EXCEL
Environmental
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Solving Environmental Problems
& Creating Redevelopment Opportunities

July 16, 2014

BY EMAIL AND MAIL

Mr. Keith H. Gronwald
Senior Engineering Geologist
Remedial Bureau C
Division of Environmental Remediation

Re: Mr. Cleaners - Shrub Oak Shopping Center Site
1336-1378 East Main Street
Tax Parcel: 16.09-2-14
Shrub Oak (Town of Yorktown), Westchester County, New York
Site Name: Mr. Cleaners
Site No.: 360117

Dear Mr. Gronwald:

On behalf of the property owner, Shrub Oak Partners, LLC, (Shrub Oak), Excel has revised the Remedial Investigation Workplan for the above mentioned Site in order to address comments in your June 16, 2014 letter. Revisions include the following:

Comments 1, 2, and 8 – Sections 3.3.2.1 and 3.3.2.4 have been revised as requested to update the construction and sampling parameters for the proposed monitoring wells. Figure 4 has also been revised to include an additional monitoring well along the southern property boundary.

Comment 3 – Chapter 4 has been revised to address your comments regarding Quality Assurance/Quality Control. The third party validator will be Kim Watson of Stone Environmental who will be responsible for reviewing the Category B laboratory data deliverables and preparation of a Data Usability Summary Report in accordance with Appendix 2B of DER-10. Ms. Watson's resume has been included as Appendix B of the Remedial Investigation Workplan.

Comments 4, 5, and 6 - Tables 1, 2, and 5 have been revised to include updated sample totals, analytical methods, and accuracy goals.

Comment 7 – Figure 3 has been revised to show the estimated extent of the former excavation and two additional soil boring locations have been added to address concerns regarding lateral soil quality investigation. Please note that the original soil boring locations have remained unchanged in order to investigate vertical soil quality below the limits of excavation. Since groundwater is documented to be approximately 17-19 feet below grade in the area of the excavation, the borings through the former excavation will serve to investigate vadose zone soils below the former excavation to verify the presence or absence of a residual top-down source above the water table.

If you have any questions or would like to discuss further, please do not hesitate to contact me at

(732) 545-9525.

Sincerely,
EXCEL ENVIRONMENTAL RESOURCES, INC.

Michael J. Meriney, P.G., LSRP
Vice President/Director Investigation Services

DEPARTMENT OF ENVIRONMENTAL CONSERVATION

REMEDIAL INVESTIGATION WORKPLAN

MR. CLEANERS - SHRUB OAK SHOPPING CENTER
1360 EAST MAIN STREET
SHRUB OAK,
WESTCHESTER COUNTY, NEW YORK

PREPARED FOR:

SHRUB OAK PARTNERS, LLC
33 FARM LANE
GREAT NECK, NEW YORK 11020

July 2014

PREPARED BY:

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Shrub Oak (Town of Yorktown), Westchester County, New York

1.0 INTRODUCTION

This Remedial Investigation Workplan (RIW) has been prepared by Excel Environmental Resources, Inc. (Excel) on behalf of Shrub Oak Partners, LLC (Shrub Oak) to summarize the proposed remedial investigation activities conducted at the Mr. Cleaners - Shrub Oak Shopping Center Site, 1336-1378 East Main Street in Shrub Oak (Town of Yorktown), Westchester County, New York (hereafter referred to as the subject property or Site). The previous data generated at the Site was used to develop a Site-specific conceptual model of the geologic/hydrogeologic framework of the Site in order to develop a scope of work to complete soil and groundwater quality delineation, further evaluate the vapor intrusion (VI) pathway, and gather the data necessary to evaluate remedial action alternatives so a final remedy can be selected and designed.

The location of the subject property is shown on the United States Geological Survey (USGS) 7.5 minute Topographical Map for the Mohegan Lake, New York Quadrangle provided as Figure 1. A generalized site plan for the subject property showing the location of the subject property and existing monitoring wells is provided as Figure 2. This Remedial Investigation Workplan (RIWP) has been prepared by Excel in accordance with applicable provisions of the New York Department of Environmental Conservation (NYDEC).

1.1 Overview of Project History

The Shrub Oak Shopping Center is located at 1360 East Main Street in the Hamlet of Shrub Oak, in the Town of Yorktown, Westchester County, New York and is comprised of three (3) large connected single-story buildings totaling 46,586 improved square feet, devoted presently to retail sales. Asphalt paved parking areas surround the shopping center structure.

As outlined in a Site Characterization (SC) Report prepared by HRP Associates, Inc. (HRP) in November 2012 (provided in Appendix A), the Shrub Oak Shopping Center includes the Mr. Cleaners dry cleaning operation. The Mr. Cleaners Inc. dry cleaner occupies a portion of the central building and is bounded by other plaza tenant spaces within Shrub Oak Shopping Center building to the north (A&P Grocery Store) and south (Francesca's Pizza and Pasta). Dry cleaning operations have occurred for at least the past 30 years (since 1982), and has been occupied by its current tenant Mr. Cleaners since 1999. The current tenant reportedly upgraded the dry cleaning equipment to fourth generation dry cleaning equipment when he opened his dry cleaning business.

According to the HRP SC Report, the Site is improved with two (2) large propane tanks to the east (behind) the building with associated piping that appears to run to the A&P, a garbage compactor, a ground level transformer, and two (2) truck beds currently used for storage. Drainage basins discharge to the state-regulated freshwater wetlands (Wetland ID A-47) located adjacent to the Site to the north and east of the Site.

On December 31, 2010 the NYSDEC was notified of a release from a 550-gallon No. 2 fuel oil aboveground storage tank (AST). The AST was located behind the Mr. Cleaners dry cleaning operation and was utilized to heat the Mr. Cleaners tenant space. NYSDEC emergency response contractor Tri-State Environmental Services, Inc. (Tri-State) was contacted to respond to the reported release. According to Tri-State, product leaked from a seam at the bottom of the AST to the asphalt parking lot surface and impacted a sewer manhole.

The dry-cleaner tenant arranged for a temporary No. 2 fuel oil AST to be installed to provide heat to the building. The spill appeared to be confined to the asphalt parking lot area and sewer manhole, which later was determined to discharge to the sanitary sewer. The product was observed along the edge of the building behind the A&P compactor dumpster. Once the compactor dumpster was moved to allow for continued assessment and remediation, fuel oil was observed to be seeping into and penetrating below the asphalt pavement. According to Tri-State and onsite NYSDEC responders, no surface water was impacted as a result of the release. On January 13, 2011 the AST was cut, cleaned and removed from the subject property.

