type? _____

j. **Has painting/staining been done in the last 6 months?** Y (N) Where & When? _____

k. **Is there new carpet, drapes or other textiles?** Y (N) Where & When? _____

l. **Have air fresheners been used recently?** Y (N) When & Type? _____

m. **Is there a kitchen exhaust fan?** Y (N) If yes, where vented? _____

n. **Is there a bathroom exhaust fan?** (Y) N If yes, where vented? 2 N/A

o. **Is there a clothes dryer?** Y / (N) If yes, is it vented outside? Y / N

p. **Has there been a pesticide application?** Y (N) When & Type? _____

Are there odors in the building? Y (N)
If yes, please describe: _____

Do any of the building occupants use solvents at work? Y (N)
(e.g., chemical manufacturing or laboratory, auto mechanic or auto body shop, painting, fuel oil delivery, boiler mechanic, pesticide application, cosmetologist

If yes, what types of solvents are used? _____

If yes, are their clothes washed at work? Y / (N)

Do any of the building occupants regularly use or work at a dry-cleaning service? (Circle appropriate response)

Yes, use dry-cleaning regularly (weekly)
Yes, use dry-cleaning infrequently (monthly or less)
Yes, work at a dry-cleaning service
(No)
Unknown

Is there a radon mitigation system for the building/structure? Y / N **Date of Installation:** _____
Is the system active or passive? Active/Passive

9. WATER AND SEWAGE

Water Supply:	(Public Water)	Drilled Well	Driven Well	Dug Well	Other: _____
Sewage Disposal:	Public Sewer	(Septic Tank)	Leach Field	Dry Well	Other: _____

10. RELOCATION INFORMATION (for oil spill residential emergency)

a. **Provide reasons why relocation is recommended:** _____

b. **Residents choose to:** remain in home relocate to friends/family relocate to hotel/motel

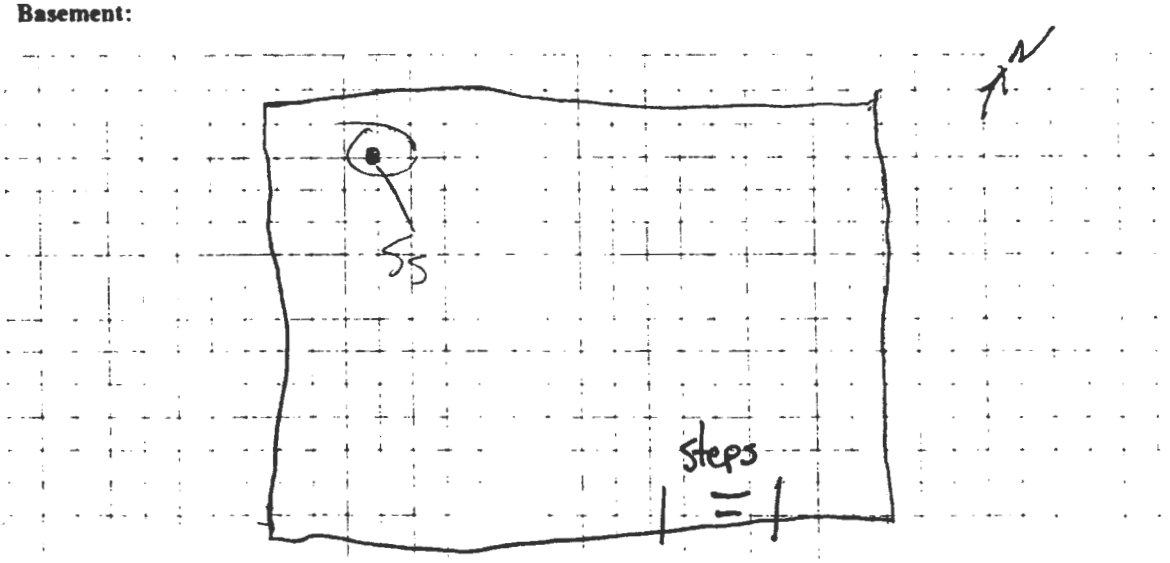
c. Responsibility for costs associated with reimbursement explained? Y / N

d. Relocation package provided and explained to residents? Y / N

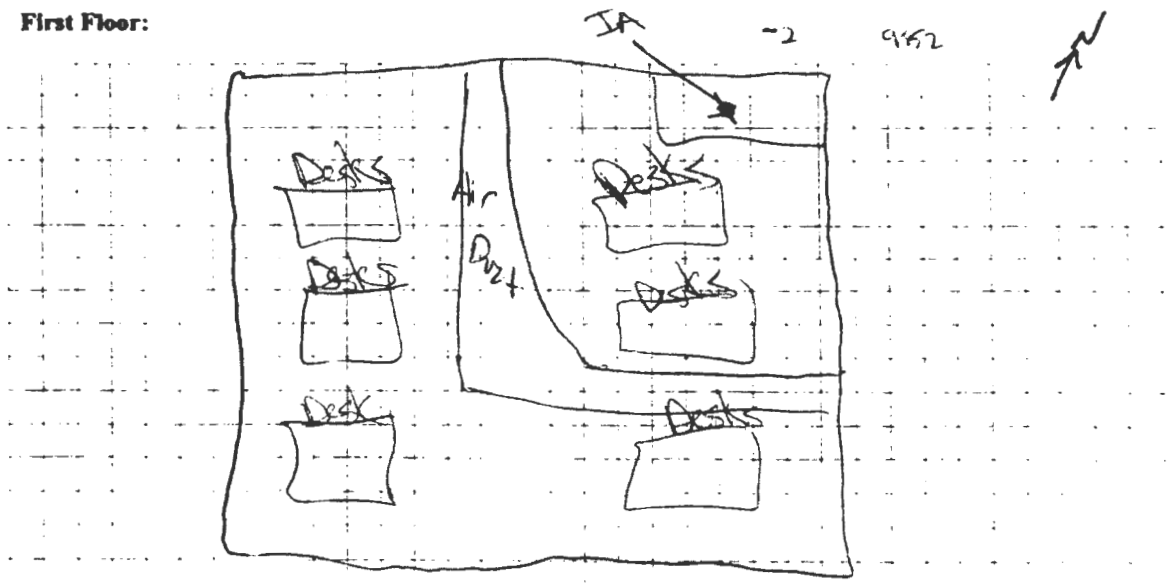
11. FLOOR PLANS

Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.

Basement:



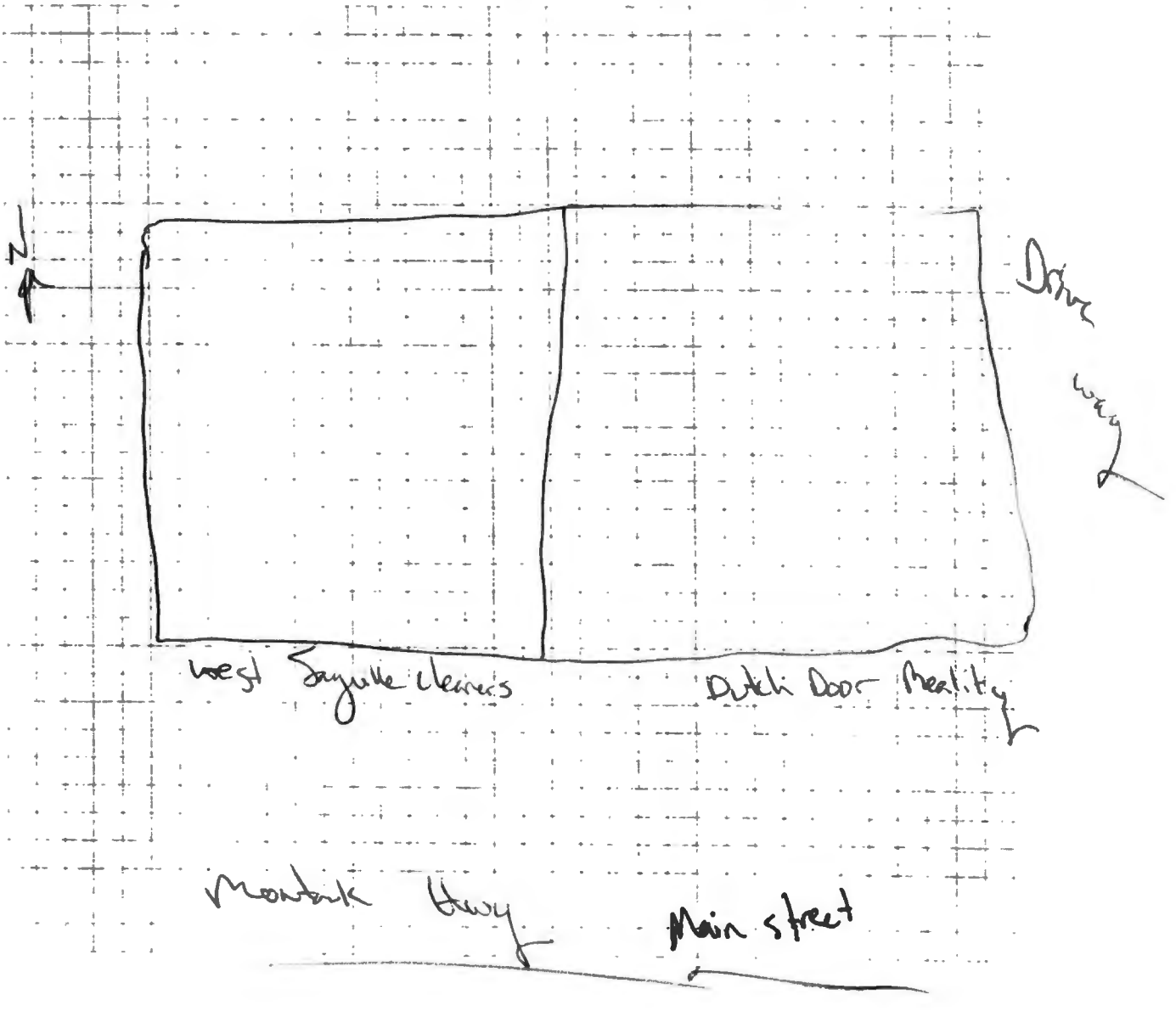
First Floor:



12. OUTDOOR PLOT

Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.

Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.



13. PRODUCT INVENTORY FORM

Make & Model of field instrument used: PID

List specific products found in the residence that have the potential to affect indoor air quality.

Location	Product Description	Size (units)	Condition*	Chemical Ingredients	Field Instrument Reading (units)	Photo** Y / N
	N/A	N/A	N/A	N/A	N/A	N

* Describe the condition of the product containers as **Unopened (UO), Used (U),** or **Deteriorated (D)**
** Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

OSR - 3

Sayville Run Company

NEW YORK STATE DEPARTMENT OF HEALTH
INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY
CENTER FOR ENVIRONMENTAL HEALTH

This form must be completed for each residence involved in indoor air testing.

Preparer's Name Justin Halpin Date/Time Prepared 3/3/10 10:30am

Preparer's Affiliation BEI Phone No. 589-6521

Purpose of Investigation IAQ

1. OCCUPANT:

Interviewed: (Y) N

Last Name: Barrett First Name: Brendan

Address: 55 main st. West Sayville, NY

County: Suffolk

Home Phone: _____ Office Phone: (63)

Number of Occupants/persons at this location 2 Age of Occupants 25-40

2. OWNER OR LANDLORD: (Check if same as occupant ___)

Interviewed: Y (N)

Last Name: _____ First Name: _____

Address: _____

County: _____

Home Phone: _____ Office Phone: _____

3. BUILDING CHARACTERISTICS

Type of Building: (Circle appropriate response)

Residential School (Commercial/Multi-use) apartment second floor
Industrial Church Other: _____

If the property is residential, type? (Circle appropriate response)

Ranch	2-Family	3-Family
Raised Ranch	Split Level	Colonial
Cape Cod	Contemporary	Mobile Home
Duplex	Apartment House	Townhouses/Condos
Modular	Log Home	Other: 2 story home

If multiple units, how many? ~~2~~ (upstairs residents) 3 units

If the property is commercial, type?

Business Type(s) Sanville Printing Company

Does it include residences (i.e., multi-use)? (Y) N If yes, how many? 1 upstairs

Other characteristics:

Number of floors ~~2~~ 3 story Building age 50 years at least

Is the building insulated? (Y) /N How air tight? (Tight) / Average / Not Tight

4. AIRFLOW

Use air current tubes or tracer smoke to evaluate airflow patterns and qualitatively describe:

Airflow between floors none

Airflow near source n/A

Outdoor air infiltration Tight

Infiltration into air ducts n/A

5. **BASEMENT AND CONSTRUCTION CHARACTERISTICS** (Circle all that apply) no basement

a. Above grade construction:	wood frame	concrete	stone	brick
b. Basement type:	full	crawlspace	slab	other None
c. Basement floor:	concrete	dirt	stone	other _____
d. Basement floor:	uncovered	covered	covered with _____	
e. Concrete floor:	unsealed	sealed	sealed with _____	
f. Foundation walls:	poured	block	stone	other _____
g. Foundation walls:	unsealed	sealed	sealed with _____	
h. The basement is:	wet	damp	dry	moldy
i. The basement is:	finished	unfinished	partially finished	
j. Sump present?	Y / N			
k. Water in sump?	Y / N	not applicable		

Basement/Lowest level depth below grade: _____(feet)

Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, drains)

None

6. **HEATING, VENTING and AIR CONDITIONING** (Circle all that apply)

Type of heating system(s) used in this building: (circle all that apply – note primary)

Hot air circulation	Heat pump	Hot water baseboard	
Space Heaters	Stream radiation	Radiant floor	
Electric baseboard	Wood stove	Outdoor wood boiler	Other Oil

The primary type of fuel used is:

Natural Gas	Fuel Oil	Kerosene
Electric	Propane	Solar
Wood	Coal	

Domestic hot water tank fueled by: Oil

Boiler/furnace located in: Basement Outdoors Main Floor Other_____

Air conditioning: Central Air (Window units) Open Windows None

4

Are there air distribution ducts present? Y / (N)

Describe the supply and cold air return ductwork, and its condition where visible, including whether there is a cold air return and the tightness of duct joints. Indicate the locations on the floor plan diagram.

_____

_____

_____

_____

7. OCCUPANCY

Is basement/lowest level occupied? Full-time Occasionally Seldom Almost Never

Level	General Use of Each Floor (e.g., familyroom, bedroom, laundry, workshop, storage)
Basement	
1st Floor	Sayville Plumbing Comp.
2nd Floor	Residential Apartments
3rd Floor	
4th Floor	

8. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY

a. Is there an attached garage? (Y) / N

b. Does the garage have a separate heating unit? Y / N / (NA)

c. Are petroleum-powered machines or vehicles stored in the garage (e.g., lawnmower, atv, car) Y / N / (NA) Please specify_____

d. Has the building ever had a fire? Y / (N) When?_____

e. Is a kerosene or unvented gas space heater present? Y / (N) Where? _____

f. Is there a workshop or hobby/craft area? Y / (N) Where & Type? _____

g. Is there smoking in the building? Y / (N) How frequently? _____

h. Have cleaning products been used recently? Y / (N) When & Type? _____

i. Have cosmetic products been used recently? Y (N) When & Type? _____

j. Has painting/staining been done in the last 6 months? Y (N) Where & When? _____

k. Is there new carpet, drapes or other textiles? Y / N Where & When? _____

l. Have air fresheners been used recently? Y (N) When & Type? _____

m. Is there a kitchen exhaust fan? Y / (N) If yes, where vented? _____

n. Is there a bathroom exhaust fan? Y / (N) If yes, where vented? _____

o. Is there a clothes dryer? Y (N) If yes, is it vented outside? Y / N

p. Has there been a pesticide application? Y (N) When & Type? _____

Are there odors in the building? Y / (N)
If yes, please describe: _____

Do any of the building occupants use solvents at work? Y / (N)
(e.g., chemical manufacturing or laboratory, auto mechanic or auto body shop, painting, fuel oil delivery, boiler mechanic, pesticide application, cosmetologist

If yes, what types of solvents are used? _____

If yes, are their clothes washed at work? Y / N

Do any of the building occupants regularly use or work at a dry-cleaning service? (Circle appropriate response)

Yes, use dry-cleaning regularly (weekly) (No)
Yes, use dry-cleaning infrequently (monthly or less) Unknown
Yes, work at a dry-cleaning service

Is there a radon mitigation system for the building/structure? Y (N) Date of Installation: _____
Is the system active or passive? Active/Passive

9. WATER AND SEWAGE

Water Supply: (Public Water) Drilled Well Driven Well Dug Well Other: _____

Sewage Disposal: (Public Sewer) Septic Tank Leach Field Dry Well Other: _____

10. RELOCATION INFORMATION (for oil spill residential emergency)

a. Provide reasons why relocation is recommended: _____

b. Residents choose to: remain in home relocate to friends/family relocate to hotel/motel

c. Responsibility for costs associated with reimbursement explained? Y / N

d. Relocation package provided and explained to residents? Y / N

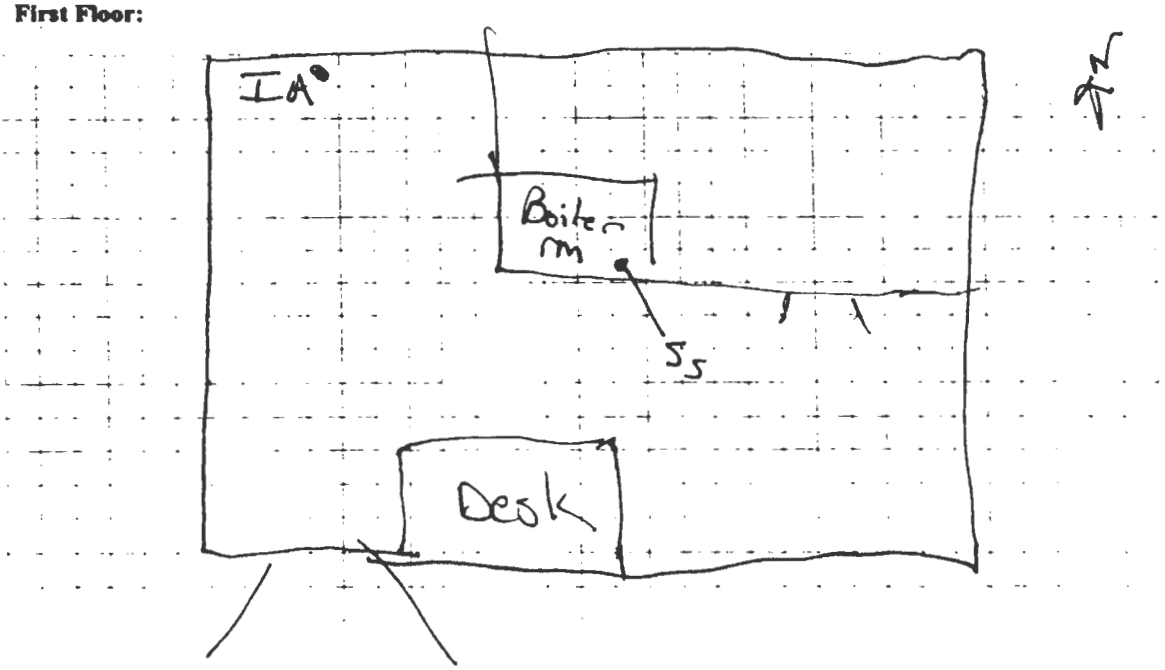
11. FLOOR PLANS

Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.

Basement:

None

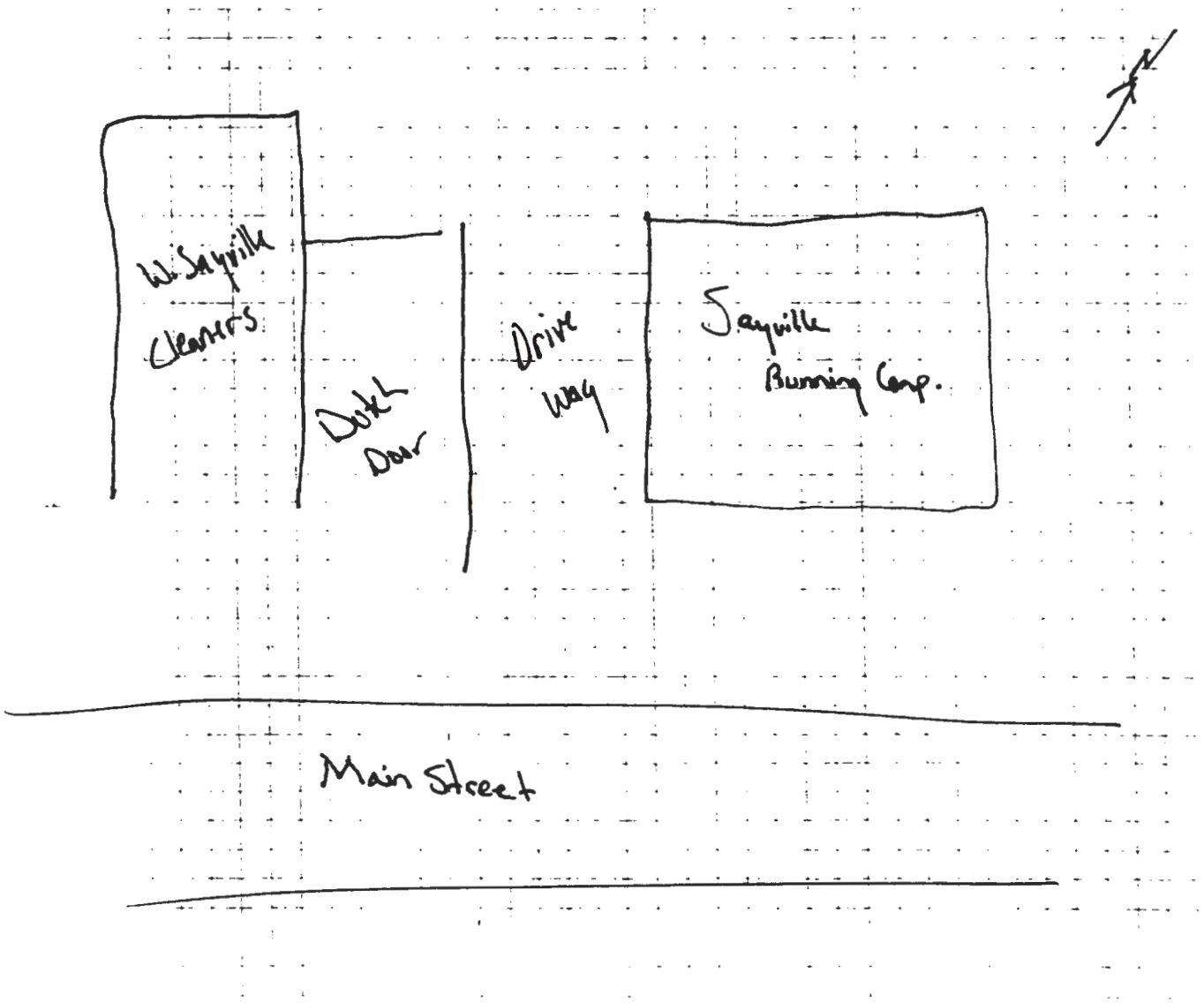
First Floor:



12. OUTDOOR PLOT

Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.

Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.



13. PRODUCT INVENTORY FORM

Make & Model of field instrument used: PID

List specific products found in the residence that have the potential to affect indoor air quality.

Location	Product Description	Size (units)	Condition*	Chemical Ingredients	Field Instrument Reading (units)	Photo** Y / N
	N/A				0	N

* Describe the condition of the product containers as **Unopened (UO), Used (U), or Deteriorated (D)**
** Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

* No PID readings in immediate area of testing.

W. Sayville Fire Department

OSR - 3

NEW YORK STATE DEPARTMENT OF HEALTH
INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY
CENTER FOR ENVIRONMENTAL HEALTH

This form must be completed for each residence involved in indoor air testing.

Preparer's Name Justin Halpin Date/Time Prepared 3/24/10

Preparer's Affiliation BEI Phone No. 631 774 6682

Purpose of Investigation FAQ FA; SS

1. OCCUPANT:

Interviewed: Y (N)

Last Name: W. Sayville Fire House First Name: _____

Address: 80 Main St. West Sayville

County: Suffolk

Home Phone: _____ Office Phone: _____

Number of Occupants/persons at this location 0 Age of Occupants 20 - 70

2. OWNER OR LANDLORD: (Check if same as occupant ___)

Interviewed: Y (N)

Last Name: _____ First Name: _____

Address: _____

County: _____

Home Phone: _____ Office Phone: _____

3. BUILDING CHARACTERISTICS

Type of Building: (Circle appropriate response)

Residential	School	Commercial/Multi-use
Industrial	Church	(Other:) Fire house

If the property is residential, type? (Circle appropriate response)

Ranch	2-Family	3-Family
Raised Ranch	Split Level	Colonial
Cape Cod	Contemporary	Mobile Home
Duplex	Apartment House	Townhouses/Condos
Modular	Log Home	Other: 2 Story

If multiple units, how many? _____

If the property is commercial, type?

Business Type(s) Fire House

Does it include residences (i.e., multi-use)? Y (N) If yes, how many? _____

Other characteristics:

Number of floors 2 Building age 1950 / 2002 (extension)

Is the building insulated? (Y) N How air tight? Tight (Average) Not Tight

4. AIRFLOW

Use air current tubes or tracer smoke to evaluate airflow patterns and qualitatively describe:

Airflow between floors tight

Airflow near source tight

Outdoor air infiltration average

Infiltration into air ducts average

5. **BASEMENT AND CONSTRUCTION CHARACTERISTICS** (Circle all that apply)

a. Above grade construction:	wood frame	concrete	stone	brick
b. Basement type:	full	crawlspace	slab	other _____
c. Basement floor:	concrete	dirt	stone	other _____
d. Basement floor:	uncovered	covered	covered with _____	
e. Concrete floor:	unsealed	sealed	sealed with _____	
f. Foundation walls:	poured	block	stone	other _____
g. Foundation walls:	unsealed	sealed	sealed with _____	
h. The basement is:	wet	damp	dry	moldy
i. The basement is:	finished	unfinished	partially finished	
j. Sump present?	Y / N			
k. Water in sump?	Y / N / not applicable			

Basement/Lowest level depth below grade: 9 (feet)

Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, drains)

Minor Cracks in Floor

6. **HEATING, VENTING and AIR CONDITIONING** (Circle all that apply)

Type of heating system(s) used in this building: (circle all that apply – note primary)

Hot air circulation	Heat pump	Hot water baseboard	
Space Heaters	Stream radiation	Radiant floor	
Electric baseboard	Wood stove	Outdoor wood boiler	Other _____

The primary type of fuel used is:

Natural Gas	Fuel Oil	Kerosene
Electric	Propane	Solar
Wood	Coal	

Domestic hot water tank fueled by: Fuel Oil

Boiler/furnace located in: Basement Outdoors Main Floor Other_____

Air conditioning: (Central Air) Window units Open Windows None

Are there air distribution ducts present? Y (N) Only second level

Describe the supply and cold air return ductwork, and its condition where visible, including whether there is a cold air return and the tightness of duct joints. Indicate the locations on the floor plan diagram.

N/A

7. OCCUPANCY

Is basement/lowest level occupied? Full-time Occasionally (Seldom) Almost Never

Level	General Use of Each Floor (e.g., familyroom, bedroom, laundry, workshop, storage)
Basement	Recreational
1st Floor	Bus.
2nd Floor	Bus. / Meetings.
3rd Floor	
4th Floor	

8. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY

a. Is there an attached garage?	(Y) / N	
b. Does the garage have a separate heating unit?	Y / N / (NA)	
c. Are petroleum-powered machines or vehicles stored in the garage (e.g., lawnmower, atv, car)	(Y) N	Please specify Fire Trucks
d. Has the building ever had a fire?	Y (N)	When?
e. Is a kerosene or unvented gas space heater present?	Y (N)	Where?
f. Is there a workshop or hobby/craft area?	Y (N)	Where & Type?
g. Is there smoking in the building?	Y (N)	How frequently?
h. Have cleaning products been used recently?	Y / N	When & Type? Floor was recently refinish

i. **Have cosmetic products been used recently?** Y (N) When & Type? _____

j. **Has painting/staining been done in the last 6 months?** (Y) N Where & When? Second Floor meeting room

k. **Is there new carpet, drapes or other textiles?** Y / (N) Where & When? _____

l. **Have air fresheners been used recently?** Y / (N) When & Type? _____

m. **Is there a kitchen exhaust fan?** (Y) N If yes, where vented? _____

n. **Is there a bathroom exhaust fan?** (Y) / N If yes, where vented? _____

o. **Is there a clothes dryer?** Y / (N) If yes, is it vented outside? Y / N

p. **Has there been a pesticide application?** Y (N) When & Type? _____

Are there odors in the building? Y (N)
If yes, please describe: _____

Do any of the building occupants use solvents at work? Y / N
(e.g., chemical manufacturing or laboratory, auto mechanic or auto body shop, painting, fuel oil delivery, boiler mechanic, pesticide application, cosmetologist

If yes, what types of solvents are used? N/A

If yes, are their clothes washed at work? Y / N

Do any of the building occupants regularly use or work at a dry-cleaning service? (Circle appropriate response)

Yes, use dry-cleaning regularly (weekly) — No
(Yes), use dry-cleaning infrequently (monthly or less) — Unknown
Yes, work at a dry-cleaning service

Is there a radon mitigation system for the building/structure? Y / N Date of Installation: N/A
Is the system active or passive? Active/Passive

9. WATER AND SEWAGE

Water Supply: (Public Water) Drilled Well Driven Well Dug Well Other: _____

Sewage Disposal: (Public Sewer) Septic Tank Leach Field Dry Well Other: _____

10. RELOCATION INFORMATION (for oil spill residential emergency)

a. **Provide reasons why relocation is recommended:** _____

b. **Residents choose to:** remain in home relocate to friends/family relocate to hotel/motel

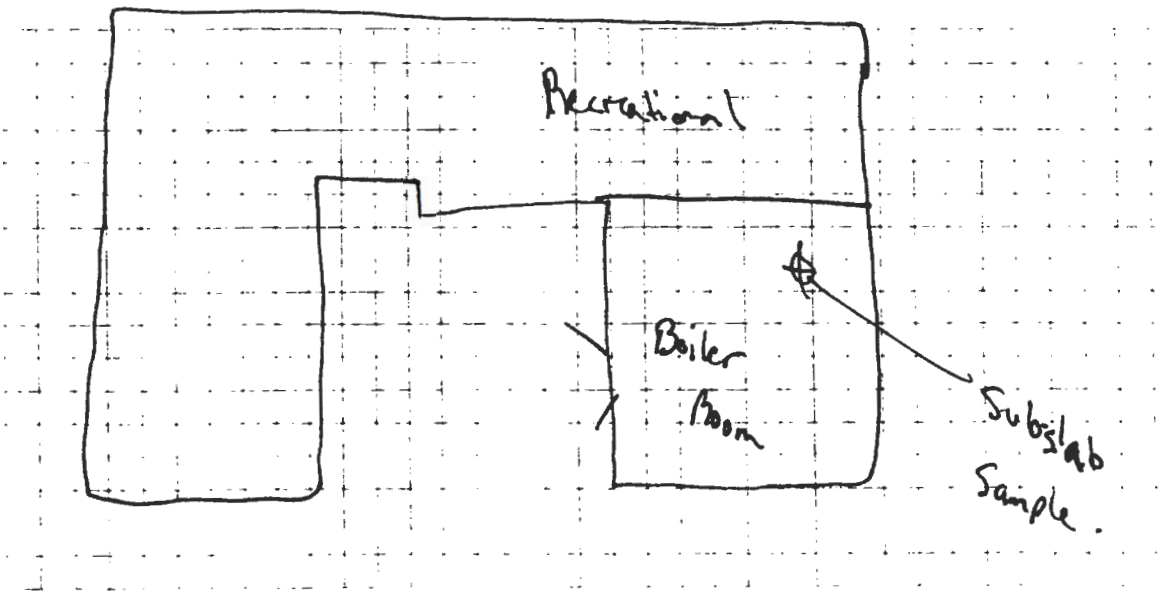
c. Responsibility for costs associated with reimbursement explained? Y / N

d. Relocation package provided and explained to residents? Y / N

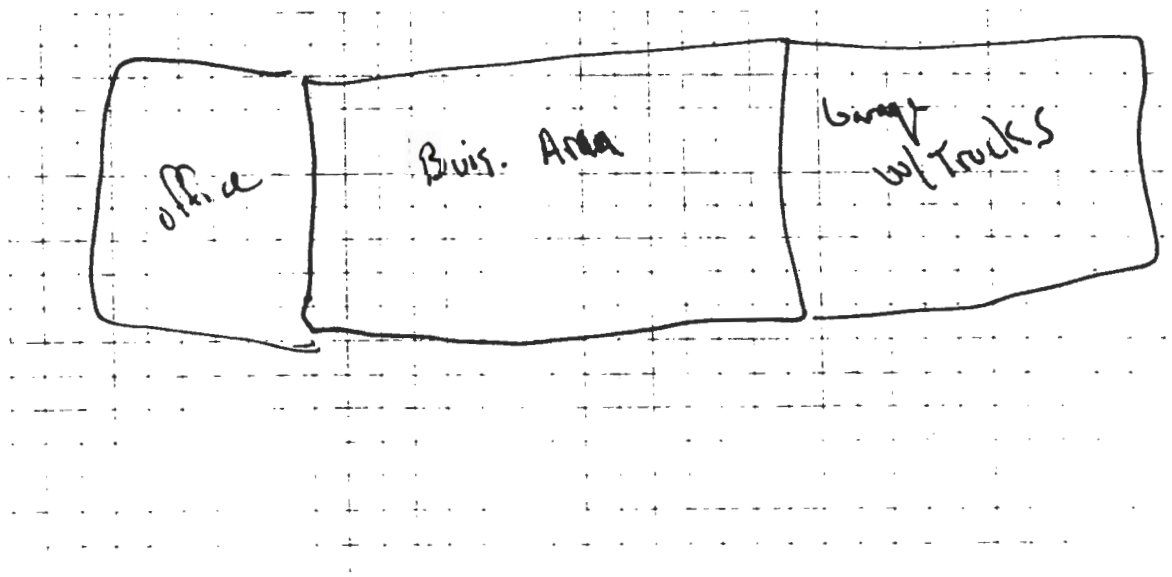
11. FLOOR PLANS

Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.

Basement:



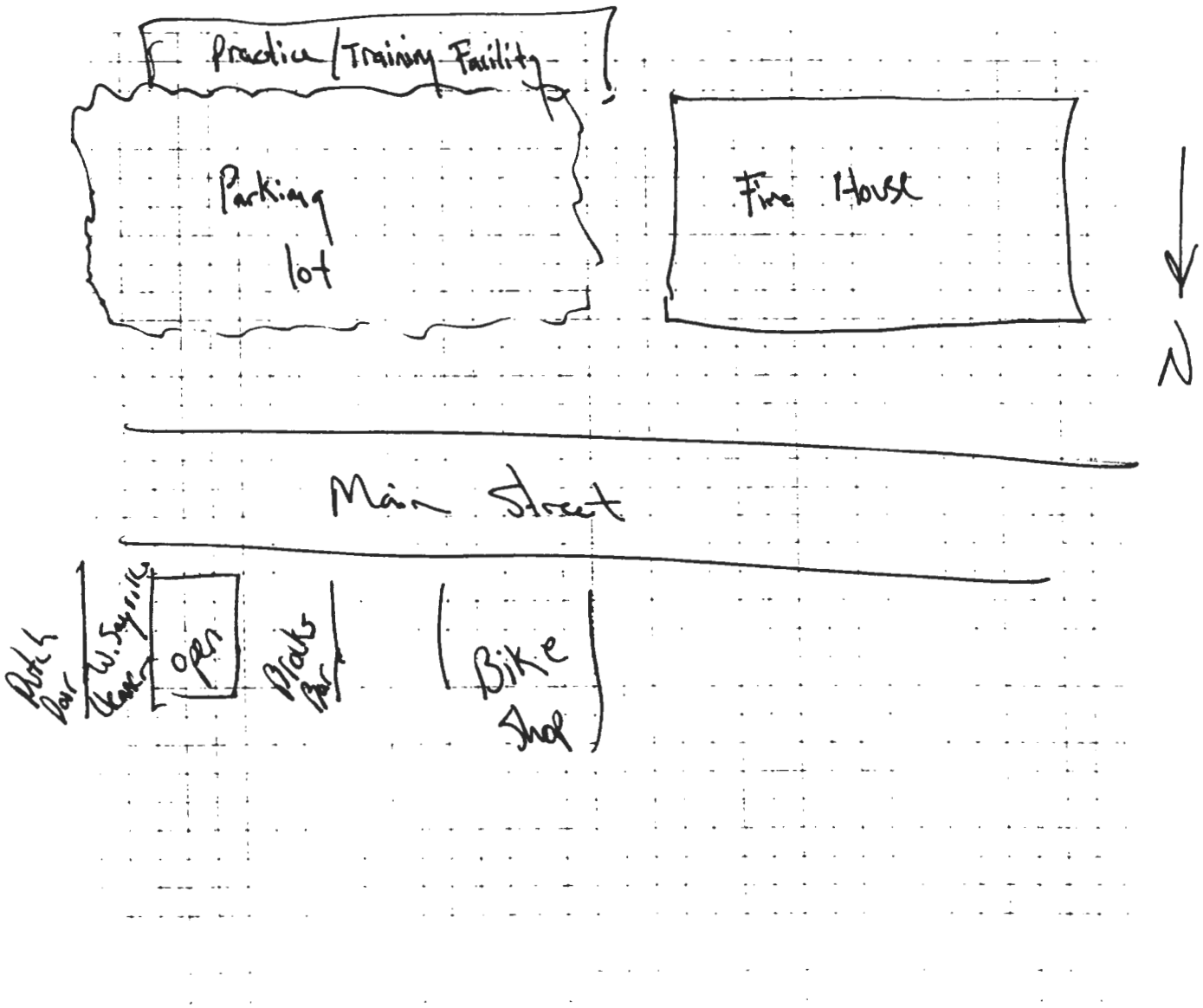
First Floor:



12. OUTDOOR PLOT

Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.

Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.



13. PRODUCT INVENTORY FORM

Make & Model of field instrument used: PID

List specific products found in the residence that have the potential to affect indoor air quality.

Location	Product Description	Size (units)	Condition*	Chemical Ingredients	Field Instrument Reading (units)	Photo** Y / N
Basement	Paint	N/A	good	N/A	0	N
"	Paint Filler	"	"	"	0	
"	Cleaners Etc.	"	"	"	0	

* Describe the condition of the product containers as **Unopened (UO), Used (U), or Deteriorated (D)**

** Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

OSR - 3

Brock's Bar + Grill

NEW YORK STATE DEPARTMENT OF HEALTH
INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY
CENTER FOR ENVIRONMENTAL HEALTH

This form must be completed for each residence involved in indoor air testing.

Preparer's Name Justin H. Date/Time Prepared 3/3/10

Preparer's Affiliation BEI Phone No. 589-6521

Purpose of Investigation IAQ

1. OCCUPANT:

Interviewed: Y / (N)

Last Name: _____ First Name: _____

Address: _____

County: _____

Home Phone: _____ Office Phone: _____

Number of Occupants/persons at this location _____ Age of Occupants _____

2. OWNER OR LANDLORD: (Check if same as occupant ___)

Interviewed: Y / (N)

Last Name: _____ First Name: _____

Address: _____

County: _____

Home Phone: _____ Office Phone: _____

3. BUILDING CHARACTERISTICS

Type of Building: (Circle appropriate response)

Residential	School	(Commercial/Multi-use)
Industrial	Church	Other: Bar

If the property is residential, type? (Circle appropriate response)

Ranch	2-Family	3-Family
Raised Ranch	Split Level	Colonial
Cape Cod	Contemporary	Mobile Home
Duplex	Apartment House	Townhouses/Condos
Modular	Log Home	Other: Bar / Bldg

If multiple units, how many? _____

If the property is commercial, type?

Business Type(s) Bar

Does it include residences (i.e., multi-use)? Y / (N) If yes, how many? _____

Other characteristics:

Number of floors 1 Building age 50 years

Is the building insulated? (Y) / N How air tight? Tight / (Average) / Not Tight

4. AIRFLOW

Use air current tubes or tracer smoke to evaluate airflow patterns and qualitatively describe:

Airflow between floors None

Airflow near source None

Outdoor air infiltration ~~None~~ Minimal

Infiltration into air ducts None

5. **BASEMENT AND CONSTRUCTION CHARACTERISTICS** (Circle all that apply)

a. Above grade construction:	wood frame	concrete	stone	brick
b. Basement type:	full	crawlspace	slab	other _____
c. Basement floor:	concrete	dirt	stone	other _____
d. Basement floor:	uncovered	covered	covered with _____	
e. Concrete floor:	unsealed	sealed	sealed with _____	
f. Foundation walls:	poured	block	stone	other _____
g. Foundation walls:	unsealed	sealed	sealed with _____	
h. The basement is:	wet	damp	dry	moldy
i. The basement is:	finished	unfinished	partially finished	
j. Sump present?	Y / N			
k. Water in sump?	Y / N / not applicable			

Basement/Lowest level depth below grade: 7' (feet)

Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, drains)

Minor cracks in Basement Floor

6. **HEATING, VENTING and AIR CONDITIONING** (Circle all that apply)

Type of heating system(s) used in this building: (circle all that apply – note primary)

Hot air circulation	Heat pump	Hot water baseboard	
Space Heaters	Stream radiation	Radiant floor	
Electric baseboard	Wood stove	Outdoor wood boiler	Other N/A

The primary type of fuel used is:

Natural Gas	Fuel Oil	Kerosene
Electric	Propane	Solar
Wood	Coal	

Domestic hot water tank fueled by: Fuel oil

Boiler/furnace located in: Basement Outdoors Main Floor Other_____

Air conditioning: Central Air Window units Open Windows None N/A

Are there air distribution ducts present? Y (N)

Describe the supply and cold air return ductwork, and its condition where visible, including whether there is a cold air return and the tightness of duct joints. Indicate the locations on the floor plan diagram.