During a mark out being conducted to locate underground utilities, an underground storage tank (UST) was discovered adjacent to the AST location.

On January 20, 2011 the initial spill area was excavated. Based on their field observations, Tri-State indicated that most of the impacted soil appeared to be observed alongside the building wall. The discovered UST was also uncovered during the excavation activity. One soil sample was collected from within the excavation area along the north wall at a depth of approximately 2.0-3.0 feet (below ground surface) bgs. Review of the analytical results indicated that PCE (160ppm) and TCE (5.1 ppm) were reported above the NYSDEC Soil Cleanup Criteria. The excavation was extended to the top of the UST and the vent pipe was cut at the top of the tank. A section of the top of the UST was opened and a mixture of product/water/sludge was observed within the UST.

During a NYSDEC and Tri-State onsite meeting, the ends and the northern side of the UST were uncovered. It was determined that the UST was 1,000 gallons in size and contained approximately 100 gallons of sludge. Since it was determined that the UST was leaking, the NYSDEC directed the removal of the UST and a new spill number designated for this UST.

Three monitoring wells were installed in the area of the spill to evaluate soil and groundwater quality associated with the No. 2 fuel oil spill. Depth to groundwater ranged from 18 to 20 feet bgs. Analytical data from an initial round of groundwater sampling indicated that chlorinated volatile organic compounds (CVOCs) were reported in all three monitoring wells. The highest

CVOC concentrations were reported at well location MW-2 with cis-1,2-dichloroethene (cis-1,2) detected at a concentration of 8,700 parts per billion (ppb), trichloroethene (TCE) detected at a concentration of 750 ppb, and tetrachloroethene (PCE) detected at a concentration of 640 ppb.

Following the proper offsite disposal of fuel oil-contaminated soil and the UST, the NYSDEC retained HRP Associates, Inc. and approved their workscope to conduct a SC Investigation including the installation and sampling (two rounds) of six overburden monitoring wells designated as MW-1 through MW-6.

HRP conducted the first groundwater sampling round and CVOCs were reported in three (MW-1 through MW-3) of the six wells above NYSDEC GA Criteria. GA Criteria pertain to groundwater that is considered a "Source of Drinking Water", provided in the June 1998 Division of Water Technical and Operational Guidance Series (1.1.1). The second round of groundwater sampling indicated the results to be consistent with the exception of CVOCs being reported at MW-6 at concentrations greater than the GA Criterion. Also, the data indicate an overall decreasing CVOC concentration trend at MW-1 through MW-3 as compared to the first round of data.

1.2 Report Objectives

Based on the findings of previous environmental reports, the RIW provided in Chapter 3.0 outlines the work scope to complete soil and groundwater quality delineation, evaluate the potential VI pathway, and provides the basis for evaluating remedial action alternatives to address the CVOC concentrations in groundwater.

1.3 Report Organization

This RIW is presented in one volume containing the text for Chapters 1.0 through 8.0 and associated summary tables, and figures. The report appendices, labeled alphabetically in order of first reference in the text, are provided in the same volume.

The remaining Chapters of this RIW are organized as follows:

Chapter 2.0 Site Environmental Setting
Chapter 3.0 Remedial Investigation Workplan
Chapter 4.0 Quality Assurance Quality Control
Chapter 5.0 Health and Safety Plan
Chapter 6.0 Reporting
Chapter 7.0 Citizen Participation Activities
Chapter 8.0 References

2.0 SITE ENVIRONMENTAL SETTING

This Chapter summarizes the environmental setting at the subject property, including a description of the Site and an overview of the regional and site-specific geology and hydrogeology at the subject property.

2.1 Site Description

As shown in Figure 1, the subject property is located at 1360 East Main Street, Shrub Oak (Town of Yorktown), New York and is designated as Tax Parcel 16.09-2-14. The location of the subject property is shown on the USGS 7.5 minute Topographical Map for the Mohegan Lake, New York Quadrangle provided as Figure 1. A generalized site plan for the subject property and surrounding area showing the location of existing monitoring wells is provided as Figure 2. The brownfield parcel is approximately 3.47 acres.

As shown on Figure 2, the subject property is located in a mixed commercial/residential section of Shrub Oak (in the Town of Yorktown) at 1360 East Main Street. Undeveloped land is located adjacent to the subject property to the north. The subject property is bordered by Wynwood Oaks Senior Living to the east, a parking lot to the west, and residential houses and Lakeland Senior High to the south. East Main Street, New Road, and Mountain Brook Road are located to the south as outlined in the SC Report prepared by HRP.

The Shrub Oak Shopping Center is located at 1360 East Main Street in the Hamlet of Shrub Oak, in the Town of Yorktown, Westchester County, New York and is comprised of three (3) large connected single-story buildings totaling 46,586 improved square feet, devoted presently to retail sales. Asphalt paved parking areas surround the shopping center structure.

2.2 Regional and Local Geology and Hydrogeology

According to the Surficial Geologic Map of New York, Lower Hudson Sheet, 1989, the surficial geologic material underlying the Site is classified as till. Till deposits consist of variable textured (i.e. clay, silt-clay, and boulder-clay). The till is usually poorly sorted, relatively impermeable, variable clast content, ranging from abundant, well rounded, diverse lithology in valley till to relatively angular, more limited lithology in uplands till and tends to be sandy in areas underlain by gneiss or sandstone. Thickness is variable from one to fifty meters bgs. As reported during previous investigations, overburden materials were observed to consist mainly of sand and silt with little gravel and a peat layer.

According to the Bedrock Geologic Map of New York, Lower Hudson Sheet, 1970, the bedrock geologic material underlying the Site is characterized as the Stockbridge Groups, Poughquag quartzite and metamorphic equivalents up to 4,000-feet bgs. The lithology of this geologic unit consists of Inwood marble, dolomite marble, and granite.

According to the United States Department of Agriculture Natural Resource Conservation Service Web Soil Survey, soils at the Site are classified as Urban Land, which are found in areas that are commonly rectangular and range in size from five to 500 acres. An unknown quantity of fill was brought in prior to the construction of the building. Land surface for this soil unit generally slopes up to 25 percent, although the slope is dominantly less than eight percent.

According to the USGS 7.5 minute topographic map, two unnamed lakes to the north and Lake Mohegan to the southwest are within a one mile radius of the Site. A state regulated freshwater wetlands (Wetland ID A-47) is located to the north and east of the Site. The Town of Yorktown has established an Open Space Preservation Conservation Area which encompasses the wetlands that abut the Site to the north and east.

Based on previous groundwater contour evaluations in the shallow subsurface aquifer, the groundwater generally flows from the southeast to the northwest in the area of the Site. Possible groundwater mounding may by present under the building due to the presence of building footers and the building construction incorporating compacted sub-base. Based on the results of the SC investigation, flow is estimated to be in the northeasterly direction. Groundwater flow and contour maps were developed from depth to water measurements.

3.0 REMEDIAL INVESTIGATION WORKPLAN

This Chapter summarizes the proposed work scope and investigative procedures for additional RI activities to be conducted at the subject property based on the existing data and the results of recent investigation activities.

3.1 Overview of Proposed Workscope

The scope of work for this RI will be to perform a Phase I Environmental Site Assessment (Phase I) pursuant to American Society for Testing and Materials (ASTM) 1527-05 in order to identify all areas of concern on the Site, verification of soil quality at the former UST excavation area/Mr. Cleaners operation, complete groundwater quality delineation, satisfy outstanding environmental compliance issues regarding the vapor intrusion pathway, and obtain information in support of the remedial action selection process to determine the most appropriate and effective remedial action option to address the known environmental conditions at the subject property.

The scope of work will include the following activities:

1. The completion of an updated Phase I Environmental Site Assessment per ASTM 1527-05.

2. Completion of a baseline groundwater sampling event utilizing existing monitoring wells to verify and confirm groundwater quality;

3. The advancement of additional soil borings and collection of soil samples to verify soil quality in the vicinity of the former UST/Mr. Cleaners operation. Additional soil borings/analytical samples may be warranted based on the findings of the Phase I and/or initial soil analytical results in the suspected source area (Mr. Cleaners).

4. Installation of one overburden monitoring well to approximately 30 feet and three overburden monitoring wells to 45 feet to complete downgradient groundwater quality delineation. Note the target completion depths are based on refusal data provided by HRP in their November 2012 SC Report.

5. Synoptic round of groundwater level measurements and groundwater sampling and analysis of all site wells to evaluate the current groundwater conditions and verify the completion of groundwater quality delineation.

6. Vapor intrusion sampling in the vicinity of the former UST/Mr. Cleaners leasehold.

3.2 Project Team

Excel has designated a Project Team of highly skilled and experienced environmental professionals dedicated to this project. Mr. Michael Meriney will direct the overall technical, regulatory, and strategic aspects of the project working closely with Mr. William Goldenbaum

who will conduct the day-to-day project management. The following summarizes the experience and capabilities of the proposed Excel Project Team:

- **Mr. Michael Meriney (732) 545-9525:** Mr. Meriney will manage the overall RI, including management of the project staff and technical resources, ensuring that the work is conducted in accordance with the RIWP and Quality Assurance Project Plan (QAPP). Mr. Meriney is a skilled and experienced environmental geologist and has managed and implemented numerous highly complex RI projects. His experience in all aspects of environmental compliance and subsurface investigation coupled with his skills as a Project Manager has resulted in the successful completion of projects in compliance with applicable regulations, on schedule, and on budget. Mr. Meriney is also a Licensed Site Remediation Professional (License No. 575023) in the state of New Jersey.
- **Mr. William Goldenbaum (732) 545-9525:** Mr. Goldenbaum will work closely with Mr. Meriney in order to manage the day-to-day aspects of the project including the scheduling of field work, coordinate with subcontractors, and coordinate with the Field Team.

Mr. Meriney will also be supported by Excel's experienced technical staff to assist in performance of the RI. Our staff has the capabilities needed to make strategic onsite field decisions as necessary to collect the information needed to accurately assess and interpret the actual conditions at the Site. Field implementation is conducted with a high level of communication with the Excel Project Manager and senior Excel staff as necessary to ensure that the field objectives are achieved.

3.3 Work Scope and Investigative Procedures

As detailed in Chapter 1.0, this RIWP has been prepared in accordance with all appropriate NYDEC regulations, specifically DER-10 Technical Guidance for Site Investigation and Remediation, May 2010. A summary of the proposed sampling and analytical work scope is provided in Table 1. Note that the following proposed sampling may be modified as necessary based on the results of the Phase I.

3.3.1 Soil Quality Evaluation

As outlined in Section 3.1, supplemental investigation is warranted to verify soil quality in the vicinity of the former UST at the subject property. Additionally, during evaluation of soil quality in this area, chlorinated compounds were reported in soil which is presumably associated with the past and/or current dry cleaning operation. To fully delineate soil quality in this area, soil borings will be conducted in a grid pattern outward from the former UST and dry cleaner leasehold. As shown on Figure 3, up to 17 soil borings are proposed to approximately 20 feet bgs.

3.3.1.1 Soil Boring Advancement

Soil borings will be advanced using direct-push drilling techniques under the onsite supervision of an experienced Excel geologist. Soil samples will be collected continuously using macro-core,

acetate-lined samplers from ground surface to a predetermined depth interval. Each sample interval will be inspected by an experienced geologist and the observations recorded on a soil boring log, including the date of boring advancement, depth of boring, depth to groundwater, and visual characterization of soil encountered and field observations (i.e., odors, visible staining, field screening results, etc.).

A properly calibrated photoionization detector (PID) will be used during all soil investigation activities to field screen the soil samples for organic vapors. The PID readings will be documented on the soil boring logs. Soil samples for laboratory analysis will be collected directly from the macro-core, acetate-lined samplers using decontaminated, stainless steel trowels. Since sampling is being conducted for VOCs, Encore sampling devices will be used. Samples will be selected for laboratory analysis biased to field indications of a potential environmental concern (i.e., staining, odors, or field screening measurements). If no field indications are encountered then samples will be collected from the 0.0-0.5-foot depth interval bgs.

Upon completion of soil borings, soil boring logs will be prepared to provide a narrative and visual summary of the subsurface soils as well as any discrepancies, odors, staining, indications of free phase product, and field screening results.

3.3.1.2 Field Screening

During the soil sampling activities, the ambient air quality and individual soil samples will be screened in the field for organic vapors using a MiniRAE PID or similar equipment. Field screening of individual soil samples for organic vapors will be conducted. The PID measurements for soil samples screened in the field will be documented on soil boring logs that will be provided in RI/Remedial Action Workplan (RAW).

3.3.1.3 Soil Sampling and Analysis

Based on the presence of CVOCs in shallow soils during the January 20, 2011 UST investigation performed by Tri-State, it is likely that there was a surface or top-down discharge of CVOCs in the vicinity of the former dry cleaner operations. As per Section 3.5.2 Part B of the DER-10 NYSDEC Technical Guidance Document dated May 3, 2010; suspected surface soil releases will be investigated by field analyzing at a minimum the top 24-inches of surface soil with a properly calibrated PID.