N/A

7. OCCUPANCY

Is basement/lowest level occupied? Full-time (Occasionally) Seldom Almost Never

Level	General Use of Each Floor (e.g., familyroom, bedroom, laundry, workshop, storage)
Basement	Storage
1st Floor	Bar / rest.
2nd Floor	
3rd Floor	
4th Floor	

8. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY

a. Is there an attached garage? Y / (N)

b. Does the garage have a separate heating unit? Y / N / (NA)

c. Are petroleum-powered machines or vehicles stored in the garage (e.g., lawnmower, atv, car) Y / N / (NA) Please specify_____

d. Has the building ever had a fire? Y / (N) When?_____

e. Is a kerosene or unvented gas space heater present? Y / (N) Where?_____

f. Is there a workshop or hobby/craft area? Y / (N) Where & Type?_____

g. Is there smoking in the building? Y / (N) How frequently?_____

h. Have cleaning products been used recently? Y / (N) When & Type?_____

i. **Have cosmetic products been used recently?** Y / (N) When & Type? _____

j. **Has painting/staining been done in the last 6 months?** Y / (N) Where & When? _____

k. **Is there new carpet, drapes or other textiles?** Y / (N) Where & When? _____

l. **Have air fresheners been used recently?** Y / (N) When & Type? _____

m. **Is there a kitchen exhaust fan?** Y / (N) If yes, where vented?_____

n. **Is there a bathroom exhaust fan?** Y / (N) If yes, where vented?_____

o. **Is there a clothes dryer?** Y / (N) If yes, is it vented outside? Y / N

p. **Has there been a pesticide application?** Y (N) When & Type?_____

Are there odors in the building? Y (N)
If yes, please describe: _____

Do any of the building occupants use solvents at work? Y (N)
(e.g., chemical manufacturing or laboratory, auto mechanic or auto body shop, painting, fuel oil delivery, boiler mechanic, pesticide application, cosmetologist

If yes, what types of solvents are used? _____

If yes, are their clothes washed at work? Y / N

Do any of the building occupants regularly use or work at a dry-cleaning service? (Circle appropriate response)

Yes, use dry-cleaning regularly (weekly)
Yes, use dry-cleaning infrequently (monthly or less)
Yes, work at a dry-cleaning service
No
(Unknown)

Is there a radon mitigation system for the building/structure? Y / (N) **Date of Installation:** _____
Is the system active or passive? Active/Passive

9. WATER AND SEWAGE

Water Supply:	(Public Water)	Drilled Well	Driven Well	Dug Well	Other: _____
Sewage Disposal:	(Public Sewer)	Septic Tank	Leach Field	Dry Well	Other: _____

10. RELOCATION INFORMATION (for oil spill residential emergency)

a. **Provide reasons why relocation is recommended:** _____

b. **Residents choose to:** remain in home relocate to friends/family relocate to hotel/motel

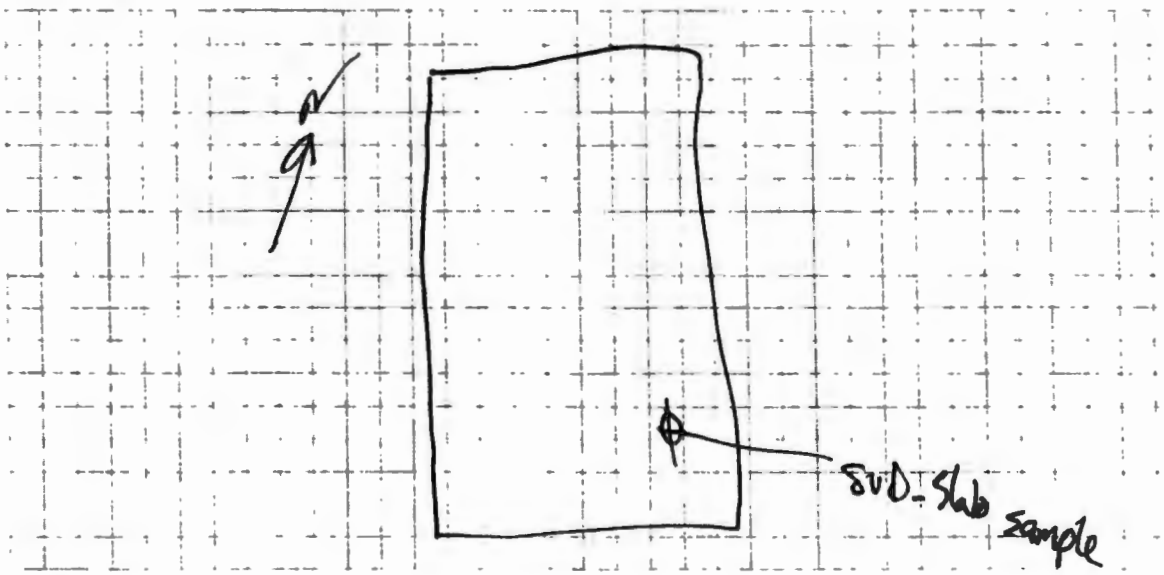
c. Responsibility for costs associated with reimbursement explained? Y / N

d. Relocation package provided and explained to residents? Y / N

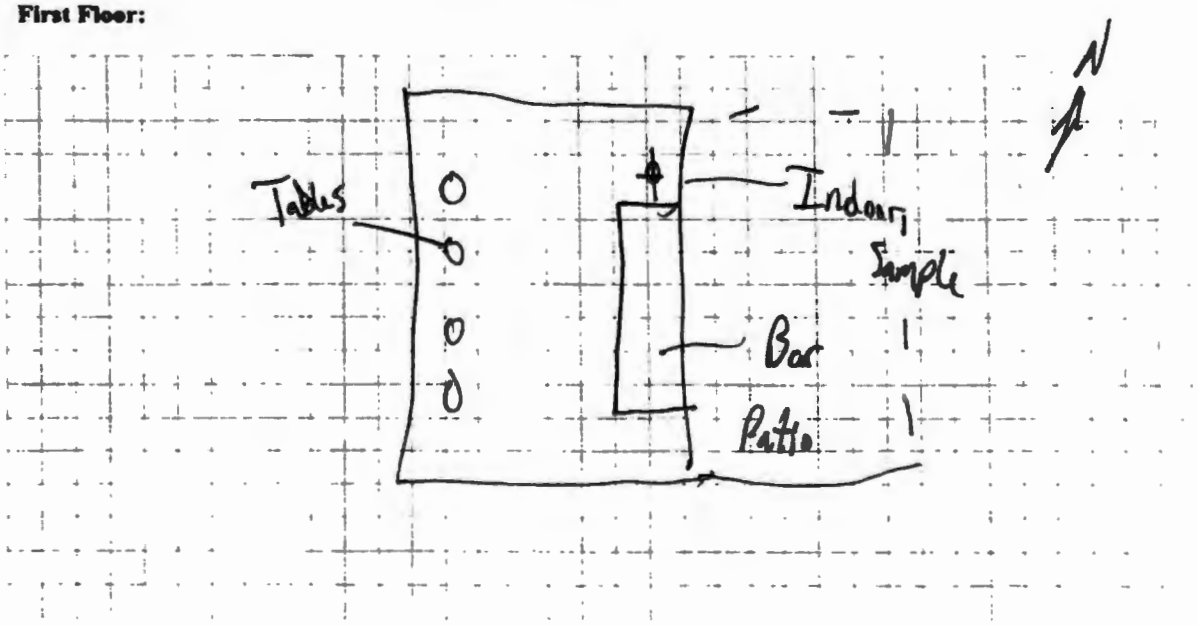
11. FLOOR PLANS

Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.

Basement:



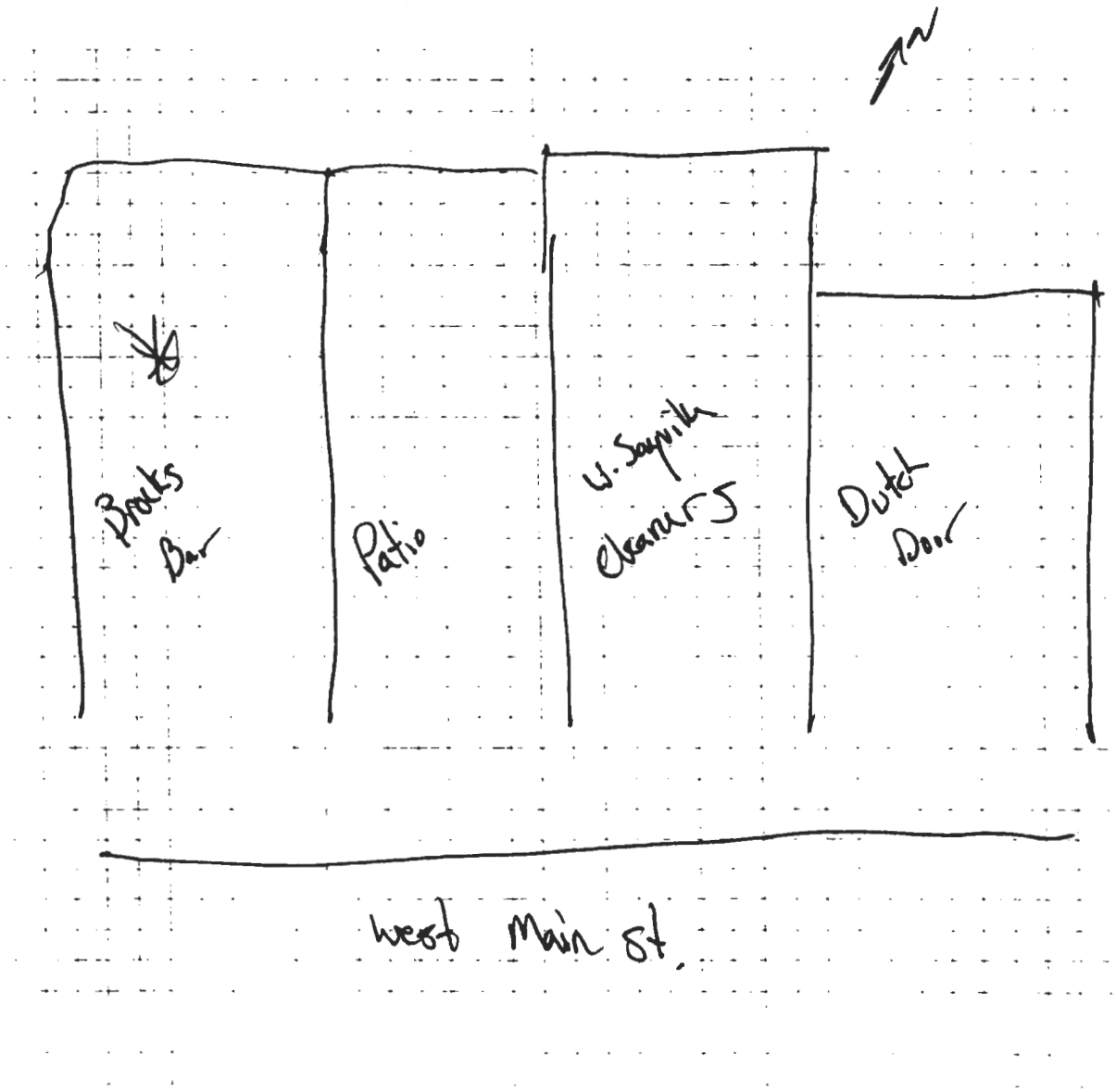
First Floor:



12. OUTDOOR PLOT

Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.

Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.



13. PRODUCT INVENTORY FORM

Make & Model of field instrument used: PID no PID readings present in room 1st floor or Basement

List specific products found in the residence that have the potential to affect indoor air quality.

Location	Product Description	Size (units)	Condition*	Chemical Ingredients	Field Instrument Reading (units)	Photo** Y / N

* Describe the condition of the product containers as **Unopened (UO), Used (U),** or **Deteriorated (D)**
** Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

APPENDIX D

Soil Boring Logs

Berninger Environmental, Inc.
groundwater consultants, engineers, geologists
90-B Knickerbocker Avenue
Bohemia • New York • 11716
Phone: 631 • 589 • 6521
Fax: 631 • 589 • 6528

Soil Classification Log

Boring/Well No. SB-1-SB-5 Project: West Sayville Cleaners 16 West Main St., NY Date: September 14, 2010 Page: 1 Logged By: Justin H. Driller: Joel Meyers Type of Rig: Track Mount Geoprobe Depth to Water: 10-12'	BORE HOLE DATE Hole Diameter: 2 1/4" Total Depth : 10-12' SAMPLER Butch/ Eusi Type: Portable Geoprobe Hammer: Dual tube sampling system REMARKS: All soil samples exhibited 0.0 PID readings with no evidence of contamination

Depth (ft) bgs	Sample				Sample Description/Lithology
	No.	Rec. %	PID Response Units, ppm	Cons.	
0-2.5	B-1-5	100	0	Loose	Dark Tan Medium Sand with mix of few Pebbles; Dry; no odors
2.5-5		"	0	"	Tan Medium Sand; Dry; no odor
5-7.5		"	0	"	Tan Medium Sand; Dry; no odor
7.5-10		"	0	"	Tan Medium Sand; Dry; no odor
10-12.5		"	0	"	Tan Medium Sand; no odor; wet

Remarks: (1) All depths in feet below land surface.

APPENDIX E

Health and Safety Plan

Site-Specific Health and Safety Plan for Work Activities

at

WEST SAYVILLE DRY CLEANERS
61 West Main Street
West Sayville, New York
Site No.: 152200

PREPARED FOR

NEW YORK STATE DEPARTMENT OF
ENVIRONMENTAL CONSERVATION
625 BROADWAY
ALBANY, NEW YORK

PREPARED BY

BEi

BERNINGER ENVIRONMENTAL, INC.

December 2006

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FOREWORD

The Occupational Safety and Health Act (OSHA) implementing regulations of 29 CFR 1910.120 govern hazardous waste operations and emergency response. These regulations require that employers of employees involved in certain specific hazardous waste operations 1) develop and implement a written safety and health PROGRAM for employees involved in hazardous waste operations and 2) that the PROGRAM incorporate a site-specific safety and health plan.

Berninger Environmental, Inc. (BEI) has employees conducting activities which fall within the scope of these regulations, and thus, has in place a written safety and health PROGRAM as required. Its contents are contained in the BEI HAZWOPER Program Manual. Some activities conducted at the contaminated portion of the West Sayville Dry Cleaners Facility may fall within the scope of these OSHA regulations. Thus, to assure regulatory compliance, this site-specific safety and health plan covering activities conducted at the contaminated portion of the West Sayville Dry Cleaners' Facility has been prepared. The Integrated Safety Management System (ISMS) and Environmental Safety, Health and Quality check lists will be used to define safe work procedures for work conducted in uncontaminated areas of the West Sayville Dry Cleaners Facility.

The regulatory requirements for site-specific safety and health plans are found at 29 CFR 1910.120 (b)(4) and include ten specific elements which are designated with the letters A through J. Each of these elements is addressed in this safety and health plan for the West Sayville Dry Cleaners Facility. Each element is listed below along with the section number where it is addressed in this safety and health plan.

	SAFETY AND HEALTH PLAN ELEMENT	SECTION NO. IN THIS PLAN
A)	Safety and health risk hazard analysis	4.0
B)	Employee training assignments and requirements	6.1
C)	Personal protective equipment requirements	4.0, 5.4
D)	Medical surveillance requirements	6.2
E)	Frequency and types of monitoring required	4.0, 5.2
F)	Site control measures	5.3
G)	Decontamination procedures	4.0, 5.6
H)	Emergency response plan	5.7
I)	Confined space entry procedures	none (no confined space entry)
J)	Spill containment program	5.3

1.0 INTRODUCTION AND PROJECT DESCRIPTION

An Inactive Hazardous Waste Disposal Site (IHWDS) Investigation Work Plan (Work Plan) has been developed pursuant to the requirements of an executed Order on Consent (August 31, 2006) between the New York State Department of Environmental Conservation (NYSDEC), Division of Environmental Remediation (DER) and West Sayville Dry Cleaners, the Respondent. The subject property is listed on the NYSDEC DER Registry of Inactive Hazardous Waste Disposal Sites in New York State as Site Number with a Classification of 2 pursuant to ECL 27-1305. The site is located at 61 West Main Street, Hamlet of West Sayville, New York , fully described as Tax Map No. 500 -407-4-17. An IHWDS Remedial Investigation Work Plan was directed as part of the Order on Consent to determine the nature and extent of site contamination and off-site migration pathways in order to allow a decision by the NYSDEC DER regarding remedial action required to be undertaken at said site and/or off-site areas.

1.1 Purpose

The purpose of an IHWDS investigation is to:

- Determine the nature and delineate the areal and vertical extent of contamination in all media for each area of concern or emanating from the site;
- Delineate the surface and subsurface environmental media, including topography and depth to groundwater;
- Identify the source(s) of contamination, migration paths and actual or potential receptors of contamination on or through air, soil gas, soil, sediment, groundwater, surface water, utilities and structures at the site without regard to property boundaries;
- Collect and evaluate all necessary data to evaluate the actual and potential impact to public health and the environment;
- Collect and evaluate information for a Fish and Wildlife Resource Impact Analysis (if necessary);
- Collect data to facilitate selection and design of remedial action alternatives; and
- Identify collected data needed for monitoring natural attenuation, potential feasible cleanup technologies and presumptive remedies.

This Site-Specific Health and Safety Plan (HASP) addresses the safety aspects of the spectrum of work activities to be conducted at the contaminated area(s). Activities at the contaminated area (but not the uncontaminated background area) fall under the scope of Code of Federal Regulations, 29 CFR 1910.120, *Hazardous Waste Operations and Emergency Response (HAZWOPER)*. The purpose of this document is to establish overall site-specific health and safety guidelines to be followed by all

personnel conducting work at this site regardless of organizational affiliation. Work will be performed in accordance with requirements, as stipulated.

The levels of protection and procedures specified in this HASP are based on the best information available from historical data and recent evaluations of the area. Therefore, these recommendations represent the minimum health and safety requirements to be observed by all personnel engaged in work at the site. Unforeseeable site conditions, changes in scope of work or hazardous conditions not previously considered will warrant a reassessment of the protection levels and controls stated. Refer to Section 5.1 for requirements pertaining to field modifications and changes to the HASP.

2.0 SITE ORGANIZATION AND COORDINATION

Subsurface Investigation activities will be performed by BEI personnel. All work is performed under the direction of the Site Supervisor and support staff, all of whom are BEI employees.

The following section describes the organizational structure for the subsurface investigation. Key personnel and their responsibilities are listed. Mr. Walter Berninger will be the Project Manager (PM), Ms. Jill Haimson will be the Site Supervisor (SS), Mr. William Schlageter and/or Mr. Peter Daniels will serve as the Site Safety and Health Officer (SSHO) and Mr. Joel Meyers will act as the Emergency Response Coordinator (ERC).

2.1 SITE SAFETY AND HEALTH OFFICER

The SSHO advises the Site Supervisor on safety and health issues and conducts briefings prior to initiation of site activities. The SSHO assesses the potential for worker exposures to hazardous agents, recommends appropriate hazard controls for protection of task site personnel and will require personnel to obtain immediate medical attention in the event of a work-related injury or illness. The SSHO ensures any necessary monitoring of potential chemical hazards is performed, reviews the effectiveness of monitoring and personal protective equipment and recommends upgrades or downgrades in protective safety and health measures. The SSHO ensures that appropriate fall protection measures are available and that needed work permits such as Radiological Work Permits (RWPs) are obtained. The SSHO notifies the Office of Radiation Protection when radiological support is required. The SSHO has stop work authority and advises emergency response personnel of an emergency. The SSHO authorizes the return to work following resolution of any safety and health hazards or other stop work issues. The SSHO ensures that this HASP is revised and approved if there are changes in site conditions or tasks. The SSHO will be available for consultation when required and will be aware of project-related work occurring on-site.

2.2 SITE SUPERVISOR

The Site Supervisor has primary responsibility for directing and managing all subsurface investigation field activities, including coordination with any support organizations. The Site Supervisor ensures that all on-site project personnel meet the required level of training, have reviewed the HASP and are instructed in safe work practices. The Site Supervisor also ensures that a qualified SSHO is designated, maintains a current copy of the HASP and documents field changes to the HASP in the project logbook. In addition, the Site Supervisor and staff perform oversight of field activities, maintain awareness of site operations and ensure that all project personnel adhere to ES&H requirements in order to prevent potential accidents from occurring.

The Site Supervisor is responsible for ensuring that the following five core functions of the Integrated Safety Management System (ISMS) are fulfilled appropriately:

- Define the work, roles and responsibilities. Allocate resources to ensure that research goals are balanced with safe work practices.
-
- Identify and analyze the hazards using the ESH&Q evaluation, consultation with subject

matter experts, material safety data sheet information, Work Smart Standards (WSS), lessons learned by other Principal Investigators (PIs) and staff and other resources.

- Develop and implement hazard controls tailored to the work being performed.

  - Resources include BEI staff, subject matter experts, the Hazardous Materials Inventory System, project procedures, Training Needs Assessment process, Laboratory Operating Manuals, Laboratory Stewards and Lessons Learned and Alerts.
  - Examples of actions and tools include optimization of engineering controls and procedural approaches with training, HAZCOM job-specific training, job pre-briefings, compliance-based and project-specific training, ES&H permits (e.g., RWPs, Lockout/Tagout process) and protective equipment.

- Perform work within controls to ensure the work is done safely:

  - Communicate expectations to project staff.
  - Ensure that the controls identified in the ESH&Q evaluation and this HASP are carried out.
  - Ensure opportunity for procedure modification to respond to unanticipated situations.
  - Stop work if imminent danger exists.

- Provide feedback and continuous improvement:

  - Solicit feedback from project staff regarding ESH&Q issues and act on that input.
  - Communicate concerns to and seek help from supervisors and the ESH&Q group.
  - Reallocate resources to address issues that arise.
  - Ensure safety meetings and site briefings are performed.

2.3 PRINCIPAL INVESTIGATORS (PI) AND FIELD PROJECT PERSONNEL

PIs and field project personnel involved in onsite operations are responsible for understanding the intent of the principles of Integrated Safety Management and are to be knowledgeable of the processes in place to satisfy the intent of Integrated Safety Management Plan.

Define the Scope of Work

- Understand the expectations they are to meet in their particular work assignment.
- Understand the responsibilities of the Site Supervisor and SSHO.
- Provide documentation of training to the Site Supervisor.

Identify and Analyze the Hazard

- Notify the SSHO of any special medical conditions (i.e., allergies, diabetes, etc.).
- Actively participate in identification of hazards prior to beginning work.
- Ensure that potential work hazards have been evaluated by subject matter experts and are accounted for in all work practices.

Develop and Implement Hazard Controls

- Seek the help of the SSHO and other subject matter experts, as appropriate, to analyze the hazards.
- Ensure that control strategies are developed and implemented, as appropriate, before work begins.
- Ensure safety measures are incorporated into activities (i.e., through HASP addendums or amendments, work aides or standard operating procedures).

Perform Work Within Controls

- Perform only those tasks that they believe they can do safely.
- Meet the responsibilities and safely perform the tasks that are delegated to them.
- Take all reasonable precautions to prevent injury to themselves and to their fellow employees; be alert to potentially harmful situations.
- Suspend work if unexpected concerns arise and modify plans to address concerns before resuming work.
- Comply with the work plan and HASP as well as postings and rules at the project site.

Provide Feedback and Continuous Improvement

- Keep the SSHO and Site Supervisor informed of any issues, problems or concerns regarding all aspects of their work.
- Notify appropriate West Sayville Dry Cleaners' management personnel or the facility point of contact of any unsafe condition, violation, noncompliance or environmental threat discovered in a facility.
- Report to the SSHO any changes in site conditions that may affect safety and health.

- Immediately notify the SSHO of symptoms or signs of exposure potentially related to any chemical, physical or biological hazards present at the site and immediately report any accidents, injuries and/or unsafe conditions to the SSHO.
- If unsafe conditions develop, task site personnel are authorized and expected to stop work and notify the SSHO and Site Supervisor of the unsafe condition.

3.0 INTEGRATED SAFETY MANAGEMENT SYSTEM (ISMS)

The ISMS process systematically integrates safety into management and work practices at all levels so work objectives are accomplished while protecting the public, the worker and the environment. Direct involvement of workers during the development and implementation of safety management systems is essential for success. Therefore, all BEI personnel are expected to incorporate the following basic ISMS core functions during all work activities:

- Defining the scope of work;
- Identifying and analyzing hazards associated with the work;
- Developing and implementing hazard controls;
- Performing work activities within these controls; and
- Providing feedback on the adequacy of the controls to continue improving safety management.

4.0 TASK SPECIFIC HAZARD EVALUATION AND CONTROLS

The purpose of this Subsurface Investigation hazard evaluation is to identify and assess potential hazards that personnel might encounter and to prescribe methods of hazard control. Historical site data provided in Appendix A gives the results of chemical analyses in shallow soils and groundwater at the West Sayville Dry Cleaners' property. Material Safety Data Sheets (MSDS) for chemicals that are likely to be handled when conducting field work are included in Attachment B.

A description of sampling procedures and the activities to be conducted at the West Sayville Dry Cleaners is described below.

4.1 WATER LEVEL MEASUREMENTS

Task Description: Manual water level measurements will be collected from any monitoring wells or piezometers installed in order to determine current depth to groundwater in the area. These measurements are taken by lowering an electronic water level sounder down the well. As the sounder is brought out of the well the tip of the sounder that has been submerged is rinsed with distilled water to rinse off the groundwater. The rinse water is allowed to drip back down into the well.

Equipment and Materials: Equipment includes water level sounder.

Task Hazards and Controls:

- **Chemical and Radiological Hazards**

  - Groundwater Contact: Based on previously obtained sample data (only available for soils and groundwater, contamination due to low level Volatile Organic Compounds (VOCs) is present. Therefore the risk of chemical exposure from short-term exposure to groundwater is present but is controllable. Direct contact with contaminated materials should be avoided; therefore, disposable latex or nitrile gloves and safety glasses will be worn when conducting groundwater monitoring and during the handling of sample tubes to prevent eye and skin contact.

  - Downhole equipment: Rinse downhole equipment with distilled water as it is brought out of the well.

- **Physical Hazards**

  - Tripping/Falling: Precautions should be taken to avoid trip, slip and fall accidents when climbing irregular or slippery surfaces. Before changing location visually survey the area for slippery surfaces and tripping hazards.

  - Heat/Cold Stress: Wear clothing appropriate for environmental and weather conditions. Temperature extremes may be a hazard for consideration depending on the timing of the activity. Refer to Section 5.5 for discussion of recognition of symptoms and controls.

- **Biological/Vector Hazards**

  - Ticks/Snakes/Pathogens: Be cautious of snakes and vector carriers such as ticks. Check clothing and skin for ticks after walking in brush. Wash hands before eating and drinking.

- **Personal Protective Equipment Required to Address General Site Hazards**

  - Level of Protection: D
  - Protective Clothing: BEI-issued work clothes or disposable tyvek
  - Head Gear: Safety glasses
  - Gloves: Latex or nitrile (when conducting groundwater sampling or handling corrosive or oxidizing reagents)
  - Footwear: Sturdy work shoes

- **Monitoring Requirements**

  - None

4.2 FIELD SAMPLING AND ANALYSIS OF GROUNDWATER/SURFACE WATER

Task Description: Procedures for field sampling and analysis of groundwater are described in the West Sayville Dry Cleaners IHWDS Investigation Work Plan. Groundwater will generally be sampled with a peristaltic pump. Slow purge techniques will be used in order to reduce the disturbance caused by removal of large volumes of water from the system. Field parameters will be monitored until stable groundwater chemistry (e.g. specific conductance, pH, Eh, temperature, dissolved oxygen) readings are obtained on the Myron 6P Ultrameter or equivalent. The purge water will be collected in DOT approved 55-gallon drums, if deemed to be necessary, or discharged in proximity to the wellhead with regulatory approval. Upon completion of the project, the drum contents (if any) will be sampled and analyzed for disposal at an approved facility.

Samples will be handled and transported according to regulatory requirements and procedures outlined in the West Sayville Dry Cleaners IHWDS Investigation Work Plan. Samples will be preserved and stored as required by the analytical protocols (e.g. cooled, preservative added). Storage

on site may occur for short periods of time in ice chests containing "blue ice" but will be quickly transferred to refrigerator storage in the field laboratory at the appropriate temperatures. All storage of contaminated samples will follow procedures and relevant regulations.

Equipment and Materials: Sampling equipment includes sampling tubing which is dedicated for each sample collected; peristaltic pump; filters and sample containers (for collecting samples). Some samples may be preserved with a few drops of nitric, hydrochloric or sulfuric acid. Calibration standards including pH and conductivity are also used.

Task Hazards and Controls:

- **Chemical and Radiological Hazards**

  - Groundwater Contact: Based on previously obtained sample data (only available for soils or surface water), the risk of chemical exposure from short-term exposure to groundwater or surface water is minimal. However, direct contact with contaminated materials should be avoided, therefore, disposable latex or nitrile gloves and safety glasses will be worn when conducting groundwater and surface water sampling to prevent eye and skin contact.

  - Reagent Contact: Corrosive or oxidizing reagents pose a contact hazard. To prevent eye and skin contact when corrosive or oxidizing reagents are used disposable latex or nitrile gloves and safety glasses will be worn.

- **Physical Hazards**

  - Tripping/Falling: Precautions should be taken to avoid trip, slip and fall accidents when climbing irregular or slippery surfaces. Before changing location visually survey the area for slippery surfaces and tripping hazards.

  - Heat/Cold Stress: Wear clothing appropriate for environmental and weather conditions. Temperature extremes may be a hazard for consideration depending on the timing of the activity. Refer to Section 5.5 for discussion of recognition of symptoms and controls.

- **Explosion Hazards**

  - Gas cylinders: Pressurized gas cylinders (if any) will be transported and handled in accordance with applicable Department of Transportation guidance and regulations. Care will be taken to secure the cylinders upright during transport to ensure they are not damaged. Cylinders will also be secured at the site so they will not tip over during the injection process.

- **Biological/Vector Hazards**

  - Ticks/Snakes/Pathogens: Be cautious of snakes and vector carriers such as ticks. Check clothing and skin for ticks after walking in brush. Wash hands before eating and drinking.

- **Personal Protective Equipment Required to Address General Site Hazards**

  - Level of Protection: D
  - Protective Clothing: BEI-issued work clothes or disposable tyvek
  - Head Gear: Safety glasses
  - Gloves: Latex or nitrile (when conducting groundwater sampling or handling corrosive or oxidizing reagents)
  - Footwear: Sturdy work shoes

- **Monitoring Requirements**

  - Air Quality: Air monitoring with an organic vapor analyzer or other suitable instrument will be performed during all groundwater sampling activities. A VOC ambient air monitoring result of 3ppm will trigger a warning response. If a detection of 5ppm VOC in ambient air is detected, the SSHO will suspend work and instruct the workers to move to a safe zone until such time the work zone is tested safe.

4.3 FIELD SAMPLING AND ANALYSIS OF SOIL/SOIL GAS/INDOOR AIR QUALITY

Task Description: Procedures for field sampling and analysis of subsurface soils, soil gas vapors and indoor air quality are described in the West Sayville Dry Cleaners IHWDS Investigation Work Plan. Soil samples and soil gas samples will generally be obtained by a discrete sampler by hand, Geoprobe direct push sampling rig or Hollow Stem Auger Drilling Rig. This method ensures dedicated, undisturbed samples protected in a PVC liner or sampler or PRT tubing or screen implant. Field testing for total volatile organic compounds (VOCs) in the breathing zone (work zone), as well as the downwind perimeter will be monitored by a MiniRae portable Photoionization Detector (PID). The air monitoring action levels using PID readings cited in Section 8.0 - Community Air Monitoring Plan will be used to safeguard workers and observers during the implementation of the field investigation program.

Any discarded soil will be collected in DOT approved 55-gallon drums or disposed on-site with permission of the SCDHS Case Manager if screening indicates no contamination. Upon completion of the project, the drum contents will be sampled and analyzed for disposal at an approved facility. It may also be possible to replace the discarded soil back in the bore hole if approved by the regulators.

Samples will be handled and transported according to regulatory requirements and procedures outlined in the West Sayville Dry Cleaners IHWDS Investigation Work Plan. Samples will be preserved and stored as required by the analytical protocols (e.g. cooled, preservative added). Storage

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groundwater consultants and geologists
90-B Knickerbocker Avenue
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TERMINAL ELECTRON ACCEPTORS

Client: Tom Costa **Project: West Sayville Cleaners**

Spill No: **Pin No:** N/A **Job No: 152200**

Sample ID#: PW-3 west **Matrix: Liquid**

Collection Date: 09/08/10 **Analysis Date: 09/08/10**

Sample Origin: PW-3 west

Method	Compound Name	Method Range	Results	Units
8166 O^2	Dissolved Oxygen	0.3 to 15.0 mg/L	3.8	mg/L
8171 NO_3^-	Nitrate	0.1 to 10.0 mg/L	0.3	mg/L
8146 $Fe^{2\pm}$	Iron (II)	0.02 to 3.0 mg/L	over range	mg/L
8051 SO_4^{2-}	Sulfate	2 to 79 mg/L	20	mg/L
8034 Mn	Maganese	0.2 to 20. mg/L	0.1	mg/L

Analyzed By: Justin H.

Analysis performed by a HACH Odyssey Model DR2500, Spectophotometer, Serial No. 010300000283
Results are for screening purposes only.

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TERMINAL ELECTRON ACCEPTORS

Client: Tom Costa **Project: West Sayville Cleaners**

Spill No: **Pin No:** N/A **Job No: 152200**

Sample ID#: PW-2 center **Matrix: Liquid**

Collection Date: 09/08/10 **Analysis Date: 09/08/10**

Sample Origin: PW-2 center

Method	Compound Name	Method Range	Results	Units
8166 O^2	Dissolved Oxygen	0.3 to 15.0 mg/L	6	mg/L
8171 NO_3^-	Nitrate	0.1 to 10.0 mg/L	4.8	mg/L
8146 $Fe^{2\pm}$	Iron (II)	0.02 to 3.0 mg/L	under range	mg/L
8051 SO_4^{2-}	Sulfate	2 to 79 mg/L	15	mg/L
8034 Mn	Maganese	0.2 to 20. mg/L	0.3	mg/L

Analyzed By: Justin H.

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TERMINAL ELECTRON ACCEPTORS

Client: Tom Costa **Project: West Sayville Cleaners**

Spill No: **Pin No:** N/A **Job No: 152200**

Sample ID#: PW-1 east **Matrix: Liquid**

Collection Date: 09/08/10 **Analysis Date: 09/08/10**

Sample Origin: PW-1 east

Method	Compound Name	Method Range	Results	Units
8166 O^2	Dissolved Oxygen	0.3 to 15.0 mg/L	6.5	mg/L
8171 NO_3^-	Nitrate	0.1 to 10.0 mg/L	2.7	mg/L
8146 $Fe^{2\pm}$	Iron (II)	0.02 to 3.0 mg/L	-0.03	mg/L
8051 SO_4^{2-}	Sulfate	2 to 79 mg/L	12	mg/L
8034 Mn	Maganese	0.2 to 20. mg/L	0.1	mg/L

Analyzed By: Justin H.

Analysis performed by a HACH Odyssey Model DR2500, Spectophotometer, Serial No. 010300000283
Results are for screening purposes only.

APPENDIX G

Lab Data

L.A.B. Validation Corp. 14 West Point Drive, East Northport, N.Y. 11731 (516) 523-7891

DATA VALIDATION REPORT

ORGANIC ANALYSES

VOLATILES BY GC/MS

For Groundwater and Soil Samples Collected
September 07, 2010, September 08, 2010,
September 14, 2010 and September 15, 2010
From West Sayville Cleaners – West Sayville, New York
By Berninger Environmental, Inc.

SAMPLE DELIVERY GROUP NUMBERS: BER098, BER099 and BER100
By H2M Labs, Inc.

SUBMITTED TO:

Mr. Walter Berninger/President
Berninger Environmental, Inc.
90 Knickerbocker Avenue, Unit B
Bohemia, New York 11716

November 15, 2010

PREPARED BY:

Lori A. Beyer/President
L.A.B. Validation Corp.
14 West Point Drive
East Northport, NY 11731

Lori A. Beyer

LABValidation@aol.com

West Sayville Cleaners – September 2010 Sampling Event – Groundwater/Soil
Data Validation Report: Volatile Organics

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Data Qualifier Definitions
Sample Receipt

1.0 Volatile Organics by GC/MS EPA Method 624 (groundwaters) and SW846 Method 8260 (soils)
- 1.1 Holding Time
- 1.2 System Monitoring Compound (Surrogate) Recovery
- 1.3 Matrix Spikes (MS), Matrix Spike Duplicates (MSD), Matrix Spike Blank (MSB)
- 1.4 Laboratory Control Sample/Laboratory Fortified Blank
- 1.5 Blank Contamination
- 1.6 GC/MS Instrument Performance Check
- 1.7 Initial and Continuing Calibrations
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- 1.9 Target/Non Target Compound List Identification
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- A. NYSDEC ASP Summary Forms
- B. Chain of Custody Documents
- C. SDG Narratives
- D. Tentatively Identified Compounds (TICs) for VOA
- E. Data Summary Tables with Qualifications

Introduction:

A validation was performed on groundwater and soil samples and the associated quality control samples for organic analysis for samples collected under chain of custody documentation by Berninger, Inc. and submitted to H2M Labs, Inc. for subsequent analysis. This report contains the laboratory and validation results for the field samples itemized on the following pages. The samples were collected on September 07, 2010 through September 15, 2010.

The samples were analyzed by H2M Labs, Inc. utilizing EPA Method 624 and SW846 Method 8260 and submitted under NYSDEC ASP Category B equivalent deliverable requirements for the associated analytical methodologies employed. The analytical testing consisted of the Target Compound List (TCL) of analytes for Volatile Organics and Tentatively Identified Compounds (TICs).

The data was evaluated in accordance with the National Functional Guidelines for Organic and Inorganic Data Review and in conjunction with the analytical methodologies for which the samples were analyzed, where applicable and relevant.

The data validation report pertains to the following field groundwater/soil and quality control samples:

Sample Identification	Laboratory Identification	Sample Matrix	Collection Date
GW-1 @ 14-16'	1010471-001	Groundwater	09/07/2010
GW-1 @ 20-22'	1010471-002	Groundwater	09/07/2010
GW-1 @ 30-32'	1010471-003	Groundwater	09/07/2010
GW-2 @ 14-16'	1010471-004	Groundwater	09/07/2010
GW-2 @ 20-22'	1010471-005	Groundwater	09/07/2010
GW-2 @30-32'	1010471-006	Groundwater	09/07/2010
GW-3 @ 14-16'	1010471-007	Groundwater	09/07/2010
GW-3 @ 20-22'	1010471-008	Groundwater	09/07/2010
GW-3 @ 30-32'	1010471-009	Groundwater	09/07/2010
GW-4 @ 14-16'	1010471-010	Groundwater	09/07/2010
GW-4 @ 20-22'	1010471-011	Groundwater	09/07/2010
GW-4 @ 30-32'	1010471-012	Groundwater	09/07/2010
GW-5 @ 16-18'	1010471-013	Groundwater	09/08/2010
GW-5 @26-28'	1010471-014	Groundwater	09/08/2010
GW-5 @ 36-38'	1010471-015	Groundwater	09/08/2010
GW-6 @ 14-16'	1010471-016	Groundwater	09/08/2010
GW-6 @ 20-22'	1010471-017	Groundwater	09/08/2010
GW-6 @ 30-32'	1010471-018	Groundwater	09/08/2010
GW-7 @ 14-16'	1010471-019	Groundwater	09/08/2010
GW-7 @ 20-22'	1010471-020	Groundwater	09/08/2010
GW-7 @ 30-32'	1010471-021	Groundwater	09/08/2010
Field/Equip Blank	1010471-022	Aqueous	09/08/2010
Trip Blank 1	1010471-023	Aqueous	09/08/2010
Trip Blank 2	1010471-024	Aqueous	09/08/2010
GW-8 @ 10-12'	1010774-001	Groundwater	09/14/2010
GW-9 @ 12-14'	1010774-002	Groundwater	09/14/2010
GW-10 @ 12-14'	1010774-003	Groundwater	09/14/2010
Field Blank	1010774-004	Aqueous	09/14/2010
Trip Blank	1010774-005	Aqueous	09/14/2010
SB-1 @4-6'	1010776-001	Soil	09/15/2010
SB-2 @ 8-10'	1010776-002	Soil	09/15/2010
SB-3 @ 4-6'	1010776-003	Soil	09/15/2010
SB-4 @ 5-7.5'	1010776-004	Soil	09/15/2010
SB-5 @ 5-7.5'	1010776-005	Soil	09/15/2010
SB-6 @ 10-12'	1010776-006	Soil	09/15/2010
Field Blank	1010776-007	Aqueous	09/15/2010

Data Qualifier Definitions:

The following definitions provide brief explanations of the qualifiers assigned to results in the data review process.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R - The sample results are rejected due to deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

N - The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."

NJ - The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate quantity.

Sample Receipt:

The Chain of Custody documents indicates that the samples were received at H2M Labs, Inc. via courier upon completion of the sampling event. Sample login notes were generated. The temperature was recorded and determined to be acceptable. The Trip Blanks submitted on September 09, 2010 were not differentiated and therefore it could not be determined which groundwater samples the Trip Blanks pertain to. It should be noted that neither Trip Blank analysis resulted in any target constituents therefore there is no impact to the reported results. No additional problems and/or discrepancies were noted, consequently, the integrity of the samples has been assumed to be good.

The data summary sheets included in Appendix E includes all usable (qualified) and unusable (rejected) results for the samples identified above. These sheets summarize the detailed narrative section of the report. All data validation qualifications have been highlighted in bold for ease of review and verification.

NOTE:
L.A.B. Validation Corp. believes it is appropriate to note that the data validation criteria utilized for data evaluation is different than the method requirements utilized by the laboratory. Qualified data does not necessarily mean that the laboratory was non-compliant in the analysis that was performed.

1.0 Volatile Organics by GC/MS EPA Method 624 and SW846 Method 8260

The following method criteria were reviewed: holding times, SMCs, MS, MSD, LCS, Blanks, Tunes, Calibrations, Internal Standards, Target Component Identification, Quantitation, Reported Quantitation Limits and Overall System Performance. The volatile results were considered to be valid and useable with the exception of non-detects of 2-Chloroethylvinyl ether in all groundwater samples due to non-recoverable MS/MSD recoveries as noted on the data summary sheets in Appendix E and within the following text:

1.1 Holding Time

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the technical holding time is exceeded, the data may not be considered valid. Those analytes detected in the samples whose holding time has been exceeded will be qualified as estimates, "J". The non-detects (sample quantitation limits) are required to be flagged as estimated, "J", or unusable, "R", if the holding times are grossly exceeded.

All samples pertaining to these SDGs were performed within the ASP Holding Time from sample receipt. The SW846 Method 8260 requirement of 14 days for initial and reanalysis was met for all soil samples. Acrolein and Acrylonitrile when analyzed by EPA Method 624 are required to be analyzed within 3 days of sample collection. Since the three-day requirement was exceeded, the non-detect results for these compounds must be considered estimated, "UJ" for groundwater samples collected on 09/07/2010 and 09/08/2010. Samples collected on 09/14/2010 were analyzed within the 3-day holding time for these compounds. No additional data validation qualifiers were required based upon holding time. It should be noted that these analytes are not regulated under the NYSDEC Groundwater Standards.

1.2 System Monitoring Compound (Surrogate) Recovery

All samples are spiked with surrogate compounds prior to sample analysis to evaluate overall laboratory performance and efficiency of the analytical technique. If the measure of surrogate concentrations is outside contract specifications, qualifications are required to be applied to associated samples and analytes.

Surrogate recoveries (%R) were found to be within acceptable limits for surrogate compounds pertaining to these SDGs for groundwater and soil analysis. No data validation qualifiers were required based on surrogate recovery data for this project.

1.3 Matrix Spikes (MS)/ Matrix Spike Duplicates (MSD)/Matrix Spike Blank (MSB)

The MS/MSD data are generated to determine the long-term precision and accuracy of the analytical method in various matrices.

SDG BER098:
GW-1 @ 30-32' was selected by the laboratory for aqueous MS/MSD analysis. Recovery values for Acrylonitrile, Chloroform, 1,2-Dichloroethane, Dibromochloromethane, Bromoform and 1,1,2,2-Tetrachloroethane recovered above established in house limits. As a result, the detected concentration of 1.3 ug/L of Chloroform in GW-6 @ 20-22' must be considered estimated, "J," biased high. The remaining analytes were not detected in associated field samples and therefore high recoveries do not demonstrate any potential loss of target concentration and no additional qualifications to the data were made.

2-Chloroethylvinyl ether was not recoverable in the MS or MSD. Non-detects must be considered unreliable and have been rejected, "R," in all samples.

Dichlorodifluoromethane recovered low (35%) in the MSD. Non-detects must be considered estimated, "UJ" biased low for the samples collected on 09/07/2010 and 09/08/2010.

Many RPD fell outside acceptance limits and poor reproducibility was observed. No additional qualifications to the data were made.

SDG BER099:
GW-9 @ 12-14' was designated by Berninger Environmental field sampling personnel for MS/MSD analysis.

2-Chloroethylvinyl ether was not recoverable in the MS or MSD. Non-detects must be considered unreliable and have been rejected, "R," in all samples.

SDG BER100:
SB-5 @ 5-7.5 was designated by Berninger Environmental field sampling personnel for MS/MSD analysis. 1,1-Dichloroethene recovery fell just below acceptance limits in the MSD. Acceptable RPD were obtained. Based on professional judgment, no qualifications to the data were made. Acceptable recoveries were observed for all spiked components in the LFB.

1.4 Laboratory Control Sample/Laboratory Fortified Blank

The LCS data for laboratory control samples (LCS) are generated to provide information on the accuracy of the analytical method and on the laboratory performance.

SDG BER098:
Acceptable LFB was analyzed for aqueous samples. All recovery values fell within established limits with the exception of Dichlorodifluoromethane which recovered low (35%). Non-detects were previously qualified based on MS/MSD data.

Carbon Tetrachloride recovered low (66%) in the LFB associated with GW-6 @ 20-22', GW-6 @ 30-32', GW-7 @ 14-16', GW-7 @ 20-22', GW-7 @ 30-32', Field/Equip Blank, Trip Blank1 and Trip Blank 2. Non-detects have been qualified, 'UJ" estimated, biased low in these samples.