If field measurement readings are detected above background PID readings the sampling will be extended until background readings are achieved, or groundwater/bedrock is encountered. Per Section 3.5.2 Part B of the DER-10, to address suspected top-down discharges in the vicinity of Mr. Cleaners, soil samples will be collected from the 0.0-0.5-foot depth interval bgs and/or the highest PID/FID field screening readings in each 24-inch soil boring in order to establish vertical delineation of CVOC impacts in subsurface soil.

Unless otherwise specified, soil samples for laboratory analysis will be biased toward predetermined depth intervals for soil quality delineation as discussed previously and/or the

highest PID readings, staining, odors, or any other field observations of an environmental concern.

Soil samples will be submitted to a New York-certified laboratory. Field and trip blank samples will be collected and maintained in accordance with NYDEC Quality Assurance/Quality Control (QA/QC) requirements for soil and groundwater sampling. Chain-of-custody documentation will be completed in the field and transported with the soil and QA/QC samples to the laboratory.

3.3.2 Groundwater Quality Delineation

The following scope of work is proposed in order to complete groundwater delineation:

- Completion of a baseline groundwater sampling event utilizing existing monitoring wells to confirm the current concentration and distribution of CVOCs in groundwater;
- The installation of four delineation monitoring wells; and
- A synoptic round of groundwater sampling subsequent to monitoring well installation activities.
- Comprehensive Round of groundwater sampling (10 wells).

The following sections discuss the methods and procedures that will be utilized to complete the proposed scope of work.

3.3.2.1 Overburden Monitoring Well Installation and Development

Based on the baseline groundwater analytical results and measured groundwater gradient, a maximum of four monitoring wells will be installed to verify the groundwater flow gradient and to complete groundwater quality delineation. The proposed well locations are shown on Figure 4. Prior to monitoring well installation, overburden stratigraphy will be logged via the collection of macrocore samples. Final monitoring well depths will vary based on stratigraphy and contaminant distribution in the source area and at locations side and downgradient of the source and known plume footprint in order to define the vertical and lateral extent of CVOC impacts, however anticipated final depths are expected to be between 30 and 45 feet bgs. Each monitoring well will be constructed of two-inch diameter, 0.010-inch factory-slotted Schedule 40 PVC well screen and two-inch diameter Schedule 40 PVC riser pipe completed flush to grade with a locking protective manhole.

Following installation of each well screen and riser, a No. 1 Morie sand filter pack will be installed in the annular space between the borehole and the well screen, extending from the bottom of the boring to approximately two feet above the screen depending upon the finished depth to the top of screen. One to two feet of bentonite pellets will be placed and hydrated above the sand pack. The annular space will then be grouted with a cement/bentonite grout to within one-half foot of the ground surface. A locking steel flush-mount manhole will then be installed and marked with each monitoring well number. A cement pad will be constructed around the steel manhole and

the well will be capped with a locking, expanding plug to complete the monitoring well installation.

Upon installation, each groundwater monitoring well will be developed using a submersible pump with dedicated Teflon-lined tubing. Each of the wells will be developed for 30 to 60 minutes or until the discharge is relatively turbid-free. The development water will be field screened and containerized in labeled, 55-gallon steel drums and stored at the project site to await proper offsite disposal.

3.3.2.2 Site and Monitoring Well Survey

Following installation of the monitoring wells, each well will be surveyed by a New York-licensed surveyor. The survey will establish horizontal location and vertical elevation to the top of the PVC and/or steel casing and the steel casing rim. The horizontal locations will be accurate to +/- 0.1 foot and the vertical elevations will be accurate to +/- 0.01 foot. The survey will also include pertinent site features and will show the extents of the Site. A metes and bounds description will be provided with the Site survey.

3.3.2.3 Groundwater Level Measurements

In order to verify the groundwater flow gradient across the Site, a synoptic round of groundwater level measurements will collected at each of the monitoring wells using an oil-water interface probe. The groundwater elevation data will be used to construct groundwater contour maps to illustrate the groundwater flow gradient across the subject property.

3.3.2.4 Groundwater Sampling and Analysis

Representative groundwater samples will be collected from all Site monitoring wells, including newly installed wells, in accordance with NYDEC-recommended procedures. Specifically, the following procedures are proposed for groundwater sample collection:

1. The monitoring wells will be inspected for damage or indications of tampering and the pertinent information recorded on the Groundwater Sampling Field Data Logs;
2. Immediately upon unlocking and removing the well cap, the VOC concentration in the well headspace will be measured using a PID. The headspace results will be documented on the Groundwater Sampling Field Data Logs;
3. The static water level and total well depth will be measured from a well casing reference point using an oil/water interface probe;
4. A variable-rate submersible pump with Teflon-lined tubing will be used to purge the wells. Measurements of temperature, pH, specific conductivity, turbidity, Eh as ORP, and DO will be collected at the start of purging. Precautions will be taken to ensure that the well is pumped at a low enough rate to minimize the potential for significant drawdown within the well or purging to dryness;

5. Measurements of the field parameters noted above will be collected using an in-line, flow-through cell approximately every five minutes during purging until a minimum of three well volumes of water have been removed and the parameters have stabilized;
6. Following purging and ensuring the field parameters have stabilized, the flow-through cell will be disconnected from the pump tubing, and groundwater samples will be collected using a dedicated disposable bailer and poured directly into laboratory-prepared and pre-preserved sample containers.
7. Following sample collection, the in-line, flow-through cell will be reconnected to the pump discharge tubing and the field parameters again measured.

All groundwater samples will be submitted to a New York-certified laboratory for Target Compound List (TCL) VOC+10, TCL Semi Volatile Organic Compounds (SVOCs), Polychlorinated Biphenyls (PCBs), and TAL Metals analysis utilizing approved USEPA Methods summarized in the QAPP (Section 4.0). Field and trip blank samples will be collected in accordance with NYDEC guidelines and procedures and proper chain-of-custody documentation will be completed in the field and transported to the laboratory with the samples.

3.3.3 Vapor Intrusion Evaluation

This section outlines the vapor intrusion evaluation activities proposed for the Site. VI sampling will be conducted in accordance with the New York State Department of Health (NYSDOH) Guidance for Evaluating Vapor Intrusion in the State of New York dated October 2006. The scope and procedures of the VI investigation include the following:

- A building walkthrough and pre-sampling site survey to identify potential background sources of volatile organic compounds, identification of any potential pathways for VI, and determine the sample location(s). A PID will be used as an initial screening tool within the building to evaluate the presence or absence of organic vapors associated with any sumps, drains, or closed spaces within the building. An indoor air quality questionnaire and building inventory will be completed during the building walkthrough to record information about the building, occupants, potential sources of indoor air contamination, and details regarding the actual sampling including number and location of samples, weather conditions at the time of sampling, and any other observations during the inspection and/or sampling.

- The NYSDOH will be notified prior to the building walkthrough and pre-sampling site survey in order to provide the opportunity to review and determine sample locations.

3.3.3.1 Soil Gas Sampling

In order to evaluate the migration pathway in soils and potential for off-site soil vapor impacts based on CVOCs in groundwater, soil gas sampling is proposed along a portion of the eastern and southern site perimeter per the NYSDEC November 8, 2013 RIWP response letter. Based on the comments by the NYSDEC, the following revised scope of work is proposed:

- Six soil gas sampling locations are proposed along the eastern property boundary between Mr. Cleaners and the residential building to investigate the potential for off-site migration of CVOC impacted soil vapors. These sample locations are spaced 50 feet apart and extend a total of 250 linear feet.

- Four soil gas sampling locations are proposed along the southeastern property boundary along East Main Street to investigate the potential for off-site migration of CVOC impacted soil vapors. These sample locations are spaced 50 feet apart and extend a total of 150 linear feet.

- On November 12, 2013, an interview of the Township of Shrub Oak building inspector indicated that the concrete footings at the Shrub Oak Shopping were installed to a depth of 42-inches. As per Section 2.6.1 Part C. in the NYSDOH Soil Vapor Intrusion Guidance Document, all soil vapor samples will be collected from a depth comparable to the depth of foundation footings along the sites perimeter.

- At all proposed soil vapor sample locations, a Geoprobe will be used to advance a temporary soil vapor sampling probe to a depth of 48-inches. A 6-inch polyvinyl chloride (PVC) screen will be installed at the bottom of the borehole with dedicated polyethylene tubing extending up to the surface. The annular space around the PVC sampling screen in each borehole will be filled with no less than 12-inches of No. 1 sand and capped with no less than a three feet of bentonite/slurry to prevent ambient air infiltration.

- Soil vapor samples will be collected shortly after the temporary sampling probe is installed using 1-liter stainless steel lab supplied summa canisters at a flow rate of 0.2 liters per minute. Before sampling, each sampling probe will be purged at a flow rate of 0.2 liters per minute using an SKC purge pump; one to three implant volumes will be purged in total before sampling. During sampling of soil gas, a tracer gas (helium) will introduced into a sampling shroud which will be placed over the sampling area. This procedure is used to verify that there is no infiltration of ambient air being pulled into the soil gas sample as a quality assurance/quality control (QA/QC) measure.

- Following sample collection, the Summa canisters will be recovered and shipped to a New York-certified laboratory, Alpha Analytical Laboratories in Westborough, Massachusetts, for analysis using USEPA Method TO-15 along with Helium tracer gas detection analysis.

- Once the soil gas sample has been collected, the sampling probe and associated tubing will be removed and the borehole will be backfilled using No. 1 sand.

- Following receipt of the soil gas analytical results, the data will be tabulated and evaluated in accordance with the NYSDOH VI Guidance document.

3.3.3.2 Sub-Slab Soil Vapor Sampling

In order to establish the migration pathway in soils based on CVOC impacted groundwater, sub-slab soil vapor sampling is required to investigate the air quality beneath the concrete slab(s) in three separate units within the Shrub Oak Shopping Center. The following summarizes the proposed sub-slab soil gas sampling scope of work:

- Four sub-slab soil gas sampling locations will be selected within and around the former dry cleaner source area to evaluate the potential for vapor intrusion, two samples inside A&P Supermarket, one sample inside Mr. Cleaners, and one sample inside Francesca's Pizza & Pasta. These samples will be collected within the 2013-2014 heating season.

- Since the building is occupied by commercial/retail businesses the sub-slab soil gas samples will be collected over an 8-hour period during the time that employees and/or customers are most likely to be present.

- Prior to sub-slab soil gas sampling the following will be recorded: historic and current storage and uses of volatile chemicals for each business, use of heating or air conditioning systems, sketch of floor plans showing sampling locations, chemical storage areas, doorways, stairways, sumps, drains etc., sketch of outdoor areas, weather conditions, pertinent observations such as spills, staining, and odors, and measurements of temperature and barometric pressure. A field sampling log sheet will also be used to document sample identification, date and time of samples, sample depths, sample methods, soil vapor purge volumes, and other field sampling observations.

- Sub-slab soil gas samples will be collected from a temporary sampling probe which will be installed approximately 2-inches into the sub-slab material. A hammer drill will be used to drill through the concrete slab. Temporary soil-gas sampling probes will be constructed of polyethylene tubing and secured using a non-VOC putty to seal off ambient air from the sub-slab sampling area. The tip of the sampling probe will be constructed to have at least 1-inch of No. 1 sand for use as a porous inert backfill.

- Sub-slab soil vapor samples will be collected shortly after the temporary sampling probe is installed using 1-liter stainless steel lab supplied summa canisters at a flow rate of 0.2 liters per minute. Before sampling, each sampling probe will be purged at a flow rate of 0.2 liters per minute using an SKC purge pump; one to three implant volumes will be purged in total before sampling. During sampling of sub-slab soil gas, a tracer gas (helium) will introduced into a sampling shroud which will be placed over the sampling area. This technique is used to verify that there is no infiltration of ambient air being pulled into the soil gas sample as a QA/QC measure.

- Following sample collection, the Summa canisters will be recovered and shipped to a New York-certified laboratory, Alpha Analytical Laboratories in Westborough, Massachusetts, for analysis using USEPA Method TO-15 along with Helium tracer gas detection analysis.

- Once sub-slab soil gas samples have been collected, the temporary sample probes will be removed and the sampling borehole will be filled using a concrete patch material.

- Following receipt of the sub-slab soil gas analytical results, the data will be tabulated and evaluated in accordance with the NYSDOH VI Guidance document.

3.3.3.3 Indoor Air Sampling

In order to establish the migration pathway in soils based on CVOC impacted groundwater, indoor air sampling is required to investigate the air quality and possible vapor intrusion in three separate units within the Shrub Oak Shopping Center. The following summarizes the proposed indoor air sampling scope of work:

- Four indoor air sampling locations will be selected within and around the former dry cleaner source area to evaluate the potential for vapor intrusion, two samples inside A&P Supermarket, one sample inside Mr. Cleaners, and one sample inside Francesca's Pizza & Pasta. These samples will be collected within the 2013-2014 heating season.

- Since the building is occupied by commercial/retail businesses the indoor air samples will be collected over an 8-hour period during the time that employees and/or customers are most likely to be present.