BER099:
Carbon Tetrachloride recovered low (66%) in the LFB associated with GW-8 @ 10-12', GW-9 @ 12-14', GW-10 @ 12-14', Field Blank and Trip Blank. Non-detects have been qualified, 'UJ" estimated, biased low in these samples.

BER100:
Acceptable recovery values were observed for all spiked constituents in the MSB and LFB.

1.5 Blank Contamination

Quality assurance (QA) blanks; i.e. method, trip and field blanks are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Trip blanks measure cross-contamination of samples during shipment. Field blanks measure cross-contamination of samples during field operations. Storage blanks measure cross-contamination during sample storage of the field samples.

The following table was utilized to qualify target analyte results due to contamination. The largest value from all the associated blanks is required to be utilized:

For:	Flag Sample Result with a "U" when:	Report CRQL & Qualify "U" when:	No Qualification is Needed when:
Methylene Chloride, Acetone, Toluene & 2-Butanone	Sample Conc. Is >CRQL, but </=10x blank value	Sample Conc. is <CRQL and </=10x blank value	Sample Conc. is >CRQL and >10x blank value
Other Contaminants	Sample Conc. Is >CRQL, but </=5x blank value	Sample Conc. Is <CRQL and </=5x blank value	Sample Conc. is >CRQL and >5x blank value

Below is a summary of the compounds in the sample and the associated qualifications that have been applied:

A) **Method Blank Contamination:**

Blank concentrations were evaluated compared to associated sample values based on the above criteria.

No target analytes were detected in the method blanks applicable to groundwater analysis. No qualifications to the data were made.

Methylene Chloride and Acetone were detected at acceptable levels in the soil blanks. Sample results were evaluated based on the above criteria and negated as required.

B) **Field Blank Contamination:**

Target/Non-target analytes were not detected in the Field Blanks associated with groundwater data.

2-Butanone, Toluene and Xylene were detected at acceptable levels in the Field Blank associated with soil analysis. None of these compounds were detected in the soil field samples and therefore no qualifications to the data were required.

C) **Trip Blank Contamination:**

Target/Non-target analytes were not detected in the Trip Blanks associated with groundwater data.

Trip Blank analysis for soil samples was not required.

D) **Storage Blank Contamination:**
Target analytes were not detected in the Storage Blanks.

1.6 GC/MS Instrument Performance Check

Tuning and performance criteria are established to ensure adequate mass resolution, proper identification of compounds and to some degree, sufficient instrument sensitivity. These criteria are not sample specific. Instrument performance is determined using standard materials. Therefore, these criteria should be met in all circumstances. The Tuning standard for volatile organics is Bromofluorobenzene (BFB).

Instrument performance was generated within acceptable limits and frequency for Bromofluorobenzene (BFB) for all analyses conducted for these SDGs.

1.7 Initial and Continuing Calibrations

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence.

The continuing calibration checks document that the instrument is giving satisfactory daily performance.

A) Response Factor GC/MS:
The response factor measures the instrument's response to specific chemical compounds. The response factor for all compounds must be >/= 0.05 in both initial and continuing calibrations. A value <0.05 indicates a serious detection and quantitation problem (poor sensitivity). Analytes detected in the sample will be qualified as estimated, "J". All non-detects for that compound in the corresponding samples will be rejected, "R".

All the response factors for the target analytes reported were found to be within acceptable limits (>/=0.05), for the initial and continuing calibrations.

B) Percent Relative Standard Deviation (%RSD) and Percent Difference (%D):
Percent RSD is calculated from the initial calibration and is used to indicate the stability of the specific compound response factor over increasing concentrations. Percent D compares the response factor of the continuing calibration check to the mean response factor (RRF) from the initial calibration. Percent D is a measure of the instrument's daily performance. Percent RSD must be <30% and %D must be <25%. A value outside of these limits indicates potential detection and quantitation errors. For these reasons, all positive results are flagged as estimated, "J" and non-detects are flagged "UJ". If %RSD and %D grossly exceed QC criteria, non-detect data may be qualified, "R", unusable. Additionally, in cases where the %RSD is >30% and eliminating either the high or the low point of the curve does not restore the %RSD to less than or equal to 30% then positive results are qualified, "J". In cases where removal of either the low or high point restores the linearity, then only low or high level results will be qualified, "J" in the portion of the curve where non linearity exists.

Initial Calibrations: The initial calibrations provided and the %RSD were within acceptable limits (30%) for all compounds with the following exceptions:

COMPOUND	CALIBRATION DATE/INSTRUMENT	%RSD	ACTION
2-Chloroethylvinyl ether	05/24/2010 HP5970-3	35.9	No additional action, non detects were previously rejected, "R" due to non recovera MS/MSD data.

Results for the above initial calibration compound, non-detects have been qualified, "UJ."

Continuing Calibrations: The continuing calibrations provided and the %D was within acceptable limits (25%) for all compounds with the following exceptions:

COMPOUND	CALIBRATION DATE/INSTRUMENT	%D	AFFECTED SAMPLES
Chloromethane	HP5970-3 09/15/2010	35.7	GW-1 @ 30-32', GW-2 @ 14-16', GW-1 @ 20-22', GW-2 @ 14-16', GW-2 @ 20-22', GW-2 @ 30-32', GW-3 @ 14-16', GW-3 @ 20-22', GW-3 @ 30-32', GW-4 @ 14-16', GW-4 @ 20-22', GW-4 @ 30-32', GW-5 @ 16-18', GW-5 @ 26-28', GW-5 @ 36-38', GW-6 @ 14-16'
Vinyl Chloride	HP5970-3 09/15/2010	36.0	GW-1 @ 30-32', GW-2 @ 14-16', GW-1 @ 20-22', GW-2 @ 14-16', GW-2 @ 20-22', GW-2 @ 30-32', GW-3 @ 14-16', GW-3 @ 20-22', GW-3 @ 30-32', GW-4 @ 14-16', GW-4 @ 20-22', GW-4 @ 30-32', GW-5 @ 16-18', GW-5 @ 26-28', GW-5 @ 36-38', GW-6 @ 14-16'
Dichlorodifluoromethane	HP5970-3 09/15/2010	59.8	GW-1 @ 30-32', GW-2 @ 14-16', GW-1 @ 20-22', GW-2 @ 14-16', GW-2 @ 20-22', GW-2 @ 30-32', GW-3 @ 14-16', GW-3 @ 20-22', GW-3 @ 30-32', GW-4 @ 14-16', GW-4 @ 20-22', GW-4 @ 30-32', GW-5 @ 16-18', GW-5 @ 26-28', GW-5 @ 36-38', GW-6 @ 14-16'
Trichlorofluoromethane	HP5970-3 09/15/2010	27.1	GW-1 @ 30-32', GW-2 @ 14-16', GW-1 @ 20-22', GW-2 @ 14-16', GW-2 @ 20-22', GW-2 @ 30-32', GW-3 @ 14-16', GW-3 @ 20-22', GW-3 @ 30-32', GW-4 @ 14-16', GW-4 @ 20-22', GW-4 @ 30-32', GW-5 @ 16-18', GW-5 @ 26-28', GW-5 @ 36-38', GW-6 @ 14-16'
Bromoform	HP5970-3 09/15/2010	25.7	GW-1 @ 30-32', GW-2 @ 14-16', GW-1 @ 20-22', GW-2 @ 14-16', GW-2 @ 20-22', GW-2 @ 30-32', GW-3 @ 14-16', GW-3 @ 20-22', GW-3 @ 30-32', GW-4 @ 14-16', GW-4 @ 20-22', GW-4 @ 30-32', GW-5 @ 16-18', GW-5 @ 26-28', GW-5 @ 36-38', GW-6 @ 14-16'
Acrolein	HP5970-3 09/15/2010	28.1	GW-1 @ 30-32', GW-2 @ 14-16', GW-1 @ 20-22', GW-2 @ 14-16', GW-2 @ 20-22', GW-2 @ 30-32', GW-3 @ 14-16', GW-3 @ 20-22', GW-3 @ 30-32', GW-4 @ 14-16', GW-4 @ 20-22', GW-4 @ 30-32', GW-5 @ 16-18', GW-5 @ 26-28', GW-5 @ 36-38', GW-6 @ 14-16'
Chloromethane	HP5970-3 09/16/2010	27.6	GW-6 @ 20-22', GW-6 @ 30-32', GW-7 @ 14-16', GW-7 @ 20-22', GW-7 @ 30-32', Field/Equip Blank, Trip Blank 1, Trip Blank 2, GW-8 @ 10-12', GW-9 @ 12-14', GW-10 @ 12-14', Field Blank, Trip Blank
Vinyl Chloride	HP5970-3 09/16/2010	30.3	GW-6 @ 20-22', GW-6 @ 30-32', GW-7 @ 14-16', GW-7 @ 20-22', GW-7 @ 30-32', Field/Equip Blank, Trip Blank 1, Trip Blank 2, GW-8 @ 10-12', GW-9 @ 12-14', GW-10 @ 12-14', Field Blank, Trip Blank
Dichlorodifluoromethane	HP5970-3 09/16/2010	39.3	GW-6 @ 20-22', GW-6 @ 30-32', GW-7 @ 14-16', GW-7 @ 20-22', GW-7 @ 30-32', Field/Equip Blank, Trip Blank 1, Trip Blank 2, GW-8 @ 10-12', GW-9 @ 12-14', GW-10 @ 12-14', Field Blank, Trip Blank
Trichlorofluoromethane	HP5970-3 09/16/2010	30.2	GW-6 @ 20-22', GW-6 @ 30-32', GW-7 @ 14-16', GW-7 @ 20-22', GW-7 @ 30-32', Field/Equip Blank, Trip Blank 1, Trip Blank 2,

			GW-8 @ 10-12', GW-9 @ 12-14', GW-10 @ 12-14', Field Blank, Trip Blank
2-Chloroethylvinyl ether	HP5970-3 09/16/2010	58.8	Previously rejected due to non recoverable MS/MSD
Acetone	HP5971 09/17/2010	28.5	Field Blank
Acetone	HP5971 09/21/2010	36.4	SB-1 @ 4-6', SB-2 @ 8-10', SB-3 @ 4-6', SB-4 @ 5-7.5', SB-5 @ 5-7.5'
2-Butanone	HP5971 09/21/2010	27.9	SB-1 @ 4-6', SB-2 @ 8-10', SB-3 @ 4-6', SB-4 @ 5-7.5', SB-5 @ 5-7.5'
Carbon Tetrachloride	HP5971 09/21/2010	26.3	SB-1 @ 4-6', SB-2 @ 8-10', SB-3 @ 4-6', SB-4 @ 5-7.5', SB-5 @ 5-7.5'
4-Methyl-2-Pentanone	HP5973I 09/24/2010	27.7	SB-6 @ 10-12'
2-Hexanone	HP5973I 09/24/2010	25.0	SB-6 @ 10-12'

Results for the above continuing calibration compounds, non-detects have been qualified, "UJ" (ND) and hits qualified as estimated, "J."

1.8 Internal Standards

Internal Standards (IS) performance criteria ensure that the GC/MS sensitivity and response are stable during every experimental run. The internal standard area count must not vary by more than a factor of 2 (-50% to +100%) from the associated continuing calibration standard. The retention time of the internal standard must not vary more than +/- 30 seconds from the associated continuing calibration standard. If the area count is outside the (-50% to +100%) range of the associated standard, all of the positive results for compounds quantitated using That IS are qualified as estimated, "J", and all non-detects as "UJ", or "R" if there is a severe loss of sensitivity.

If an internal standard retention time varies by more than 30 seconds, professional judgment will be used to determine either partial or total rejection of the data for that sample fraction.

All internal standards met acceptance limits for groundwater and soil analysis. No qualifications to the data were required.

1.9 Target/Non Target Compound List Identification

TCL compounds are identified on the GC/MS by using the analyte's relative retention time (RRT) and by comparison to the ion spectra obtained from known standards. For the results to be a positive hit, the sample peak must be within =/- 0.06RRT units of the standard compound and have an ion spectra which has a ratio of the primary and secondary m/e intensities within 20% of that in the standard compound.

GC/MS spectra met the qualitative criteria for identification. All retention times were within required specifications.

TICs (Tentatively Identified Compounds) were generated and are presented in Appendix D of this report. TICs identified as siloxanes (column bleed) were rejected, "R" and cannot be considered present in samples.

Groundwater samples were analyzed by EPA Method 624 which has a different analyte list than 8260.

1.10 Compound Quantitation and Reported Detection Limits

GC/MS quantitative analysis is considered to be acceptable. Correct internal standards per SW846/624, response factors and percent moisture were used to calculate final concentrations.

All samples were analyzed undiluted.

Results were reported to the CRQL's with "J" values to the MDL. This is common laboratory practice.

1.11 Overall System Performance

Good resolution and chromatographic performance were observed.

Reviewer's Signature Lori A. Blz **Date** 11/15/10

L.A.B. Validation Corp. 14 West Point Drive, East Northport, N.Y. 11731 (516) 523-7891

Appendix A
NYSDEC ASP
Summary Forms

LABValidation@aol.com

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE IDENTIFICATION AND ANALYTICAL REQUIREMENT SUMMARY

SDG: BER098

Analytical Requirements

Customer Sample Code	Laboratory Sample Code	MSVOA
GW-1 @ 14-16'	1010471-001	X
GW-1 @ 20-22'	1010471-002	X
GW-1 @ 30-32'	1010471-003	X
GW-2 @ 14-16'	1010471-004	X
GW-2 @ 20-22'	1010471-005	X
GW-2 @ 30-32'	1010471-006	X
GW-3 @ 14-16'	1010471-007	X
GW-3 @ 20-22'	1010471-008	X
GW-3 @ 30-32'	1010471-009	X
GW-4 @ 14-16'	1010471-010	X
GW-4 @ 20-22'	1010471-011	X
GW-4 @ 30-32'	1010471-012	X
GW-5 @ 16-18'	1010471-013	X
GW-5 @ 26-28'	1010471-014	X
GW-5 @ 36-38'	1010471-015	X
GW-6 @ 14-16'	1010471-016	X
GW-6 @ 20-22'	1010471-017	X
GW-6 @ 30-32'	1010471-018	X
GW-7 @ 14-16'	1010471-019	X
GW-7 @ 20-22'	1010471-020	X
GW-7 @ 30-32'	1010471-021	X
FIELD/EQUIP BLANK	1010471-022	X
TRIP BLANK 1	1010471-023	X
TRIP BLANK 2	1010471-024	X
STORAGE BLANK	1010471-025	X

CLP (Non-CLP) (Please indicate year of protocol) NYSDEC ASP B 2000 NTS 9.28.10

BER098 S3

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE IDENTIFICATION AND ANALYTICAL REQUIREMENT SUMMARY

SDG: BER099

Analytical Requirements

Customer Sample Code	Laboratory Sample Code	MSVOA
GW-8@ 10-12'	1010774-001	X
GW-9@ 12-14'	1010774-002	X
GW-10 @ 12-14'	1010774-003	X
FIELD BLANK	1010774-004	X
TRIP BLANK	1010774-005	X
STORAGE BLANK	1010774-006	X

CLP (Non-CLP) (Please indicate year of protocol) NYSDEC ASP B 2000

NTB 10/7/10

BER099 S3

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE IDENTIFICATION AND ANALYTICAL REQUIREMENT SUMMARY

SDG: BER100

Analytical Requirements

Customer Sample Code	Laboratory Sample Code	MSVOA
SB-1 @ 4-6'	1010776-001	X
SB-2 @ 8-10'	1010776-002	X
SB-3 @ 4-6'	1010776-003	X
SB-4 @ 5-7.5'	1010776-004	X
SB-5 @ 5-7.5'	1010776-005	X
SB-6 @ 10-12'	1010776-006	X
FIELD BLANK	1010776-007	X

CLP (Non-CLP) (Please indicate year of protocol) NYS DEC ASP B 2000
NTB 10/7/10

BER100 S3

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
VOLATILE (VOA)
ANALYSES

SDG: BER098

Laboratory Samp ID	Client Sample ID	Matrix	Analytical Protocol	Date Collected	DateRecd at Lab	Date Extracted	Date Analyzed	Extraction Method	DF	Level	Aux Cleanup
1010471-001A	GW-1 @ 14-16'	Aqueous	ASP 624	07-Sep-10	09-Sep-10		15-Sep-10		1	LOW	
1010471-002A	GW-1 @ 20-22'	Aqueous	ASP 624	07-Sep-10	09-Sep-10		15-Sep-10		1	LOW	
1010471-003A	GW-1 @ 30-32'	Aqueous	ASP 624	07-Sep-10	09-Sep-10		15-Sep-10		1	LOW	
1010471-003AMS	GW-1 @ 30-32'MS	Aqueous	ASP 624	07-Sep-10	09-Sep-10		15-Sep-10		1	LOW	
1010471-003AMSD	GW-1 @ 30-32'MSD	Aqueous	ASP 624	07-Sep-10	09-Sep-10		15-Sep-10		1	LOW	
1010471-004A	GW-2 @ 14-16'	Aqueous	ASP 624	07-Sep-10	09-Sep-10		15-Sep-10		1	LOW	
1010471-005A	GW-2 @ 20-22'	Aqueous	ASP 624	07-Sep-10	09-Sep-10		15-Sep-10		1	LOW	
1010471-006A	GW-2 @ 30-32'	Aqueous	ASP 624	07-Sep-10	09-Sep-10		15-Sep-10		1	LOW	
1010471-007A	GW-3 @ 14-16'	Aqueous	ASP 624	07-Sep-10	09-Sep-10		15-Sep-10		1	LOW	
1010471-008A	GW-3 @ 20-22'	Aqueous	ASP 624	07-Sep-10	09-Sep-10		15-Sep-10		1	LOW	
1010471-009A	GW-3 @ 30-32'	Aqueous	ASP 624	07-Sep-10	09-Sep-10		15-Sep-10		1	LOW	
1010471-010A	GW-4 @ 14-16'	Aqueous	ASP 624	07-Sep-10	09-Sep-10		15-Sep-10		1	LOW	
1010471-011A	GW-4 @ 20-22'	Aqueous	ASP 624	07-Sep-10	09-Sep-10		15-Sep-10		1	LOW	
1010471-012A	GW-4 @ 30-32'	Aqueous	ASP 624	07-Sep-10	09-Sep-10		15-Sep-10		1	LOW	
1010471-013A	GW-5 @ 16-18'	Aqueous	ASP 624	08-Sep-10	09-Sep-10		15-Sep-10		1	LOW	
1010471-014A	GW-5 @ 26-28'	Aqueous	ASP 624	08-Sep-10	09-Sep-10		15-Sep-10		1	LOW	
1010471-015A	GW-5 @ 36-38'	Aqueous	ASP 624	08-Sep-10	09-Sep-10		15-Sep-10		1	LOW	
1010471-016A	GW-6 @ 14-16'	Aqueous	ASP 624	08-Sep-10	09-Sep-10		15-Sep-10		1	LOW	
1010471-017a	GW-6 @ 20-22'	Aqueous	ASP 624	08-Sep-10	09-Sep-10		16-Sep-10		1	LOW	
1010471-018A	GW-6 @ 30-32'	Aqueous	ASP 624	08-Sep-10	09-Sep-10		16-Sep-10		1	LOW	
1010471-019A	GW-7 @ 14-16'	Aqueous	ASP 624	08-Sep-10	09-Sep-10		16-Sep-10		1	LOW	
1010471-020A	GW-7 @ 20-22'	Aqueous	ASP 624	08-Sep-10	09-Sep-10		16-Sep-10		1	LOW	
1010471-021A	GW-7 @ 30-32'	Aqueous	ASP 624	08-Sep-10	09-Sep-10		16-Sep-10		1	LOW	
1010471-022A	FIELD/EQUIP BLANK	Aqueous	ASP 624	08-Sep-10	09-Sep-10		16-Sep-10		1	LOW	
1010471-023A	TRIP BLANK 1	Aqueous	ASP 624	08-Sep-10	09-Sep-10		16-Sep-10		1	LOW	
1010471-024A	TRIP BLANK 2	Aqueous	ASP 624	08-Sep-10	09-Sep-10		16-Sep-10		1	LOW	
1010471-025A	STORAGE BLANK	Aqueous	ASP 624	09-Sep-10	09-Sep-10		16-Sep-10		1	LOW	

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
VOLATILE (VOA)
ANALYSES

SDG: BER099

Laboratory Samp ID	Client Sample ID	Matrix	Analytical Protocol	Date Collected	DateRecd at Lab	Date Extracted	Date Analyzed	Extraction Method	DF	Level	Aux Cleanup
1010774-001A	GW-8@ 10-12'	Aqueous	ASP 624	14-Sep-10	16-Sep-10		16-Sep-10		1	LOW	
1010774-002A	GW-9@ 12-14'	Aqueous	ASP 624	14-Sep-10	16-Sep-10		16-Sep-10		1	LOW	
1010774-002AMS	GW-9@ 12-14'MS	Aqueous	ASP 624	14-Sep-10	16-Sep-10		16-Sep-10		1	LOW	
1010774-002AMSD	GW-9@ 12-14'MSD	Aqueous	ASP 624	14-Sep-10	16-Sep-10		16-Sep-10		1	LOW	
1010774-003A	GW-10 @ 12-14'	Aqueous	ASP 624	14-Sep-10	16-Sep-10		16-Sep-10		1	LOW	
1010774-004A	FIELD BLANK	Aqueous	ASP 624	14-Sep-10	16-Sep-10		16-Sep-10		1	LOW	
1010774-005A	TRIP BLANK	Aqueous	ASP 624	14-Sep-10	16-Sep-10		16-Sep-10		1	LOW	
1010774-006A	STORAGE BLANK	Aqueous	ASP 624	14-Sep-10	16-Sep-10		16-Sep-10		1	LOW	

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
VOLATILE (VOA)
ANALYSES

SDG: BER100

Laboratory Samp ID	Client Sample ID	Matrix	Analytical Protocol	Date Collected	DateRecd at Lab	Date Extracted	Date Analyzed	Extraction Method	DF	Level	Aux Cleanup
1010776-001A	SB-1 @ 4-6'	Soil	ASPBSW8260	15-Sep-10	16-Sep-10		21-Sep-10		1	LOW	
1010776-002A	SB-2 @ 8-10'	Soil	ASPBSW8260	15-Sep-10	16-Sep-10		21-Sep-10		1	LOW	
1010776-003A	SB-3 @ 4-6'	Soil	ASPBSW8260	15-Sep-10	16-Sep-10		21-Sep-10		1	LOW	
1010776-004A	SB-4 @ 5-7.5'	Soil	ASPBSW8260	15-Sep-10	16-Sep-10		21-Sep-10		1	LOW	
1010776-005A	SB-5 @ 5-7.5'	Soil	ASPBSW8260	15-Sep-10	16-Sep-10		21-Sep-10		1	LOW	
1010776-005AMS	SB-5 @ 5-7.5'MS	Soil	ASPBSW8260	15-Sep-10	16-Sep-10		24-Sep-10		1	LOW	
1010776-005AMSD	SB-5 @ 5-7.5'MSD	Soil	ASPBSW8260	15-Sep-10	16-Sep-10		24-Sep-10		1	LOW	
1010776-006A	SB-6 @ 10-12'	Soil	ASPBSW8260	15-Sep-10	16-Sep-10		24-Sep-10		1	LOW	
1010776-007A	FIELD BLANK	Aqueous	ASPBSW8260	15-Sep-10	16-Sep-10		17-Sep-10		1	LOW	

Appendix B
Chain of Custody Documents

H2M LABS, INC.

575 Broad Hollow Rd, Melville, NY 11747-5076
Tel: (631) 694-3040 Fax: (631) 420-8436

CGR

EXTERNAL CHAIN OF CUSTODY

CLIENT: Berninger Env. Inc. | **H2M SDG NO:** BER098

PROJECT NAME/NUMBER: West Sayville Cleaners (WSC)
61 Main St. West Sayville NY

SAMPLERS: (signature)/Client: Justin / Butch / Eusi

DELIVERABLES: ASP Cat. B deliv.

TURNAROUND TIME: Normal

NOTES: P.O# 100922 (Rev 1 of 3)

Project Contact: Justin

Phone Number: 631 774 6682

PIS/Quote #

DATE	TIME	MATRIX	FIELD I.D.	Total No. of Containers	Sample Container Description: EPA-624-TCL + TIC's (ORGANIC: VOA)	ORGANIC: BNA	ORGANIC: Pest/PCB	INORG.: Metal	INORG.: CN	LAB I.D. NO.	REMARKS:
9/7/10	9:00	L	GW-1 @ 14-16'	2	X					1010471-001	
	9:10		GW-1 @ 20-22'	2						-002	
	9:20		GW-1 @ 30-32' (Dupes)	4						-003	
	10:30		GW-2 @ 14-16'	2						-004	
	10:45		GW-2 @ 20-22'	1						-005	
	13:45		GW-2 @ 30-32'							-006	
	12:00		GW-3 @ 14-16'							-007	
	12:15		GW-3 @ 20-22'							-008	
	12:30		GW-3 @ 30-32'							-009	
	13:00		GW-4 @ 14-16'							-010	

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	9/9/10	10:15		9-9-10	10:15
	9-9-10	1200		9/9/10	12:00

LABORATORY USE ONLY

Discrepancies Between Sample Labels and COC Record? Y or N
Explain:

Samples were:
1. Shipped ___ or Hand Delivered X Airbill# _____
2. Ambient or chilled Temp 5.0°C on ICE
3. Received in good condition: Y or N
4. Properly preserved: Y or N

COC Tape was:
1. Present on outer package: Y or N
2. Unbroken on outer package: Y or N
3. COC record present & complete upon sample receipt: Y or N

WHITE COPY - ORIGINAL | YELLOW COPY - CLIENT | PINK COPY - LABORATORY

BER098 S6

H LABS, INC.

575 Broad Hollow Rd, Melville, NY 11747-5076
Tel: (631) 694-3040 Fax: (631) 420-8436

250

EXTERNAL CHAIN OF CUSTODY

CLIENT: BEi **H2M SDG NO:** BER098

PROJECT NAME/NUMBER: (WSC) West Sayville Cleaners
61 Main St. West Sayville, NY

SAMPLERS: (signature)/Client: Justin / Eusi

DELIVERABLES: ASP Cat. B deliv.

TURNAROUND TIME: Norm

NOTES: P.O# 1009272 (Pg 2 of 3)

Project Contact: Justin

Phone Number: 774 6682

PIS/Quote #

DATE	TIME	MATRIX	FIELD I.D.	Total No. of Containers	ANALYSIS REQUESTED: ORGANIC VOA	ORGANIC BNA	ORGANIC Pest/PCB	INORG. Metal	INORG. CN	LAB I.D. NO.	REMARKS:
9/7/10	13:15	L	GW-4 @ 20-22'	2	X					1010471-011	
↓	13:30		GW-4 @ 30-32'							-012	
9/8/10	9:00		GW-5 @ 16-18'							-013	
	9:15		GW-5 @ 26-28'							-014	
	9:25		GW-5 @ 36-38'							-015	
	9:35		GW-6 @ 14-16'							-016	
	10:00		GW-6 @ 20-22'							-017	
	10:20		GW-6 @ 30-32'							-018	
	10:45		GW-7 @ 14-16'							-019	
↓	11:00	↓	GW-7 @ 20-22'	↓	↓					-020	

Sample Container Description: EPA-624 TCL + TIC's

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	9/9/10	10:15		9-9-10	10:15
	9-9-10	12:00		9/9/10	17:00

LABORATORY USE ONLY

Discrepancies Between Sample Labels and COC Record? Y or N
Explain:

Samples were:
1. Shipped ___ or Hand Delivered X Airbill# ____
2. Ambient or Chilled, Temp 5.0°C on ice
3. Received in good condition: (Y) or N
4. Properly preserved: Y or N

COC Tape was:
1. Present on outer package: Y or (N)
2. Unbroken on outer package: Y or N
3. COC record present & complete upon sample receipt: (Y) or N

WHITE COPY - ORIGINAL YELLOW COPY - CLIENT PINK COPY - LABORATORY

BER098 S7

H2M LABS, INC.

296

EXTERNAL CHAIN OF CUSTODY

575 Broad Hollow Rd, Melville, NY 11747-5076
Tel: (631) 694-3040 Fax: (631) 420-8436

CLIENT: BEI | **H2M SDG NO:** BER098

PROJECT NAME/NUMBER: West Sayville Cleaners (WSZ)
61 Main St. West Sayville, NY

SAMPLERS: (signature)/Client: Justin/Eusi

DELIVERABLES: ASP Cat. B deliv.

TURNAROUND TIME: Normal

NOTES: P.O# 1009272 (Page 3 of 3)

Project Contact: Justin

Phone Number: 631 774 6682

PIS/Quote #:

DATE	TIME	MATRIX	FIELD I.D.	Total No. of Containers	Sample Container Description	ANALYSIS REQUESTED: ORGANIC VOA	ORGANIC BNA	ORGANIC Pest/PCB	INORG. Metal	INORG. CN	LAB I.D. NO.	REMARKS:
9/8/10	11:30	L	GW-7a) 30-32'	2	EPA-624 TCL + TIC's	X					1010471-021	
↓		↓	Trip Blanks (2 days)	4	↓	↓					↓ -023 & 024	
↓		↓	Field / Equip Blank	2	↓	↓					↓ -022	

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	9/9/10	10:15		9-9-10	10:15
	9-9-10	1200		9/9/10	12:00
	Date	Time		Date	Time
	Date	Time		Date	Time

LABORATORY USE ONLY

Discrepancies Between Sample Labels and COC Record? Y or N
Explain:

Samples were:
1. Shipped ___ or Hand Delivered Y Airbill# ___
2. Ambient or Chilled, Temp 5.0°C on ICE
3. Received in good condition Y or N
4. Properly preserved Y or N

COC Tape was:
1. Present on outer package: Y or N
2. Unbroken on outer package: Y or N
3. COC record present & complete upon sample receipt: Y or N

WHITE COPY - ORIGINAL | YELLOW COPY - CLIENT | PINK COPY - LABORATORY

BER098 S8

BER098

'H2M LABS, INC.

Sample Receipt Checklist

Client Name BER | Date and Time Received: 9/9/2010 10:15:00 AM

Work Order Number 1010471 | Received by dmc

Checklist completed by [signature] Signature 9/9/10 Date | Reviewed by SA Initials 9/15/10 Date

Matrix: | Carrier name Hand Delivered

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Applicable ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Applicable ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Applicable ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
ufficient sample volume for indicated test?	Yes ☑	No ☐	
l samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Water - VOA vials have zero headspace?	No VOA vials submitted ☐	Yes ☑	No ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	

Adjusted? _____ Checked by _____

Any No and/or NA (not applicable) response must be detailed in the comments section below.

Client contacted YES Date contacted: 9/9/10 Person contacted JUSTIN HALPIN

Contacted by: JEN ARACRI Regarding _____

Comments: TRIP BLANKS FOR 2 DAYS OF SAMPLING LOGGED ON COC. TRIP BLANK LABELS WERE IDENTICAL FOR ALL 4 VIALS AND DID NOT SPECIFY WHICH SET WAS FOR WHICH DAY.

Corrective Action TRIP BLANKS WERE LOGGED AS TRIP BLANK 1 AND TRIP BLANK 2.

BER098 S9

H2M LABS, INC.

INTERNAL CHAIN OF CUSTODY

CLIENT: BER DELIVERABLES: B0-70D TURN AROUND TIME: 21 DAYS

SDG #: BER098 CASE #: _____ MATRIX: ~~GW~~ AQ pH CHECK Y or (N)

REMARKS: 008 BER 10 9/10/10 DMC T

RECEIVED BY: DMC SIGNATURE: _____ DATE: 9/9/10 TIME: 10:15

CLIENT ID	H2M LAB #	DATE COLLECTED	BOTTLE TYPE	# OF BOTTLES	TESTS REQUESTED	
GW-1 @ 14-16'	1010471-001A	9/7/10	DH	2	~~ASP8260-W~~ 624-W	9/14/10 DMC T
" 20-22'	-002A			↓		
" ↓ 30-32' *	-003A			4		*MS/MSD
" -2 14-16'	-004A			2		
" ↓ 20-22'	-005A					
" ↓ 30-32'	-006A					
" -3 14-16'	-007A					
" ↓ 20-22'	-008A					
" ↓ 30-32'	-009A					
" -4 14-16'	-010A					
" ↓ 20-22'	-011A					
" ↓ 30-32'	-012A	↓				
" -5 16-18'	-013A	9/8/10				
" ↓ 26-28'	-014A					
" ↓ 36-38'	-015A					
" -6 14-16'	-016A					
" ↓ 20-22'	-017A					
" ↓ 30-32'	-018A					
" -7 14-16'	-019A					
" ↓ 20-22'	-020A					
" ↓ 30-32'	-021A					
FIELD EQUIP BLANK	-022A					
TRIP BLANK 1	-023A					
TRIP BLANK 2	-024A					
STORAGE BLANK	-025A	9/9/10	↓	↓	↓	9/9/10 DMC

VOLATILE

P 0283

BER098 S10

H2M LABS, INC.

CLIENT: BER

SDG #: BER098

INTERNAL CHAIN OF CUSTODY

DATE	TIME	SAMPLE RELINQUISHED BY	SAMPLE RECEIVED BY	BOTTLE TYPE	PURPOSE OF CHANGE OF CUSTODY	INIT
9/9/10	19:20	SIGN	SIGN	DI	Analysis	
		SIGN	SIGN			
		SIGN	SIGN			
		SIGN	SIGN			
		SIGN	SIGN			
		SIGN	SIGN			
		SIGN	SIGN			
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		SIGN	SIGN			

VOLATILE

P 0284

BER098 S11

H2M LABS INC

575 Broad Hollow Rd, Melville, NY 11747-5076
Tel: (631) 694-3040 Fax: (631) 420-8436

EXTERNAL CHAIN OF CUSTODY

CLIENT: BEI | **H2M SDG NO:** BER099

PROJECT NAME/NUMBER: West Sayville Cleaners (WSC)
Col main st. West Sayville, NY

SAMPLERS: (signature)/Client

DELIVERABLES: ASP-B deliv.

TURNAROUND TIME: Normal

NOTES: P.O.# 100279 (Rev 1.02)

Project Contact: Justin

Phone Number: 5896521

PIS/Quote #

Sample Container Description: EPA 624 TCL + TICs

ANALYSIS REQUESTED

DATE	TIME	MATRIX	FIELD I.D.	Total No. of Containers	ORGANIC: VOA	ORGANIC: BNA	ORGANIC: Pest/PCB	INORG.: Metal	INORG.: CN	LAB I.D. NO.	REMARKS:
9/14/10	9/14	W	GW-8 @ 10-12'	2	1					1009774-001	
			GW-9 @ 12-14' (Dupes)	4	1					002	
			GW-10 @ 12-14'	2	1					003	
			Field Blank	2	1					004	
			Trip Blanks	2	1					005	

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	9/16	11:08		9/16	11:08
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	9/16/10	11:20		9/16/10	11:20
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time

LABORATORY USE ONLY

Discrepancies Between Sample Labels and COC Record? Y or N
Explain:

Samples were:
1. Shipped ___ or Hand Delivered X Airbill# ___
2. Ambient or chilled, Temp 2.9°C ON ICE
3. Received in good condition Y or N
4. Properly preserved: Y or N

COC Tape was:
1. Present on outer package: Y or N
2. Unbroken on outer package: Y or N
3. COC record present & complete upon sample receipt: Y or N

WHITE COPY - ORIGINAL | YELLOW COPY - CLIENT | PINK COPY - LABORATORY

I2M LABS, INC.

BER099

Sample Receipt Checklist

Client Name BER

Date and Time Received: 9/16/2010 11:08:00 AM

Work Order Number 1010774

Received by dmc

Checklist completed by _____ 9/16/10
Signature Date

Reviewed by JSA 9/21/10
Initials Date

Matrix: Carrier name Pickup

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Applicable ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Applicable ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Applicable ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
ıfficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Water - VOA vials have zero headspace?	No VOA vials submitted ☐	Yes ☑	No ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	

Adjusted? _____ Checked by _____

Any No and/or NA (not applicable) response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding _____

Comments: _____

Corrective Action _____

BER099 S7

H2M LABS, INC.

INTERNAL CHAIN OF CUSTODY

CLIENT: BER DELIVERABLES: B0-700 TURN AROUND TIME: 21 DAYS

SDG #: BER099 CASE #: _____ MATRIX: Aq pH CHECK Y or (N)

REMARKS: 008 BER 10

RECEIVED BY: DMC SIGNATURE: [signature] DATE: 9/16/10 TIME: 11:08

CLIENT ID	H2M LAB #	DATE COLLECTED	BOTTLE TYPE	# OF BOTTLES	TESTS REQUESTED	
1 GW-8@ 10-12'	1010774-001A	9-14-10	DH	2	624-W	
2 GW-9@ 12-14' *	-002A			4		*MS/MSD
3 GW-10@ 12-14'	-003A			2		
4 FIELD BLANK	-004A					
5 TRIP BLANK	-005A					
6 STORAGE BLANK	-006A					
7						
8						
9						
10						
11						
12						
13						
14						
15				MCW		
16						
17					9-20-10	
18						
19						
20						

VOLATILE

P 0034

BER099 S8

HzM LABS, INC.

CLIENT: BER

JOG #: BER099

INTERNAL CHAIN OF CUSTODY

DATE	TIME	SAMPLE RELINQUISHED BY	SAMPLE RECEIVED BY	BOTTLE TYPE	PURPOSE OF CHANGE OF CUSTODY	INIT
11/10	12:00	SIGN	SIGN	Du	ANALYSIS	
		SIGN	SIGN			
		SIGN	SIGN			
		SIGN	SIGN			
		SIGN	SIGN			
		SIGN	SIGN			
		SIGN	SIGN			
		SIGN	SIGN			
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		SIGN	SIGN			

VOLATILE

P 0035

BER099.S9

H2M LABS, INC.

575 Broad Hollow Rd, Melville, NY 11747-5076
Tel: (631) 694-3040 Fax: (631) 420-8436

EXTERNAL CHAIN OF CUSTODY

CLIENT: Berninger Enviro. Inc. (DEI) | H2M SDG NO: BER094 (100)

PROJECT NAME/NUMBER: West Sayville Cleaners (456) 61 main St. W. Sayville, NY

SAMPLERS: (signature) Client

DELIVERABLES: ASP cat-B deliv.

TURNAROUND TIME: Normal

NOTES: P.O.# 1009279 (Pg 2 of 2)

Project Contact: Justin

Phone Number: 589-6521

PIS/Quote #

DATE	TIME	MATRIX	FIELD I.D.	Total No. of Containers	Sample Container Description: 2 SOIL + TIC's	ORGANIC: VOA	ORGANIC: BNA	ORGANIC: Pest/PCB	INORG.: Metal	INORG.: CN	LAB I.D. NO.	REMARKS:
9/15		S	SB-1 @ 4-6'	1	2						010778-001	
			SB-2 @ 8-10'	1							-002	
			SB-3 @ 4-6'	1							-003	
			SB-4 @ 5-7.5'	1							-004	
			SB-5 (Dup) @ 5-7.5'	2							-005	
			SB-6 @ 10-12'	1							-006	
9/15		L	Field Blank	3	X						-007	

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	9/16	11:08		9/16	11:08
	9/16/10	11:20		9/16/10	11:20

LABORATORY USE ONLY

Discrepancies Between Sample Labels and COC Record? Y or N
Explain:

Samples were:
1. Shipped ___ or Hand Delivered X Airbill# _____
2. Ambient or chilled, Temp 2.4 °C on ICE
3. Received in good condition: Y or N
4. Properly preserved: Y or N

COC Tape was:
1. Present on outer package: Y or N
2. Unbroken on outer package: Y or N
3. COC record present & complete upon sample receipt: Y or N

WHITE COPY - ORIGINAL | YELLOW COPY - CLIENT | PINK COPY - LABORATORY

BER100 S6

12M LABS, INC.

BER100

Sample Receipt Checklist

Client Name BER | Date and Time Received: 9/16/2010 11:08:00 AM

Work Order Number 1010776 | Received by dmc

Checklist completed by _____ (Signature) 9/16/10 (Date) | Reviewed by JSA (Initials) 9/21/10 (Date)

Matrix: | Carrier name Hand Delivered

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Applicable ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Applicable ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Applicable ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Water - VOA vials have zero headspace?	No VOA vials submitted ☐	Yes ☑	No ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	

Adjusted? _____ Checked by _____

Any No and/or NA (not applicable) response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding _____

Comments:

Corrective Action

BER100 S7

H2M LABS, INC.

INTERNAL CHAIN OF CUSTODY

CLIENT: BER DELIVERABLES: B0-70D TURN AROUND TIME: 21 DAYS

SDG #: BER100 CASE #: _____ MATRIX: Soil pH CHECK Y or (N)

REMARKS: 008 BER 10

RECEIVED BY: DMC SIGNATURE: _____ DATE: 9/16/10 TIME: 11:08

CLIENT ID	H2M LAB #	DATE COLLECTED	BOTTLE TYPE	# OF BOTTLES	TESTS REQUESTED	
• SB-1@4-6'	101076-001A	9-15-10	A	1	ASP095-8260_S, PMoST	
• SB-2@ 8-10'	-002A					
• SB-3@ 4-6'	-003A					
• SB-4@ 5-7.5'	-004A			↓		
• SB-5@ 5-7.5' *	-005A			2		*MS/MSD
B-6@ 10-12'	-006A		↓	1	↓	
• FIELD BLANK	-007A	↓	D H	2	ASP095 8260_W	
•						
•						
"						
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MCW 9-20-10

VOLATILE

P 0037

BER100 S8

H2M LABS, INC.

CLIENT: BER

SDG #: BER100

INTERNAL CHAIN OF CUSTODY

DATE	TIME	SAMPLE RELINQUISHED BY	SAMPLE RECEIVED BY	BOTTLE TYPE	PURPOSE OF CHANGE OF CUSTODY	INIT
7/6/10	12:05	SIGN	SIGN	A, DH	ANALYSIS	
7/6/10	12:15	SIGN	SIGN	A	PHOST	
7/6/10	13:15	SIGN	SIGN	A	storage	
		SIGN	SIGN			
		SIGN	SIGN			
		SIGN	SIGN			
		SIGN	SIGN			
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		SIGN	SIGN			
		SIGN	SIGN			

VOLATILE

BER100 S9

Appendix C
SDG Narratives

H2M LABS, INC.

SDG NARRATIVE FOR VOLATILE ORGANICS
SAMPLES RECEIVED: 9/9/10
SDG #: BER098

For Sample(s):

GW-1 @ 14-16'	GW-2 @ 30-32'	GW-4 @ 20-22'	GW-6 @ 14-16'	GW-7 @ 30-32'
GW-1 @ 20-22'	GW-3 @ 14-16'	GW-4 @ 30-32'	GW-6 @ 20-22'	FIELD/EQUIP BLANK
GW-1 @ 30-32'	GW-3 @ 20-22'	GW-5 @ 16-18'	GW-6 @ 30-32'	TRIP BLANK 1
GW-2 @ 14-16'	GW-3 @ 30-32'	GW-5 @ 26-28'	GW-7 @ 14-16'	TRIP BLANK 2
GW-2 @ 20-22'	GW-4 @ 14-16'	GW-5 @ 36-38'	GW-7 @ 20-22'	STORAGE BLANK

The above sample(s) was/were analyzed for a select list of volatile organics by following the requirements of EPA method 624 plus TICs.

All QC data and calibrations met the requirements of the method, unless discussed below. The following should be noted:

Sample GW-1 @ 30-32' was analyzed as the matrix spike/matrix spike duplicate (MS/MSD). The matrix spike/matrix spike duplicate had poor RSD's and several percent recoveries outside of QC limits. Lab fortified blanks were analyzed. All percent recoveries were within or above QC limits except for dichlorodifluoromethane at 35% (limit 50%) in LFB 91510 and carbon tetrachloride at 66% recovered (limit 70%) in LFB 91610.

2-chloroethylvinyl ether did not recover in the matrix spike matrix spike duplicate due to acid preservation.

Acrolein and acryonitrile results should be considered qualified as the analysis occurred outside the three day holding time.

A lab fortified blank was analyzed indicating good method efficiency.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Date Reported: September 28, 2010

****
* *
* *
****

Joann M. Slavin
Senior Vice President

H2M LABS, INC.