- Prior to indoor air sampling the following will be recorded: historic and current storage and uses of volatile chemicals for each business, use of heating or air conditioning systems, sketch of floor plans showing sampling locations, chemical storage areas, doorways, stairways, sumps, drains etc., sketch of outdoor areas, weather conditions, pertinent observations such as spills, staining, and odors, and measurements of temperature and barometric pressure. A field sampling log sheet will also be used to document sample identification, date and time of samples, sample depths, sample methods, soil vapor purge volumes, and other field sampling observations.

- The indoor air canister will be placed approximately three feet above the floor at an approximate breathing zone height. 6-liter stainless steel laboratory supplied summa canisters will be utilized for sample collection.

- Since the building is occupied by commercial/retail businesses the sub-slab and indoor air samples will be collected over an 8-hour period during the time that employees and/or customers are most likely to be present.

- One exterior background air sample will be collected during sub-slab and indoor air sampling activities adjacent to the dry cleaners operation.

- Following sample collection, the Summa canisters will be recovered and shipped to a New York-certified laboratory, Alpha Analytical Laboratories of Westborough, Massachusetts, for analysis using USEPA Method TO-15 along with Helium tracer gas detection analysis.

- Following receipt of the indoor air and ambient background analytical results, the data will be tabulated and evaluated in accordance with the NYSDOH VI Guidance document.

As recommended in the NYSDOH Soil Vapor Intrusion Guidance Document, all soil gas, sub-slab soil gas, indoor air, and outdoor ambient air samples will be collected within the same 8-hour time frame.

4.0 QUALITY ASSURANCE/QUALITY CONTROL

A QAPP has been prepared in support of the RI activities. The QAPP dictates implementation of the investigation tasks delineated in this Work Plan. A Sampling and Analysis Plan (SAP) identifying methods for sample collection, decontamination, handling, and shipping, is provided as below. The QAPP will assure the accuracy and precision of data collection during the Site characterization and data interpretation periods. The QAPP identifies procedures for sample collection to mitigate the potential for cross-contamination, as well as analytical requirements necessary to allow for independent data validation. The QAPP has been prepared in accordance with USEPA's Requirements for Quality Assurance Project Plans for Environmental Data Operations; the EPA Region II CERCLA Quality Assurance Manual, and NYSDEC's DER-10 Technical Guidance for Site Investigation and Remediation (May 2010).

4.1 Scope of the QAPP

The QAPP is primarily concerned with the quality assurance and quality control aspects of the procedures involved in the collection, preservation, packaging, and transportation of samples; field testing; record keeping; data management; chain-of-custody procedures; laboratory analyses; and other necessary matters to assure that the investigation activities, once completed, will yield data whose integrity can be defended. QA refers to the conduct of all planned and systematic actions necessary to perform satisfactorily all task-specific activities and to provide information and data confidence as a result of such activities. The QA for task-specific activities includes the development of procedures, auditing, monitoring and surveillance of the performance.

QC refers to the activity performed to determine if the work activities conform to the requirements. This includes activities such as inspections of the work activities in the field (e.g., verification that the items and materials installed conform to applicable codes and design specifications). QA is an overview monitoring of the performance of QC activities through audits rather than first time inspections.

4.2 QAPP Organization and Responsibility

The principal organizations involved in verifying achievement of data collection goals for the Mr. Cleaners – Scrub Oak Shopping Center Site include: the NYSDEC, NYSDOH, Shrub Oak (Participant/Applicant), Excel Environmental Resources, Inc. (Applicant's Environmental Consultant), the drilling subcontractor(s), land surveyors and the environmental laboratory.

It is the responsibility of the NYSDEC, in conjunction with the NYSDOH, to review the RI Work Plan and supporting documents, for completeness and conformance with the site-specific cleanup objectives and to make a decision to accept or reject these documents based on this review. The NYSDEC also has the responsibility and authority to review and approve all QA documentation collected during brownfield cleanup construction and to confirm that the QA Plan was followed.

Shrub Oak (Applicant) will be responsible for complying with the QA requirements as specified herein and for monitoring and controlling the quality of the Brownfield cleanup construction either directly or through their designated environmental consultant and/or legal counsel. The Applicant will also have the authority to select Contractor(s) to assist them in fulfilling these responsibilities. The designated Applicant is responsible for implementing the project, and has the authority to commit the resources necessary to meet project objectives and requirements.

The Excel Project Manager has the responsibility for ensuring that the project meets the Work Plan objectives. The PM will report directly to the Shrub Oak Project Coordinator and the NYSDEC/NYSDOH Project Coordinators and is responsible for technical and project oversight. The Field Team Leader (FTL) has the responsibility for implementation of specific project tasks identified at the Site, and is responsible for the supervision of project field personnel, subconsultants, and subcontractors. The FTL reports directly to the Project Manager.

For this project the FTL will also serve as the Site Safety and Health Officer (SSHO). As such, he is responsible for implementing the procedures and required components of the Site Health and Safety Plan (HASP), determining levels of protection needed during field tasks, controlling site entry/exit, briefing the field team and subcontractors on site-specific health and safety issues, and all other responsibilities as identified in the HASP.

4.3 The Project Team

Excel has designated a Project Team of highly skilled and experienced environmental professionals dedicated to this project. Mr. Michael Meriney will direct the overall technical, regulatory, and strategic aspects of the project working closely with Mr. William Goldenbaum who will conduct the day-to-day project management. The following summarizes the experience and capabilities of the proposed Excel Project Team:

- Mr. Michael Meriney (732) 545-9525: Mr. Meriney will manage the overall RI, including management of the project staff and technical resources, ensuring that the work is conducted in accordance with the RIWP and Quality Assurance Project Plan (QAPP). Mr. Meriney is a skilled and experienced environmental geologist and has managed and implemented numerous highly complex RI projects. His experience in all aspects of environmental compliance and subsurface investigation coupled with his skills as a Project Manager has resulted in the successful completion of projects in compliance with the applicable regulations, on schedule, and on budget.

- Mr. William Goldenbaum (732)-545-9525: Mr. Goldenbaum will work closely with Mr. Meriney in order to manage the day-to-day aspects of the project including the scheduling of field work, coordinate with subcontractors, and coordinate with the Field Team.

Mr. Meriney will also be supported by Excel's experienced technical staff to assist in performance of the RI. Excel's staff has the capabilities needed to make strategic onsite field decisions as necessary to collect the information needed to accurately assess and interpret the actual conditions at the Site. Field implementation is conducted with a high level of communication with the Excel

Project Manager and senior Excel staff as necessary to ensure that the field objectives are achieved.