SDG NARRATIVE FOR VOLATILE ORGANICS
SAMPLES RECEIVED: 9/16/10
SDG #: BER099

For Sample(s):

GW-8@ 10-12'
GW-9@ 12-14'
GW-10 @ 12-14'
FIELD BLANK
TRIP BLANK
STORAGE BLANK

The above sample(s) was/were analyzed for a select list of volatile organics by following the requirements of EPA method 624 plus TICs.

All QC data and calibrations met the requirements of the method, unless discussed below. The following should be noted:

Sample GW-9@ 12-14'was analyzed as the matrix spike/matrix spike duplicate (MS/MSD). 2-chloroethylvinyl ether did not recover in the matrix spike matrix spike duplicate due to acid preservation. Lab fortified blanks were analyzed. All percent recoveries were within or above QC limits except for carbon tetrachloride at 66% recovered (limit 70%) in LFB 91610.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Date Reported: October 4, 2010

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* *
* *
****
Joann M. Slavin
Senior Vice President

H2M LABS, INC.

SDG NARRATIVE FOR VOLATILE ORGANICS
SAMPLES RECEIVED: 9/16/10
SDG #: BER100

For Sample(s):

SB-1 @ 4-6'
SB-2 @ 8-10'
SB-3 @ 4-6'
SB-4 @ 5-7.5'
SB-5 @ 5-7.5'
SB-6 @ 10-12'
FIELD BLANK

The above sample(s) was/were analyzed for volatile organics by EPA method 8260B in accordance with the NYSDEC ASP, Rev. 6/2000 with category B deliverables.

All QC data and calibrations met the requirements of the method, unless discussed below. The following should be noted:

Sample SB-5 @ 5-7.5' was analyzed as the matrix spike/matrix spike duplicate (MS/MSD).

All percent recoveries and RPD's were met except for a low recovery for 1,1-dichloroethene in the matrix spike duplicate. Lab fortified blanks were analyzed and indicate good method efficiency. Levels of methylene chloride, acetone and a TIC identified as an alkane were present in some method blanks. These analytes are flagged with a "B" qualifier if present in samples associated with these blanks.

A TIC identified as a "siloxane" is flagged with an "X" qualifier to indicate suspected column/septa bleed.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Date Reported: October 7, 2010

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* *
* *
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Joann M. Slavin
Senior Vice President

Appendix D
Tentatively Identified Compounds (TICs)

1F

EPA SAMPLE NO.

FIELD/EQUIP BLANK

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER098

Matrix: (soil/water) WATER Lab Sample ID: 1010471-022A

Sample wt/vol: 5 (g/mL) ML Lab File ID: 0\P49592.D

Level: (low/med) LOW Date Received: 09/09/10

% Moisture: not dec. Date Analyzed: 09/16/10

GC Column: Rtx-624 ID: .18 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 0 (µg/L or µg/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q

BER098 S18

1F

EPA SAMPLE NO.

GW-1 @ 14-16'

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER098

Matrix: (soil/water) WATER Lab Sample ID: 1010471-001A

Sample wt/vol: 5 (g/mL) ML Lab File ID: 0\P49564.D

Level: (low/med) LOW Date Received: 09/09/10

% Moisture: not dec. Date Analyzed: 09/15/10

GC Column: Rtx-624 ID: .18 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 0 (µg/L or µg/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q

1F

EPA SAMPLE NO.

GW-1 @ 20-22'

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER098

Matrix: (soil/water) WATER Lab Sample ID: 1010471-002A

Sample wt/vol: 5 (g/mL) ML Lab File ID: 0\P49565.D

Level: (low/med) LOW Date Received: 09/09/10

% Moisture: not dec. Date Analyzed: 09/15/10

GC Column: Rtx-624 ID: .18 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 0 (µg/L or µg/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q

1F

EPA SAMPLE NO.

GW-1 @ 30-32'

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER098

Matrix: (soil/water) WATER Lab Sample ID: 1010471-003A

Sample wt/vol: 5 (g/mL) ML Lab File ID: 0\P49563.D

Level: (low/med) LOW Date Received: 09/09/10

% Moisture: not dec. Date Analyzed: 09/15/10

GC Column: Rtx-624 ID: .18 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 0 (µg/L or µg/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q

1F

EPA SAMPLE NO.

GW-2 @ 14-16'

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER098

Matrix: (soil/water) WATER Lab Sample ID: 1010471-004A

Sample wt/vol: 5 (g/mL) ML Lab File ID: 0\P49566.D

Level: (low/med) LOW Date Received: 09/09/10

% Moisture: not dec. Date Analyzed: 09/15/10

GC Column: Rtx-624 ID: .18 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 0 (µg/L or µg/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q

1F

EPA SAMPLE NO.

GW-2 @ 20-22'

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER098

Matrix: (soil/water) WATER Lab Sample ID: 1010471-005A

Sample wt/vol: 5 (g/mL) ML Lab File ID: 0\P49569.D

Level: (low/med) LOW Date Received: 09/09/10

% Moisture: not dec. Date Analyzed: 09/15/10

GC Column: Rtx-624 ID: .18 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 0 (µg/L or µg/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q

1F

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW-2 @ 30-32'

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER098

Matrix: (soil/water) WATER Lab Sample ID: 1010471-006A

Sample wt/vol: 5 (g/mL) ML Lab File ID: 0\P49570.D

Level: (low/med) LOW Date Received: 09/09/10

% Moisture: not dec. Date Analyzed: 09/15/10

GC Column: Rtx-624 ID: .18 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 0 (µg/L or µg/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q

BER098 S36

1F

EPA SAMPLE NO.

GW-3 @ 14-16'

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER098

Matrix: (soil/water) WATER Lab Sample ID: 1010471-007A

Sample wt/vol: 5 (g/mL) ML Lab File ID: 0\P49571.D

Level: (low/med) LOW Date Received: 09/09/10

% Moisture: not dec. Date Analyzed: 09/15/10

GC Column: Rtx-624 ID: .18 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 0 (µg/L or µg/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q

1F

EPA SAMPLE NO.

GW-3 @ 20-22'

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER098

Matrix: (soil/water) WATER Lab Sample ID: 1010471-008A

Sample wt/vol: 5 (g/mL) ML Lab File ID: 0\P49572.D

Level: (low/med) LOW Date Received: 09/09/10

% Moisture: not dec. Date Analyzed: 09/15/10

GC Column: Rtx-624 ID: .18 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 0 (µg/L or µg/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q

BER098 S42

1F

EPA SAMPLE NO.

GW-3 @ 30-32'

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER098

Matrix: (soil/water) WATER Lab Sample ID: 1010471-009A

Sample wt/vol: 5 (g/mL) ML Lab File ID: 0\P49573.D

Level: (low/med) LOW Date Received: 09/09/10

% Moisture: not dec. Date Analyzed: 09/15/10

GC Column: Rtx-624 ID: .18 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 2 (µg/L or µg/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q
1.	unknown (1)	1.00	14	J
2.	unknown (1.16)	1.16	9.2	J

1F

EPA SAMPLE NO.

GW-4 @ 14-16'

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER098

Matrix: (soil/water) WATER Lab Sample ID: 1010471-010A

Sample wt/vol: 5 (g/mL) ML Lab File ID: 0\P49574.D

Level: (low/med) LOW Date Received: 09/09/10

% Moisture: not dec. Date Analyzed: 09/15/10

GC Column: Rtx-624 ID: .18 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 0 (µg/L or µg/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q

1F

EPA SAMPLE NO.

GW-4 @ 20-22'

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER098

Matrix: (soil/water) WATER Lab Sample ID: 1010471-011A

Sample wt/vol: 5 (g/mL) ML Lab File ID: 0\P49575.D

Level: (low/med) LOW Date Received: 09/09/10

% Moisture: not dec. Date Analyzed: 09/15/10

GC Column: Rtx-624 ID: .18 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 0 (µg/L or µg/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q

BER098 S51

1F

EPA SAMPLE NO.

GW-4 @ 30-32'

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER098

Matrix: (soil/water) WATER Lab Sample ID: 1010471-012A

Sample wt/vol: 5 (g/mL) ML Lab File ID: 0\P49576.D

Level: (low/med) LOW Date Received: 09/09/10

% Moisture: not dec. Date Analyzed: 09/15/10

GC Column: Rtx-624 ID: .18 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 0 (µg/L or µg/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q

BER098 S54

1F

EPA SAMPLE NO.

GW-5 @ 16-18'

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER098

Matrix: (soil/water) WATER Lab Sample ID: 1010471-013A

Sample wt/vol: 5 (g/mL) ML Lab File ID: 0\P49577.D

Level: (low/med) LOW Date Received: 09/09/10

% Moisture: not dec. Date Analyzed: 09/15/10

GC Column: Rtx-624 ID: .18 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 0 (µg/L or µg/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q

BER098 S57

1F

EPA SAMPLE NO.

GW-5 @ 26-28'

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER098

Matrix: (soil/water) WATER Lab Sample ID: 1010471-014A

Sample wt/vol: 5 (g/mL) ML Lab File ID: 0\P49578.D

Level: (low/med) LOW Date Received: 09/09/10

% Moisture: not dec. Date Analyzed: 09/15/10

GC Column: Rtx-624 ID: .18 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 2 (µg/L or µg/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q
1.	unknown (1)	1.00	8.5	J
2.	unknown (1.16)	1.16	5.8	J

BER098 S60

1F

EPA SAMPLE NO.

GW-5 @ 36-38'

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER098

Matrix: (soil/water) WATER Lab Sample ID: 1010471-015A

Sample wt/vol: 5 (g/mL) ML Lab File ID: 0\P49579.D

Level: (low/med) LOW Date Received: 09/09/10

% Moisture: not dec. Date Analyzed: 09/15/10

GC Column: Rtx-624 ID: .18 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 2 (µg/L or µg/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q
1.	unknown (1)	1.00	13	J
2.	unknown (1.16)	1.16	8.5	J

BER098 S63

1F

EPA SAMPLE NO.

GW-6 @ 14-16'

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER098

Matrix: (soil/water) WATER Lab Sample ID: 1010471-016A

Sample wt/vol: 5 (g/mL) ML Lab File ID: 0\P49580.D

Level: (low/med) LOW Date Received: 09/09/10

% Moisture: not dec. Date Analyzed: 09/15/10

GC Column: Rtx-624 ID: .18 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 0 (µg/L or µg/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q

1F

EPA SAMPLE NO.

GW-6 @ 20-22'

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER098

Matrix: (soil/water) WATER Lab Sample ID: 1010471-017a

Sample wt/vol: 5 (g/mL) ML Lab File ID: 0\P49585.D

Level: (low/med) LOW Date Received: 09/09/10

% Moisture: not dec. Date Analyzed: 09/16/10

GC Column: Rtx-624 ID: .18 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 1 (µg/L or µg/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q
1.		unknown	1.16	4.4	J

1F

EPA SAMPLE NO.

GW-6 @ 30-32'

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER098

Matrix: (soil/water) WATER Lab Sample ID: 1010471-018A

Sample wt/vol: 5 (g/mL) ML Lab File ID: 0\P49586.D

Level: (low/med) LOW Date Received: 09/09/10

% Moisture: not dec. Date Analyzed: 09/16/10

GC Column: Rtx-624 ID: .18 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 0 (µg/L or µg/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q

1F

EPA SAMPLE NO.

GW-7 @ 14-16'

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER098

Matrix: (soil/water) WATER Lab Sample ID: 1010471-019A

Sample wt/vol: 5 (g/mL) ML Lab File ID: 0\P49589.D

Level: (low/med) LOW Date Received: 09/09/10

% Moisture: not dec. Date Analyzed: 09/16/10

GC Column: Rtx-624 ID: .18 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 0 (µg/L or µg/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q

BER098 S75

1F

EPA SAMPLE NO.

GW-7 @ 20-22'

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER098

Matrix: (soil/water) WATER Lab Sample ID: 1010471-020A

Sample wt/vol: 5 (g/mL) ML Lab File ID: 0\P49590.D

Level: (low/med) LOW Date Received: 09/09/10

% Moisture: not dec. Date Analyzed: 09/16/10

GC Column: Rtx-624 ID: .18 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 0 (µg/L or µg/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q

BER098 S78

1F

EPA SAMPLE NO.

GW-7 @ 30-32'

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER098

Matrix: (soil/water) WATER Lab Sample ID: 1010471-021A

Sample wt/vol: 5 (g/mL) ML Lab File ID: 0\P49591.D

Level: (low/med) LOW Date Received: 09/09/10

% Moisture: not dec. Date Analyzed: 09/16/10

GC Column: Rtx-624 ID: .18 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 0 (µg/L or µg/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q

1F

EPA SAMPLE NO.

STORAGE BLANK

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER098

Matrix: (soil/water) WATER Lab Sample ID: 1010471-025A

Sample wt/vol: 5 (g/mL) ML Lab File ID: 0\P49595.D

Level: (low/med) LOW Date Received: 09/09/10

% Moisture: not dec. Date Analyzed: 09/16/10

GC Column: Rtx-624 ID: .18 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 0 (µg/L or µg/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q

BER098 S84

1F

EPA SAMPLE NO.

TRIP BLANK 1

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER098

Matrix: (soil/water) WATER Lab Sample ID: 1010471-023A

Sample wt/vol: 5 (g/mL) ML Lab File ID: 0\P49593.D

Level: (low/med) LOW Date Received: 09/09/10

% Moisture: not dec. Date Analyzed: 09/16/10

GC Column: Rtx-624 ID: .18 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 0 (µg/L or µg/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q

BER098 S87

1F

EPA SAMPLE NO.

TRIP BLANK 2

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER098

Matrix: (soil/water) WATER Lab Sample ID: 1010471-024A

Sample wt/vol: 5 (g/mL) ML Lab File ID: 0\P49594.D

Level: (low/med) LOW Date Received: 09/09/10

% Moisture: not dec. Date Analyzed: 09/16/10

GC Column: Rtx-624 ID: .18 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 0 (µg/L or µg/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q

BER098 S90

1F

EPA SAMPLE NO.

VBLK091510

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER098

Matrix: (soil/water) WATER Lab Sample ID: VBLK091510

Sample wt/vol: 5 (g/mL) ML Lab File ID: 0\P49560.D

Level: (low/med) LOW Date Received:

% Moisture: not dec. Date Analyzed: 09/15/10

GC Column: Rtx-624 ID: .18 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 0 (µg/L or µg/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q

BER098 S106

1F

EPA SAMPLE NO.

VBLK091610

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER098

Matrix: (soil/water) WATER Lab Sample ID: VBLK091610

Sample wt/vol: 5 (g/mL) ML Lab File ID: 0\P49583.D

Level: (low/med) LOW Date Received:

% Moisture: not dec. Date Analyzed: 09/16/10

GC Column: Rtx-624 ID: .18 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 0 (µg/L or µg/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q

BER098 S110

1F

EPA SAMPLE NO.

GW-8@ 10-12'

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER099

Matrix: (soil/water) WATER Lab Sample ID: 1010774-001A

Sample wt/vol: 5 (g/mL) ML Lab File ID: 0\P49596.D

Level: (low/med) LOW Date Received: 09/16/10

% Moisture: not dec. Date Analyzed: 09/16/10

GC Column: Rtx-624 ID: .18 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 0 (µg/L or µg/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q

1F

EPA SAMPLE NO.

GW-9@ 12-14'

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER099

Matrix: (soil/water) WATER Lab Sample ID: 1010774-002A

Sample wt/vol: 5 (g/mL) ML Lab File ID: 0\P49597.D

Level: (low/med) LOW Date Received: 09/16/10

% Moisture: not dec. Date Analyzed: 09/16/10

GC Column: Rtx-624 ID: .18 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 0 (µg/L or µg/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q

1F

EPA SAMPLE NO.

GW-10 @ 12-14'

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER099

Matrix: (soil/water) WATER Lab Sample ID: 1010774-003A

Sample wt/vol: 5 (g/mL) ML Lab File ID: 0\P49600.D

Level: (low/med) LOW Date Received: 09/16/10

% Moisture: not dec. Date Analyzed: 09/16/10

GC Column: Rtx-624 ID: .18 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 1 (µg/L or µg/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q
1.	unknown	1.16	5.9	J

1F

EPA SAMPLE NO.

FIELD BLANK

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER099

Matrix: (soil/water) WATER Lab Sample ID: 1010774-004A

Sample wt/vol: 5 (g/mL) ML Lab File ID: 0\P49601.D

Level: (low/med) LOW Date Received: 09/16/10

% Moisture: not dec. Date Analyzed: 09/16/10

GC Column: Rtx-624 ID: .18 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 0 (µg/L or µg/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q

BER099 S25

1F

EPA SAMPLE NO.

TRIP BLANK

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER099

Matrix: (soil/water) WATER Lab Sample ID: 1010774-005A

Sample wt/vol: 5 (g/mL) ML Lab File ID: 0\P49602.D

Level: (low/med) LOW Date Received: 09/16/10

% Moisture: not dec. Date Analyzed: 09/16/10

GC Column: Rtx-624 ID: .18 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 0 (µg/L or µg/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q

BER099 S28

1F

EPA SAMPLE NO.

STORAGE BLANK

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER099

Matrix: (soil/water) WATER Lab Sample ID: 1010774-006A

Sample wt/vol: 5 (g/mL) ML Lab File ID: 0\P49603.D

Level: (low/med) LOW Date Received: 09/16/10

% Moisture: not dec. Date Analyzed: 09/16/10

GC Column: Rtx-624 ID: .18 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 0 (µg/L or µg/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q

BER099 S31

1F

EPA SAMPLE NO.

VBLK091610

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER099

Matrix: (soil/water) WATER Lab Sample ID: VBLK091610

Sample wt/vol: 5 (g/mL) ML Lab File ID: 0\P49583.D

Level: (low/med) LOW Date Received:

% Moisture: not dec. Date Analyzed: 09/16/10

GC Column: Rtx-624 ID: .18 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 0 (µg/L or µg/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q

BER099 S44

1F

EPA SAMPLE NO.

SB-1 @ 4-6'

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER100

Matrix: (soil/water) SOIL Lab Sample ID: 1010776-001A

Sample wt/vol: 5 (g/mL) G Lab File ID: 0A\A71092.

Level: (low/med) LOW Date Received: 09/16/10

% Moisture: not dec. 3.51 Date Analyzed: 09/21/10

GC Column: ZB-624 ID: .18 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 1 (µg/L or µg/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q
1.	unknown alkene	5.98	9	BJ

R

Sa 11/10/10

BER100 S15

1F

EPA SAMPLE NO.

SB-2 @ 8-10'

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER100

Matrix: (soil/water) SOIL Lab Sample ID: 1010776-002A

Sample wt/vol: 5 (g/mL) G Lab File ID: 0A\A71093.

Level: (low/med) LOW Date Received: 09/16/10

% Moisture: not dec. 6.89 Date Analyzed: 09/21/10

GC Column: ZB-624 ID: .18 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 2 (µg/L or µg/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q	
~~1.~~	~~unknown alkane~~	~~5.98~~	~~6~~	~~BJ~~	R
~~2.~~	~~Unknown siloxane~~	~~16.83~~	~~6~~	~~JX~~	R

Lou Blum
11/10/10

BER100 S17

1F

EPA SAMPLE NO.

SB-3 @ 4-6'

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER100

Matrix: (soil/water) SOIL Lab Sample ID: 1010776-003A

Sample wt/vol: 5 (g/mL) G Lab File ID: 0A\A71094.

Level: (low/med) LOW Date Received: 09/16/10

% Moisture: not dec. 3.48 Date Analyzed: 09/21/10

GC Column: ZB-624 ID: .18 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 2 (µg/L or µg/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q
1.	unknown	16.20	14	J
~~2.~~	~~Unknown siloxane~~	~~19.60~~	~~7~~	~~JX~~ R

11/10/10

1F

EPA SAMPLE NO.

SB-4 @ 5-7.5'

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER100

Matrix: (soil/water) SOIL Lab Sample ID: 1010776-004A

Sample wt/vol: 5 (g/mL) G Lab File ID: 0A\A71095.

Level: (low/med) LOW Date Received: 09/16/10

% Moisture: not dec. 6.46 Date Analyzed: 09/21/10

GC Column: ZB-624 ID: .18 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 0 (µg/L or µg/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q

1F

EPA SAMPLE NO.

SB-5 @ 5-7.5'

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER100

Matrix: (soil/water) SOIL Lab Sample ID: 1010776-005A

Sample wt/vol: 5 (g/mL) G Lab File ID: 0A\A71096.

Level: (low/med) LOW Date Received: 09/16/10

% Moisture: not dec. 3.5 Date Analyzed: 09/21/10

GC Column: ZB-624 ID: .18 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 0 (µg/L or µg/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q

1F

EPA SAMPLE NO.

SB-6 @ 10-12'

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER100

Matrix: (soil/water) SOIL Lab Sample ID: 1010776-006A

Sample wt/vol: 5 (g/mL) G Lab File ID: 10\E9631.D

Level: (low/med) LOW Date Received: 09/16/10

% Moisture: not dec. 10.1 Date Analyzed: 09/24/10

GC Column: Rxi-1MS ID: .32 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 0 (µg/L or µg/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q

1F

EPA SAMPLE NO.

FIELD BLANK

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER100

Matrix: (soil/water) WATER Lab Sample ID: 1010776-007A

Sample wt/vol: 5 (g/mL) ML Lab File ID: 0A\A71060.

Level: (low/med) LOW Date Received: 09/16/10

% Moisture: not dec. Date Analyzed: 09/17/10

GC Column: ZB-624 ID: .18 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 1 (µg/L or µg/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q
1.		unknown alkene	6.19	7	J

1F

EPA SAMPLE NO.

VBLK091710

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER100

Matrix: (soil/water) WATER Lab Sample ID: VBLK091710

Sample wt/vol: 5 (g/mL) ML Lab File ID: 0A\A71050B

Level: (low/med) LOW Date Received:

% Moisture: not dec. Date Analyzed: 09/17/10

GC Column: ZB-624 ID: .18 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 0 (µg/L or µg/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q

1F

EPA SAMPLE NO.

VBLK092110

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER100

Matrix: (soil/water) SOIL Lab Sample ID: VBLK092110

Sample wt/vol: 5 (g/mL) G Lab File ID: 0A\A71088.

Level: (low/med) LOW Date Received:

% Moisture: not dec. Date Analyzed: 09/21/10

GC Column: ZB-624 ID: .18 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 1 (µg/L or µg/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q
1.		unknown alkene	5.98	20	J

1F

EPA SAMPLE NO.

VBLK092410

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER100

Matrix: (soil/water) SOIL Lab Sample ID: VBLK092410

Sample wt/vol: 5 (g/mL) G Lab File ID: 10\E9626.D

Level: (low/med) LOW Date Received:

% Moisture: not dec. Date Analyzed: 09/24/10

GC Column: Rxi-1MS ID: .32 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 0 (µg/L or µg/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q

Appendix E
Data Summary Tables
With Qualifications

LABValidation@aol.com

TABLE 1 - SUMMARY OF VOLATILE ORGANIC COMPOUNDS DETECTED AND/OR ELEVATED ABOVE NYSDEC CLASS GA AMBIENT WATER QUALITY STANDARDS

West Sayville Cleaners, West Sayville, NY								
SDG BER098, BER099								
Berninger Sample ID:	Field/Equip Blank	GW-1 @ 14-16'	GW-1 @20-22'	GW-1 @30-32'	GW-2 @ 14-16'	GW-2 @20-22'	GW-2 @ 30-32'	NYSDEC CLASS GA
Laboratory ID:	1010471-022A	1010471-001A	1010471-002A	1010471-003A	1010471-004A	1010471-005A	1010471-006A	AMBIENT WATER
Sampling Date:	9/8/2010	9/7/2010	9/7/2010	9/7/2010	9/7/2010	9/7/2010	9/7/2010	QUALITY STANDARDS
% Moisture	NA	NA	NA	NA	NA	NA	NA	GUIDANCE VALUES
units: ug/L								units: ug/L
Analyte								
Chloromethane	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	NA
Bromomethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5
Vinyl Chloride	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	2
Chloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	50
Dichlorodifluoromethane	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	NA
Trichlorofluoromethane	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	NA
1,1-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	50
cis-1,2-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5
Methylene Chloride	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5
trans-1,2-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5
1,1-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5
Chloroform	1 U	1 U	1 U	1 U	1 U	1 U	1 U	7
1,1,1-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5
1,2-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5
Carbon Tetrachloride	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	5
Benzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1
Trichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5
1,2-Dichloropropane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1
Bromodichloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	50
2-Chloroethylvinyl ether	1 R	1 R	1 R	1 R	1 R	1 R	1 R	NA
cis-1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5
Toluene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5
trans-1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
1,1,2-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5
Tetrachloroethene	1 U	1 U	1 U	1 U	1 U	2.7	1 U	5
Dibromochloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
Chlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5
Ethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5
Bromoform	1 U	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	50
1,1,2,2-Tetrachloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5
1,3-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	3
1,4-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	3
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	3
Acrolein	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	NA
Acrylonitrile	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	NA
Xylene (total)	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5
TOTAL VOCS	ND	ND	ND	ND	ND	2.7	ND	
TOTAL TENTATIVELY IDENTIFIED CMPDS	ND	ND	ND	ND	ND	ND	ND	NA = Not Applicable ND=None Detected

TABLE 1 - SUMMARY OF VOLATILE ORGANIC COMPOUNDS DETECTED AND/OR ELEVATED ABOVE NYSDEC CLASS GA AMBIENT WATER QUALITY STANDARDS

West Sayville Cleaners, West Sayville, NY								
SDG BER099, BER099								
Berninger Sample ID:	GW-3 @ 14-16'	GW-3 @20-22'	GW-3 @30-32'	GW-4 @ 14-16'	GW-4 @20-22'	GW-4 @30-32'	GW-5 @ 16-18'	NYSDEC CLASS GA
Laboratory ID:	1010471-007A	1010471-008A	1010471-009A	1010471-010A	1010471-011A	1010471-012A	1010471-013A	AMBIENT WATER
Sampling Date:	9/7/2010	9/7/2010	9/7/2010	9/7/2010	9/7/2010	9/7/2010	9/8/2010	QUALITY STANDARDS
% Moisture	NA	NA	NA	NA	NA	NA	NA	GUIDANCE VALUES
units: ug/L								units: ug/L
Analyte								
Chloromethane	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	NA
Bromomethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5
Vinyl Chloride	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	2
Chloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	50
Dichlorodifluoromethane	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	NA
Trichlorofluoromethane	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	NA
1,1-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	50
cis-1,2-Dichloroethene	1 U	3.8	1 U	1 U	1 U	1 U	1 U	5
Methylene Chloride	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5
trans-1,2-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5
1,1-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5
Chloroform	1 U	1 U	1 U	1 U	1 U	1 U	1 U	7
1,1,1-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5
1,2-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5
Carbon Tetrachloride	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5
Benzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1
Trichloroethene	1 U	2.0	1 U	1 U	1 U	1 U	1 U	5
1,2-Dichloropropane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1
Bromodichloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	50
2-Chloroethylvinyl ether	1 R	1 R	1 R	1 R	1 R	1 R	1 R	NA
cis-1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5
Toluene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5
trans-1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
1,1,2-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5
Tetrachloroethene	1 U	20	1.0	1 U	4.9	1 U	1 U	5
Dibromochloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
Chlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5
Ethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5
Bromoform	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	50
1,1,2,2-Tetrachloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5
1,3-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	3
1,4-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	3
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	3
Acrolein	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	NA
Acrylonitrile	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	NA
Xylene (total)	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5
TOTAL VOCS	ND	25.8	1.0	ND	4.9	ND	ND	
TOTAL TENTATIVELY IDENTIFIED CMPDS	ND	ND	23.2 J	ND	ND	ND	ND	NA = Not Applicable
								ND=None Detected

TABLE 1 - SUMMARY OF VOLATILE ORGANIC COMPOUNDS DETECTED AND/OR ELEVATED ABOVE NYSDEC CLASS GA AMBIENT WATER QUALITY STANDARDS

West Sayville Cleaners, West Sayville, NY							
SDG BER096, BER099							
Berninger Sample ID:	GW-5 @ 26-28'	GW-5 @ 36-38'	GW-6 @ 14-16'	GW-6 @ 20-22'	GW-6 @ 30-32'	GW-7 @ 14-16'	NYSDEC CLASS GA
Laboratory ID:	1010471-014A	1010471-015A	1010471-016A	1010471-017A	1010471-018A	1010471-019A	AMBIENT WATER
Sampling Date:	9/8/2010	9/8/2010	9/8/2010	9/8/2010	9/8/2010	9/8/2010	QUALITY STANDARDS
% Moisture	NA	NA	NA	NA	NA	NA	GUIDANCE VALUES
units: ug/L							units: ug/L
Analyte							
Chloromethane	1 UJ	1 UJ	1 UJ	1 UJ	1.0 J	1 UJ	NA
Bromomethane	1 U	1 U	1 U	1 U	1 U	1 U	5
Vinyl Chloride	1 UJ	1 UJ	3.9 J	1 UJ	1 UJ	1 UJ	2
Chloroethane	1 U	1 U	1 U	1 U	1 U	1 U	50
Dichlorodifluoromethane	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	NA
Trichlorofluoromethane	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	NA
1,1-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	50
cis-1,2-Dichloroethene	1 U	1 U	2.2	1.1	1 U	1 U	5
Methylene Chloride	1 U	1 U	1 U	1 U	1 U	1 U	5
trans-1,2-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	5
1,1-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	5
Chloroform	1 U	1 U	1 U	1.3 J	1 U	1 U	7
1,1,1-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	5
1,2-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	5
Carbon Tetrachloride	1 U	1 U	1 U	1 UJ	1 UJ	1 UJ	5
Benzene	1 U	1 U	1 U	1 U	1 U	1 U	1
Trichloroethene	1 U	1 U	1 U	2.1	1 U	1 U	5
1,2-Dichloropropane	1 U	1 U	1 U	1 U	1 U	1 U	1
Bromodichloromethane	1 U	1 U	1 U	1 U	1 U	1 U	50
2-Chloroethylvinyl ether	1 R	1 R	1 R	1 R	1 R	1 R	NA
cis-1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	5
Toluene	1 U	1 U	1 U	1 U	1 U	1 U	5
trans-1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	NA
1,1,2-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	5
Tetrachloroethene	1 U	1 U	1 U	17	1 U	1 U	5
Dibromochloromethane	1 U	1 U	1 U	1 U	1 U	1 U	NA
Chlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	5
Ethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	5
Bromoform	1 UJ	1 UJ	1 UJ	1 U	1 U	1 U	50
1,1,2,2-Tetrachloroethane	1 U	1 U	1 U	1 U	1 U	1 U	5
1,3-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	3
1,4-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	3
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	3
Acrolein	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	NA
Acrylonitrile	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	NA
Xylene (total)	1 U	1 U	1 U	1 U	1 U	1 U	5
TOTAL VOCS	ND	ND	6.1	21.5	1.0	ND	
TOTAL TENTATIVELY IDENTIFIED CMPDS	14.3 J	21.5 J	ND	4.4 J	ND	ND	

NA = Not Applicable
ND=None Detected

TABLE 1 - SUMMARY OF VOLATILE ORGANIC COMPOUNDS DETECTED AND/OR ELEVATED ABOVE NYSDEC CLASS GA AMBIENT WATER QUALITY STANDARDS

West Sayville Cleaners, West Sayville, NY SDG BER698, BER699 Berrlngor Sample ID: Laboratory ID: Sampling Date: % Moisture units: ug/L	GW-7 @ 20-22' 1010471-020A 9/8/2010 NA	GW-7 @ 30-32' 1010471-021A 9/8/2010 NA	Trip Blank 1 1010471-023A 9/8/2010 NA	Trip Blank 2 1010471-024A 9/8/2010 NA	Field Blank 1010774-004A 9/14/2010 NA	GW-8 @ 10-12' 1010774-001A 9/14/2010 NA	NYSDEC CLASS GA AMBIENT WATER QUALITY STANDARDS GUIDANCE VALUES units: ug/L
Analyte							
Chloromethane	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	NA
Bromomethane	1 U	1 U	1 U	1 U	1 U	1 U	5
Vinyl Chloride	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	2
Chloroethane	1 U	1 U	1 U	1 U	1 U	1 U	50
Dichlorodifluoromethane	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	NA
Trichlorofluoromethane	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	NA
1,1-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	50
cis-1,2-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	5
Methylene Chloride	1 U	1 U	1 U	1 U	1 U	1 U	5
trans-1,2-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	5
1,1-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	5
Chloroform	1 U	1 U	1 U	1 U	1 U	1 U	7
1,1,1-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	5
1,2-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	5
Carbon Tetrachloride	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	5
Benzene	1 U	1 U	1 U	1 U	1 U	1 U	1
Trichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	5
1,2-Dichloropropane	1 U	1 U	1 U	1 U	1 U	1 U	1
Bromodichloromethane	1 U	1 U	1 U	1 U	1 U	1 U	50
2-Chloroethylvinyl ether	1 R	1 R	1 R	1 R	1 R	1 R	NA
cis-1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	5
Toluene	1 U	1 U	1 U	1 U	1 U	1 U	5
trans-1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	NA
1,1,2-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	5
Tetrachloroethene	2.7	1 U	1 U	1 U	1 U	2.6	5
Dibromochloromethane	1 U	1 U	1 U	1 U	1 U	1 U	NA
Chlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	5
Ethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	5
Bromoform	1 U	1 U	1 U	1 U	1 U	1 U	50
1,1,2,2-Tetrachloroethane	1 U	1 U	1 U	1 U	1 U	1 U	5
1,3-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	3
1,4-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	3
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	3
Acrolein	1 UJ	1 UJ	1 UJ	1 UJ	1 U	1 U	NA
Acrylonitrile	1 UJ	1 UJ	1 UJ	1 UJ	1 U	1 U	NA
Xylene (total)	1 U	1 U	1 U	1 U	1 U	1 U	5
TOTAL VOCS	2.7	ND	ND	ND	ND	2.6	
TOTAL TENTATIVELY IDENTIFIED CMPDS	ND	ND	ND	ND	ND	ND	

NA = Not Applicable
ND=None Detected

TABLE 1 - SUMMARY OF VOLATILE ORGANIC COMPOUNDS DETECTED AND/OR ELEVATED ABOVE NYSDEC CLASS GA AMBIENT WATER QUALITY STANDARDS

West Sayville Cleaners, West Sayville, NY				
SDG BER098, BER099				
Berninger Sample ID:	GW-9 @ 12-14'	GW-10 @ 12-14'	Trip Blank	NYSDEC CLASS GA
Laboratory ID:	1010774-002A	1010774-003A	1010774-005A	AMBIENT WATER
Sampling Date:	9/14/2010	9/14/2010	9/14/2010	QUALITY STANDARDS
% Moisture	NA	NA	NA	GUIDANCE VALUES
units: ug/L				units: ug/L
Analyte				
Chloromethane	3.4 J	1 UJ	1 UJ	NA
Bromomethane	1 U	1 U	1 U	5
Vinyl Chloride	1 UJ	1 UJ	1 UJ	2
Chloroethane	1 U	1 U	1 U	50
Dichlorodifluoromethane	1 UJ	1 UJ	1 UJ	NA
Trichlorofluoromethane	1 UJ	1 UJ	1 UJ	NA
1,1-Dichloroethene	1 U	1 U	1 U	50
cis-1,2-Dichloroethene	1 U	1 U	1 U	5
Methylene Chloride	1 U	1 U	1 U	5
trans-1,2-Dichloroethene	1 U	1 U	1 U	5
1,1-Dichloroethane	1 U	1 U	1 U	5
Chloroform	1 U	1 U	1 U	7
1,1,1-Trichloroethane	1 U	1 U	1 U	5
1,2-Dichloroethane	1 U	1 U	1 U	5
Carbon Tetrachloride	1 UJ	1 UJ	1 UJ	5
Benzene	1 U	1 U	1 U	1
Trichloroethene	1 U	1 U	1 U	5
1,2-Dichloropropane	1 U	1 U	1 U	1
Bromodichloromethane	1 U	1 U	1 U	50
2-Chloroethylvinyl ether	1 R	1 R	1 R	NA
cis-1,3-Dichloropropene	1 U	1 U	1 U	5
Toluene	1 U	1 U	1 U	5
trans-1,3-Dichloropropene	1 U	1 U	1 U	NA
1,1,2-Trichloroethane	1 U	1 U	1 U	5
Tetrachloroethene	1 U	1 U	1 U	5
Dibromochloromethane	1 U	1 U	1 U	NA
Chlorobenzene	1 U	1 U	1 U	5
Ethylbenzene	1 U	1 U	1 U	5
Bromoform	1 U	1 U	1 U	50
1,1,2,2-Tetrachloroethane	1 U	1 U	1 U	5
1,3-Dichlorobenzene	1 U	1 U	1 U	3
1,4-Dichlorobenzene	1 U	1 U	1 U	3
1,2-Dichlorobenzene	1 U	1 U	1 U	3
Acrolein	1 U	1 U	1 U	NA
Acrylonitrile	1 U	1 U	1 U	NA
Xylene (total)	1 U	1 U	1 U	5
TOTAL VOCS	3.4	ND	ND	
TOTAL TENTATIVELY IDENTIFIED CMPDS	ND	5.9 J	ND	

NA = Not Applicable
ND=None Detected

TABLE 1 - SUMMARY OF VOLATILE ORGANIC COMPOUNDS DETECTED AND/OR ELEVATED ABOVE NYSDEC SOIL CLEANUP OBJECTIVES

West Sayville Cleaners, West Sayville, NY								
SDG BER100								
Berninger Sample ID:	SB-1 @ 4-6'	SB-2 @ 8-10'	SB-3 @ 4-6'	SB-4 @ 5-7.5'	SB-5 @ 5-7.5'	SB-6 @ 10-12'	Field Blank*	NYSDEC TAGM
Laboratory ID:	1010776-001A	1010776-002A	1010776-003A	1010776-004A	1010776-005A	1011776-006A	1011776-007A	RECOMMENDED
Sampling Date:	9/15/2010	9/15/2010	9/15/2010	9/15/2010	9/15/2010	9/15/2010	9/15/2010	SOIL CLEANUP
% Moisture	3.51	6.89	3.48	6.46	3.5	10.1	NA	OBJECTIVES
units: ug/kg (dry wt)								
Analyte								
Chloromethane	10 U	11 U	10 U	11 U	10 U	11 U	5 U	NA
Bromomethane	10 U	11 U	10 U	11 U	10 U	11 U	5 U	NA
Vinyl Chloride	10 U	11 U	10 U	11 U	10 U	11 U	5 U	200
Chloroethane	10 U	11 U	10 U	11 U	10 U	11 U	5 U	1,900
Methylene Chloride	10 U	11 U	10 U	11 U	10 U	11 U	5 U	100
Acetone	10 UJ	12 UJ	25 UJ	11 UJ	10 UJ	11 U	12 UJ	200
Carbon Disulfide	10 U	11 U	10 U	11 U	10 U	11 U	5 U	2,700
1,1-Dichloroethene	10 U	11 U	10 U	11 U	10 U	11 U	5 U	400
1,1-Dichloroethane	10 U	11 U	10 U	11 U	10 U	11 U	5 U	200
1,2-Dichloroethene (total)	10 U	11 U	10 U	11 U	10 U	11 U	5 U	300
2-Butanone	10 UJ	11 UJ	10 UJ	11 UJ	10 UJ	11 U	2 J	300
Chloroform	10 U	11 U	10 U	11 U	10 U	11 U	5 U	300
1,2-Dichloroethane	10 U	11 U	10 U	11 U	10 U	11 U	5 U	100
1,1,1-Trichloroethane	10 U	11 U	10 U	11 U	10 U	11 U	5 U	800
Carbon Tetrachloride	10 UJ	11 UJ	10 UJ	11 UJ	10 UJ	11 U	5 U	600
Bromodichloromethane	10 U	11 U	10 U	11 U	10 U	11 U	5 U	NA
1,2-Dichloropropane	10 U	11 U	10 U	11 U	10 U	11 U	5 U	NA
cis-1,3-Dichloropropene	10 U	11 U	10 U	11 U	10 U	11 U	5 U	NA
Trichloroethene	10 U	11 U	10 U	11 U	10 U	11 U	5 U	700
Benzene	10 U	11 U	10 U	11 U	10 U	11 U	5 U	60
Dibromochloromethane	10 U	11 U	10 U	11 U	10 U	11 U	5 U	300
trans-1,3-Dichloropropene	10 U	11 U	10 U	11 U	10 U	11 U	5 U	NA
1,1,2-Trichloroethane	10 U	11 U	10 U	11 U	10 U	11 U	5 U	NA
Bromoform	10 U	11 U	10 U	11 U	10 U	11 U	5 U	NA
4-Methyl-2-Pentanone	10 U	11 U	10 U	11 U	10 U	11 UJ	5 U	1,000
2-Hexanone	10 U	11 U	10 U	11 U	10 U	11 UJ	5 U	NA
Tetrachloroethene	10 U	11 U	10 U	11 U	10 U	11 U	5 U	1,400
1,1,2,2-Tetrachloroethane	10 U	11 U	10 U	11 U	10 U	11 U	5 U	600
Toluene	10 U	11 U	10 U	11 U	10 U	11 U	3 J	1,500
Chlorobenzene	10 U	11 U	10 U	11 U	10 U	11 U	5 U	1,700
Ethylbenzene	10 U	11 U	10 U	11 U	10 U	11 U	5 U	5,500
Styrene	10 U	11 U	10 U	11 U	10 U	11 U	5 U	1,200
Xylene (total)	10 U	11 U	10 U	11 U	10 U	11 U	4 J	NA
TOTAL VOCS	ND	ND	ND	ND	ND	ND	9	10,000
TOTAL TENTATIVELY IDENTIFIED CMPDS	ND	ND	14 J	ND	ND	ND	ND	

NA=Not Applicable
ND=None Detected

*Field Blank results are in ug/L

L.A.B. Validation Corp. 14 West Point Drive, East Northport, N.Y. 11731

DATA VALIDATION REPORT

ORGANIC ANALYSES

EPA Compendium Method TO-15
VOLATILES BY GC/MS

For Soil Gas Samples Collected
March 04, 2010, March 24, 2010 and March 25, 2010
West Sayville Cleaners, Sayville, NY
Berninger Environmental

SAMPLE DELIVERY GROUP NUMBER: BER096
H2M Labs, Inc.

SUBMITTED TO:

Mr. Walter Berninger/President
Berninger Environmental
90 Knickerbocker Avenue
Bohemia, New York 11716

May 05, 2010

PREPARED BY:

Lori A. Beyer/President
L.A.B. Validation Corp.
14 West Point Drive
East Northport, NY 11731

West Sayville Cleaners, Sayville, New York; March 2010.
Data Validation Report: Volatile Organics

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APPENDICES:

A. Data Summary Tables with Qualifications
B. Chain of Custody Documents
C. NYSDEC ASP Summary Forms
D. SDG Narratives
E. Tentatively Identified Compounds (TICs)

Introduction:

A validation was performed on twelve (12) soil gas [air] samples for Volatile Organic analysis collected by Berninger Environmental and submitted to H2M Labs, Inc. for subsequent analysis under chain of custody documentation. This report contains the laboratory and validation results for the twelve (12) field samples itemized below. The samples were collected on March 04, 2010, March 24, 2010 and March 25, 2010.

The samples were analyzed by H2M Labs, Inc. utilizing EPA Method TO-15 and in accordance with NYSDEC Analytical Services Protocol (10/95) and submitted under NYSDEC ASP Category B equivalent deliverable requirements for the associated analytical methodology employed. The analytical testing consisted of the selected TO-15 Target Compound List (TCL) of analytes for Volatile Organics listed in Appendix A.

The data was evaluated in accordance with the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (Publication 9240.1-05) and in conjunction with the analytical methodology for which the samples were analyzed, where applicable and relevant.

The data validation report pertains to the following field soil gas/air samples:

Sample Identification	Laboratory Identification(s)	Sample Matrix	Collection Date
BBGIA-10'	1003267-001	Air	03/04/10
BBGSS-10'	1003267-002	Air	03/04/10
DDRIA-10'	1003267-003	Air	03/04/10
DDRSS-10'	1003267-004	Air	03/04/10
OAI-10'	1003267-005	Air	03/04/10
SG[ATOP-10'	1003267-006	Air	03/04/10
SRCIA-10'	1003267-007	Air	03/04/10
SRCSS-10'	1003267-008	Air	03/04/10
FIRE 1A-10'	1003954-001	Air	03/25/10
FIRE SS-10'	1003954-002	Air	03/25/10
SVE-1	1003954-003	Air	03/24/10
SVE-2	1003954-004	Air	03/24/10

Data Qualifier Definitions:

The following definitions provide brief explanations of the qualifiers assigned to results in the data review process.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R - The sample results are rejected due to deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

N - The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."

NJ - The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate quantity.

Sample Receipt:

The Chain of Custody documents from 03/04/10, 03/24/10 and 03/25/10 indicates that twelve (12) air samples were received at H2M Labs, Inc. after completion of each sampling event. Sample login notes and the chain of custody indicate that at the Validated Time of Sample Receipt (VTSR) at the laboratory no discrepancies were notated and therefore the integrity of the canister samples is assumed to be good.

It was notated at login that SGPATIO-10' was in the box with a different flow controller than on the chain of custody. Both flow controllers were baked out by the laboratory. There is no impact to reported results.

The data summary tables included in Appendix A includes all usable (qualified) and unusable (rejected) results for the samples identified above. These tables summarize the detailed narrative section of the report. All data validation qualifications have been reported in the excel spreadsheet in bold for ease of review and verification.

NOTE:
L.A.B. Validation Corp. believes it is appropriate to note that the data validation criteria utilized for data evaluation is different than the method requirements utilized by the laboratory. Qualified data does not necessarily mean that the laboratory was non-compliant in the analysis that was performed.

Volatile Organics by EPA Compendium Method TO-15

The following method criteria were reviewed: holding times, surrogate standards, LCS, Blanks, Tunes, Calibrations, Internal Standards, Target Component Identification and Quantitation, Reported Quantitation Limits and Overall System Performance. The volatile results were considered to be valid and useable as noted on the data summary tables in Appendix A and within the following text:

1.1 Holding Time

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the technical holding time is exceeded, the data may not be considered valid. Those analytes detected in the samples whose holding time has been exceeded will be qualified as estimates, "J". The non-detects (sample quantitation limits) are required to be flagged as estimated, "J", or unusable, "R", if the holding times are grossly exceeded.

Air samples pertaining to this SDG were performed within the method required thirty (30) days from sample collection for analysis. No qualifications were required based upon holding time criteria.

1.2 Surrogate Standards

All samples are spiked with surrogate compounds prior to sample analysis to evaluate overall laboratory performance and efficiency of the analytical technique. If the measure of surrogate concentrations is outside contact specification, qualifications are required to be applied to associated samples and analytes.

Recoveries for 4-Bromofluorobenzene fell within established ranges of 70-130% for all analyses pertaining to this SDG.

1.3 Matrix Spikes (MS)/ Matrix Spike Duplicates (MSD)

The MS/MSD data are generated to determine the long-term precision and accuracy of the analytical method in various matrices.

Matrix Spike/Matrix Spike Duplicate analysis was not performed on samples pertaining to this SDG.

1.4 Laboratory Control Sample

The LCS data for laboratory control samples (LCS) are generated to provide information on the accuracy of the analytical method and on the laboratory performance.

Additional QC samples were not analyzed which is acceptable per the method since a Lab Fortified Blank (LFB) was analyzed.

Acceptable recoveries for all spiked components were observed.

1.5 Blank Contamination

Quality assurance (QA) blanks; i.e. method, trip and field blanks are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Trip blanks measure cross-contamination of samples during shipment. Field blanks measure cross-contamination of samples during field operations. Storage blanks measure cross-contamination during sample storage of the field samples.

The following table was utilized to qualify target analyte results due to contamination. The largest value from all the associated blanks is required to be utilized:

For:	Flag Sample Result with a "U" when:	Report CRQL & Qualify "U" when:	No Qualification is Needed when:
Methylene Chloride, Acetone, Toluene & 2-Butanone	Sample Conc. Is >CRQL, but </=10x blank value	Sample Conc. is <CRQL and </=10x blank value	Sample Conc. is >CRQL and >10x blank value
Other Contaminants	Sample Conc. Is >CRQL, but </=5x blank value	Sample Conc. Is <CRQL and </=5x blank value	Sample Conc. is >CRQL and >5x blank value

Below is a summary of the compounds in the sample and the associated qualifications that have been applied:

A) **Method Blank Contamination:**

Methylene Chloride was detected in the method blanks at acceptable levels. Sample results were negated based on the above criteria.

B) **Field Blank Contamination:**

Field Blank analysis was not conducted for this SDG.

C) **Trip Blank Contamination:**

Trip Blank analysis was not submitted with this SDG.

D) **Storage Blank Contamination:**

Storage blanks were not submitted for this SDG. It should be noted that storage blanks are not mandated by EPA Method TO-15.

1.6 GC/MS Instrument Performance Check

Tuning and performance criteria are established to ensure adequate mass resolution, proper identification of compounds and to some degree, sufficient instrument sensitivity. These criteria are not sample specific. Instrument performance is determined using standard materials. Therefore, these criteria should be met in all circumstances. The Tuning standard for volatile organics is Bromofluorobenzene (BFB).

Instrument performance was generated within acceptable limits and frequency for Bromofluorobenzene (BFB) for all analyses conducted for this SDG.

1.7 Initial and Continuing Calibrations

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance.

A) Response Factor GC/MS:
The response factor measures the instrument's response to specific chemical compounds. The response factor for all compounds must be >/= 0.05 in both initial and continuing calibrations. A value <0.05 indicates a serious detection and quantitation problem (poor sensitivity). Analytes detected in the sample will be qualified as

estimated, "J". All non-detects for that compound in the corresponding samples will be rejected, "R".

All the response factors for the target analytes reported were found to be within acceptable limits (>/=0.05), for the initial and continuing calibrations.

B) Percent Relative Standard Deviation (%RSD) and Percent Difference (%D):
Percent RSD is calculated from the initial calibration and is used to indicate the stability of the specific compound response factor over increasing concentrations. Percent D compares the response factor of the continuing calibration check to the mean response factor (RRF) from the initial calibration. Percent D is a measure of the instrument's daily performance. Percent RSD must be <30% and %D must be <25%. A value outside of these limits indicates potential detection and quantitation errors. For these reasons, all positive results are flagged as estimated, "J" and non-detects are flagged "UJ". If %RSD and %D grossly exceed QC criteria, non-detect data may be qualified, "R", unusable. Additionally, in cases where the %RSD is >30% and eliminating either the high or the low point of the curve does not restore the %RSD to less than or equal to 30% then positive results are qualified, "J". In cases where removal of either the low or high point restores the linearity, then only low or high level results will be qualified, "J" in the portion of the curve where non linearity exists.

Initial Calibrations: The initial calibrations provided and the %RSD were within acceptable limits (30%) for all target compounds with the following exceptions:

ICAL 3/3/10-3/4/10 HP5973I – Vinyl Chloride – 33.7%, Methylene Chloride – 39.6%; "UJ" non detects for all samples collected on 03/04/10.

ICAL 3/18/10 HP5973I – Methylene Chloride – 38.9%; "UJ" non detects for all samples collected on 03/25/10.

Continuing Calibrations: The continuing calibrations provided and the %D was within acceptable limits (25%) for all target compounds with the following exceptions:

CCAL 03/09/10:
Dichlorodifluoromethane – 27.2% "J" samples DDRSS-10' and SGPATIO-10'.

CCAL 03/25/10:
1,1,2,2-Tetrachloroethane – 27.9% "UJ" samples FIRE IA-10' and FIRE SS-10'.

1.8 Internal Standards

Internal Standards (IS) performance criteria ensure that the GC/MS sensitivity and response are stable during every experimental run. The internal standard area count must not vary by more than a factor of 2 (-50% to +100%) from the associated continuing calibration standard. The retention time of the internal standard must not vary more than +/- 30 seconds from the associated continuing calibration standard. If the area count is outside the (-50% to +100%) range of the associated standard, all of the positive results for compounds quantitated using that IS are qualified as estimated, "J", and all non-detects as "UJ", or "R" if there is a severe loss of sensitivity.

If an internal standard retention time varies by more than 30 seconds, professional judgment will be used to determine either partial or total rejection of the data for that sample fraction.

Internal Standard area responses met QC requirements for all analysis pertaining to this data set .

1.9 Target Compound List Identification

TCL compounds are identified on the GC/MS by using the analyte's relative retention time (RRT) and by comparison to the ion spectra obtained from known standards. For the results to be a positive hit, the sample peak must be within =/- 0.06RRT units of the standard compound and have an ion spectra which has a ratio of the primary and secondary m/e intensities within 20% of that in the standard compound.

GC/MS spectra met the qualitative criteria for identification. All retention times were within required specifications.

1.10 Tentatively Identified Compounds (TICs)

TICs were reported in accordance with the project requirements. The identification must be considered tentative (both quantitative and qualitative) due to the lack of required compound specific response factors. Consequently all concentrations should be considered estimate, "J" and as a result of the qualitative uncertainty should be qualified, "N" where an identification has been made.

GC/MS "3 best match spectra" met method criteria.

TICs are presented in Appendix E and primarily consist of unknown hydrocarbons and aromatic compounds. Compounds suspected to be attributed to column bleed were rejected, "R."

1.11 Compound Quantification and Reported Detection Limits

GC/MS quantitative analysis is considered to be acceptable. Correct internal standards and response factors and air volumes were used to calculate final concentrations.

Sample results have been presented in ug/m3 as well as ppbv.

1.12 Overall System Performance

GC/MS analytical methodology was acceptable for this analysis.

All samples were analyzed undiluted with the exception of SVE-1 (1:5) and SVE-2 (1:4) due to high Tetrachloroethene concentrations.

Reviewer's Signature Lori Beyer **Date** 05/04/10

L.A.B. Validation Corp. 14 West Point Drive, East Northport, N.Y. 11731

Appendix A
Data Summary Tables
With Qualifications

Phone (516) 523-7891 email LABValidation@aol.com

VOLATILE ORGANICS EPA Compendium METHOD TO-15

West Sayville Cleaners, NY
SDG BER096

			BBGIA-10'	BBGSS-10'	DDRIA-10'	DDRSS-10'	OAI-10'	SGPATIO-10'
Berninger Sample ID:			1003267-001	1003267-002	1003267-003	1003267-004	1003267-005	1003267-006
Laboratory ID:								
Sampling Date:			3/4/2010	3/4/2010	3/4/2010	3/4/2010	3/4/2010	3/4/2010
Dilution			1	1	1	1	1	1
Cas #	Analyte	Units:						
75-71-8	Dichlorodifluoromethane	ug/m3	2.27	2.47	2.13	2.87 J	0.989 U	2.92 J
76-14-2	1,2-Dichlorotetrafluoroethane	ug/m3	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U
74-87-3	Chloromethane	ug/m3	0.413 U	0.413 U	0.950	0.413 U	0.413 U	0.413 U
106-99-0	1,3-Butadiene	ug/m3	0.442 U	0.442 U	0.442 U	0.442 U	0.442 U	0.442 U
74-83-9	Bromomethane	ug/m3	0.777 U	0.777 U	0.777 U	0.777 U	0.777 U	0.777 U
75-01-4	Vinyl Chloride	ug/m3	0.511 UJ	0.511 UJ	0.511 UJ	0.511 UJ	0.511 UJ	0.511 UJ
75-00-3	Chloroethane	ug/m3	0.528 U	0.528 U	0.528 U	0.528 U	0.528 U	0.528 U
75-09-2	Methylene Chloride	ug/m3	2.26 UJ	0.695 UJ	2.50 UJ	2.36 UJ	3.86 UJ	1.29 UJ
107-05-1	Allyl Chloride	ug/m3	0.626 U	0.626 U	0.626 U	0.626 U	0.626 U	0.628 U
593-60-2	Vinyl Bromide	ug/m3	0.874 U	0.874 U	0.874 U	0.874 U	0.874 U	0.874 U
75-15-0	Carbon Disulfide	ug/m3	0.623 U	0.623 U	0.747	0.623 U	0.623 U	1.21
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane	ug/m3	1.53 U	1.53 U	1.53 U	1.53 U	1.53 U	1.53 U
75-35-4	1,1-Dichloroethene	ug/m3	0.793 U	0.793 U	0.793 U	0.793 U	0.793 U	0.793 U
75-34-3	1,1-Dichloroethane	ug/m3	0.809 U	0.809 U	0.809 U	0.809 U	0.809 U	0.809 U
75-69-4	Trichlorofluoromethane	ug/m3	1.69	1.46	1.12	1.91	0.705 U	7.31
110-54-3	n-Hexane	ug/m3	0.705 U	9.73	1.20	33.4	0.705 U	8.11
156-60-5	trans-1,2-Dichloroethene	ug/m3	0.793 U	0.793 U	0.793 U	0.793 U	0.793 U	0.793 U
156-59-2	cis-1,2-Dichloroethene	ug/m3	0.793 U	0.793 U	0.793 U	0.793 U	0.793 U	0.793 U
67-66-3	Chloroform	ug/m3	0.977 U	0.977 U	0.977 U	8.01	0.977 U	0.977 U
107-06-2	1,2-Dichloroethane	ug/m3	0.793 U	0.793 U	0.793 U	0.793 U	0.793 U	0.793 U
71-55-6	1,1,1-Trichloroethane	ug/m3	1.09 U	1.09 U	1.09 U	1.09 U	1.09 U	1.09 U
110-82-7	Cyclohexane	ug/m3	0.688 U	2.24	0.688 U	3.99	0.688 U	0.792
56-23-5	Carbon Tetrachloride	ug/m3	1.26 U	1.26 U	1.26 U	1.26 U	1.26 U	1.26 U
75-27-4	Bromodichloromethane	ug/m3	1.34 U	1.34 U	1.34 U	1.34 U	1.34 U	1.34 U
78-87-5	1,2-Dichloropropane	ug/m3	0.924 U	0.924 U	0.924 U	0.924 U	0.924 U	0.924 U
540-84-1	2,2,4-Trimethylpentane	ug/m3	0.934 U	4.76	0.934 U	3.32	0.934 U	0.934 U
10061-01-5	cis-1,3-Dichloropropene	ug/m3	2.27 U	2.27 U	2.27 U	2.27 U	2.27 U	2.27 U
79-01-6	Trichloroethene	ug/m3	0.247 U	0.247 U	0.269	0.914	0.247 U	0.247 U
71-43-2	Benzene	ug/m3	1.05	2.49	1.31	6.71	0.639 U	4.28
124-48-1	Dibromochloromethane	ug/m3	1.70 U	1.70 U	1.70 U	1.70 U	1.70 U	1.70 U
10061-02-6	trans-1,3-Dichloropropene	ug/m3	2.27 U	2.27 U	2.27 U	2.27 U	2.27 U	2.27 U
79-00-5	1,1,2-Trichloroethane	ug/m3	1.09 U	1.09 U	1.09 U	1.09 U	1.09 U	1.09 U
75-25-2	Bromoform	ug/m3	2.07 U	2.07 U	2.07 U	2.07 U	2.07 U	2.07 U
142-82-5	n-Heptane	ug/m3	0.820 U	2.62	1.31	6.43	0.820 U	2.54
591-78-6	Methyl Butyl Ketone	ug/m3	2.05 U	2.05 U	2.05 U	2.05 U	2.05 U	2.05 U
106-93-4	1,2-Dibromoethane	ug/m3	1.54 U	1.54 U	1.54 U	1.54 U	1.54 U	1.54 U
127-18-4	Tetrachloroethene	ug/m3	2.98	2.03	45.0	28.9	1.36 U	3.05
79-34-5	1,1,2,2-Tetrachloroethane	ug/m3	1.37 U	1.37 U	1.37 U	1.37 U	1.37 U	1.37 U
108-88-3	Toluene	ug/m3	2.22	14.8	11.2	39.9	0.754 U	33.8
108-90-7	Chlorobenzene	ug/m3	0.921 U	0.921 U	0.921 U	0.921 U	0.921 U	0.921 U
100-41-4	Ethylbenzene	ug/m3	0.869 U	3.65	2.48	3.26	0.869 U	5.30
100-42-5	Styrene	ug/m3	0.852 U	1.75	1.23	0.852 U	0.852 U	1.75
1330-20-7	Xylene (m,p)	ug/m3	0.912	11.3	7.91	8.17	0.869 U	16.5
95-47-6	Xylene (o)	ug/m3	0.869 U	15.5	2.82	2.56	0.869 U	4.00
95-49-8	2-Chlorotoluene	ug/m3	1.04 U	1.04 U	1.04 U	1.04 U	1.04 U	1.04 U
622-96-8	4-Ethyltoluene	ug/m3	0.983 U	1.62	1.08	0.983 U	0.983 U	1.28
108-67-8	1,3,5-Trimethylbenzene	ug/m3	0.983 U	1.92	1.03	1.03	0.983 U	1.23
95-63-6	1,2,4-Trimethylbenzene	ug/m3	1.03	9.93	3.54	3.88	0.983 U	4.82
541-73-1	1,3-Dichlorobenzene	ug/m3	1.20 U	1.20 U	1.20 U	1.20 U	1.20 U	1.20 U
106-46-7	1,4-Dichlorobenzene	ug/m3	1.20 U	1.20 U	1.20 U	1.20 U	1.20 U	1.20 U
95-50-1	1,2-Dichlorobenzene	ug/m3	1.20 U	1.20 U	1.20 U	1.20 U	1.20 U	1.20 U
87-68-3	Hexachlorobutadiene	ug/m3	2.13 U	2.13 U	2.13 U	2.13 U	2.13 U	2.13 U
120-82-1	1,2,4-Trichlorobenzene	ug/m3	1.48 U	1.48 U	1.48 U	1.48 U	1.48 U	1.48 U

VOLATILE ORGANICS EPA Compendium METHOD TO-15

West Sayville Cleaners, NY
SDG BER096

		SRCIA-10'	SRCSS-10'	FIRE 1A-10'	FIRE SS-10'	SVE-1	SVE-2
Beminger Sample ID:		1003267-007	1003267-008	1003954-001	1003954-002	1003954-003	1003954-004
Laboratory ID:							
Sampling Date:		3/4/2010	3/4/2010	3/25/2010	3/25/2010	3/25/2010	3/25/2010
Dilution		1	1	1	1	5	4
Cas #	Analyte	Units:					
75-71-8	Dichlorodifluoromethane	ug/m3	2.72	1.83	2.52	2.72	4.94 U	3.96 U
76-14-2	1,2-Dichlorotetrafluoroethane	ug/m3	1.40 U	1.40 U	1.40 U	1.40 U	6.99 U	5.59 U
74-87-3	Chloromethane	ug/m3	1.14	0.413 U	1.05	0.413 U	2.07 U	1.65 U
106-99-0	1,3-Butadiene	ug/m3	0.442 U	0.442 U	0.442 U	0.442 U	2.21 U	1.77 U
74-83-9	Bromomethane	ug/m3	0.777 U	0.777 U	0.777 U	0.777 U	3.88 U	3.11 U
75-01-4	Vinyl Chloride	ug/m3	0.511 UJ	0.511 UJ	0.511 U	0.511 U	2.56 U	2.04 U
75-00-3	Chloroethane	ug/m3	0.528 U	0.528 U	0.528 U	0.528 U	2.64 U	2.11 U
75-09-2	Methylene Chloride	ug/m3	3.06 UJ	0.695 UJ	1.70 UJ	4.55 UJ	6.08 U	7.50 U
107-05-1	Allyl Chloride	ug/m3	0.626 U	0.626 U	0.626 U	0.626 U	3.13 U	2.50 U
593-60-2	Vinyl Bromide	ug/m3	0.874 U	0.874 U	0.874 U	0.874 U	4.37 U	3.50 U
75-15-0	Carbon Disulfide	ug/m3	0.623 U	0.623 U	0.623 U	0.716	3.11 U	2.49 U
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane	ug/m3	1.53 U	1.53 U	1.53 U	1.53 U	7.66 U	6.13 U
75-35-4	1,1-Dichloroethene	ug/m3	0.793 U	0.793 U	0.793 U	0.793 U	3.96 U	3.17 U
75-34-3	1,1-Dichloroethane	ug/m3	0.809 U	0.809 U	0.809 U	0.809 U	4.05 U	3.24 U
75-69-4	Trichlorofluoromethane	ug/m3	1.57	1.40	1.52	2.36	5.62 U	4.50 U
110-54-3	n-Hexane	ug/m3	0.705 U	33.6	0.705 U	21.4	3.52 U	2.82 U
156-60-5	trans-1,2-Dichloroethene	ug/m3	0.793 U	0.793 U	0.793 U	0.793 U	3.96 U	3.17 U
156-59-2	cis-1,2-Dichloroethene	ug/m3	0.793 U	0.793 U	0.793 U	0.793 U	3.96 U	14.0
67-66-3	Chloroform	ug/m3	0.977 U	0.977 U	0.977 U	0.977 U	4.88	3.91 U
107-06-2	1,2-Dichloroethane	ug/m3	0.793 U	0.793 U	0.793 U	0.793 U	3.97 U	3.17 U
71-55-6	1,1,1-Trichloroethane	ug/m3	1.09 U	1.09 U	1.09 U	1.09 U	5.46 U	4.36 U
110-82-7	Cyclohexane	ug/m3	10.8	5.20	0.688 U	4.99	3.44 U	2.75 U
56-23-5	Carbon Tetrachloride	ug/m3	1.26 U	1.26 U	1.26 U	1.26 U	6.29 U	5.03 U
75-27-4	Bromodichloromethane	ug/m3	1.34 U	1.34 U	1.34 U	1.34 U	6.70 U	5.36 U
78-87-5	1,2-Dichloropropane	ug/m3	0.924 U	0.924 U	0.924 U	0.924 U	4.62 U	3.70 U
540-84-1	2,2,4-Trimethylpentane	ug/m3	0.934 U	5.51	0.934 U	7.19	4.67 U	3.74 U
10061-01-5	cis-1,3-Dichloropropene	ug/m3	2.27 U	2.27 U	2.27 U	2.27 U	11.3 U	9.08 U
79-01-6	Trichloroethene	ug/m3	0.247 U	0.247 U	0.247 U	0.247 U	5.37	15.5
71-43-2	Benzene	ug/m3	0.703	7.09	0.639 U	4.70	3.19 U	2.56 U
124-48-1	Dibromochloromethane	ug/m3	1.70 U	1.70 U	1.70 U	1.70 U	8.52 U	6.82 U
10061-02-6	trans-1,3-Dichloropropene	ug/m3	2.27 U	2.27 U	2.27 U	2.27 U	11.3 U	9.08 U
79-00-5	1,1,2-Trichloroethane	ug/m3	1.09 U	1.09 U	1.09 U	1.09 U	5.46 U	4.36 U
75-25-2	Bromoform	ug/m3	2.07 U	2.07 U	2.07 U	2.07 U	10.3 U	8.27 U
142-82-5	n-Heptane	ug/m3	0.820 U	9.67	0.820 U	4.96	4.10 U	3.28 U
591-78-6	Methyl Butyl Ketone	ug/m3	2.05 U	2.05 U	2.05 U	2.05 U	10.2 U	8.19 U
106-93-4	1,2-Dibromoethane	ug/m3	1.54 U	1.54 U	1.54 U	1.54 U	7.69 U	6.15 U
127-18-4	Tetrachloroethene	ug/m3	3.25	2.37	1.36 U	2.51	814	637
79-34-5	1,1,2,2-Tetrachloroethane	ug/m3	1.37 U	1.37 U	1.37 UJ	1.37 UJ	6.87 U	5.49 U
108-88-3	Toluene	ug/m3	22.5	100	1.06	27.8	12.6	15.7
108-90-7	Chlorobenzene	ug/m3	0.921 U	0.921 U	0.921 U	0.921 U	4.61 U	3.68 U
100-41-4	Ethylbenzene	ug/m3	1.56	17.5	0.869 U	6.60	4.34 U	3.47 U
100-42-5	Styrene	ug/m3	0.852 U	6.90	0.852 U	0.852 U	4.26 U	3.41 U
1330-20-7	Xylene (m,p)	ug/m3	3.21	52.1	0.869 U	21.9	8.69	10.6
95-47-6	Xylene (o)	ug/m3	1.650	15.5	0.869 U	10.3	4.34 U	4.34
95-49-8	2-Chlorotoluene	ug/m3	1.04 U	1.04 U	1.04 U	1.04 U	5.18 U	4.14 U
622-96-8	4-Ethyltoluene	ug/m3	0.983 U	5.16	0.983 U	6.05	4.92 U	3.93 U
108-67-8	1,3,5-Trimethylbenzene	ug/m3	0.983 U	5.95	0.983 U	7.37	4.92 U	3.93 U
95-63-6	1,2,4-Trimethylbenzene	ug/m3	1.23	28.2	0.983 U	31.8	5.41	6.49
541-73-1	1,3-Dichlorobenzene	ug/m3	1.20 U	3.49	1.20 U	1.20 U	6.01 U	4.81 U
106-46-7	1,4-Dichlorobenzene	ug/m3	1.20 U	1.20 U	1.20 U	1.80	6.01 U	4.81 U
95-50-1	1,2-Dichlorobenzene	ug/m3	1.20 U	1.20 U	1.20 U	1.20 U	6.01 U	4.81 U
87-68-3	Hexachlorobutadiene	ug/m3	2.13 U	2.13 U	2.13 U	2.13 U	10.7 U	8.53 U
120-82-1	1,2,4-Trichlorobenzene	ug/m3	1.48 U	1.48 U	1.48 U	1.48 U	7.42 U	5.94 U
		ug/m3						

VOLATILE ORGANICS EPA Compendium METHOD TO-15

West Sayville Cleaners, NY
SDG BER096

	Berninger Sample ID:		BBGIA-10'	BBGSS-10'	DDRIA-10'	DDRSS-10'	OAI-10'	SGPATIO-10'
	Laboratory ID:		1003267-001	1003267-002	1003267-003	1003267-004	1003267-005	1003267-006
	Sampling Date:		3/4/2010	3/4/2010	3/4/2010	3/4/2010	3/4/2010	3/4/2010
	Dilution		1	1	1	1	1	1
Cas #	Analyte	Units:						
75-71-8	Dichlorodifluoromethane	ppbv	0.460	0.500	0.430	0.580 J	0.200 U	0.590 J
76-14-2	1,2-Dichlorotetrafluoroethane	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
74-87-3	Chloromethane	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
106-99-0	1,3-Butadiene	ppbv	0.200 U	0.200 U	0.460	0.200 U	0.200 U	0.200 U
74-83-9	Bromomethane	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
75-01-4	Vinyl Chloride	ppbv	0.200 UJ	0.200 UJ	0.200 UJ	0.200 UJ	0.200 UJ	0.200 UJ
75-00-3	Chloroethane	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
75-09-2	Methylene Chloride	ppbv	0.650 UJ	0.200 UJ	0.720 UJ	0.680 UJ	1.11 UJ	0.370 UJ
107-05-1	Allyl Chloride	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
593-60-2	Vinyl Bromide	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
75-15-0	Carbon Disulfide	ppbv	0.200 U	0.200 U	0.240	0.200 U	0.200 U	0.390
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
75-35-4	1,1-Dichloroethene	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
75-34-3	1,1-Dichloroethane	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
75-69-4	Trichlorofluoromethane	ppbv	0.300	0.260	0.200 U	0.340	0.200 U	1.30
110-54-3	n-Hexane	ppbv	0.200 U	2.76	0.340	9.49	0.200 U	2.30
156-60-5	trans-1,2-Dichloroethene	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
156-59-2	cis-1,2-Dichloroethene	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
67-66-3	Chloroform	ppbv	0.200 U	0.200 U	0.200 U	1.64	0.200 U	0.200 U
107-06-2	1,2-Dichloroethane	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
71-55-6	1,1,1-Trichloroethane	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
110-82-7	Cyclohexane	ppbv	0.200 U	0.650	0.200 U	1.16	0.200 U	0.230
56-23-5	Carbon Tetrachloride	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
75-27-4	Bromodichloromethane	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
78-87-5	1,2-Dichloropropane	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
540-84-1	2,2,4-Trimethylpentane	ppbv	0.200 U	1.02	0.200 U	0.710	0.200 U	0.200 U
10061-01-5	cis-1,3-Dichloropropene	ppbv	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U
79-01-6	Trichloroethene	ppbv	0.046 U	0.046 U	0.050	0.170	0.046 U	0.046 U
71-43-2	Benzene	ppbv	0.330	0.780	0.410	2.10	0.200 U	1.34
124-48-1	Dibromochloromethane	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
10061-02-6	trans-1,3-Dichloropropene	ppbv	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U
79-00-5	1,1,2-Trichloroethane	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
75-25-2	Bromoform	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
142-82-5	n-Heptane	ppbv	0.200 U	0.640	0.320	1.57	0.200 U	0.620
591-78-6	Methyl Butyl Ketone	ppbv	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U
106-93-4	1,2-Dibromoethane	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
127-18-4	Tetrachloroethene	ppbv	0.440	0.300	8.83	4.26	0.200 U	0.450
79-34-5	1,1,2,2-Tetrachloroethane	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
108-88-3	Toluene	ppbv	0.590	3.93	2.98	10.6	0.200 U	8.96
108-90-7	Chlorobenzene	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
100-41-4	Ethylbenzene	ppbv	0.200 U	0.840	0.570	0.750	0.200 U	1.22
100-42-5	Styrene	ppbv	0.200 U	0.410	0.290	0.200 U	0.200 U	0.410
1330-20-7	Xylene (m,p)	ppbv	0.210	2.60	1.82	1.88	0.200 U	3.80
95-47-6	Xylene (o)	ppbv	0.200 U	3.57	0.650	0.590	0.200 U	0.920
95-49-8	2-Chlorotoluene	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
622-96-8	4-Ethyltoluene	ppbv	0.200 U	0.330	0.220	0.200 U	0.200 U	0.260
108-67-8	1,3,5-Trimethylbenzene	ppbv	0.200 U	0.390	0.210	0.210	0.200 U	0.250
95-63-6	1,2,4-Trimethylbenzene	ppbv	0.210	2.02	0.720	0.790	0.200 U	0.980
541-73-1	1,3-Dichlorobenzene	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
106-46-7	1,4-Dichlorobenzene	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
95-50-1	1,2-Dichlorobenzene	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
87-68-3	Hexachlorobutadiene	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
120-82-1	1,2,4-Trichlorobenzene	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
	TOTAL TENTATIVELY IDENTIFIED COMPOUNDS	ppbv	448 J	235 J	14 J	153 J	ND	113 J

VOLATILE ORGANICS EPA Compendium METHOD TO-15

West Sayville Cleaners, NY
SDG BER096

	Berninger Sample ID:		SRCIA-10'	SRCSS-10'	FIRE 1A-10'	FIRE SS-10'	SVE-1	SVE-2
	Laboratory ID:		1003267-007	1003267-008	1003954-001	1003954-002	1003954-003	1003954-004
	Sampling Date:		3/4/2010	3/4/2010	3/25/2010	3/25/2010	3/25/2010	3/25/2010
	Dilution		1	1	1	1	5	4
Cas #	Analyte	Units:						
75-71-8	Dichlorodifluoromethane	ppbv	0.550	0.370	0.510	0.550	1.00 U	0.800 U
76-14-2	1,2-Dichlorotetrafluoroethane	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	1.00 U	0.800 U
74-87-3	Chloromethane	ppbv	0.200 U	0.200 U	0.510	0.200 U	1.00 U	0.800 U
106-99-0	1,3-Butadiene	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	1.00 U	0.800 U
74-83-9	Bromomethane	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	1.00 U	0.800 U
75-01-4	Vinyl Chloride	ppbv	0.200 UJ	0.200 UJ	0.200 U	0.200 U	1.00 U	0.800 U
75-00-3	Chloroethane	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	1.00 U	0.800 U
75-09-2	Methylene Chloride	ppbv	0.880 UJ	1.11 UJ	0.490 UJ	1.31 UJ	1.75 U	2.16 U
107-05-1	Allyl Chloride	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	1.00 U	0.800 U
593-60-2	Vinyl Bromide	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	1.00 U	0.800 U
75-15-0	Carbon Disulfide	ppbv	0.200 U	0.200 U	0.200 U	0.230	1.00 U	0.800 U
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	1.00 U	0.800 U
75-35-4	1,1-Dichloroethene	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	1.00 U	0.800 U
75-34-3	1,1-Dichloroethane	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	1.00 U	0.800 U
75-69-4	Trichlorofluoromethane	ppbv	0.280	0.250	0.270	0.420	1.00 U	0.800 U
110-54-3	n-Hexane	ppbv	0.200 U	9.54	0.200 U	6.08	1.00 U	0.800 U
156-60-5	trans-1,2-Dichloroethene	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	1.00 U	0.800 U
156-59-2	cis-1,2-Dichloroethene	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	1.00 U	3.52
67-66-3	Chloroform	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	1.00	0.800 U
107-06-2	1,2-Dichloroethane	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	1.00 U	0.800 U
71-55-6	1,1,1-Trichloroethane	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	1.00 U	0.800 U
110-82-7	Cyclohexane	ppbv	3.14	1.51	0.200 U	1.45	1.00 U	0.800 U
56-23-5	Carbon Tetrachloride	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	1.00 U	0.800 U
75-27-4	Bromodichloromethane	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	1.00 U	0.800 U
78-87-5	1,2-Dichloropropane	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	1.00 U	0.800 U
540-84-1	2,2,4-Trimethylpentane	ppbv	0.200 U	1.18	0.200 U	1.54	1.00 U	0.800 U
10061-01-5	cis-1,3-Dichloropropene	ppbv	0.500 U	0.500 U	0.500 U	0.500 U	2.50 U	2.00 U
79-01-6	Trichloroethene	ppbv	0.046 U	0.046 U	0.046 U	0.046 U	1.00	2.88
71-43-2	Benzene	ppbv	0.220	2.22	0.200 U	1.47	1.00 U	0.800 U
124-48-1	Dibromochloromethane	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	1.00 U	0.800 U
10061-02-6	trans-1,3-Dichloropropene	ppbv	0.500 U	0.500 U	0.500 U	0.500 U	2.50 U	2.00 U
79-00-5	1,1,2-Trichloroethane	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	1.00 U	0.800 U
75-25-2	Bromoform	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	1.00 U	0.800 U
142-82-5	n-Heptane	ppbv	0.200 U	2.36	0.200 U	1.21	1.00 U	0.800 U
591-78-6	Methyl Butyl Ketone	ppbv	0.500 U	0.500 U	0.500 U	0.500 U	2.50 U	2.00 U
106-93-4	1,2-Dibromoethane	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	1.00 U	0.800 U
127-18-4	Tetrachloroethene	ppbv	0.460	0.350	0.200 U	0.370	120	94.0
79-34-5	1,1,2,2-Tetrachloroethane	ppbv	0.200 U	0.200 U	0.200 UJ	0.200 UJ	1.00 U	0.800 U
108-88-3	Toluene	ppbv	5.96	26.6	0.280	7.39	3.35	4.16
108-90-7	Chlorobenzene	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	1.00 U	0.800 U
100-41-4	Ethylbenzene	ppbv	0.360	4.02	0.200 U	1.52	1.00 U	0.800 U
100-42-5	Styrene	ppbv	0.200 U	1.62	0.200 U	0.200 U	1.00 U	0.800 U
1330-20-7	Xylene (m,p)	ppbv	0.740	12.0	0.200 U	5.05	2.00	2.44
95-47-6	Xylene (o)	ppbv	0.380	3.56	0.200 U	2.38	1.00 U	1.00
95-49-8	2-Chlorotoluene	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	1.00 U	0.800 U
622-96-8	4-Ethyltoluene	ppbv	0.200 U	1.05	0.200 U	1.23	1.00 U	0.800 U
108-67-8	1,3,5-Trimethylbenzene	ppbv	0.200 U	1.21	0.200 U	1.50	1.00 U	0.800 U
95-63-6	1,2,4-Trimethylbenzene	ppbv	0.250	5.74	0.200 U	6.46	1.10	1.32
541-73-1	1,3-Dichlorobenzene	ppbv	0.200 U	0.580	0.200 U	0.200 U	1.00 U	0.800 U
106-46-7	1,4-Dichlorobenzene	ppbv	0.200 U	0.200 U	0.200 U	0.300	1.00 U	0.800 U
95-50-1	1,2-Dichlorobenzene	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	1.00 U	0.800 U
87-68-3	Hexachlorobutadiene	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	1.00 U	0.800 U
120-82-1	1,2,4-Trichlorobenzene	ppbv	0.200 U	0.200 U	0.200 U	0.200 U	1.00 U	0.800 U
	TOTAL TENTATIVELY IDENTIFIED COMPOUNDS	ppbv	56.2 J	383 J	11.9 J	190 J	ND	ND

Appendix B
Chain of Custody

H2M LABS, INC.
575 Broadhollow Rd., Melville, NY 11747
Tel: (631) 694-3040 Fax:(631) 420-8436

0295

AIR CANISTER CHAIN OF CUSTODY

Client Contact Information	Project Manager: Justin	CLIENT: BEI	H2M SDG NO.: BER096
Company: Beringer Env. Inc.	Phone: (631 774-6682	Samplers Name(s) Pete / Butch / Justin	C-O # 216
Address: 90-B Knickerbocker	Site Contact: Justin		Guage # 105
City/State/Zip Bohemia, NY			
Phone: (631 589-6521			
FAX:			
Project Name: West Sayville Cleaner	Analysis Turnaround Time		
Site:	Standard (Specify) ✓		
PO # 1003100	Rush (Specify)		

Sample Identification	Date Collected	Time Collected	Temp. (F)	Canister Pressure FIELD Initial("Hg) (Start)	FIELD ("Hg) / PSI (Stop)	LAB Outgoing ("Hg) (Lab)	LAB Incoming ("Hg) (Lab)	Flow Controller ID	Canister ID	Can Size (L)	LAB ID No.	Analysis: TO-15	Analysis: OTHER	Matrix: Indoor / Ambient Air	Matrix: Soil Gas	Matrix: Source Level
	3/4/10					-30			1626	6.0		X				
BBGSS-10'		12:00	68°	-30	-4	-30	-4	1009	3395		1003267-002			X		
DDBSS-10'		10:00	70°	-28	-4	-30	-4	0906	3400		-004			X		
SGPatio-10'		14:30	35°	-29	-2	-30	-6	1022	3403		-006				X	
						-30			3406							
						-30			3407							
SBCSS-10'		11:15	68°	-29	-1	-30	-1	1023	3414		-008			X		
						-30			3417							
						-30			3426							
OAI-10'		13:30	35°	-29	-4	-30	-4	1026	3427		-005			X		

	Pressure			Temperature (Fahrenheit)		
	Ambient	Maximum	Minimum	Ambient	Maximum	Minimum
Start						
Stop						

Special Instructions/QC Requirements & Comments:

P.O# 1003100

Samples Relinquished by:	Date/Time: 3/8/10 11:40	Received by:	Date/Time: 3-8-10 11:40
Relinquished by:	Date/Time:	Received by:	Date/Time:

WHITE COPY - ORIGINAL YELLOW COPY - CLIENT PINK COPY - LABORATORY

BER096 S6 Notify lab if equipment is damaged upon receipt. Client is responsible for damage to equipement

H2M LABS, INC.
575 Broadhollow Rd., Melville, NY 11747
Tel: (631) 694-3040 Fax:(631) 420-8436

0296

AIR CANISTER CHAIN OF CUSTODY

Client Contact Information	**Project Manager:** Justin	**CLIENT:** BEI	**H2M SDG NO.:** BER096
Company: Beninger Env. Inc.	Phone: (631-774-6682	Samplers Name(s) Pete / Butch / Justin	C-O# 216
Address: 90-B Knickerbocker	Site Contact: Justin		
City/State/Zip Bohemia, NY			
Phone: (631 589 6521			
FAX:			
Project Name: West Sayville Cleaners	**Analysis Turnaround Time**		
Site:	Standard (Specify) ✓		
PO # 1003100	Rush (Specify)		

				Canister Pressure								Analysis				Matrix			
				FIELD		LAB													
Sample Identification	**Date Collected**	**Time Collected**	**Temp. (F)**	**Initial("Hg) (Start)**	**("Hg) / PSI (Stop)**	**Outgoing ("Hg) (Lab)**	**Incoming ("Hg) (Lab)**	**Flow Controller ID**	**Canister ID**	**Can Size (L)**	**LAB ID No.**	**TO-15**	**OTHER**			**Indoor / Ambient Air**	**Soil Gas**	**Source Level**	
DDPIA-10'	3/4/10	10:00	72°	-30	-2	-30	-2	0917	3428	6.0	1003267 -003	X				X			
SPGIA-10'	↓	10:30	68°	-30	-5	-30	-4	2121	3813	6.0	-007	X				↓			
BBGIA-10'	↓	11:30	68°	29	-4	-30	-4	1028	3814	6.0	↓ -001	X							

	Pressure			Temperature (Fahrenheit)			
	Ambient	Maximum	Minimum	Ambient	Maximum	Minimum	
Start							
Stop							

Special Instructions/QC Requirements & Comments:
PO# 1003100

Samples Relinquished by:	Date/Time: 3/8/10 11:40	Received by:	Date/Time: 3-8-10 11:40
Relinquished by:	Date/Time:	Received by:	Date/Time:

WHITE COPY - ORIGINAL YELLOW COPY - CLIENT PINK COPY - LABORATORY

BER096 S7* Notify lab if equipment is damaged upon receipt. Client is responsible for damage to equipement

H2M LABS, INC.

BER 096

Sample Receipt Checklist

Client Name BER | Date and Time Received: 3/8/2010 11:40:00 AM

Work Order Number 1003267 | Received by MCW

Checklist completed by M. Hart 3-8-10 (Signature / Date) | Reviewed by JSA (Initials) 3/9/10 (Date)

Matrix: | Carrier name Hand Delivered

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Applicable ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Applicable ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Applicable ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
Samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Water - VOA vials have zero headspace?	No VOA vials submitted ☑	Yes ☐	No ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	

Adjusted? _____ Checked by _____

Any No and/or NA (not applicable) response must be detailed in the comments section below.

Client contacted NO | Date contacted: | Person contacted

Contacted by: | Regarding

Comments: Sample SGPAT10-10' was said to have been used with flow controller 1022 on the C.O.C. It was in the box with 1012 & on the sample tag it said 1012 for the flow controller ID.

Corrective Action DOUBLE BAKE BOTH FLOW CONTROLLERS.

Yes ☑

VOA vials submitted ☑

BER096 S8

H2M LABS, INC.

INTERNAL CHAIN OF CUSTODY

CLIENT: BER DELIVERABLES: B0-70D TURN AROUND TIME: 21 DAYS

SDG #: BER096 CASE #: _____ MATRIX: Air pH CHECK Y or (N)

REMARKS: 008 BER 10

RECEIVED BY: MCW SIGNATURE: M-Wat DATE: 3-8-10 TIME: 1140

CLIENT ID	H2M LAB #	DATE COLLECTED	BOTTLE TYPE	# OF BOTTLES	TESTS REQUESTED
BBGIA-10'	1003267-001A	3-4-10	CANISTER	1	TO-15 (SEL)
BBGSS-	-002A				
DDRIA-	-003A				
DDRSS-	-004A				
OAI-	-005A				
SGPATIO-	-006A				
SRCIA-	-007A				
SRCSS-	-008A				
"					
"					
"					
"					
"					
"					
"					
"					
"					
"					
"					

MCW 3-8-10

VOLATILE

H2M LABS, INC.

CLIENT: BER

SDG #: BER096

MCW 3-8-10

INTERNAL CHAIN OF CUSTODY

DATE	TIME	SAMPLE RELINQUISHED BY	SAMPLE RECEIVED BY	BOTTLE TYPE	PURPOSE OF CHANGE OF CUSTODY	INIT
3-8-10	1230	SIGN M Watt	SIGN	CANISTER	ANALYSIS	
		SIGN	SIGN			
		SIGN	SIGN			
		SIGN	SIGN			
		SIGN	SIGN			
		SIGN	SIGN			
		SIGN	SIGN			
		SIGN	SIGN			
		SIGN	SIGN			
		SIGN	SIGN			
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		SIGN	SIGN			

VOLATILE

P 0149

BER096 S10

H2M LABS, INC.