4.4 Quality Assurance Objectives for Measurement Data

4.4.1 Precision

Precision is a measurement of the degree to which two or more measurements are in agreement, which is quantitatively assessed based on the standard deviation. Precision in the laboratory is assessed through the calculation of relative percent difference (RPD) and relative calculation of relative standard deviations (RSD) for three or more replicate samples. General precision goals are provided in Table 2. In accordance with the NYDEC requirements, the appropriate category B data deliverables will be provided.

Laboratory precision will be assessed through the analysis of matrix spike/matrix spike duplicate (MS/MSD) for organic parameters. For inorganic parameters, precision will be assessed through the analysis of matrix spike/ duplicates field duplicate pairs. Precision for field parameters, including pH, turbidity, specific conductance, and temperature will be determined through duplicate analysis of 1 in every 20 samples. Precision control limits for field-measured parameters are provided in Table 3.

4.4.2 Accuracy

Accuracy is the degree of agreement between an observed value and an accepted reference of true value. Accuracy in the field is assessed through the use of field blanks and trip blanks and through the adherence to all sample handling, preservation and holding times. One trip blank will accompany each batch of water matrix sample containers shipped to the laboratory for volatile organic chemical analysis.

Laboratory accuracy is assessed through the analysis of a matrix spike/matrix spike duplicate (MS/MSD) (1 per 20 samples), standard reference materials (SRM), laboratory control samples (LCS), and surrogate compounds, and the determination of percent recoveries. Accuracy for field measured parameters including pH, turbidity, specific conductance, and temperature will be assessed through daily instrument calibration.

4.4.3 Completeness

Data completeness is a measure of the amount of valid data obtained from a prescribed measurement system as compared with that expected and required to meet the project goals. Laboratory and field completeness will be addressed by applying data quality checks and assessments to ensure that the data collected are valid and significant.

As shown on Table 2, the laboratory completeness objectives for the RI will be 90 percent or greater. A third party data validator will assess the completeness and validity of laboratory data deliverables. For the RI, 100 percent of all laboratory analytical results will undergo third party

data review. The completeness of an analysis will be documented by including in the report sufficient information to allow the data validator to assess the quality of the results.

Raw data such as chromatograms, spectra, calibration data, laboratory worksheets and notes will not be produced with the analytical data reporting package but will be stored with the sample results in the laboratory and made available upon request, if necessary, to substantiate analytical results. The raw data will be archived for at least two years by the laboratory. The laboratory will retain all analytical information; regardless of whether Excel requests the substantiation of results.

4.4.4 Data Representativeness

Data representativeness expresses the degree to which data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition within a defined spatial and/or temporal boundary. All proposed field-testing and measurement procedures were selected to maximize the degree to which the field data will represent the conditions at the Site, and the matrix being sampled or analyzed.

Performance System Audits and the proper execution of field activities are the main mechanism for ensuring data representativeness. Representativeness in the laboratory is ensured through the use of the proper analytical procedures, appropriate methods, meeting sample holding times, and analyzing and assessing field duplicate samples.

4.4.5 Comparability

Data comparability expresses the confidence with which one data set can be compared to another data set. Procedures for field measurements will assure that tests performed at various locations across the Site are conducted using accepted procedures, in a consistent manner between locations and over time, and including appropriate QA/QC procedures to ensure the validity of the data. Sampling procedures for environmental matrices are provided to ensure that samples are collected using accepted field techniques.

Environmental samples will be analyzed by Accutest using consistent protocols for sample preservation, holding times, sample preparation, analytical methodology, and QC as described in USEPA SW-846. Analytical data will be comparable when similar sampling and analytical methods are used as documented in the QAPP. Comparability is also dependent on similar QA objectives.

4.5 Level of QC Effort for Sample Parameters

Field blank, method blank, trip blank, laboratory duplicate, laboratory control, standard reference materials (SRM) and matrix spike samples will be analyzed to assess the quality of the data resulting from the field sampling and analytical programs. QC samples are discussed below.

- Field and trip blanks consisting of distilled water will be submitted to the analytical laboratories to provide the means to assess the quality of the data resulting from the field-sampling program. Field (equipment) blank samples are analyzed to check for procedural

chemical constituents at the facility that may cause sample contamination. Trip blanks are used to assess the potential for contamination of samples due to contaminant migration during sample shipment and storage.

- Method blank samples are generated within the laboratory and used to assess contamination resulting from laboratory procedures.

- Duplicate samples are analyzed to check for sampling and analytical reproducibility.

- MS/MSD and MS/Duplicate samples provide information about the effect of the sample matrix on the digestion and measurement methodology. Depending on site-specific circumstances, one MS/MSD or MS/Duplicate should be collected for every 20 or fewer investigative samples to be analyzed for organic and inorganic chemicals of a given matrix.

4.6 Sampling and Analysis Plan

The selection and rationale for the RI sampling program along with the methods and protocol are discussed in previous sections of the Work Plan. The number and types of environmental samples to be collected is summarized on Table 1. Sample parameter lists, holding times and sample container requirements are summarized on Table 5. To the extent allowed by existing physical conditions at the facility, sample collection efforts will adhere to the specific methods presented herein. If alternative sampling locations or procedures are implemented in response to facility specific constraints, each will be selected on the basis of meeting data objectives. Such alternatives will be approved by NYSDEC before implementation and subsequently documented for inclusion in the project file.

4.6.1 Custody Procedures

Sample custody is controlled and maintained through the chain-of-custody procedures. Chain of custody is the means by which the possession and handling of samples will be tracked from the source (field) to their final disposition, the laboratory. A sample is considered to be in a person's custody if it is in the person's possession or it is in the person's view after being in his or her possession or it was in that person's possession and that person has locked it in a vehicle or room. Sample containers will be cleaned and preserved at the laboratory before shipment to the Site. The following sections describe procedures for maintaining sample custody from the time samples are collected to the time they are received by the analytical laboratory.

4.6.2 Sample Receipt

A sample custodian is responsible for receiving samples, completing chain-of-custody records, determining and documenting the condition of samples received through the Cooler Receipt and Preservation Form (CRPF), logging samples into the LIMS system based upon the order of log-in, and storing samples in appropriate limited-access storage areas. Chain-of custody documentation is also maintained for the transfer of samples between Accutest, and for shipment of samples to subcontracted laboratories. Upon sample receipt, an inventory of shipment contents

is compared with the chain-of-custody record, and any discrepancies, including broken containers, inappropriate container materials or preservatives, headspace in volatile organic samples, and incorrect or unclear sample identification, are documented and communicated to the appropriate project manager. Each sample is given a unique laboratory code and an analytical request form is generated. The analytical request contains pertinent information for each sample, including:

- Client name
- Project number
- Task number
- Purchase order number
- Air bill number
- Chain-of-custody number
- Number of samples
- Sample descriptions
- Sample matrix type
- Date and time of sampling
- Analysis due dates
- Date and time of receipt by lab
- Client sample identification
- Any comments regarding special instructions or discrepancies

4.6.3 Sample Storage

Samples are stored in secure limited-access areas. Walk-in coolers or refrigerators are maintained at 4°C, ± 2°C, or as required by the applicable regulatory program. The temperatures of all refrigerated storage areas are monitored and recorded a minimum of once per day. Deviations of temperature from the applicable range require corrective action, including moving samples to another storage location if necessary.