575 Broad Hollow Rd., Melville, NY 11747
Tel: (631) 694-3040 Fax:(631) 420-8436

0302

AIR CANISTER CHAIN OF CUSTODY

MCW 3-25-10

Client Contact Information	Project Manager: Justin Halpin	CLIENT: Benjer Env.	H2M SDG NO.: BER0976
Company: BEI	Phone: 631 TH 6682	Samplers Name(s)	C.O.# 223 Qto - 17, 18 Gauge - 1
Address: 90-B Knickerbocker	Site Contact:		
City/State/Zip Bohemia, NY			
Phone: 6315296521			
FAX:			
Project Name: Kit Sayville	Analysis Turnaround Time		
Site:	Standard (Specify) ✓		
PO #	Rush (Specify)		

Po# 1003120

Sample Identification	Date Collected	Time Collected	Temp. (F)	Canister Pressure FIELD Initial("Hg) (Start)	FIELD ("Hg) / PSI (Stop)	LAB Outgoing ("Hg) (Lab)	LAB Incoming ("Hg) (Lab)	Flow Controller ID	Canister ID	Can Size (L)	LAB ID No.	Analysis: TO-15	Analysis: OTHER			Matrix: Indoor / Ambient Air	Matrix: Soil Gas	Matrix: Source Level	Matrix: SVE Grab
Fress-10'	3/25	10:00	68°	-30	-3	-30		2121	3407	6.0	1003954-002	X				X			
FireIA-10'	3/25	10:00	68°	-30	-4	-30		1012	3406	6.0	-001	X				X			
SVE-1	3/24	12:00	52°	-30	-1	-30		—	115	1.4	-003	X							X
SVE-2	3/24	12:00	52°	-30	-1	-30		—	117	1.4	-004	X							X

	Pressure			Temperature (Fahrenheit)			
	Ambient	Maximum	Minimum		Ambient	Maximum	Minimum
Start				Start			
Stop				Stop			

Special Instructions/QC Requirements & Comments:

Samples Relinquished by:	Date/Time: 3/25/10 11:45	Received by: M-Hart	Date/Time: 3-25-10 11:45
Relinquished by:	Date/Time:	Received by:	Date/Time:

WHITE COPY - ORIGINAL YELLOW COPY - CLIENT PINK COPY - LABORATORY

BER096 S1* Notify lab if equipment is damaged upon receipt. Client is responsible for damage to equipement

H2M LABS, INC.

BER096

Sample Receipt Checklist

Client Name BER | Date and Time Received: 3/25/2010 11:45:00 AM

Work Order Number 1003954 | Received by MCW

Checklist completed by M. Watt 3-25-10 (Signature / Date) | Reviewed by JSA 3/26/10 (Initials / Date)

Matrix: | Carrier name | Hand Delivered

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Applicable ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Applicable ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Applicable ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
amples received within holding time?	Yes ☑	No ☐	
ontainer/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Water - VOA vials have zero headspace?	No VOA vials submitted ☑	Yes ☐	No ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	

Adjusted? _____ Checked by _____

Any No and/or NA (not applicable) response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding _____

Comments:

Corrective Action

BER096 S12

H2M LABS, INC.

INTERNAL CHAIN OF CUSTODY

CLIENT: BER DELIVERABLES: B0-10D TURN AROUND TIME: 21 DAYS

SDG #: BER096 CASE #: _____ MATRIX: Air pH CHECK Y or (N)

REMARKS: 008 BER 10

RECEIVED BY: MCW SIGNATURE: M-Watt DATE: 3-25-10 TIME: 11:45

CLIENT ID	H2M LAB #	DATE COLLECTED	BOTTLE TYPE	# OF BOTTLES	TESTS REQUESTED
1 FIRE IA-10'	1003954 -001A	3-25-10	CANISTER	1	TO-15(SEL)
2 ↓ SS-10'	-002A	↓	↓	↓	↓
3 SVE-1	-003A	3-24-10			
4 ↓ -2	-004A	↓	↓	↓	↓
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

MCW 3-25-10

VOLATILE

P 0100

BER096 S13

F_M LABS, INC.

CLIENT: BER

SDG #: BER096

INTERNAL CHAIN OF CUSTODY

DATE	TIME	SAMPLE RELINQUISHED BY	SAMPLE RECEIVED BY	BOTTLE TYPE	PURPOSE OF CHANGE OF CUSTODY	INIT
3-25-10	1230	SIGN M. Watt	SIGN	CANISTER	ANALYSIS	
		SIGN	SIGN			
		SIGN	SIGN			
		SIGN	SIGN			
		SIGN	SIGN			
		SIGN	SIGN			
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VOLATILE

P 0101

BER096 S14

L.A.B. Validation Corp. 14 West Point Drive, East Northport, N.Y. 11731

Appendix C
NYSDEC ASP
Summary Forms

Phone (516) 523-7891 email LABValidation@aol.com

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE IDENTIFICATION AND ANALYTICAL REQUIREMENT SUMMARY

SDG: BER096

Analytical Requirements

Customer Sample Code	Laboratory Sample Code	MSVOA
BBGIA-10'	1003267-001	X
BBGSS-10'	1003267-002	X
DDRIA-10'	1003267-003	X
DDRSS-10'	1003267-004	X
OAI-10'	1003267-005	X
SGPATIO-10'	1003267-006	X
SRCIA-10'	1003267-007	X
SRCSS-10'	1003267-008	X
FIRE IA-10'	1003954-001	X
FIRE SS-10'	1003954-002	X
SVE-1	1003954-003	X
SVE-2	1003954-004	X

CLP, (Non-CLP) (Please indicate year of protocol) ASP B 2000

JSW 4/14/10

BER096 S3

NEW YORK STATE DEPARTMENT OF ENVI...IMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
VOLATILE (VOA)
ANALYSES

SDG: BER096

Laboratory Samp ID	Client Sample ID	Matrix	Analytical Protocol	Date Collected	DateRecd at Lab	Date Extracted	Date Analyzed	Extraction Method	DF	Level	Aux Cleanup
1003267-001A	BBGIA-10'	Air	ETO-15	04-Mar-10	08-Mar-10		10-Mar-10		1	LOW	
1003267-002A	BBGSS-10'	Air	ETO-15	04-Mar-10	08-Mar-10		10-Mar-10		1	LOW	
1003267-003A	DDRIA-10'	Air	ETO-15	04-Mar-10	08-Mar-10		10-Mar-10		1	LOW	
1003267-004A	DDRSS-10'	Air	ETO-15	04-Mar-10	08-Mar-10		09-Mar-10		1	LOW	
1003267-005A	OAI-10'	Air	ETO-15	04-Mar-10	08-Mar-10		08-Mar-10		1	LOW	
1003267-006A	SGPATIO-10'	Air	ETO-15	04-Mar-10	08-Mar-10		09-Mar-10		1	LOW	
1003267-007A	SRCIA-10'	Air	ETO-15	04-Mar-10	08-Mar-10		11-Mar-10		1	LOW	
1003267-008A	SRCSS-10'	Air	ETO-15	04-Mar-10	08-Mar-10		10-Mar-10		1	LOW	
1003954-001A	FIRE IA-10'	Air	ETO-15	25-Mar-10	25-Mar-10		25-Mar-10		1	LOW	
1003954-002A	FIRE SS-10'	Air	ETO-15	25-Mar-10	25-Mar-10		26-Mar-10		1	LOW	
1003954-003A	SVE-1	Air	ETO-15	24-Mar-10	25-Mar-10		06-Apr-10		5	LOW	
1003954-004A	SVE-2	Air	ETO-15	24-Mar-10	25-Mar-10		06-Apr-10		4	LOW	

L.A.B. Validation Corp. 14 West Point Drive, East Northport, N.Y. 11731

Appendix D
SDG Narrative

Phone (516) 523-7891 email LABValidation@aol.com

H2M LABS, INC.

SDG NARRATIVE FOR VOLATILE ANALYSES
SAMPLE(S) RECEIVED: 3/8/10 & 3/25/10
SDG#: BER096

For Sample(s):

BBGIA-10'	SRCIA-10'
BBGSS-10'	SRCSS-10'
DDRIA-10'	FIRE IA-10'
DDRSS-10'	FIRE SS-10'
OAI-10'	SVE-1
SGPATIO-10'	SVE-2

The above air sample(s) was/were analyzed for a specific list of volatile organic analytes by EPA method TO-15 in accordance with the NYSDEC ASP, Rev. 2000.

All quality control and calibration requirements were met, unless discussed below, and no problems were encountered with sample analyses. The following should be noted:

No matrix spike / matrix spike duplicate was requested, but a lab-fortified blank was analyzed. Recoveries were within the QC limits.

Low concentrations of methylene chloride were present in all method blanks. The analyte was flagged with the qualifier "B", if found in the associated samples.

The RSD for methylene chloride in the initial calibrations were above 30% but below the limit of 40%.

TICs identified as unknown siloxanes are suspected to be column bleed from the analytical column and were flagged with the qualifier "X". TICs identified as alkanes are listed on the TIC form however are not included in the number of TIC's reported.

Sample results are reported in both ppbv and ug/m3 units.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Date Reported: April 14, 2010

****
* *
* *
****

Joann M. Slavin
Senior Vice President

L.A.B. Validation Corp. 14 West Point Drive, East Northport, N.Y. 11731

Appendix E
Tentatively Identified Compounds (TICs)

Phone (516) 523-7891 email LABValidation@aol.com

1F

EPA SAMPLE NO.

BBGIA-10'

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER096

Matrix: (soil/water) AIR Lab Sample ID: 1003267-001A

Sample wt/vol: 400 (g/mL) ML Lab File ID: I6297.D

Level: (low/med) LOW Date Received: 03/08/10

% Moisture: not dec. Date Analyzed: 03/10/10

GC Column: Rxi-1MS ID: .32 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 10 (µg/L or µg/Kg) ppbv

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q
1.	000811-97-2	Norflurane	3.63	97.3	JN
2.		unknown (3.96)	3.96	17.2	J
3.		(DEL) Alkane: Straight-Chain	4.20	2.20	J
4.	000064-17-5	Ethanol-	4.66	48.3	JN
5.		unknown (4.78)	4.78	140	J
6.		(DEL) Alkane: Branched	5.12	8.70	J
7.	000067-64-1	Acetone-	5.16	4.40	JN
8.	000067-63-0	Isopropyl Alcohol-	5.41	127	JN
9.		Pentadiene(isomer)	5.68	1.10	J
10.	000141-78-6	Ethyl Acetate-	8.18	1.50	JN
11.		~~unknown siloxane (14.37)~~	~~14.37~~	~~3.90~~	~~JX~~ R
12.		~~unknown siloxane (20.42)~~	~~20.42~~	~~14.8~~	~~JX~~ R

BER096 S23

1F

EPA SAMPLE NO.

BBGSS-10'

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

b Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER096

Matrix: (soil/water) AIR Lab Sample ID: 1003267-002A

Sample wt/vol: 400 (g/mL) ML Lab File ID: I6298.D

Level: (low/med) LOW Date Received: 03/08/10

% Moisture: not dec. Date Analyzed: 03/10/10

GC Column: Rxi-1MS ID: .32 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 12 (µg/L or µg/Kg) ppbv

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q	
1.		unknown alkene	4.12	1.80	J	
2.	000064-17-5	Ethanol-	4.74	77.3	JN	
3.	000067-64-1	Acetone-	5.12	9.70	JN	
4.	000067-63-0	Isopropyl Alcohol-	5.40	121	JN	
5.		(DEL) Alkane: Straight-Chain (5.58)	5.58	1.80	J	
6.	000075-65-0	2-Propanol, 2-methyl-	5.95	1.60	JN	
7.		Silanol, trimethyl(isomer)	7.10	4.20	J	
8.		(DEL) Alkane: Branched (7.24)	7.24	1.00	J	
9.	000078-93-3	2-Butanone-	7.50	3.20	JN	
10.		(DEL) Alkane: Branched (7.65)	7.65	1.10	J	
11.	000109-99-9	Furan, tetrahydro--	8.63	3.60	JN	
12.		(DEL) Alkane: Branched (13.2)	13.20	1.90	J	
13.		(DEL) Alkane: Straight-Chain (13.87)	13.87	1.20	J	R
14.		~~unknown siloxane (14.37)~~	~~14.37~~	~~120~~	~~JX~~	
15.		-Pinene(isomer)	17.10	1.10	J	
16.		unknown	18.93	1.00	J	
17.		(DEL) Alkane: Straight-Chain (19.71)	19.71	1.70	J	
18.		~~unknown siloxane (20.42)~~	~~20.42~~	~~4.60~~	~~JX~~	R
19.		(DEL) Alkane: Straight-Chain (21.01)	21.01	1.10	J	
20.		(DEL) Alkane: Cyclic	21.67	1.10	J	

5/24/10

BER096 S26

1F

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

DDRIA-10'

b Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER096

Matrix: (soil/water) AIR Lab Sample ID: 1003267-003A

Sample wt/vol: 400 (g/mL) ML Lab File ID: I6299.D

Level: (low/med) LOW Date Received: 03/08/10

% Moisture: not dec. Date Analyzed: 03/10/10

GC Column: Rxi-1MS ID: .32 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 4 (µg/L or µg/Kg) ppbv

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q
1.		(DEL) Alkane: Branched	3.97	3.60	J
2.		(DEL) Alkane: Straight-Chain	4.23	1.00	J
3.	000064-17-5	Ethanol -	4.68	4.40	JN
4.	000067-64-1	Acetone-	5.13	3.00	JN
5.	000067-63-0	Isopropyl Alcohol-	5.34	2.00	JN
6.	_____	unknown siloxane	20.42	2.10	JX

R

5/2/10

BER096 S29

1F

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

DDRSS-10'

b Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER096

Matrix: (soil/water) AIR Lab Sample ID: 1003267-004A

Sample wt/vol: 400 (g/mL) ML Lab File ID: I6278.D

Level: (low/med) LOW Date Received: 03/08/10

% Moisture: not dec. Date Analyzed: 03/09/10

GC Column: Rxi-1MS ID: .32 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 6 (µg/L or µg/Kg) ppbv

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q
1.	(DEL) Alkane: Branched (3.97)	3.97	7.00	J
2.	(DEL) Alkane: Straight-Chain (4.14)	4.14	3.80	J
3. 000064-17-5	Ethanol-	4.70	2.80	JN
4.	(DEL) Alkane: Branched (5.14)	5.14	8.80	J
5. 000067-63-0	Isopropyl Alcohol-	5.35	1.80	JN
6.	(DEL) Alkane: Straight-Chain (5.6)	5.60	3.70	J
7.	(DEL) Alkane: Branched (7.27)	7.27	3.30	J
8. 000078-93-3	2-Butanone-	7.49	4.20	JN
9.	(DEL) Alkane: Branched (7.67)	7.67	4.00	J
10. 000109-99-9	Furan, tetrahydro--	8.62	11.3	JN
11.	(DEL) Alkane: Branched (8.98)	8.98	2.40	J
12.	(DEL) Alkane: Cyclic (12.45)	12.45	2.20	J
13.	(DEL) Alkane: Branched (13.12)	13.12	2.00	J
14.	(DEL) Alkane: Branched (13.2)	13.20	33.5	J
15.	(DEL) Alkane: Branched (13.53)	13.53	6.40	J
16.	unknown Alkene	13.57	3.70	J
17.	(DEL) Alkane: Cyclic (13.8)	13.80	6.60	J
18.	(DEL) Alkane: Straight-Chain (13.87)	13.87	41.8	J
19.	(DEL) Alkane: Cyclic (14.8)	14.80	1.60	J
20. 000067-72-1	Ethane, hexachloro-	19.47	1.80	JN

BER096 S32

1F

EPA SAMPLE NO.

OAI-10'

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

b Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER096

Matrix: (soil/water) AIR Lab Sample ID: 1003267-005A

Sample wt/vol: 400 (g/mL) ML Lab File ID: I6264.D

Level: (low/med) LOW Date Received: 03/08/10

% Moisture: not dec. Date Analyzed: 03/08/10

GC Column: Rxi-1MS ID: .32 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 3 (µg/L or µg/Kg) ppbv

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q
1.	~~unknown siloxane (14.37)~~	~~14.37~~	~~1.90~~	~~JX~~ R
2.	~~unknown siloxane (18.03)~~	~~18.03~~	~~19.5~~	~~JX~~ R
3.	~~unknown siloxane (20.42)~~	~~20.42~~	~~5.20~~	~~JX~~ R

5/24/10

BER096 S35

1F

EPA SAMPLE NO.

SGPATIO-10'

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

b Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER096

Matrix: (soil/water) AIR Lab Sample ID: 1003267-006A

Sample wt/vol: 400 (g/mL) ML Lab File ID: I6279.D

Level: (low/med) LOW Date Received: 03/08/10

% Moisture: not dec. Date Analyzed: 03/09/10

GC Column: Rxi-1MS ID: .32 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 8 (µg/L or µg/Kg) ppbv

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q
1.		unknown Alkene (3.66)	3.66	25.0	J
2.		(DEL) Alkane: Straight-Chain (3.98)	3.98	9.00	J
3.		unknown Alkene (4.15)	4.15	7.50	J
4.		(DEL) Alkane: Straight-Chain (4.23)	4.23	1.70	J
5.	000067-64-1	Acetone-	5.12	11.3	JN
6.	000067-63-0	Isopropyl Alcohol -	5.33	1.70	JN
7.	000075-65-0	2-Propanol, 2-methyl-	5.90	2.50	JN
8.		unknown cyclic	6.34	1.80	J
9.	000078-93-3	2-Butanone-	7.48	2.20	JN
10.		(DEL) Alkane: Branched (13.19)	13.19	10.4	J
11.		(DEL) Alkane: Branched (13.53)	13.53	2.10	J
12.		(DEL) Alkane: Cyclic	13.80	2.00	J
13.		(DEL) Alkane: Branched (13.87)	13.87	22.3	J
~~14.~~		~~unknown siloxane~~	~~14.36~~	~~2.40~~	~~JX~~ R
15.		unknown	17.00	1.90	J
16.		(DEL) Alkane: Branched (17.68)	17.68	2.80	J
17.		(DEL) Alkane: Straight-Chain (18.16)	18.16	4.70	J
18.		Carene (isomer)	18.44	2.50	J
19.	000067-72-1	Ethane, hexachloro-	19.47	2.00	JN

5/2/10

BER096 S38

1F

EPA SAMPLE NO.

SRCIA-10'

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

b Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER096

Matrix: (soil/water) AIR Lab Sample ID: 1003267-007A

Sample wt/vol: 400 (g/mL) ML Lab File ID: I6309.D

Level: (low/med) LOW Date Received: 03/08/10

% Moisture: not dec. Date Analyzed: 03/11/10

GC Column: Rxi-1MS ID: .32 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 8 (µg/L or µg/Kg) ppbv

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q	
1.		(DEL) Alkane: Branched	3.99	27.3	J	
2.		(DEL) Alkane: Straight-Chain	4.24	8.30	J	
3.	000064-17-5	Ethanol-	4.68	1.20	JN	
4.	000067-64-1	Acetone-	5.13	2.70	JN	
5.	000078-93-3	2-Butanone-	7.48	5.60	JN	
6.	000141-78-6	Ethyl Acetate-	8.15	3.10	JN	
7.		(DEL) Alkane: Cyclic	11.80	1.40	J	
8.		~~unknown siloxane (14.36)~~	~~14.36~~	~~1.30~~	~~JX~~	R
9.	000108-94-1	Cyclohexanone	15.58	1.20	JN	
10.		Limonene(isomer)	18.69	5.40	J	
11.		~~unknown siloxane (20.42)~~	~~20.42~~	~~1.30~~	~~JX~~	R

Jan Bs 5/11/10

BER096 S41

1F

EPA SAMPLE NO.

SRCSS-10'

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER096

Matrix: (soil/water) AIR Lab Sample ID: 1003267-008A

Sample wt/vol: 400 (g/mL) ML Lab File ID: I6301.D

Level: (low/med) LOW Date Received: 03/08/10

% Moisture: not dec. Date Analyzed: 03/10/10

GC Column: Rxi-1MS ID: .32 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 10 (µg/L or µg/Kg) ppbv

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q	
1.		unknown	3.96	6.60	J	
2.	000064-17-5	Ethanol-	4.71	59.9	JN	
3.	000067-64-1	Acetone-	5.13	10.2	JN	
4.	000067-63-0	Isopropyl Alcohol-	5.37	109	JN	
5.	000075-65-0	2-Propanol, 2-methyl-	5.93	5.00	JN	
6.		(DEL) Alkane: Branched (7.26)	7.26	3.80	J	
7.		(DEL) Alkane: Branched (7.66)	7.66	3.80	J	
8.	000109-99-9	Furan, tetrahydro--	8.62	6.50	JN	
9.		(DEL) Alkane: Branched (13.2)	13.20	46.2	J	
10.		(DEL) Alkane: Branched (13.53)	13.53	11.0	J	
11.		(DEL) Alkane: Cyclic (13.57)	13.57	7.80	J	
12.	000123-86-4	Acetic acid, butyl ester	13.75	4.40	JN	
13.		(DEL) Alkane: Cyclic (13.8)	13.80	8.80	J	
14.		(DEL) Alkane: Straight-Chain (13.88)	13.88	83.0	J	
15.		~~unknown siloxane (14.38)~~	~~14.38~~	~~196~~	~~JX~~	R
16.		(DEL) Alkane: Cyclic (14.8)	14.80	3.60	J	
17.		(DEL) Alkane: Cyclic (15.58)	15.58	4.30	J	
18.		Limonene(isomer)	18.70	4.80	J	
19.		(DEL) Alkane: Straight-Chain (19.71)	19.71	4.40	J	
20.		~~unknown siloxane (20.42)~~	~~20.42~~	~~15.0~~	~~JX~~	R

5/2/10

BER096 S44

1F

EPA SAMPLE NO.

FIRE IA-10'

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

ɔ Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER096

Matrix: (soil/water) AIR Lab Sample ID: 1003954-001A

Sample wt/vol: 400 (g/mL) ML Lab File ID: I6382.D

Level: (low/med) LOW Date Received: 03/25/10

% Moisture: not dec. Date Analyzed: 03/25/10

GC Column: Rxi-1MS ID: .32 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 2 (µg/L or µg/Kg) ppbv

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q
1.	(DEL) Alkane: Branched (3.98)	3.98	4.00	J
2.	(DEL) Alkane: Straight-Chain (4.23)	4.23	1.40	J
3. 000064-17-5	Ethanol-	4.68	1.40	JN
4.	(DEL) Alkane: Branched (5.13)	5.13	2.40	J
5. 000067-63-0	Isopropyl Alcohol -	5.34	1.30	JN
6.	(DEL) Alkane: Straight-Chain (5.6)	5.60	1.40	J

BER096 S47

1F

EPA SAMPLE NO.

FIRE SS-10'

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

b Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER096

Matrix: (soil/water) AIR Lab Sample ID: 1003954-002A

Sample wt/vol: 400 (g/mL) ML Lab File ID: I6388.D

Level: (low/med) LOW Date Received: 03/25/10

% Moisture: not dec. Date Analyzed: 03/26/10

GC Column: Rxi-1MS ID: .32 (mm) Dilution Factor: 1.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 12 (µg/L or µg/Kg) ppbv

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q
1.	000075-68-3	Ethane, 1-chloro-1,1-difluoro-	3.87	10.3	JN
2.		unknown	4.00	8.20	J
3.		unknown alkene	4.15	12.4	J
4.		(DEL) Alkane: Straight-Chain (4.24)	4.24	3.30	J
5.	000064-17-5	Ethanol-	4.67	13.1	JN
6.	000067-64-1	Acetone-	5.10	73.3	JN
7.	000067-63-0	Isopropyl Alcohol-	5.32	4.20	JN
8.		(DEL) Alkane: Straight-Chain (5.6)	5.60	4.80	J
9.	000075-65-0	2-Propanol, 2-methyl-	5.90	18.1	JN
10.		(DEL) Alkane: Branched (7.27)	7.27	3.50	J
11.	000078-93-3	2-Butanone-	7.46	12.1	JN
12.		(DEL) Alkane: Branched (7.67)	7.67	4.80	J
13.	000109-99-9	Furan, tetrahydro--	8.61	2.90	JN
14.		(DEL) Alkane: Cyclic (8.97)	8.97	2.60	J
15.		(DEL) Alkane: Branched (13.19)	13.19	7.30	J
16.		(DEL) Alkane: Cyclic (13.8)	13.80	2.00	J
17.		(DEL) Alkane: Straight-Chain (13.87)	13.87	3.40	J
18.		c3-subs_benzene	18.50	1.70	J
19.		c4-subs_benzene (18.94)	18.94	1.80	J
20.		c4-subs_benzene (19.02)	19.02	1.80	J

BER096 S50

1F

EPA SAMPLE NO.

SVE-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER096

Matrix: (soil/water) AIR Lab Sample ID: 1003954-003A

Sample wt/vol: 400 (g/mL) ML Lab File ID: I6418.D

Level: (low/med) LOW Date Received: 03/25/10

% Moisture: not dec. Date Analyzed: 04/06/10

GC Column: Rxi-1MS ID: .32 (mm) Dilution Factor: 5.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 1 (µg/L or µg/Kg) ppbv

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q
1. _____	unknown siloxane	20.42	5.50	JX

R

for
5/24/10

BER096 553

1F

EPA SAMPLE NO.

SVE-2

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

b Name: H2M LABS, INC. Contract: _____

Lab Code: 10478 Case No.: BER SAS No.: _____ SDG No.: BER096

Matrix: (soil/water) AIR Lab Sample ID: 1003954-004A

Sample wt/vol: 400 (g/mL) ML Lab File ID: I6419.D

Level: (low/med) LOW Date Received: 03/25/10

% Moisture: not dec. Date Analyzed: 04/06/10

GC Column: Rxi-1MS ID: .32 (mm) Dilution Factor: 4.00

Soil Extract Volume: (µl) Soil Aliquot Volume: 0 (µL)

CONCENTRATION UNITS:

Number TICs found: 1 (µg/L or µg/Kg) ppbv

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q
1.	~~unknown siloxane~~	~~20.42~~	~~5.20~~	~~JX~~

R

5/24/10

BER096 S56

APPENDIX H

Spectrophotometer SOP

59000-22

ODYSSEY

DR/2500
Spectrophotometer
PROCEDURE MANUAL



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Be Right™

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jb/dk 03/01 1ed

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AccuVer™
AccuVial™
Add-A-Test™
AgriTrak™
AluVer®
AmVer™
APA 6000™
AquaChek™
AquaTrend®
BariVer®
BODTrak™
BoroTrace™
BoroVer®
C. Moore Green™
CA 610™
CalVer®
ChromaVer®
ColorQuik®
CoolTrak®
CuVer®
CyaniVer®
Digesdahl®
DithiVer®
Dr. F. Fluent™
Dr. H. Tueau™
DR/Check™
EC 310™
FerroMo®
FerroVer®
FerroZine®
FilterTrak™ 660
Formula 2533™
Formula 2589™
Gelex®
H_2O University™
H_2OU™
Hach Logo®
Hach One®
Hach Oval®
Hach.com™
HachLink™
Hawkeye The Hach Guy™
HexaVer®
HgEx™
HydraVer®
ICE-PIC™
IncuTrol®
Just Add Water™
LeadTrak®
M-ColiBlue24®
ManVer®
MolyVer®
Mug-O-Meter®
NetSketcher™
NitraVer®
NitriVer®
NTrak®
OASIS™
On Site Analysis.
Results You Can Trust℠
OptiQuant™
OriFlow™
OxyVer™
PathoScreen™
PbEx®
PermaChem®
PhosVer®
Pocket Colorimeter™
Pocket Pal™
Pocket Turbidimeter™
Pond In Pillow™
PourRite®
PrepTab™
ProNetic™
Pump Colorimeter™
QuanTab®
Rapid Liquid™
RapidSilver™
Ratio™
RoVer®
sension™
Simply Accurate℠
SINGLET™
SofChek™
SoilSYS™
SP 510™
Spec√™
StablCal®
StannaVer®
SteriChek™
StillVer®
SulfaVer®
Surface Scatter®
TanniVer®
TenSette®
Test 'N Tube™
TestYES!℠
TitraStir®
TitraVer®
ToxTrak™
UniVer®
VIScreen™
Voluette®
WasteAway™
ZincoVer®

HACH ISO 9001 Certified

TEST CERTIFICATE

MODEL *Odyssey DR2500*

Part Number 59000-60 **Serial Number** 010300000283

Inspected By _____ **Date** 3/26/01

CHARACTERISTIC	STANDARD	ACTUAL
Visual Inspection	PASS/FAIL	PASS
pH Temperature	47.0±0.3 C	47.0
Bias Voltage test	PASS/FAIL	PASS
Accuracy @-1.998 Vdc	±1.000 mV	0.9
Accuracy @ -1.000 Vdc	± 0.500 mV	0.5
Accuracy @ 0.000 Vdc	±0.200 mV	0.0
Accuracy @ 1.000 Vdc	±0.500 mV	-0.4
Accuracy @ 1.998 Vdc	±1.000 mV	-0.8
Photometric Accuracy @546.1 nm 0.250 A	±0.007 Abs	0.004
Photometric Accuracy @546.1 nm 0.500 A	±0.007 Abs	0.001
Photometric Accuracy @546.1 nm1.000 A	±0.012 Abs	0.006
Photometric Accuracy @546.1 nm 1.500 A	±0.016 Abs	0.008
Photometric Accuracy @546.1 nm 2.000 A	±0.054 Abs	0.007
Stray Light @430 nm	>2.500 Abs	2.899
Stray Light @500 nm	>2.500 Abs	3.255
Stray Light @565 nm	>2.500 Abs	3.129
Stray Light @650 nm	>2.500 Abs	3.029
Wavelength Accuracy @404.66 nm	±1.00 nm	-0.0
Wavelength Accuracy @435.84 nm	±1.00 nm	-0.0
Wavelength Accuracy @546.07 nm	±1.00 nm	-0.1
Wavelength Accuracy @696.54 nm	±1.00 nm	-0.1
Wavelength Accuracy @763.51 nm	±1.00 nm	-0.0
Wavelength Accuracy @826.45 nm	±1.00 nm	0.0

Test equipment used for the verification of manufactured instruments is calibrated using standards traceable to National Institute of Standards and Technology (NIST) standards. Where such standards do not exist, the basis for calibration is documented.

Section 1 Introduction

1.1 Abbreviations Used in this Manual

The following abbreviations are used throughout the text of the procedure section:

Table 1

Abbreviation	Definition	Abbreviation	Definition
°C	degree(s) Celsius (Centigrade)	HR	high range
°F	degree(s) Fahrenheit	L	liter—volume equal to one cubic decimeter (dm^3)
ACS	American Chemical Society reagent grade purity	LR	low range
APHA Standard Methods	*Standard Methods for the Examination of Water and Wastewater*, published jointly by the American Public Health Association (APHA), the American Water Works Association (AWWA), and the Water Environment Federation (WEF), is the standard reference work for water analysis. Order from Hach requesting Cat. No. 22708-00, or from the Publication Office of the APHA. Many procedures contained in this manual are based on *Standard Methods*.	MDL	method detection limit
		MDB	marked dropping bottle
		mg/L	milligrams per liter (ppm)
		µg/L	micrograms per liter (ppb)
		mL	milliliter—1/1000 of a liter. It is approximately the same as a cubic centimeter (and is sometimes called a "cc").
		MR	medium range
AV	AccuVac®	NIPDWR	National Interim Primary Drinking Water Regulations
Bicn	bicinchoninate	NPDES	National Pollutant Discharge Elimination System
conc	concentrated	P	phosphorus
DB	dropping bottle	PCB	poly chlorinated biphenyl
DBP	disinfection by-products	ppb	parts per billion
CFR	Code of Federal Regulations	ppm	parts per million
EDL	Estimated detection limit	RL	Rapid Liquid™
EPA	Environmental Protection Agency	SCDB	self-contained dropping bottle
F&T	free and total	THM	trihalomethane
FM	FerroMo®	TNT	Test 'N Tube™
FV	FerroVer®	TOC	total organic carbon
FZ	FerroZine®	TPH	total petroleum hydrocarbons
g	grams	TPTZ	(2,4,6-Tri-(2-Pyridyl)-1,3,5-Triazine)
gr/gal	grains per gallon (1 gr/gal = 17.12 mg/L)	USEPA	United States Environmental Protection Agency
		ULR	ultra low range

1.2 Conversions

1.2.1 Chemical Species

Species conversion factors for many commonly used chemicals are preprogrammed into the Odyssey Spectrophotometer (see *Table 2*). Conversions are method specific and may be changed by touching the displayed units on the screen.

Table 2 Conversion Factors

To Convert From...	To...	Multiply By...	Conversion used in program #
mg/L Al	mg/L Al_2O_3	1.8895	9, 10
mg/L B	mg/L H_3BO_3	5.7	40, 45
mg/L Ca-$CaCO_3$	mg/L Ca	0.4004	220
mg/L $CaCO_3$	mg/L Ca	0.4004	227
mg/L $CaCO_3$	mg/L Mg	0.2428	225, 227
µg/L Carbo.	µg/L Hydro.	1.92	182
µg/L Carbo.	µg/L ISA	2.69	182
µg/L Carbo.	µg/L MEKO	3.15	182
mg/L Cr^{6+}	mg/L CrO_4^{2-}	2.231	90, 95, 100
mg/L Cr^{6+}	mg/L Na_2CrO_4	3.115	90, 95, 100
mg/L Cr^{6+}	mg/L $Cr_2O_7^{2-}$	2.077	90, 95, 100
mg/L Mg–$CaCO_3$	mg/L Mg	0.2428	225
mg/L Mn	mg/L $KMnO_4$	2.876	290, 295
mg/L Mn	mg/L MnO_4^-	2.165	290, 295
mg/L Mo^{6+}	mg/L MoO_4^{2-}	1.667	315, 320, 322
mg/L Mo^{6+}	mg/L Na_2MoO_4	2.146	315, 320, 322
mg/L N	mg/L NH_3	1.216	342, 343, 346, 350, 395
mg/L N	mg/L NO_3^-	4.427	346, 350, 395
mg/L Cl_2	mg/L NH_2Cl	0.726	66, 67
mg/L Cl_2	mg/L N	0.197	66, 67
mg/L NH_3–N	mg/L NH_3	1.216	380, 385, 387
mg/L NH_3–N	mg/L NH_4^+	1.288	380, 385, 387
mg/L NO_2^-	mg/L $NaNO_2$	1.5	373
mg/L NO_2^-	mg/L NO_2^-–N	0.3045	373
mg/L NO_2^-–N	mg/L $NaNO_2$	4.926	345, 371, 375
µg/L NO_2^-–N	µg/L $NaNO_2$	4.926	376
mg/L NO_2^-–N	mg/L NO_2^-	3.284	345, 371, 375
µg/L NO_2^-–N	µg/L NO_2^-	3.284	376
mg/L NO_3^-–N	mg/L NO_3^-	4.427	344, 351, 353, 355, 359, 361
mg/L PO_4^{3-}	mg/L P	0.3261	480, 482, 485, 490, 492, 535
µg/L PO_4^{3-}	µg/L P	0.3261	488

Table 2 Conversion Factors (continued)

To Convert From...	To...	Multiply By...	Conversion used in program #
mg/L PO_4^{3-}	mg/L P_2O_5	0.7473	480, 482, 485, 490, 492, 535, 536, 540, 541
µg/L PO_4^{3-}	µg/L P_2O_5	0.7473	488
mg/L SiO_2	mg/L Si	0.4674	651, 656
µg/L SiO_2	µg/L Si	0.4674	645

1.2.2 Hardness

Table 3 lists the factors for converting hardness from one unit of measure to another. For example, to convert mg/L $CaCO_3$ to German parts/100,000 CaO, multiply the value in mg/L x 0.056.

Table 3 Hardness Conversion Factors

Units of Measure	mg/L $CaCO_3$	British gr/gal (Imperial) $CaCO_3$	American gr/gal (US) $CaCO_3$	French parts/ 100,000 $CaCO_3$	German Parts/ 100,000 CaO	meq/L*	g/L CaO	lbs./cu ft $CaCO_3$
mg/L $CaCO_3$	1.0	0.07	0.058	0.1	0.056	0.02	$5.6x10^{-4}$	$6.23x10^{-5}$
English gr/gal $CaCO_3$	14.3	1.0	0.83	1.43	0.83	0.286	$8.0x10^{-3}$	$8.9x10^{-4}$
US gr/gal $CaCO_3$	17.1	1.2	1.0	1.72	0.96	0.343	$9.66x10^{-3}$	$1.07x10^{-3}$
Fr. p/ 100,000 $CaCO_3$	10.0	0.7	0.58	1.0	0.56	0.2	$5.6x10^{-3}$	$6.23x10^{-4}$
Ger. p/ 100,000 CaO	17.9	1.25	1.04	1.79	1.0	0.358	$1x10^{-2}$	$1.12x10^{-3}$
meq/L	50.0	3.5	2.9	5.0	2.8	1.0	$2.8x10^{-2}$	$3.11x10^{-2}$
g/L CaO	1790.0	125.0	104.2	179.0	100.0	35.8	1.0	0.112
lbs./cu ft $CaCO_3$	16,100.0	1,123.0	935.0	1,610.0	900.0	321.0	9.0	1.0

* 'epm/L, or 'mval/L'
Note: 1 meq/L = 1N/1000

2.1 Temperature

Most tests in this manual perform most accurately when the sample temperature is between 20 °C and 25 °C (68 to 77 °F). A note in the individual procedure will state any special temperature requirements.

2.2 Mixing

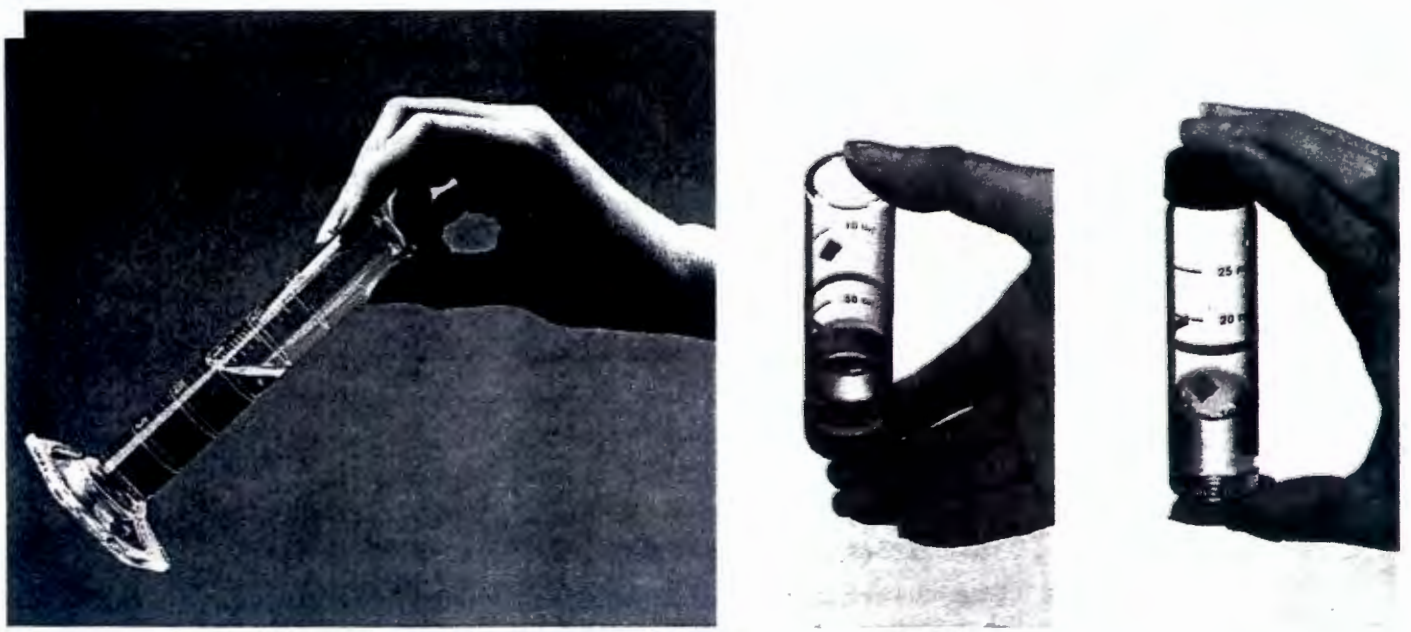
Swirling is recommended when mixing samples in a graduated cylinder or a titration flask. Grip the cylinder (or flask) firmly with the tips of the thumb and first two fingers (see *Figure 1*). Hold the cylinder at a 45-degree angle and make a circling motion from your wrist. This should move the cylinder in an approximately 12-inch circle, creating enough rotation to complete the mixing in a few turns.

Swirling is the gentlest method of mixing and offers the least chance for atmospheric contamination when testing for carbon dioxide and other gases.

Inverting allows for thorough mixing in a capped sample cell or a mixing cylinder. Hold the cell, or cylinder, in a vertical position with the cap on top. Invert, so that the cap is on the bottom. Return it to its original position. (See *Figure 1*.) This may be repeated as needed.

Both methods are simple, but take a bit of practice to get the best results.

Figure 1 Swirling a Cylinder and Inverting a Sample Cell



2.3 Digestion

Several procedures require sample digestion. Digestion uses chemicals and heat to break down a substance into components that can be analyzed. This section has three different digestion procedures.

The Hach Digesdahl system is a process that yields a digest suitable for the determination of metals, total phosphorus and total Kjeldahl nitrogen (TKN). It is rapid, convenient, and the method of choice.

For USEPA reporting purposes, USEPA-approved digestions are required. USEPA presents two digestions (mild and vigorous) for metals analysis. These are much more inconvenient and time consuming compared to the Hach Digesdahl system. Other digestion procedures are required for mercury, arsenic, phosphorus and TKN.

2.3.1 EPA Mild Digestion with Hot Plate for Metals Analysis Only

1. Acidify the entire sample at the time of collection with concentrated nitric acid by adding 5 mL of acid per liter (or quart) of sample.
2. Transfer 100 mL of well-mixed sample to a beaker or flask. Add 5 mL of distilled 1:1 hydrochloric acid (HCl).
3. Heat using a steam bath or hot plate until the volume has been reduced to 15–20 mL. Make certain the sample does not boil.
4. After this treatment, the sample may be filtered to remove any insoluble material.
5. Adjust the digested sample to pH 4 by drop-wise addition of 5.0 N Sodium Hydroxide Standard Solution. Mix thoroughly and check the pH after each addition.
6. Quantitatively transfer the sample with deionized water to a 100-mL volumetric flask and dilute to volume with deionized water. Continue with the procedure. This mild digestion may not suffice for all sample types. A reagent blank also should be carried through the digestion and measurement procedures.

2.3.2 EPA Vigorous Digestion with Hot Plate for Metals Analysis Only

A vigorous digestion can be followed to ensure all organo-metallic bonds are broken.

1. Acidify the entire sample with redistilled 1:1 Nitric Acid Solution to a pH of less than two. Do not filter the sample before digestion.
2. Transfer an appropriate sample volume (see *Table 4*) into a beaker and add 3 mL of concentrated redistilled nitric acid.
3. Place the beaker on a hot plate and evaporate to near dryness, making certain the sample does not boil.
4. Cool the beaker and add another 3 mL of the concentrated redistilled nitric acid.
5. Cover the beaker with a watch glass and return it to the hot plate. Increase the temperature of the hot plate so that a gentle reflux occurs. Add additional acid, if necessary, until the digestion is complete (generally indicated when the digestate is light in color or does not change color or appearance with continued refluxing).

6. Again, evaporate to near dryness (do not bake) and cool the beaker. If any residue or precipitate results from the evaporation, add redistilled 1:1 hydrochloric acid (5 mL per 100 mL of final volume). See *Table 4*.
7. Warm the beaker. Add 5 mL of 5.0 N sodium hydroxide and quantitatively transfer the sample with deionized water to a volumetric flask. See *Table 4* below for the suggested final volume.
8. Adjust the sample to pH 4 by drop-wise addition of 5.0 N Sodium Hydroxide Standard Solution; mix thoroughly and check the pH after each addition. Dilute to volume with deionized water. Multiply the result by the correction factor in *Table 4*. A reagent blank also should be carried through the digestion and measurement procedures.

Table 4 Vigorous Digestion Volumes

Expected Metal Concentration	Suggested Sample Vol. for Digestion	Suggested Volume of 1:1 HCl	Suggested Final Volume After Digestion	Correction Factor
1 mg/L	50 mL	10 mL	200 mL	4
10 mg/L	5 mL	10 mL	200 mL	40
100 mg/L	1 mL	25 mL	500 mL	500

2.3.3 General Digesdahl Digestion (Not USEPA accepted)

Many samples may be digested using the Digesdahl Digestion Apparatus (Cat. No. 23130). It is designed to digest many types of samples such as oils, wastewater, sludges, feeds, grains, plating baths, food, and soils. In this procedure the sample is oxidized by a mixture of sulfuric acid and hydrogen peroxide. Digestion of a dry sample requires less than ten minutes, while liquid samples require about 1 minute/mL. The digestion is done in a special flat-bottomed 100-mL volumetric flask. Aliquots (sample portions) are taken for analysis using colorimetric methods.

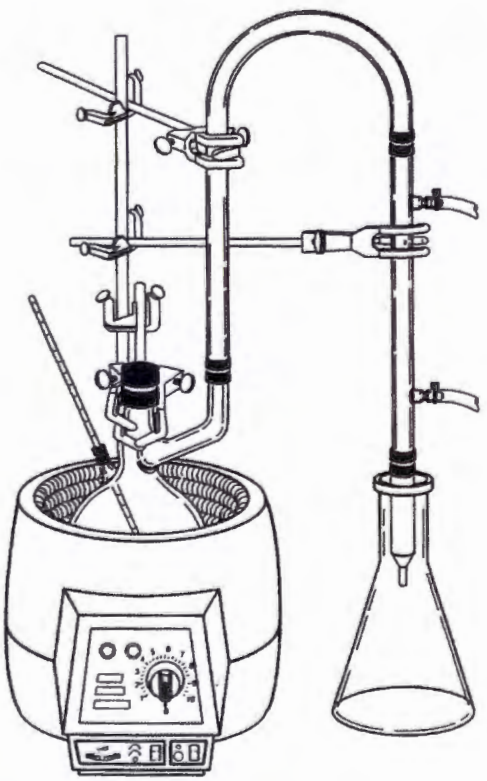
Procedures for digestion and using the Digesdahl Digestion Apparatus are based on the type and form of the sample, and are found in the *Digesdahl Digestion Apparatus Instruction Manual*, which is included with each Digesdahl Digestion Apparatus.

2.4 Distillation

Distillation is an effective, easy, and safe method of separating some chemical components for analysis. Hach Co. offers the following equipment for distillation: the General Purpose Distillation Apparatus (Cat. No. 22653-00), shown in *Figure 2*; the Arsenic Distillation Apparatus Set (Cat. No. 22654-00); the Cyanide Distillation Apparatus Set (Cat. No. 22658-00); and the General Purpose Heater and Support Apparatus, which comes in a 115 Vac, 60 Hz model (Cat. No. 22744-00) and a 230 V ac, 50 Hz model (Cat. No. 22744-02).

The Hach Distillation Apparatus is suitable for water and wastewater that requires sample pretreatment by distillation. Applications for the General Purpose Apparatus include: fluoride, albuminoid nitrogen, ammonia nitrogen, phenols, selenium, and volatile acids. The General Purpose Heater and Support Apparatus provides efficient heating and anchoring of the glassware.

Figure 2 General Purpose Distillation Apparatus



2.5 Filtration

Filtration separates particulates from an aqueous sample. It uses a porous medium that retains particulates but allows liquids to pass through. It is useful for removing turbidity (which may interfere in colorimetric analyses) from water samples.

Two methods of filtration are most frequently used: vacuum filtration and gravity filtration.

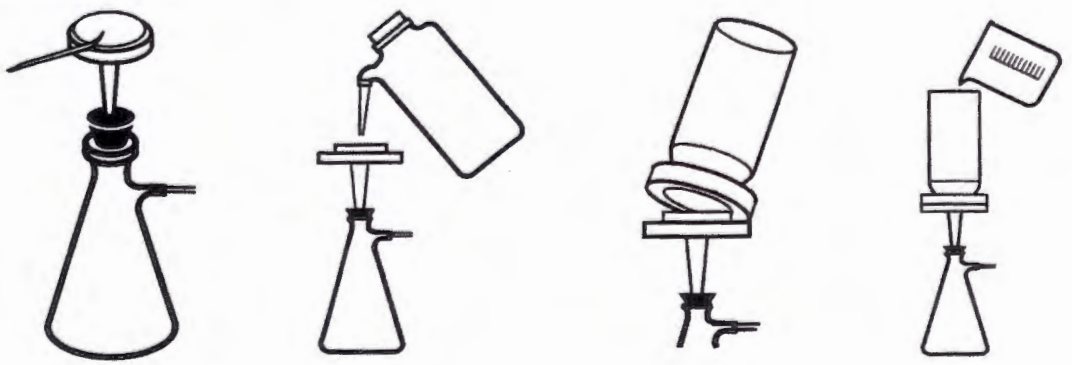
2.5.1 Vacuum Filtration

Vacuum filtration uses both suction and gravity to draw the liquid through the filter. An aspirator or vacuum pump is used to create suction (see *Figure 3*). It is faster than gravity filtration.

To filter using a vacuum:

1. Use tweezers to place a filter paper into the filter holder.
2. Place the filter holder assembly in the filtering flask. Wet the filter with deionized water to ensure adhesion to the holder.
3. Position the funnel housing on the filter holder assembly.
4. While applying a vacuum to the filtering flask, transfer the sample to the filtering apparatus.
5. Slowly release the vacuum from the filtering flask and transfer the solution from the filter flask to another container.

Figure 3 Vacuum Filtration



Required Apparatus for Vacuum Filtration

Description	Unit	Cat. No.
Filter Discs, glass fiber, 47 mm	100/pkg	2530-00
Filter Holder, membrane, 47 mm	each	13529-00
Flask, filtering, 500 mL	each	546-49
Pump, vacuum, hand operated	each	14283-00
OR		
Pump, vacuum, portable, 115 Vac	each	14697-00
Pump, vacuum, portable, 220 Vac	each	14697-02

2.5.2 Gravity Filtration

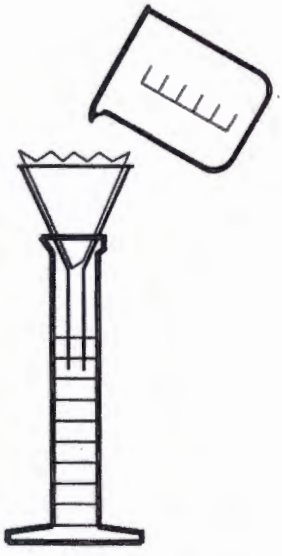
Many of the procedures in this manual use gravity filtration. This requires only filter paper, a conical funnel, and a receiving flask (see *Figure 4*). Gravity filtration is better for retaining fine particles. The rate of filtration increases as the volume increases in the filter cone, but never fill the cone more than three-quarters full.

Note: *Pretreatment using acid and heat is often necessary for metals testing. Filter paper will not withstand such an environment; therefore, vacuum filtration with glass fiber filter discs is recommended. Also, glass filter discs do not retain colored species like the paper filters do.*

To filter using gravity:

1. Place a folded filter paper into the funnel.
2. Wet the filter paper with deionized water to adhere it to the funnel.
3. Place the funnel into an erlenmeyer flask or graduated cylinder.
4. Pour the sample into the funnel.

Figure 4 Gravity Filtration



Required Apparatus for Gravity Filtration

Description	Unit	Cat No.
Cylinder, graduated, 100 mL	each	508-42
Funnel, poly, 65 mm	each	1083-67
Filter Paper, 12.5 cm, pleated	100/pkg	1894-57
Flask, erlenmeyer, 125 mL	each	505-43

2.6 Reagents

2.6.1 Reagent and Standard Stability

Chemicals supplied with the Odyssey Spectrophotometer and the Odyssey Portable Laboratory have an indefinite shelf life when stored in a cool, dry, dark place. The product label will specify any special storage needs.

It is always good laboratory practice to date chemicals upon receipt and to rotate supplies so the older supplies are used first.

Absorption of moisture, carbon dioxide, or other gases from the atmosphere; bacterial action; or light (with photosensitive compounds) may affect the reagent shelf life. In some cases, reaction with the storage container or interaction of reagent components may occur.

In its quest for reagent stability, Hach has developed many unique formulations, methods of analysis, and forms of packaging.

2.6.2 Reagent Blank

In several tests, the contribution of the reagent(s) to the final reading is of such a magnitude that it must be compensated for whenever the test is performed. This is referred to as the blank of the reagent, or the *reagent blank*. This produces a positive error in the test results.

Every effort is made to produce reagents with the lowest possible blank; and, for most reagents, it is less than 0.009 absorbance units. It is sometimes impossible or impractical to produce reagents with so low of a blank. When using such reagents, it is best to determine the reagent blank by performing the procedure using high-quality water (deionized, distilled, etc.) in place of sample. The resulting value is then expressed in the concentration units of the test and is subtracted from each sample determination that uses the same reagent lot. The Odyssey Spectrophotometer software allows the reagent blank value to be stored and subtracted automatically from each sample value. The reagent blank needs to be determined only at first use, when a new lot of reagent has been opened, or if you suspect contamination has occurred.

In most tests, the reagent blank is so small the instrument may be zeroed on either an untreated portion of the original water sample or on deionized water. This will not result in a significant loss of accuracy unless the test is for very low levels of a chemical. It is then best to use a reagent blank prepared as above.

2.7 Sample Dilution

Colorimetric tests mostly use volumes of 10 and 25 mL. However, in some tests, the color developed in the sample may be too intense to be measured, or unexpected colors may develop. In either case, dilute the sample to produce a measurable endpoint or to determine if interfering substances are present.

To dilute the sample easily, pipet the chosen sample portion into a clean graduated cylinder (or volumetric flask for more accurate work). Fill the cylinder (or flask) to the desired volume with deionized water. Mix well. Use the diluted sample when running the test.

Table 5 shows relative quantities and the multiplication factors to use with a graduated cylinder. The concentration of the sample is equal to the diluted sample result multiplied by the multiplication factor.

Table 5 Sample Dilution Volumes

Sample Volume (mL)	mL Deionized Water Used to Bring the Volume to 25 mL	Multiplication Factor
25.0	0.0	1
12.5	12.5	2
10.0*	15.0	2.5
5.0*	20.0	5
2.5*	22.5	10
1.0*	24.0	25
0.250*	24.75	100

* For sample sizes of 10 mL or less, use a pipet to measure the sample into the graduated cylinder or volumetric flask.

More accurate dilutions can be done with a pipet and a 100-mL volumetric flask (see *Table 6* for more information). Pipet the sample and dilute to volume with deionized water. Swirl to mix

Table 6 Multiplication Factors for Diluting to 100 mL

Sample Volume (mL)	Multiplication Factor
1	100
2	50
5	20
10	10
25	4
50	2

2.7.1 Sample Dilution with Interfering Substances

Sample dilution may influence the level at which a substance interferes. The effect of the interferences decreases as the dilution increases. In other words, higher levels of an interfering substance can be tolerated in the original sample if it is diluted before analysis.

An Example:

Copper does not interfere at or below 100 mg/L for a 25 mL sample in a procedure. If the sample volume is diluted with an equal volume of water, what is the level at which copper will not interfere?

$$\frac{\text{Total volume}}{\text{Sample volume}} = \text{Dilution factor}$$

$$\frac{25}{12.5} = 2$$

Interference Level × Dilution Factor = Interference level in sample

$100 \times 2 = 200$

The level at which copper will not interfere in the undiluted sample is at or below 200 mg/L.

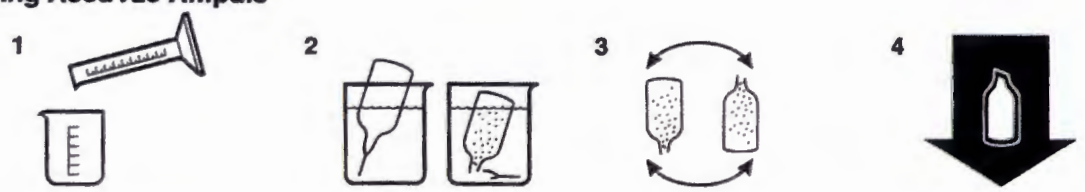
2.8 AccuVac® Ampuls

AccuVac Ampuls contain pre-measured powder or liquid vacuum-packed in optical-quality glass ampules.

To use AccuVac Ampuls:

1. Collect the sample in a beaker or other open container.
2. Place the ampule tip well below the sample surface and break the tip off (see *Figure 5*) against the beaker wall. The break must be far enough below the surface to prevent air from being drawn in as the level of the sample lowers (the AccuVac Breaker may be used instead of breaking the ampule against the beaker side).
3. Invert the ampule several times to dissolve the reagent. Do not place your finger over the broken end; the liquid will stay in the ampule when inverted. Wipe the ampule with a towel to remove fingerprints, etc.
4. Insert the ampule into the sample cell holder in the Odyssey Spectrophotometer and read the results directly.

Figure 5 Using AccuVac Ampuls



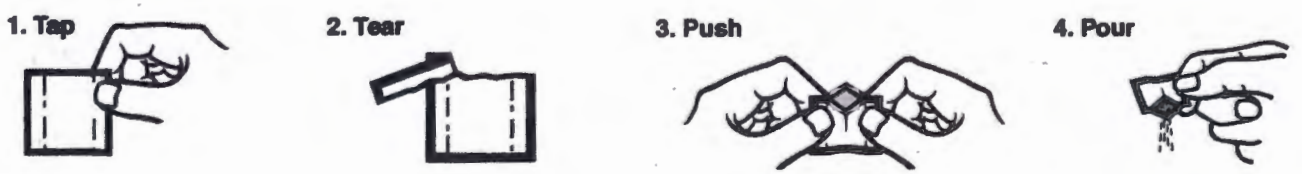
2.9 PermaChem® Pillows

To minimize leakage and deterioration, Hach uses dry, powdered reagents whenever possible. Some powders are packed in individual, one-test, foil packets called PermaChem pillows.

To use PermaChem pillows (see *Figure 6*):

1. Tap the pillow on a hard surface to collect the powdered reagent in the bottom.
2. Tear (or cut) across, from A to B, holding the pillow away from your face.
3. Using two hands, push both sides toward each other to form a spout.
4. Pour the pillow contents into the sample cell and continue the procedure according to the instructions.

Figure 6 Opening PermaChem Pillows



2.10 Sample Cells

A set of 10-mL round sample cells are shipped with the Odyssey Spectrophotometer. A solution in both cells should give the same absorbance within ±0.002 Abs. (For more information, see *Matching*, below.)

Note: *25-mL cells with the catalog number printed across the bottom cannot be used in Odyssey instruments.*

2.10.1 Orientation of Sample Cells

To minimize measurement variability when using a particular cell, always orient the cell in the same manner before placing it into the cell holder. The fill marks on the cells can be used as orientation guides for positioning the cells.

2.10.2 Care of Sample Cells

When not in use, store the sample cells in their boxes to protect them from scratches and breakage. After use, empty and clean the cells; avoid leaving colored solutions in the cells for extended periods of time.

2.10.3 Cleaning of Sample Cells

Most laboratory detergents can be used at recommended concentrations. Neutral detergents such as Neutracon are safer when regular cleaning is required, as in the case of protein residues. When using a detergent, you can clean faster by increasing the temperature or using an ultrasonic bath. Finish by rinsing a few times with deionized water and allow to air dry.

Individual procedures may require special cleaning methods.

2.10.4 Matching of Sample Cells

Although sample cells shipped with the Odyssey Spectrophotometer are distortion-free, nicks and scratches from handling may cause an optical mismatch between two sample cells and introduce error into the test results. This type of error may be avoided by optically matching the sample cells as follows:

1. Turn the instrument on. In Instrument Setup, turn Display Lock **Off**.
2. Return to the Main Menu and select **Single Wavelength**.
3. Touch the λ key and select a wavelength of **510 nm**, or the wavelength to be used for the test.
4. Pour at least 25 mL (10 mL for 10-mL cells) of deionized water into each of two sample cells.
5. Place one sample cell into the cell holder. Orient the fill mark toward the front. Close the light shield.
6. Touch **Zero**. The display will show: **0.000 Abs**
7. Place the other sample cell into the cell holder. Close the light shield.
8. Wait about three seconds for the value to stabilize and read the absorbance. Record the resulting absorbance.
9. Turn the cell 180° and repeat *step 8*. Try to achieve an absorbance value within ±0.002 Abs of the first cell. Note the orientation of the cell.

If the sample cells cannot be matched within ±0.002 Abs, they may still be used by compensating for the difference. For example, if the second cell reads 0.003 absorbance units higher than the first cell, correct future readings (when using these two cells) by subtracting 0.003 absorbance units (or the equivalent concentration) from the reading. Likewise, if the second cell reads -0.003 absorbance units, add 0.003 absorbance units to the reading.

2.11 Other Apparatus

2.11.1 Boiling Aids

Boiling is required in some procedures. Under some conditions *bumping* may occur causing sample loss or injury. Bumping is caused by the sudden, almost explosive, conversion of water to steam as it is heated. Use of a boiling aid, such as boiling chips (Cat. No. 14835-31), reduces bumping.

Make sure the boiling aids will not contaminate the sample. Do not use boiling aids (except glass beads) more than once. Loosely covering the sample during boiling will prevent splashing, reduce the chances of contamination, and minimize sample loss.

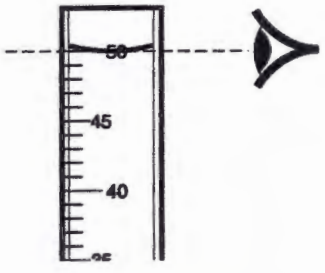
Individual procedures will recommend the specific boiling aid to use.

2.12 Achieving Accuracy in Volume Measurement

2.12.1 Pipets and Graduated Cylinders

When smaller sample quantities are used, the accuracy of measurements becomes increasingly important. *Figure 7* illustrates the proper way to read the sample level using the meniscus formed when the liquid wets the cylinder or pipet walls.

Figure 7 Reading the Meniscus



Before filling, rinse the pipet or cylinder two or three times with the sample to be tested. Use a pipet filler or pipet bulb to draw the sample into the pipet. ***Never pipet chemical reagent solutions or samples by mouth.*** When filling a pipet, keep the tip of the pipet below the surface of the sample as the sample is drawn into the pipet.

Serological pipets have marks that indicate the volume of liquid delivered by the pipet. The marks may extend to the tip of the pipet or may be only on the straight portion of the tube. If the marks are only on the straight part of the tube, fill serological pipets to the zero mark and discharge the sample by draining the sample until the meniscus is level with the desired mark. If the serological pipet has marks extending to the tip of the pipet, fill the pipet to the desired volume

and drain all the sample from the pipet. Then blow the sample out of the pipet tip for accurate measurements.

Volumetric (transfer) pipets have a bulb in the middle and a single ring above the bulb to indicate the volume of liquid when it is filled to the mark. To discharge a volumetric pipet, hold the tip of the pipet at a slight angle against the container wall and drain. **Do not** discharge the solution remaining in the tip of the pipet after draining. Volumetric pipets are designed to retain a small amount of sample in the pipet tip.

If droplets of sample cling to the walls of the pipet, the pipet is dirty and is not delivering the correct amount of sample. Wash the pipet thoroughly with a laboratory detergent or cleaning solution and rinse several times with deionized water.

2.12.2 The Pour-Thru Cell

The Pour-Thru cell is an optional accessory that improves accuracy and makes measuring more convenient, especially when the analyte is present at low levels. Using the Pour-Thru cell avoids any error that might result from optical differences between sample cells. See your *Instrument Manual* for instructions on installation. Not all procedures allow for using the Cell; individual procedures will note if it can be used.

The Pour-Thru Cell **cannot** be used with 10-mL sample sizes and reagents. There is not sufficient volume to flush the cell completely; this leads to sample carryover errors. For some tests, you will find optional 25-mL reagents listed for use with the Pour-Thru Cell.

Instead of placing a 25-mL sample cell into the cell holder, you simply pour the solution into the funnel of the installed Pour-Thru Cell Assembly. Avoid spilling solution onto the instrument.

The funnel height and orientation may be adjusted. The funnel height determines the speed of sample flow through the cell. The higher the funnel, the faster the flow. To minimize air bubbles, adjust the funnel so that it drains completely with the final level of liquid in the tube about 5 cm (2 inches) below the tip of the funnel.

Take instrument readings after the solution has stopped flowing through the cell. Always rinse the cell thoroughly with deionized water after each series of tests, or as often as specified in the procedure.

Occasionally, remove the Pour-Thru Cell to check for any accumulation of film on the windows. If the windows appear hazy, soak the cell in a detergent bath and rinse thoroughly with deionized water.

Note: *The Pour-Thru Cell cannot be used directly with Hach programs unless it is specified in the procedure. Using the Pour-Thru Cell with other Hach procedures requires a standard adjust.*

3.1 Sample Collection, Preservation and Storage

Correct sampling and storage are critical for accurate testing. Sampling devices and containers must be thoroughly clean to prevent carryover from previous samples. Preserve the sample properly; each procedure has information about sample preservation.

3.1.1 Collecting Water Samples

Use a clean container. Rinse the container several times with the water to be sampled before taking the sample. Document the location and procedure used for each sample taken. For example:

From a tap Take samples as close as possible to the source of the supply. This lessens the influence of the distribution system on the sample. Let the water run long enough to flush the system. Fill sample containers slowly with a gentle stream to avoid turbulence and air bubbles.

When testing well water, let the pump run long enough to draw fresh groundwater into the system. Collect a sample from a tap near the well.

From open waters Sample as near the middle of the body of water as is practical; at least several feet from the shore or edge of the tank.

Take the sample under the surface of the water. If you are using a capped container, submerge it before removing the cap.

3.1.1.1 Types of Containers

Table 7 lists recommended containers for specific parameters.

- **Polypropylene and Polyethylene** — These are the least expensive containers.
- **Quartz or TFE (tetrafluoroethylene, Teflon®)**—These are the best, and the most expensive.
- **Glass**—Glass provides a good general-purpose container. Avoid using soft-glass containers to collect samples to be tested for metals in the microgram-per-liter range.

  When determining silver, store samples in dark containers such as amber or brown glass.

Acid washing will thoroughly clean sample containers before use.

3.1.1.2 Acid Washing

If a procedure suggests acid washing, follow these steps:

a. Clean the glassware or plasticware with laboratory detergent. Phosphate-free detergent is best. (When determining phosphates, phosphate-free detergent *must* be used.)
b. Rinse well with tap water.
c. Rinse with a 1:1 hydrochloric acid solution or a 1:1 nitric acid solution. (Nitric acid is best when testing for lead or other metals.)
d. Rinse well with deionized water. For chromium, 12–15 rinses may be necessary. When determining ammonia and Kjeldahl nitrogen, the rinse water must be ammonia-free.

e. Air dry. Protect the glassware from fumes and other sources of contamination when storing.

Use chromic acid or chromium-free substitutes to remove organic deposits from glass containers. Afterward, rinse thoroughly with water to remove all traces of chromium.

Avoid introducing metal contaminants from containers, distilled water, or membrane filters.

3.1.1.3 Sample Splits

Samples must often be split or divided into separate containers for intra- or inter-laboratory use in studies, confirmation, alternative techniques, or maintaining additional sample for reference, or stability studies. It is very important that sample splits be done correctly.

- Collect a large volume of sample in a single container and transfer to smaller containers; do not fill the smaller containers individually from the water source.
- Thoroughly mix samples containing particulates or solids before splitting so that all the splits are homogeneous.
- If the sample requires filtering before analysis or storage, filter the entire sample before splitting.
- Use the same kind of container for all the splits.
- Analyze biologically active splits on the same day, or as close to the same day as is possible.
- Preserve all splits in the same way; if this is not done, the differing methods must be fully documented.
- Fill containers of volatile samples to overflowing and cap carefully. Do not leave any headspace or air in the container.

3.1.2 Storage and Preservation

Because chemical and biological processes continue after collection, analyze the sample as soon as possible. This also reduces the chance for error and minimizes labor. When immediate analysis is not possible, the sample must be preserved. Preservation methods include pH control, chemical addition, refrigeration, and freezing.

Table 7 presents an overview of preservation methods and holding times for specific procedures.

You can preserve aluminum, cadmium, chromium, cobalt, copper, iron, lead, nickel, potassium, silver, and zinc samples for at least 24 hours by adding one Nitric Acid Solution Pillow 1:1 (Cat. No. 2540-98) per liter of sample. Check the pH with pH indicator paper or a pH meter to assure the pH is 2 or less. Add additional pillows if necessary. Adjust the sample pH prior to analysis by raising the pH to 4.5 with Sodium Hydroxide Standard Solution, 1 N or 5 N.

3.1.3 Correcting for Volume Additions

If you use a large volume of preservative, you must account for dilution by the acid added to preserve the sample, and the base used to adjust the pH to the range of the procedure. Make this correction as follows:

1. Determine the volume of initial sample, the volume of acid and base added, and the total final volume of the sample.
2. Divide the total volume by the initial volume.
3. Multiply the test result by this factor.

Example:

A one-liter sample was preserved with 2 mL of nitric acid. It was neutralized with 5 mL of 5 N sodium hydroxide. The result of the analysis procedure was 10.00 mg/L. What is the volume correction factor and correct result?

1. Total Volume = 1000 mL + 2 mL + 5 mL = 1007 mL
2. $\frac{1007}{1000}$ = 1.007 = volume correction factor
3. 10.0 mg/L × 1.007 = 10.07 mg/L = correct result

Hach 1:1 Nitric Acid Pillows contain 2.5 mL of acid: correct for this volume.

Table 7 Required Containers, Preservation Techniques and Holding Times[1]

Parameter No./Name	Container[2]	Preservation[3,4]	Maximum Holding Time[5]
Table 1A - Bacterial Tests			
1-4. Coliform, fecal and total	P,G	Cool, 4 °C, 0.008% $Na_2S_2O_3$	6 hours
5. Fecal streptococci	P,G	Cool, 4 °C, 0.008% $Na_2S_2O_3$	6 hours
Table 1B - Inorganic Tests			
1. Acidity	P, G	Cool, 4 °C	14 days
2. Alkalinity	P, G	Cool, 4 °C	14 days
4. Ammonia	P, G	Cool, 4 °C, H_2SO_4 to pH<2	28 days
9. Biochemical oxygen demand (BOD)	P, G	Cool, 4 °C	48 hours
10. Boron	P, PFTE or quartz	HNO_3 to pH<2	6 months
11. Bromide	P, G	None required	28 days
14. Biochemical oxygen demand, carbonaceous	P, G	Cool, 4 °C	48 hours
15. Chemical oxygen demand	P, G	Cool, 4 °C, H_2SO_4 to pH<2	28 days
16. Chloride	P, G	None required	28 days
17. Chlorine, total residual	P, G	None required	Analyze immediately
21. Color	P, G	Cool, 4 °C	48 hours
23-24. Cyanide, total and amenable to chlorination	P, G	Cool, 4 °C, NaOH to pH>12, 0.6 g ascorbic acid[6]	14 days[7]
25. Fluoride	P	None required	28 days
27. Hardness	P, G	HNO_3 to pH<2, H_2SO_4 to pH<2	6 months
28. Hydrogen ion (pH)	P, G	None required	Analyze immediately

Table 7 Required Containers, Preservation Techniques and Holding Times[1] (continued)

Parameter No./Name	Container[2]	Preservation[3,4]	Maximum Holding Time[5]
31, 43. Kjeldahl and organic nitrogen	P, G	Cool 4 °C, H_2SO_4 to pH<2	28 days
Metals[6]			
18. Chromium VI	P, G	Cool, 4 °C	24 hours
35. Mercury [3, 5-8, 12, 13, 19, 20, 22, 26, 29, 30, 32-34, 36, 37, 45, 47, 51, 52, 58-60, 62, 63, 70-72, 74, 75][9].	P, G	HNO_3 to pH<2	6 months
Metals, except boron, chromium VI and mercury			
38. Nitrate	P, G	Cool, 4 °C	48 hours
39. Nitrate-nitrite	P, G	Cool 4 °C, H_2SO_4 to pH<2	28 days
40. Nitrite	P, G	Cool, 4 °C	48 hours
41. Oil and grease	G	Cool, 4 °C, HCl or H_2SO_4 to pH<2	28 days
42. Organic Carbon	P, G	Cool, 4 °C, HCl or H_2SO4 or H_3PO_4 to pH<2	28 days
44. Orthophosphate	P, G	Filter immediately; Cool, 4 °C	48 hours
46. Oxygen, dissolved probe	G Bottle and top	None required	Analyze immediately
47. Winkler	G Bottle and top	Fix on site and store in dark	8 hours
48. Phenols	G only	Cool 4 °C, H_2SO_4 to pH<2	28 days
49. Phosphorus, elemental	G	Cool, 4 °C	48 hours
50. Phosphorus, total	P, G	Cool, 4 °C, H_2SO_4 to pH<2	28 days
53. Residue, total	P, G	Cool, 4 °C	7 days
54. Residue, filterable	P, G	Cool, 4 °C	7 days
55. Residue, Nonfilterable (TSS)	P, G	Cool, 4 °C	7 days
56. Residue, Settleable	P, G	Cool, 4 °C	48 hours
57. Residue, volatile	P, G	Cool, 4 °C	7 days
61. Silica	P, PFTE or quartz	Cool, 4 °C	28 days
64. Specific conductance	P, G	Cool, 4 °C	28 days
65. Sulfate	P, G	Cool, 4 °C	28 days
66. Sulfide	P, G	Cool 4 °C, add zinc acetate plus sodium hydroxide to pH>9	7 days
67. Sulfite	P, G	none required	Analyze immediately
68. Surfactants	P, G	Cool, 4 °C	48 hours
69. Temperature	P, G	None required	Analyze immediately
73. Turbidity	P, G	Cool, 4 °C	48 hours

1 This table was taken from Table II published in the *Federal Register*, July 1, 1995, 40 CFR, Part 136.3, pages 643–645. Organic tests are not included.

²olyethylene (P) or glass (G), or PTFE Teflon

3 Sample preservation should be performed immediately upon sample collection. For composite chemical samples each portion should be preserved at the time of collection. When use of an automated sampler makes it impossible to preserve each portion, then chemical samples may be preserved by maintaining at 4 °C until compositing and sample splitting is completed.

When any sample is to be shipped by common carrier or sent through United States Mails, it must comply with the *Department of Transportation Hazardous Material Regulations* (49 CFR Part 172). The person offering such material for transportation is responsible for ensuring such compliance. For the preservation requirements of Table II, the Office of Hazardous Materials, Materials Transportation Bureau, Department of Transportation has determined that the Hazardous Materials Regulations do not apply to the following materials: Hydrochloric acid (HCl) in water solutions at concentrations of 0.04% by weight or less (pH about 1.96 or greater); Nitric acid (HNO_3) in water solutions at concentrations of 0.15% by weight or less (pH about 1.62 or greater); Sulfuric acid (H_2SO_4) in water solutions at concentrations of 0.35% by weight or less (pH about 1.15 or greater); and Sodium hydroxide (NaOH) in water solutions at concentrations of 0.080% by weight or less (pH about 12.30 or less).

5 Samples should be analyzed as soon as possible after collection. The times listed are the maximum times that samples may be held before analysis and still be considered valid. Samples may be held for longer periods only if the permitee, or monitoring laboratory has data on file to show that the specific types of samples under study are stable for the longer time, and has received a variance from the Regional Administer under §136.3(e). Some samples may not be stable for the maximum time period given in the table. A permitee or monitoring laboratory is obligated to hold the sample for a shorter time if knowledge exists to show that this is necessary to maintain sample stability. See §136.3(e) for details. The term "analyze immediately" usually means within 15 minutes or less after sample collection.

6 Should only be used in the presence of residual chlorine.

7 Maximum holding time is 24 hours when sulfide is present. Optionally all samples may be tested with lead acetate paper before pH adjustments in order to determine if sulfide is present. If sulfide is present, it can be removed by the addition of cadmium nitrate powder until a negative spot test is obtained. The sample is filtered and then NaOH is added to pH 12.

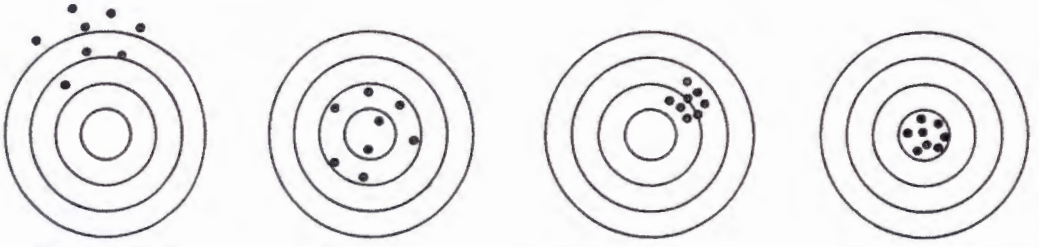
8 Samples should be filtered immediately on-site before adding preservative for dissolved metals.

9 Numbers refer to parameter numbers in 40 CFR, Part 136.3, Table 1B.

3.2 Checking for Accuracy and Precision

Accuracy defines the closeness of a test result to the true value. Precision defines the closeness of repeated measurements to each other. Although precise results suggest accuracy, they can be inaccurate. Both the accuracy and the precision of test results can be improved by using standard additions or standard solutions.

Figure 8 Precision and Accuracy Illustrated



3.2.1 Standard Solutions

A standard solution may be ordered as a prepared reagent or it may be made in the laboratory. It is a solution of a known composition and concentration. The accuracy of your instrument may be checked by using a standard solution in place of the sample water in a procedure.

3.2.2 Standard Additions

This technique can test for interferences, bad reagents, faulty instruments, and incorrect procedures. It is also known as *spiking* or *known additions*. If this

technique works for a given procedure in this manual, detailed instructions will be given in the *Accuracy Check* section of the procedure.

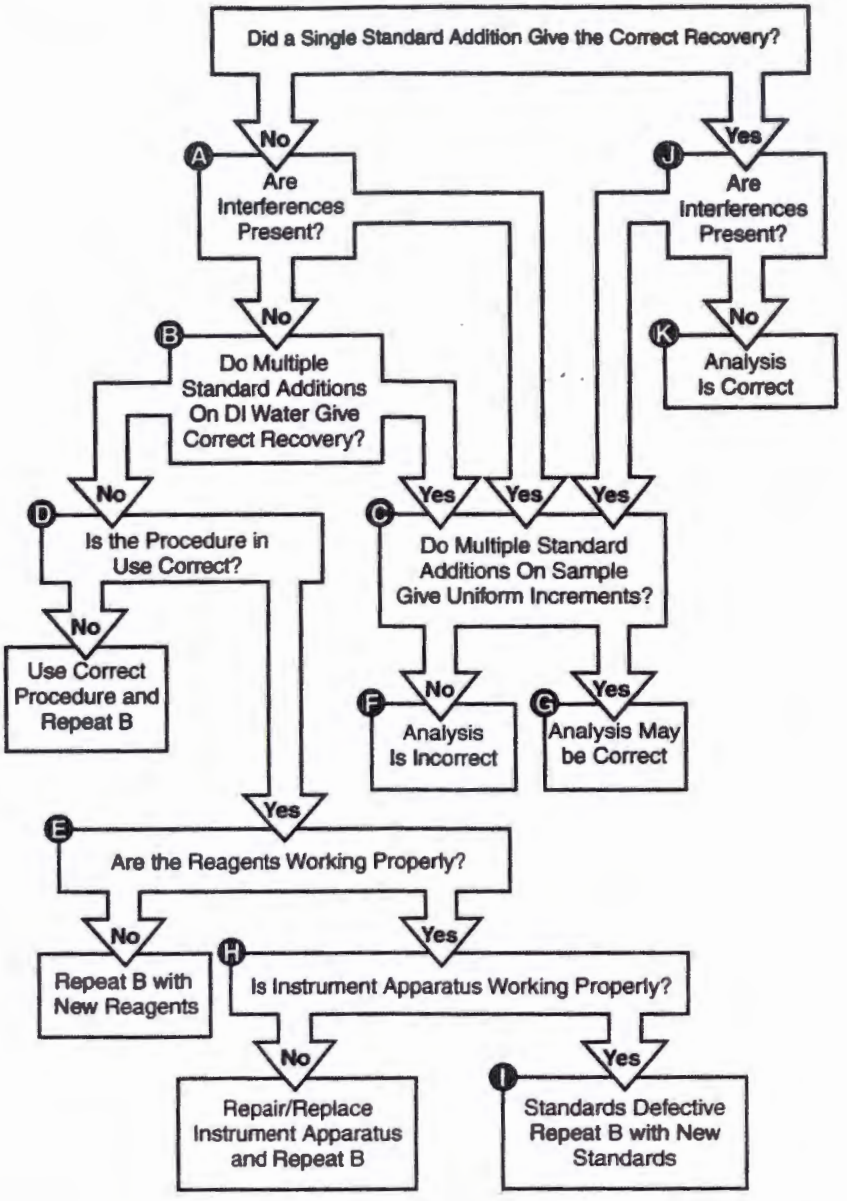
In general, this technique requires adding a small amount of a standard solution to the sample water and repeating the procedure. You should get close to 100% recovery. If not, a problem exists and must be identified.

1. To check for an interference, add the standard solution to deionized water and repeat the procedure. If you now get close to 100% recovery, you have an interference and must identify the source of the interference. If your recovery is still poor, use the following checklist:
   - Are you following the procedure exactly?
   - Are you using the proper reagents in the proper order and concentration?
   - Are you waiting the full time necessary for color development?
   - Are you using the correct glassware? Is it clean?
   - Does the test need a specific sample temperature?
   - Is the pH of the sample in the correct range?

   A careful reading of the procedure should help you to answer these questions.
2. Check the performance of your instrument. Follow the instructions in the *Maintenance* section of the *Instrument Manual.*
3. Check your reagents. Repeat the standard additions test using fresh reagents. It may also be necessary to replace the standard solution.

If you have still not located the problem, use the Decision Tree in *Figure 9*, and the explanations of each branch, for further help.

Figure 9 Standard Additions Decision Tree



3.2.3 Explanation of the Standard Additions Decision Tree

If a single standard addition to the sample does not give the expected increase in concentration, a likely cause may be the presence of interferences. (Other causes might be defective reagents, a defective instrument or apparatus, defective standard, or incorrect technique.)

Branch A

If interferences are known to be present, proceed to *Branch C*.

If interferences are known or assumed to be absent, look for other sources of error. Proceed to *Branch B*.

Branch B Perform multiple standard additions on a sample of deionized water as follows:

1. Pour 25 mL of deionized water into a 25-mL sample cell.
2. Add 0.1 mL of the appropriate standard solution (for this example, a 50 mg/L iron standard) to a second 25-mL sample of deionized water.
3. Add 0.2 mL of the same standard to a third 25-mL sample of deionized water.
4. Add 0.3 mL of the same standard solution to a third 25-mL sample of deionized water.
5. Tabulate the data as is shown below:

mL standard added	mg/L standard added	mg/L analyte found
0	0	0
0.1	0.2	0.2
0.2	0.4	0.4
0.3	0.6	0.6

These data show several points:

- The standard added to the deionized water was completely recovered. Therefore, the chemicals, instrument, procedure/technique, and standards are working correctly.
- The standard added to the original sample was not completely recovered; therefore, the sample contains an interference.
- Analyses done on the sample will be incorrect. The sample must be pre-treated to remove interferences.

If the results using deionized water give the expected increments (as they did in the example above), go to *Branch C*.

If the results using deionized water do not give the expected increments, the problem may lie with another part of the procedure; go to *Branch D*.

Branch C If interferences are present, the correct results may still be approximated by using multiple standard additions to the sample. Follow the procedure outlined in *Branch B*, substituting sample water for the deionized water.

If the increase in the mg/L of analyte found are uniform for each addition (ex. 0.1, 0.1, and 0.1), go to *Branch G*.
If the increases are not uniform (i.e., 0.1, 0.08, and 0.05), go to *Branch F*.

Branch D Carefully re-read the instructions for the test.

- Are the correct reagents used in the correct order?
- Is the colorimeter adjusted to the correct wavelength?
- Is the glassware precise enough?
- Have the reactions been timed properly?

If the procedure technique was incorrect, repeat *Branch B*.
If the procedure technique was correct, go to *Branch E*.

Branch E Check the reagent performance by either obtaining a fresh lot of reagent or by using a known standard to run the test. Make sure the color development time given in the procedure is the same as that required for the reagent in question.

If a reagent is defective, repeat *Branch B* with new reagents.
If the reagents are good, go to *Branch H*.

Branch F Examples **A** and **B** show non-uniform increments between the standard additions produced by the presence of interferences. These data points have been plotted in *Figure 10*.

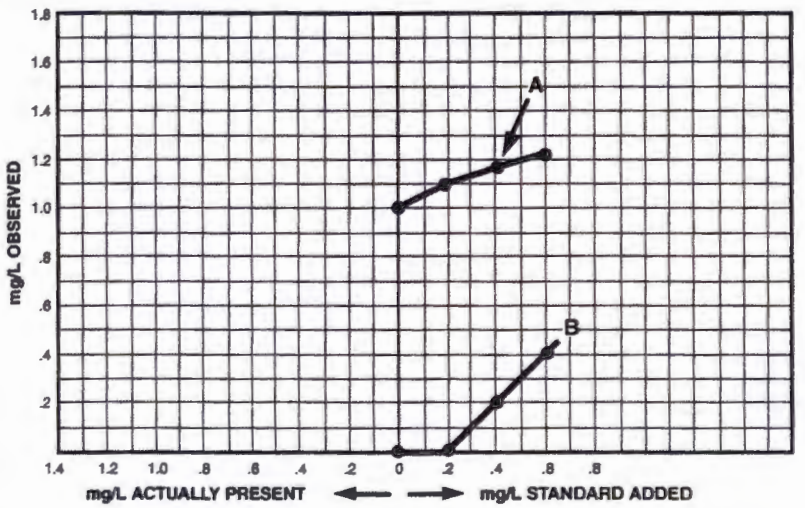
Example A

mL standard added	mg/L standard added	mg/L analyte found
0	0	1.0
0.1	0.2	1.10
0.2	0.4	1.18
0.3	0.6	1.23

Example B

mL standard added	mg/L standard added	mg/L analyte found
0	0	0
0.1	0.2	0
0.2	0.4	0.2
0.3	0.6	0.4

Figure 10 Multiple Standard Additions — A and B



The plot for **Example A** illustrates an interference that becomes progressively worse as the concentration of the standard or analyte increases. This type of interference is uncommon and is more likely to be caused by an error or malfunction of the procedure, reagents, or instrument. Repeat *Branch B* to verify the interference.

The plot for **Example B** illustrates a common chemical interference that becomes less, or even zero, as the concentration of standard or analyte increases. The graph shows the first addition was consumed by the interference and the remaining additions gave the correct increment of 0.2 mg/L. This could also be the result of an error made in the standard addition. Repeat the analysis to see if

an error was made during the standard addition. For these two types of interferences, the method is not appropriate for the sample matrix. Analyze the sample by another method that uses a different chemistry.

Branch G Examples C and D show uniform increments between the standard additions produced by the presence of interferences. These data points have been plotted in *Figure 11*.

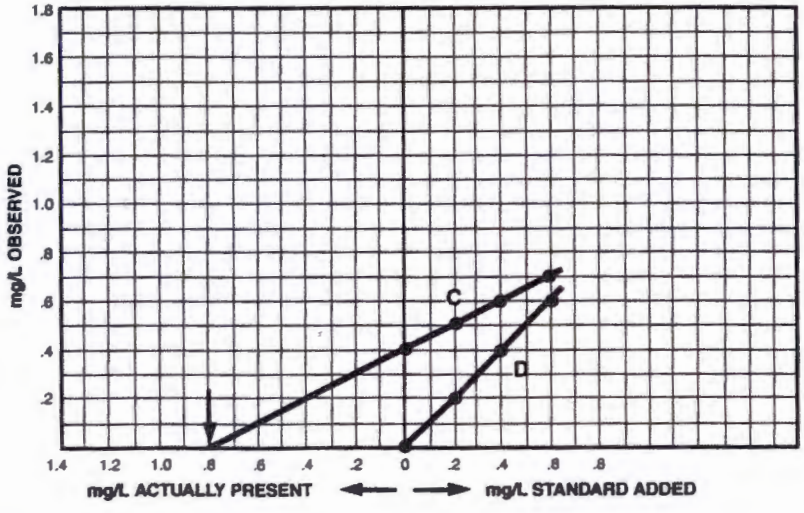
Example C

mL standard added	mg/L standard added	mg/L analyte found
0	0	0.4
0.1	0.2	0.5
0.2	0.4	0.6
0.3	0.6	0.7

Example D

mL standard added	mg/L standard added	mg/L analyte found
0	0	0
0.1	0.2	0.2
0.2	0.4	0.4
0.3	0.6	0.6

igure 11 Multiple Standard Additions — C and D



The plot for **Example C** illustrates a common interference with a uniform effect on the standard and the substances in the sample. The four data points form a straight line that may be extended back through the horizontal axis. The point where the line meets the axis can be used to determine the concentration of the substance you are measuring.

In this example, the first analysis gave 0.4 mg/L. After extrapolating the line to the horizontal axis, the graph shows the result should be much closer to the correct result: 0.8 mg/L.

The plot for **Example D** illustrates a problem for the analyst. The increments are uniform and the recovery of the standard is complete. The result of the first analysis is 0 mg/L and the extrapolates back through 0 mg/L. If interferences are known to be present, the interferences may be present in an amount equal to the substance in question, preventing the analyst from finding the substance. This would be an uncommon situation.

Apparent interferences may also be caused by a defect in the instrument or standards. Before assuming the interference is chemical, check *Branch B*.

Branch H Check the operation of the instrument and/or apparatus used to perform the test. Perform the wavelength and linearity checks in the instrument manual. Check the glassware used in the procedure and make sure it is extremely clean. Dirty pipettes and graduated cylinders can cause contamination and will not deliver the correct volume.

If a defect is found in the instrument and/or apparatus, repeat *Branch B* after repair or replacement. If the instrument and apparatus are working, proceed with *Branch I*.

Branch I After determining that the procedure, reagents, instrument, and/or apparatus are correct and working properly, the most likely cause for standard additions not functioning correctly in deionized water is the standard used. Obtain a new standard and repeat *Branch B*.

Branch J If the standard additions gives the correct result, the analyst must then determine if one or more interfering substances are present. If interfering substances are present, proceed to *Branch C*. If they are not present, the analysis is correct.

If you cannot identify the problem, call Hach Technical Consultants at 1-800-227-4224 or visit our Web site: http://www.hach.com/forms.htm.

3.2.4 Troubleshooting a Test When Results are in Doubt

If the results from any Hach chemistry are in doubt, troubleshoot them as follows:

1. Run a proof-of-accuracy check.Take a standard solution, which has a known concentration, through the same steps as the original sample. Include sampling and storage, digestion and colorimetric determination, if applicable. If the results of the standard solution check are correct, skip to *step 4* below. If there is a variation in the expected results, go to *step 2*.
2. If the standard solutions check does not match the expected results, check the instrument set-up and method procedure as follows:
   a. Verify that the correct wavelength and units of concentration being displayed match the units of concentration described in the procedure.
   b. Verify that the units of concentration of the standard match the displayed units. (One of the alternative forms of the analyte may be in the display.) For example: Molybdenum may be shown as Mo instead of MoO_4.
   c. Verify that the sample cells called for in the procedure are the ones being used.
   d. Verify that the reagents are correct for the sample size being analyzed.

e. Verify that the reagent blank value stored is for the current procedure. It may be from a previous lot of reagents and therefore not representative of the current reagent lot.

f. Verify the calibration or curve adjustment currently in use. The factory-stored default calibration should be used initially to check the standard.

If the instrument setup is correct and the method procedure specifics are being followed correctly, go to *step 3*.

3. If the standard solution check does not match the expected results, check the reagents used in the test and the analytical technique as follows:

   a. Determine the age of the reagents used in the test. While most Hach reagents have a long shelf life, many factors affect this (i.e., storage temperature, storage conditions, microbial contamination). Replace suspect reagents and run the standards check again.

   b. Run a deionized or distilled water blank through the entire process; include sampling and storage, digestion, and colorimetric determination. Some chemicals will add a small amount of color to a test; this is not considered unusual. However, color development in excess of 10% of the range of the test may indicate a problem with one of the reagents or the dilution water.

   c. To troubleshoot the procedure, delete the parts one by one. First, using the standard solution, omit preservation and storage, doing only digestion and colorimetry. If this analysis is correct, examine the procedure used to store the sample. Ensure that it is the procedure prescribed for the chosen parameter. If the sample is acidified for storage, be sure the correct acid is used and the sample is adjusted to the proper pH level before testing.

      If the standards check is still incorrect, run the standard on just the colorimetry. If the results are correct, examine the digestion procedure. Ensure that the amount of reagents used and the pH after the digestion are correct for the procedure. (See the procedure for the parameter in question.)

4. If the standard solution gives a correct value, but the results of the sample measurement are questionable, there may be an interference in the sample. To check for an interference:

   a. Spike the sample. Use a standard addition test instead of a standard solution test to include any possible interferences.

      To two cells containing fresh sample water, add an amount of standard equal to two times the concentration of the sample. Process both samples using the same reagents, instruments, and technique. The spiked sample should show an increase equal to the amount of standard added. Calculate percent recovery as shown below. Ideally, the results should be 100%, with results from 90 to 110% considered acceptable. Refer to the procedure notes for possible interferences and ways to eliminate them.

   b. Run a series of dilutions on the sample. Make sure your sample is within the range of the test. A sample out of range for the method may give erroneous results because of under- or over-development of the color, excess turbidity, or even sample bleaching. Run a series of dilutions to check for this possibility.

Because it may not be feasible to determine the cause of the interference, diluting the sample past the point of interference is often the most economical and efficient means of getting the correct result. If it is not possible to dilute out an interference without diluting out the parameter to be measured, use a different method, such as a different chemistry or an ion-selective electrode to measure the parameter.

Calculating percent recovery:

1. Measure the unknown sample concentration.
2. Calculate the theoretical concentration of the spiked sample using the following formula:

$$\text{Theoretical Concentration} = \frac{(C_u \times V_u) + (C_s \times V_s)}{V_u + V_s}$$

Where:

C_u = measured concentration of the unknown sample
V_u = volume of the unknown sample
C_s = concentration of the standard
V_s = volume of the standard

3. Measure the spiked sample concentration.
4. Divide the spiked sample concentration by the theoretical concentration and multiply by 100.

For example:

A sample was tested for manganese and the result was 4.5 mg/L. A separate 97-mL portion of the same sample was spiked with 3 mL of a 100 mg/L standard solution of manganese. This spiked solution was tested again for manganese using the same method. The result was 7.1 mg/L.

The theoretical concentration of the spiked sample is:

$$\frac{(4.5\ \text{mg/L} \times 97\ \text{mL}) + (100\ \text{mg/L} \times 3\ \text{mL})}{97\ \text{mL} + 3\ \text{mL}} = 7.4\ \text{mg/L}$$

The percent spiked recovery is:

$$\frac{7.1\ \text{mg/L}}{7.4\ \text{mg/L}} \times 100 = 96\%$$

USEPA Calculation

The USEPA requires a more stringent calculation for percent recovery. This formula calculates the percent recovery only for the standard added to the spiked sample and yields a lower value than the above calculation. A complete explanation for the USEPA formula is in *USEPA Publication SW-846*. The USEPA percent recovery formula is:

$$\%R = \frac{100(X_s - X_u)}{K}$$

Where:

X_s = measured value of the spiked sample
X_u = measured value for the unspiked sample, adjusted for the dilution of the spike volume
K = known value of the spike in the sample

Example:

A sample measures 10 mg/L. A separate 100-mL portion of the sample was spiked with 5 mL of a 100 mg/L standard solution. The spiked solution was measured by the same method as the original sample. The result was 13.7 mg/L.

X_s = 13.7 mg/L

$$X_u = \frac{10\ mL \times 100\ mg/L}{105\ mL} = 9.5\ mg/L$$

$$K = \frac{5\ mg/L \times 100\ mL}{105\ mL} = 4.8\ mg/L$$

$$\%R = \frac{100 \times (13.7\ mg/L - 9.5\ mg/L)}{4.8\ mg/L} = 88\%$$

Acceptable percent recovery values are 80-120%.

3.2.5 Adjusting the Standard Curve

The Odyssey Spectrophotometer has over 120 Hach programs permanently installed in memory. A program usually includes a pre-programmed calibration curve. Each curve is the result of an extensive calibration performed under ideal conditions and is normally adequate for most testing. Deviations from the curve can occur from using compromised testing reagents, defective sample cells, incorrect test procedure, incorrect technique, or other correctable causes. Interfering substances or other causes may be beyond the analyst's control.

In some situations, using the pre-programmed curve may not be convenient:

- Running tests where the reagents are highly variable from lot to lot.
- Running tests where frequent calibration curve checks are required.
- Testing samples which give a consistent test interference.

Consider the following before adjusting the calibration curve:

- Will future test results be improved by adjusting the curve?
- Are interfering substances consistent in all the samples that you will test?
- Any estimated detection limit, sensitivity, precision, and test range information provided with the procedure may not apply to an adjusted curve calibration.

You can adjust many of the calibration curves by following the steps found in the test procedure. Generally, you add test reagents to a blank and standard solution. Working carefully is important. After the adjustment, it is wise to run standard solutions of several concentrations to make sure the adjusted curve is satisfactory. Performing standard additions on typical samples may also help determine if the adjusted curve is acceptable.

Think of adjusting a measurement as a two-step process. First, the instrument measures the sample using the pre-programmed calibration. Second, it multiplies this measurement by an adjustment factor. The factor is the same for all concentrations The instrument will remember the factor indefinitely and will display the standard adjustment icon when it is used. You can return to the pre-programmed curve any time by selecting the Hach Program from the main menu.

3.3 Interferences

Interferences are contaminants in a sample that are capable of causing changes in color development, turbidity, or unusual colors and odors, and thereby creating errors in your results. A list of common interferences is included in each procedure. Hach reagents are formulated to eliminate many interferences; you can remove others by pretreating the sample as instructed in the procedure.

Test strips are available for many of the common interferences. These can be conveniently used to screen samples for the presence of interferences.

If you get test results that you feel are inaccurate, if you get an unexpected color, or if you notice an unusual odor or turbidity, repeat the test on a sample diluted with deionized water. (See *Section 2.7 Sample Dilution.*) Correct the results for the dilution, and compare them with those from your original test. If they differ significantly, make a second dilution and check it against the first. Repeat the dilutions until you get the same result (after corrections) twice in succession.

For more information on interferences, see *Section 3.2.2 Standard Additions.* The *APHA Standard Methods* book, an excellent reference for the water analyst, also covers interferences in its "General Introduction."

pH Interference

Chemical reactions are often pH dependent. Hach reagents contain buffers to adjust the pH of the sample to the correct range. However, the reagent buffer may not be strong enough for samples that are highly buffered or have an extreme pH.

The *Sampling and Storage* section of each procedure gives the pH range for that test. The Odyssey Spectrophotometer can accept a Platinum Series pH electrode for taking measurements through the instrument.

Before testing, adjust the sample to the proper pH as instructed in the procedure, or by following these steps:

1. Measure the pH of your analyzed sample with a pH meter. Use pH paper when testing for chloride, potassium, or silver.
2. Prepare a reagent blank using deionized water as the sample. Add all reagents called for in the procedure. Timer sequences, etc., may be ignored. Mix well.
3. Measure the pH of the reagent blank with a pH meter.
4. Compare the pH values of your analyzed sample with the reagent blank.
5. If there is little difference in the values of your analyzed sample and the reagent blank, then pH interference is not the problem. Follow the *Accuracy Check* for the specific procedure to more clearly identify the problem.
6. If there is a large difference between the value of your analyzed sample and the reagent blank, adjust the sample pH to the value of the reagent blank. Adjust the sample pH to this same pH for all future samples before analysis. Use the appropriate acid, usually nitric acid, to lower the pH. Use the appropriate base, usually sodium hydroxide, to raise the pH. Adjust the final result for any dilution caused by adding acid or base; see *Correcting for Volume Additions.*
7. Analyze the sample as before.

8. Some purchased standards may be very acidic and will not work directly with Hach procedures. Adjust the pH of these standards as described above. Adjust the final concentration of the standard for the dilution. The Hach standard solutions suggested in the procedures are formulated so that no pH adjustment is necessary.

3.4 Method Performance

3.4.1 Estimated Detection Limit

Ranges for chemical measurements have limits. The lower limit is important because it determines whether a measurement is different from zero. Many experts disagree about the definition of this detection limit, and determining it can be difficult. The *Code of Federal Regulations* (40 CFR, Part 136, Appendix B) provides a procedure to determine the "Method Detection Limit" or MDL. The MDL is the lowest concentration that is different from zero with a 99% level of confidence. A measurement below this MDL may be useful, but there is a greater chance that it is actually zero.

The MDL is not fixed; it varies for each reagent lot, instrument, analyst, sample type, etc. Therefore, a published MDL may be a useful guide, but is only accurate for a specific set of circumstances. Each analyst should determine a more accurate MDL for each specific sample matrix using the same equipment, reagents, and standards that will routinely be used for measurements.

Hach provides a sensitivity value (concentration change equivalent to an absorbance change of 0.010 abs) as an estimate of the lower limit of each test. The sensitivity value may be treated as an EDL for the purposes of MDL determination. It can be considered a good starting concentration when determining a MDL. **Do not use the EDL as a MDL.** The conditions for MDL determination must be exactly the same as the conditions used for analysis. The EDL may be useful to the analyst as a starting point in determining a MDL or as a way to compare methods. Measurements below the EDL may also be valuable because they can show a trend, indicate the presence of analyte and/or provide statistical data. However, these values have a large uncertainty.

3.4.2 Method Detection Limit (MDL)

This method is in accordance with the USEPA definition in 40 CFR, Part 136, Appendix B in the 7-1-94 edition. The USEPA defines the method detection limit (MDL) as the minimum concentration that can be determined with a 99% level of confidence that the true concentration is greater than zero. Since the MDL will vary from analyst to analyst, it is important that the MDL be determined under actual operating conditions.

The procedure for determining MDL is based on replicate analyses at a concentration 1 to 5 times the estimated detection limit. The MDL value is calculated from the standard deviation of the replicate study results multiplied by the appropriate Student's *t* value for a 99% confidence interval. For this definition, the MDL does not account for variation in sample composition and can only be achieved under ideal conditions.

1. Estimate the detection limit. Use the Hach sensitivity value stated in the *Method Performance* section of the analysis procedure.
2. Prepare a laboratory standard of the analyte, 1 to 5 times the estimated detection limit, in deionized water that is free of the analyte.

3. Analyze at least seven portions of the laboratory standard and record each result.
4. Calculate the average and the standard deviation(*s*) of the results.
5. Compute the MDL using the appropriate Student's *t* value (see table below) and the standard deviation value:

MDL = Students t × s

Number of Test Portions	Student's *t* Value
7	3.143
8	2.998
9	2.896
10	2.821

For example:

The EDL for measuring iron using the FerroZine® method is 0.003 mg/L. An analyst accurately prepared 1 liter of a 0.010 mg/L (about 3x the EDL) laboratory standard by diluting a 10-mg/L iron standard in iron-free deionized water.

Eight portions of the standard were tested according to the FerroZine method with the following results:

Sample #	Result (mg/L)
1	0.009
2	0.010
3	0.009
4	0.010
5	0.008
6	0.011
7	0.010
8	0.009

Using a calculator program, the average concentration = 0.010 mg/L and the standard deviation (*s*) = 0.0009 mg/L

Based on the USEPA's definition, calculate the MDL as follows:

MDL for FerroZine method = 2.998 (Student's *t*) x 0.0009 (*s*)

MDL = 0.003 mg/L (agrees with initial estimate)

Note: *Occasionally, the calculated MDL may be very different than Hach's estimate of the detection limit. To test how reasonable the calculated MDL is, repeat the procedure using a standard near the calculated MDL. The average result calculated for the second MDL derivation should agree with the initial calculated MDL. Refer to 40 CFR, Part 136, Appendix B (7-1-94), pages 635–637 for detailed procedures to verify the MDL determination.*

Run a laboratory blank, containing deionized water without analyte, through the test procedure to confirm that the blank measurement is less than the calculated MDL. If the blank measurement is near the calculated MDL, repeat the MDL procedure using a separate blank for analysis for each portion of standard solution analyzed. Subtract the average blank measurement from each standard and use the corrected standard values to calculate the average and standard deviation used in the MDL.

3.4.3 Precision

Every measurement has some degree of uncertainty. Just as a ruler with markings of 0.1 mm leaves some doubt as to the exact length of a measurement, chemical measurements also have some degree of uncertainty. The quality of the entire calibration curve determines the precision.

Uncertainty in chemical measurements may be due to systematic errors and/or random errors. A systematic error is a mistake that is always the same for every measurement made. For example, a blank can add to each measurement for a specific compound, giving consistently high results (a positive bias). Random errors are different for every test and can add either a positive or negative variation in response. Random errors are most often caused by variation in analytical technique. Hach chemists work hard to eliminate systematic errors in Hach procedures using Hach reagents, but response variation occurs in all chemical measurements.

3.4.4 Estimating Precision

The method performance section in each procedure provides an estimate of the procedure's precision. Two types of estimates are used throughout this manual. Most of the procedures use a *replicate analysis* estimate, based on real data. For precision determined in this manner, the 95% confidence interval of the distribution is reported. Some newer procedures use a 95% or 99% *confidence interval*, which is based on the calibration data for that particular chemistry.

In replicate analysis, a Hach chemist prepares a specific concentration of the analyte in a deionized water matrix. The standard is then analyzed seven individual times on a single instrument with the two reagent lots originally used in the calibration (a total of 14 samples). A standard deviation of each of the two sets of seven values is calculated, and the 95% confidence interval of the distribution is reported in the method. The reported value provides an estimate of the "scatter" of results at a particular point in the calibration curve.

In cases where precision is determined directly from the calibration data, an estimate is obtained from the calibration data itself, with no additional replicate analyses. In this case, the precision is the 95 or 99% confidence interval for the stated concentrations. The precision range is an estimate of the average response variation and is based on multiple reagent lots and instruments used in the calibration. Therefore, it will not exactly predict the true precision range for each reagent lot, but does provide a useful estimate.

In either case, it is important to realize that the estimates are based on a deionized water matrix. Precision on real samples with varying matrices can be quite different than these estimates.

If the concentration obtained from running a standard solution does not fall within the stated precision, please refer to *Section 3.2.4 Troubleshooting a Test When Results are in Doubt*.

3.4.5 Sensitivity

Hach's definition of sensitivity for the DR/2500 is the change in concentration (ΔConcentration) for a 0.010 change in absorbance (ΔAbs).

Use sensitivity when comparing different methods. For example, Hach has three DR/2500 methods for determining iron:

Iron Analysis Method	Portion of Curve	ΔAbs	ΔConcentration
FerroVer	Entire range	0.010	0.022 mg/L
FerroZine	Entire range	0.010	0.009 mg/L
TPTZ	0.010 Abs	0.010	0.012 mg/L

Notice that the FerroZine method has the greatest sensitivity of the three methods because it will measure the smallest change in concentration. The technical definition of sensitivity comes from a calibration curve with Abs on the x-axis and concentration on the y-axis as follows:

1. If the calibration is a line, the sensitivity is the slope of the line multiplied by 0.010.
2. If the calibration is a curve, the sensitivity is the slope of the tangent line to the curve at the concentration of interest multiplied by 0.010.

The sensitivity value is also used as an estimate of the lower limit of the test. The value may be used as a starting point in determining MDL.

.5 Adapting Procedures to Other Spectrophotometers

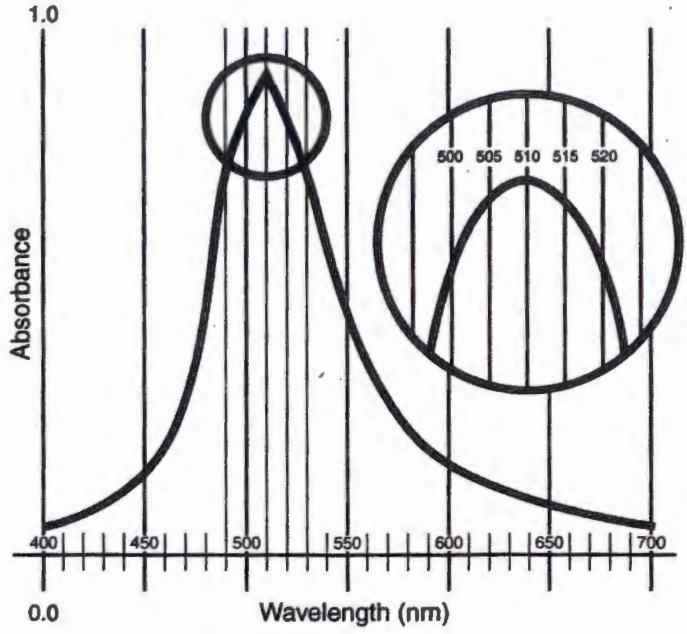
Hach procedures may be used with other spectrophotometers if calibration curves are made that convert absorbance, to concentration. Regardless of the spectrophotometer used, prepare the sample and calibration standards following the Hach procedure and use the optimum wavelength used in the Hach procedure.

To calibrate for a given analyte, a series of standards are prepared and measured to establish the calibration curve. The absorbance vs. concentration is plotted on linear graph paper (as in *Figure 10* and *Figure 11*). Points on the graph are connected with a smooth line (curved or straight). If necessary, use the curve to make a calibration table.

3.5.1 Selecting the Best Wavelength

When developing a new procedure or using procedures that are sensitive to wavelength, it is normal to select the wavelength where the instrument gives the greatest absorbance (see *Figure 12*). Because Hach chemists have selected the best wavelength for the procedures in this manual, selecting the wavelength is not necessary for most procedures.

Figure 12 Selecting the Best Wavelength



3.5.1.1 To select the best wavelength on the Odyssey Spectrophotometer (Advanced Software):

1. Turn the instrument on.
2. Touch **Wavelength Scan**.
3. Adjust the scan boundaries to maximize the scan range. To do this:
   a. touch **Options**,
   b. touch λ **Range**,
   c. adjust the lower boundary to 400 nm, and the upper boundary to 880 nm,
   d. touch **OK**, and then **Return**.

   The graph area for Wavelength Scan will appear, with the new range on the horizontal axis.
4. Prepare the sample and blank for analysis. Fill the appropriate sample cells with the blank and the sample solutions (cells can be 10- or 25-mL cells, COD vial, 1-cm vials, etc.).
5. Place the blank in the cell holder. Orient the fill mark to the front. Close the light shield.
6. Touch **Zero.** The instrument will set the prepared blank solution to read zero absorbance across the scan range chosen.
7. Place the prepared sample into the cell holder. Close the light shield. Touch **Read**. The instrument will scan and plot the absorbance versus wavelength for the sample solution over the scan range solution. The blank values have automatically been subtracted from the sample absorbance values.

   Note: *Samples that are* ***bleached*** *(lighter than the blank and lighter at increasing concentrations) should be run in the reverse order. Use the prepared sample as the blank and the blank as the sample in step 5 through step 7 to determine the wavelength of maximum absorbance difference.*

8. Find the wavelength with the greatest absorbance on the graph. To do this, touch the graph near the largest peak. Then, move the cursor with the cursor navigation keys, until the peak with the greatest absorbance is found. This will be the optimum wavelength for your analyses.
9. Check to be sure there is enough difference in absorbance between samples with low and high analyte concentrations by measuring two sample solutions that contain the expected low and high concentrations of analyte at the optimum wavelength. The change in absorbance caused by increases/decreases in concentration depends on the sensitivity of the procedure and the chemistry. Chemistries with small absorbance changes are less sensitive, but tend to have larger ranges. Chemistries with large absorbance changes are more sensitive, but tend to have smaller ranges.

3.5.1.2 To select the best wavelength on the Odyssey Spectrophotometer (Basic Software):

1. Turn the instrument on.
2. Touch **Instrument Setup**. Touch **Display Lock**, then **Off**, and **OK**. Touch **Return**.
3. Touch **Single Wavelength**.
4. Touch the wavelength adjustment button, labelled λ. Enter a wavelength in the range of interest and touch **OK**.

   Note: *Sample color provides a good indication of what wavelength region to use. A yellow solution absorbs light in the 400–500 nm region. A red solution absorbs light between 500–600 nm. A blue solution absorbs light in the 600–700 nm range.*

5. Prepare the sample and blank for analysis. Fill the appropriate sample cells with the blank and the sample solutions (cells can be 10- or 25-mL cells, COD vial, 1-cm vials, etc.).
6. Place the blank in the cell holder. Orient the fill mark to the front. Close the light shield. Touch **Zero**.
7. Place the prepared sample into the cell holder. Close the light shield. Read the absorbance level.
8. Increase the wavelength so it is at least 100 nm greater than the range of interest. Re-zero as in steps *5–6*. Measure and record the absorbance of the sample.
9. Repeat, decreasing the wavelength by 50 nm. Re-zero, then measure and record the absorbance at each increment. Continue this process throughout the wavelength range of interest. Note the wavelength of greatest absorbance. (See *Table 8*.)

Table 8

Wavelength	Absorbance
550 nm	0.477
500 nm	0.762
450 nm	0.355
400 nm	0.134

10. Adjust the wavelength to 50 nm more than the highest absorbance point on the initial search (step *9*). Re-zero as in steps *5* and *6*.

11. Measure and record the absorbance. Repeat, decreasing the absorbance in 5-nm steps. Re-zero, then measure and record the absorbance at each increment. Continue until the entire range of interest is measured (see *Table 9*).

Table 9

Wavelength	Absorbance
520 nm	0.748
515 nm	0.759
510 nm	0.780
505 nm	0.771
500 nm	0.771
495 nm	0.651
490 nm	0.590

Check to be sure there is enough difference in absorbance between samples with low and high analyte concentrations by measuring two sample solutions that contain the expected low and high concentrations of analyte at the optimum wavelength. The change in absorbance caused by increases/decreases in concentration depends on the sensitivity of the procedure and the chemistry. Chemistries with small absorbance changes are less sensitive, but tend to have larger ranges. Chemistries with large absorbance changes are more sensitive, but tend to have smaller ranges.

3.5.2 Definitions of USEPA Approved and Accepted

USEPA Approved

The United States Environmental Protection Agency (USEPA) establishes limits for maximum contamination levels of certain constituents in water. It also requires that specific methodology be used to analyze for these constituents. Sometimes the USEPA develops these methods; more often, the USEPA evaluates methods developed by manufacturers, professional groups, and public agencies such as:

- American Public Health Association
- American Water Works Association
- Water Environmental Federation
- American Society for Testing and Materials
- United States Geological Survey
- Associates of Official Analytical Chemists

When a method meets the USEPA criteria, it is *approved*. All USEPA approved methods are cited in the *Federal Register* and compiled in the *Code of Federal Regulations*. USEPA-approved methods may be used for reporting results to the USEPA and other regulatory agencies.

USEPA Accepted

Hach has developed several procedures that are equivalent to USEPA approved methods. Even though minor modifications exist, the USEPA has reviewed and accepted certain procedures for reporting purposes. These methods are not published in the *Federal Register*, but are referenced to the equivalent USEPA method in the procedure.

Section 4 Waste Management and Safety

This section provides guidelines for laboratory waste management. While it summarizes basic USEPA requirements, it does not relieve the user from complying with the regulations contained in the Code of Federal Regulations. The regulations may change, or additional state and local laws may apply; waste generators are responsible for knowing and following all the laws and regulations that apply to their operations.

4.1 Waste Minimization

Minimizing waste is the most effective way to decrease waste management problems and expense. To do this:

- Use the smallest sample size that will produce accurate results.
- Where possible, choose methods that use reagents that pose fewer hazards.
- Eliminate the need to dispose of out-dated materials by buying in smaller quantities.
- Use biodegradable detergents to clean glassware and apparatus unless solvents or acids are specifically called for.

4.2 Regulatory Overview

The Resource Conservation and Recovery Act (RCRA) controls all solid waste disposal with the emphasis on hazardous waste. Title 40 Code of Federal Regulations (CFR) part 260 contains the federal waste disposal regulations issued in accordance with the RCRA. The regulations create a system to identify wastes and track waste generation, transport, and ultimate disposal. Each facility involved in hazardous waste management must be registered with the USEPA.

Federal regulations recognize three categories of generators with those generating larger amounts of waste being under stricter control. The categories are:

Conditionally Exempt Small Quantity Generator — less than 100 kg (220 lb.) per month

Small Quantity Generator — between 100 kg and 1000 kg per month

Large Quantity Generator — greater than 1,000 kg per month.

4.3 Hazardous Waste

4.3.1 Definition

For regulatory purposes, a *hazardous waste* is a material that is subject to special consideration by the USEPA under 40 CFR 261. State or local authorities may also designate additional materials as hazardous waste in their areas.

Many toxic compounds are not regulated, but improper management or disposal may lead to legal problems under CERCLA (Superfund) or common law tortes.

The definition given by 40 CFR 261 defines a hazardous waste as a solid waste that is not excluded from regulation and meets one or more of the following criteria:

- It is a discarded commercial chemical product, off-specification species, container residue, or spill residue of materials specifically listed in 40 CFR 261.33;
- It is a waste from a specific source listed in 40 CFR 261.32;
- It is a waste from a non-specific source listed in 40 CFR 261.31;

and/or

- It displays any of the following characteristics of hazardous waste:
  - ignitability
  - corrosivity
  - reactivity
  - toxicity

There are exceptions to these regulations and you should review the regulations to see if you are excluded.

4.3.2 Sample Codes

Hazardous wastes are managed by specific codes assigned in 40 CFR 261.20-261.33. These codes are provided to help you identify hazardous waste. The generator is responsible for making the actual waste code determination.

Selected characteristic waste codes for chemicals which may be generated using Hach methods for water analysis are given in the following table. A complete list of waste codes is found in 40 CFR 261.24.

Characteristic	USEPA Code	Chemical Abstract Services (CAS) No.	Regulatory Level (mg/L)
Corrosivity	D002	na	na
Ignitability	D001	na	na
Reactivity	D003	na	na
Arsenic	D004	6440-38-2	5.0
Barium	D005	6440-39-3	100.0
Benzene	D018	71-43-2	0.5
Cadmium	D006	7440-43-9	1.0
Chloroform	D022	67-66-3	6.0
Chromium	D007	7440-47-3	5.0
Lead	D008	7439-92-1	5.0
Mercury	D009	7439-97-6	0.2
Selenium	D010	7782-49-2	1.0
Silver	D011	7440-22-4	5.0

4.3.3 How to Determine if Waste is Hazardous

Federal laws do not require you to test a material to decide if it is a hazardous waste. If the product is not specifically listed in the regulations, you must apply product knowledge to decide if it is hazardous. Often, there is enough information on a Material Safety Data Sheet (MSDS) to decide. Look for characteristics of a hazardous waste:

- Flash point is below 15 °C (60 °F), or it is classified by DOT as an oxidizer.
- The pH of the material is ≤2 or 12.5.
- The material is unstable, reacts violently with water, may generate toxic gases when mixed with water
- It is toxic.

Use the chemical composition data to decide if a material is toxic based on the concentration of certain contaminants (Heavy metals and a number or organic compounds). If the waste is a liquid, compare the concentration of contaminants to the concentrations listed in 40 CFR 261.24. If the waste is a solid, analyze the sample by the Toxicity Characteristic Leachability Procedure (TCLP) and then compare the results to the concentrations in 40 CFR 261.24. Levels above the threshold amounts are considered hazardous.

For more information on using the MSDS, see *Material Safety Data Sheets on page 55.*

Hach tests use or produce a number of chemicals that make the end product a hazardous waste; for example, the COD tests and Nessler's reagent. Hazardous waste status may also result from substances present in the sample.

4.3.4 Disposal

Hazardous waste must be managed and disposed of according to federal, state, and local regulations. The waste generator is responsible for making hazardous waste determinations. Analysts should check with their facility's environmental compliance department for specific instructions.

Most hazardous wastes should be handled by treatment, storage, and disposal facilities (TSDF) that have USEPA permits. In some cases, the generator may treat the hazardous waste, but may need a permit from the USEPA. Laboratories are not exempt from these regulations. If your facility is a "Conditionally Exempt Small Quantity Generator," special rules may apply. Check 40 CFR 261 to determine if you have to comply with all the laws.

The most common allowed treatment is elementary neutralization. This applies to wastes that are hazardous only because they are corrosive, or are listed only for that reason. Neutralize acidic solutions by adding a base such as sodium hydroxide; neutralize basic solutions by adding an acid such as hydrochloric acid. Slowly add the neutralizing agent while stirring. Monitor the pH. When it is at or near 7, the material is neutralized and may be flushed down the drain. Many wastes generated from Hach procedures may be treated in this manner.

Other chemical or physical treatments such as cyanide destruction or evaporation may require a permit. Check with your environmental department or local regulators to determine which rules apply to your facility.

Laboratory chemicals may be mixed and disposed of with other hazardous wastes generated at your facility. They may also be accumulated in accordance

with 40 CFR 262.34 satellite accumulation rules. After collection they may be disposed of in a *labpack*. Many environmental and hazardous waste companies offer labpacking services. They will inventory, sort, pack, and arrange for proper disposal of hazardous waste. Find companies offering these services in the Yellow Pages under "Waste Disposal — Hazardous" or contact state and local regulators for assistance.

4.4 Management of Specific Wastes

Hach has several documents to assist customers in managing waste that has been generated from our products. You can obtain the following documents by calling 1-800-227-4224 or 970-669-3050 and requesting the literature codes given:

Literature Code	Title
1321	Waste Reduction: A Primer
9323	Mercury Waste Disposal Firms
9325	COD Waste Management
9326	COD Heavy Metal Total Concentrations

4.4.0.1 Special Considerations for Cyanide-Containing Materials

Several procedures in this manual use reagents that contain cyanide compounds. These materials are regulated as reactive waste (D003) by the Federal RCRA. Instructions provided with each procedure explain how to collect these materials for proper disposal. It is imperative that these materials be handled safely to prevent the release of hydrogen cyanide gas (an extremely toxic material with the smell of bitter almonds). Most cyanide compounds are stable, and can be safely stored for disposal, in highly alkaline solutions (pH >11) such as 2 N sodium hydroxide. Never mix these wastes with other laboratory wastes that may contain lower pH materials such as acids or even water.

If a cyanide-containing compound is spilled, avoid exposure to hydrogen cyanide gas. Take the following steps to destroy the cyanide compounds in an emergency:

1. Use a fume hood, supplied air, or self-contained breathing apparatus.
2. While stirring, add the waste to a beaker containing a strong solution of sodium hydroxide and either calcium hypochlorite or sodium hypochlorite (household bleach).
3. Add an excess of hydroxide and hypochlorite. Let the solution stand for 24 hours.
4. Neutralize the solution and flush it down the drain with a large amount of water. If the solution contains other regulated materials such as chloroform or heavy metals, it may still need to be collected for hazardous waste disposal. Never flush untreated hazardous wastes down the drain.

4.5 Resources

Many sources of information on proper waste management are available. The USEPA has a hotline number for questions about the Resource Conservation and Recovery Act (RCRA). The RCRA Hotline number is 1-800-424-9346. You may also get a copy of the appropriate regulations. Federal hazardous waste regulations are found in 40 CFR 260-99. Obtain this book from the U.S. Government Printing Office or an alternate vendor. Other documents that may be helpful to the hazardous waste manager in the laboratory include:

1. Task Force on Laboratory Waste Management. *Laboratory Waste Management, A Guidebook*; American Chemical Society, Department of Government Relations and Science Policy: Washington, DC 1994.
2. Task Force on Laboratory Waste Management. *Waste Management Manual for Laboratory Personnel*; American Chemical Society, Department of Government Relations and Science Policy: Washington, DC 1990.
3. Task Force on Laboratory Waste Management. *Less is Better*; 2nd ed.; American Chemical Society, Department of Government Relations and Science Policy: Washington, DC 1993.
4. Committee on Chemical Safety. *Safety in Academic Chemistry Laboratories*, 5th ed.; American Chemical Society: Washington, DC, 1990.
5. Armour, Margaret-Ann. *Hazardous Laboratory Chemicals Disposal Guide*; CRC Press: Boca Raton, FL, 1991.
6. *Environmental Health and Safety Manager's Handbook*; Government Institutes, Inc.: Rockville, MD, 1988.
7. Lunn, G.; Sansone, E.B. *Destruction of Hazardous Chemicals in the Laboratory*; John Wiley and Sons: New York, 1990.
8. National Research Council. *Prudent Practices for Disposal of Chemicals from Laboratories*; National Academy Press: Washington, DC, 1983.
9. National Research Council. *Prudent Practices for Handling Hazardous Chemicals in Laboratories*; National Academy Press: Washington, DC, 1981.
10. Environmental Protection Agency, Office of Solid Waste and Emergency Response. *The RCRA Orientation Manual*; U.S. Government Printing Office: Washington, DC, 1991.
11. Environmental Protection Agency, Office of Solid Waste and Emergency Response. *Understanding the Small Quantity Generator Hazardous Waste Rules: A Handbook for Small Business*; U.S. Government Printing Office: Washington, DC, 1986.

4.6 Safety

Safety is the responsibility of every analyst. Many of the procedures in this manual use potentially hazardous chemicals and equipment; it is important to prevent accidents by practicing good laboratory techniques. The following guidelines apply to water analysis and are not intended to cover every aspect of safety.

4.6.1 Read Labels Carefully

Read each reagent label carefully. Pay particular attention to the precautions given. Never remove or block the label on a container while it contains reagent. Do not put a different reagent into a labeled container without changing the

label. When preparing a reagent or standard solution, label the container clearly. If a label is hard to read, re-label promptly according to your facility's hazard communication program.

Warning labels also appear on some of the apparatus used with the test procedures. The protective shields with the COD Reactor and the Digesdahl Digestion Apparatus point out potential hazards. Be sure these shields are in place during use and observe the precautions on the label.

4.6.2 Protective Equipment

Use the right protective equipment for the chemicals and procedures. The MSDS contains this information. Protective equipment may include:

- Eye protection, such as safety glasses or goggles, to protect from flying objects or chemical splashes.
- Gloves to protect skin from toxic or corrosive materials, sharp objects, very hot or very cold materials, or broken glass. Use tongs or finger cots when transferring hot apparatus.
- Laboratory coats or splash aprons to protect skin and clothing from splashes.
- Footwear to protect feet from spills. Open toed shoes should not be worn in chemistry settings.
- Respirators may be needed if adequate ventilation, such as fume hoods, are not available. Use fume hoods when directed to do so by the procedure, or as recommended in the MSDS. For many procedures, adequate ventilation is enough if there is plenty of fresh air and air exhaust to protect against unnecessary exposure to chemicals.

4.6.3 First Aid Equipment and Supplies

Most first aid instructions for chemical splashes in eyes or on skin call for thorough flushing with water. Laboratories should have eyewash and shower stations. For field work, carry a portable eyewash unit. Laboratories should also have appropriate fire extinguishers and fume hoods.

4.6.4 General Safety Rules

Follow these rules when working with toxic and hazardous chemicals:

1. **Never** pipet by mouth. Always use a mechanical pipet or pipet bulb to avoid ingesting chemicals.
2. Follow test procedures carefully and observe all precautionary measures. Read the entire procedure before beginning.
3. Wipe up all spills promptly. Get proper training and have the right response equipment to clean up spills. See your safety director for more information.
4. **Do not** smoke, eat, or drink in an area where toxic or irritating chemicals are used.
5. Use reagents and equipment only as directed in the test procedure.
6. **Do not** use damaged labware and broken equipment.
7. Minimize all chemical exposures. **Do not** breathe vapors or let chemicals touch your skin. Wash your hands after using chemicals.
8. Keep work areas **neat** and **clean**.
9. **Do not** block exits or access to emergency equipment.

4.7 Material Safety Data Sheets

Material safety data sheets (MSDS) describe the hazards of chemical products. This section explains the information found on a Hach MSDS, and tells how to locate important information for safety and waste disposal. The information provided on the MSDS applies to the product as sold by Hach. The properties of any mixtures obtained by using this product will be different.

4.7.1 How to Obtain an MSDS

Hach ships a MSDS to each customer with the first order of any chemical product. A new MSDS may be sent when the information on the data sheet is updated. Please review all new MSDS for new information. If you need another copy of an MSDS, simply call 1-800-227-4224 or download directly from www.hach.com/msdsinfo.htm.

4.7.2 Sections of an MSDS

Each MSDS has ten sections. The sections and the information found in them are described below.

Header Information

The Hach catalog number, MSDS date, change number, company address and telephone number, and emergency telephone numbers are listed at the top of the MSDS.

4.7.2.1 Product Identification

This section contains:

- Hach product name
- Chemical Abstract Services (CAS) number
- Chemical name
- Chemical formula, if appropriate
- Chemical family to which the material belongs

4.7.2.2 Ingredients

This section lists each component in the product. It contains the following information for each component:

- **PCT:** Percent by weight of this component
- **CAS NO.:** Chemical Abstract Services (CAS) registry number for this component
- **SARA:** Superfund Amendments and Reauthorization Act, better known as the "Community Right to Know Law." Says if the component is listed in SARA 313. If the component is listed and you use more than the amount listed, you must report this to the USEPA every year.
- **TLV:** Threshold Limit Value. The maximum airborne concentration for an 8-hour exposure that is recommended by the American Conference of Governmental Industrial Hygienists (ACGIH).
- **PEL:** Permissible Exposure Limit. The maximum airborne concentration for an 8-hour exposure that is regulated by the Occupational Safety and Health Administration (OSHA).
- **HAZARD:** Physical and health hazards of the component are explained.

4.7.2.3 Physical Data

The physical properties of the product are given in this section. They include the physical state, color, odor, solubility, boiling point, melting point, specific gravity, pH, vapor density, evaporation rate, corrosivity, stability, and storage precautions.

4.7.2.4 Fire, Explosion Hazard And Reactivity Data

This section contains the flash point and flammable limits of the material. It also includes how to fight fires if the material catches on fire. Key terms in this section include:

- Flash point: The temperature at which a liquid will give off enough flammable vapor to ignite.
- Flammability and ignitability are usually defined by the flash point.
- Lower Flammable Limit (LFL or LEL): The lowest concentration that will produce a fire or flash when an ignition source is present.
- Upper Flammable Limit (UFL or UEL): The vapor concentration in air above which the concentration is too rich to burn.
- NFPA Codes: The National Fire Protection Association (NFPA) has a system to rate the degree of hazards presented by a chemical. These codes are usually placed in a colored diamond. The codes range from 0 for minimal hazard to 4 for extreme hazard. They are grouped into the following hazards: health (blue), flammability (red), reactivity (yellow), and special hazards (white).

4.7.2.5 Health Hazard Data

This section describes the pathways by which the chemical can enter your body (i.e., ingestion, inhalation, skin contact). It also gives acute (immediate) and chronic (long-term) health effects. If the material causes cancer or genetic damage, it is stated in this section.

4.7.2.6 Precautionary Measures

This section contains special precautions for the material. These may include special storage instructions, handling instructions, conditions to avoid, and protective equipment required to use this material safely.

4.7.2.7 First Aid

First aid instructions for exposures to the chemical are given in this section. Be sure to read this section before inducing vomiting in a victim. Some chemicals are better treated by not inducing vomiting. Seek prompt medical attention for all chemical exposures.

4.7.2.8 Spill And Disposal Procedures

This section explains safe practices for cleaning up and disposing of spilled material. For more information, see *Section 4.3 Hazardous Waste* on page 49. The waste generator is ultimately responsible for meeting the federal, state, and local laws that apply to his facility.

4.7.2.9 Transportation Data

Domestic and International shipping information is provided in this section. It gives shipping name, hazard class, and ID number of the product.

4.7.2.10 References

This section lists the reference materials used to write the MSDS.

Following the Reference section, the product will be listed as having SARA 313 chemicals or California Proposition 65 List Chemicals, if applicable. Also found here is any special information about the product.

4.7.3 OSHA Chemical Hygiene Plan

The Occupational Safety and Health Administration (OSHA) enforces laws controlling exposure to hazardous chemicals in laboratories. These regulations are in Title 29 CFR 1910.1450. The regulations apply to all employers who use hazardous chemicals, and require employers to develop and use a written Chemical Hygiene Plan and to appoint a qualified person as the Chemical Hygiene Officer.