4.6.4 Sample Custody

Sample custody is defined by this document as when any of the following occur:

- It is in someone's actual possession.
- It is in someone's view after being in his or her physical possession.
- It was in someone's possession and then locked, sealed, or secured in a manner that prevents unsuspected tampering.
- It is placed in a designated and secured area.

Samples are removed from storage areas by the sample custodian or analysts and transported to secure laboratory areas for analysis. Access to the laboratory and sample storage areas is restricted to laboratory personnel and escorted visitors only; all areas of the laboratory are therefore considered secure. If required by the applicable regulatory program, internal chain-of-custody is

documented in a log by the person moving the samples between laboratory and storage areas. Laboratory documentation used to establish chain of custody (COC) and sample identification may include the following:

- Field COC forms or other paperwork that arrives with the sample.
- The laboratory COC.
- Sample labels or tags are attached to each sample container.
- Sample custody seals.
- Sample preparation logs (i.e., extraction and digestion information) recorded in hardbound laboratory books that are filled out in legible handwriting, and signed and dated by the chemist.
- Sample analysis logs (e.g., metals, GC/MS, etc.) information recorded in hardbound laboratory books that are filled out in legible handwriting, and signed and dated by the chemist.
- Sample storage log (same as the laboratory COC).
- Sample disposition log, which documents sample disposal by a contracted waste disposal company.

4.7 Calibration Procedures and Frequency

This section describes the calibration procedures and the frequency at which these procedures will be performed for both field and laboratory instruments.

4.7.1 Field Instrument Calibration

Quantitative field data to be obtained during groundwater sampling include pH, turbidity, specific conductance, temperature, and depth to groundwater. Quantitative water level measurements will be obtained with an electronic sounder or steel tape, which require no calibration. Quantitative field data to be obtained during soil sampling include screening for the presence of volatile organic constituents using a photoionization detector (PID). Field instrument calibration for soil and groundwater sampling will occur daily and results will be recorded on the appropriate field forms and in a bound Field Book.

4.8 Analytical Procedures

Soil, groundwater, and air samples collected during investigation field sampling activities will be analyzed by New York Certified Laboratory Accutest located in Dayton, New Jersey, (732) 549-3900.

4.9 Data Usability Evaluation

Data evaluation will be performed by the third party data validator using the most current methods and quality control criteria from the USEPA's Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review, and Contract Laboratory Program, National Functional Guidelines for Inorganic Data Review. The data review guidance will be used only to the extent that it is applicable to the SW-846 methods; SW-846 methodologies will be followed primarily and given preference over CLP when differences occur. Also, results of blanks, surrogate spikes, MS/MSDs, and laboratory control samples will be reviewed/evaluated by the data validator. All sample analytical data for each sample matrix shall be evaluated. The third party data validation expert will also evaluate the overall completeness of the data package. Completeness checks will be administered on all data to determine whether deliverables specified in this QAPP are present. The reviewer will determine whether all required items are present and request copies of missing deliverables.

Following completion of sampling activities and receipt of Category B laboratory data deliverables, Ms. Kim Bryant Watson of Stone Environmental, Inc. of Montpelier, Vermont will act as a third party validator. Ms. Watson will be responsible for the preparation of a Data Usability Summary Report (DUSR) in accordance with Appendix 2B of DER-10 Technical Guidance for Site Investigation and Remediation, and her resume is included as Appendix B for the NYDEC's review and approval.

5.0 HEALTH AND SAFETY PLAN

In accordance with Occupational Safety and Health Administration (OSHA) 1910.120, a Site-specific HASP has been prepared for implementation of the RI activities at the Site. The HASP will establish the safe work procedures and level of personnel safety for each of the RI work tasks and include emergency notification information and a local hospital route that will be clearly posted in each work area. A copy of the HASP will be distributed to all project team personnel involved in RI field activities.

In accordance with the HASP, daily Tailgate Safety Meetings will be conducted prior to initiation of work during each day of field activities. The objective of the daily Tailgate Safety Meeting is to review the nature and general scope of the planned field activities for that day, the basic safety requirements as specified by the Site-specific HASP, and answer questions regarding work and safety procedures and requirements and to notify field personnel of any change in Site conditions or health and safety procedures. The HASP is included as Appendix C in this Report.

6.0 REPORTING

A RI Report and RAW will be prepared upon completion of these proposed RI activities outlined herein in accordance with the Technical Rules. Specifically, the RIR/RAW will include:

- A summary of the RI activities;
- The scope and investigative procedures used during implementation of the RI;
- A discussion and rationale for any significant variances from the approved workplan;
- The results of the RI, including soil boring logs, soil analytical results, monitoring well construction diagrams, well survey data, groundwater level and elevation data, groundwater analytical results, site plans depicting the final soil boring and monitoring well locations, and the findings of the data reliability evaluation;
- Groundwater contour maps for each groundwater monitoring event;
- Color-coded drawings depicting the soil and groundwater analytical results.
- Conclusions and recommendations for any additional investigation and/or action.

Soil and groundwater analytical results will be provided in tabular format in comparison to the published NYDEC Soil Cleanup Criteria and Groundwater Quality Standards and a copy of the laboratory analytical reports will be provided. The report will include a detailed discussion of the results of the RI as well as detailed conclusions and recommendations for the scope of any additional action.

The RI Report will be submitted with a RAW to outline the proposed scope and technical approach for remedial action of soil and groundwater. The RAW will include a specific work scope and procedures for implementation of the remedial action.

6.1 Schedule

The RI field work will be initiated following approval of the scope of work presented in this Work Plan by NYSDEC. A general timeline for the project includes the following milestones:

- • Phase I completion – within 45 days of the approval of the work plan.
- • Duration of Currently Proposed Field Activities – approximately 45 days.
- • Draft Report to Shrub Oak – within 90 days of the completion of field activities.
- • Final Report to NYSDEC – within 120 days of the completion of field activities.

7.0 CITIZEN PARTICIPATION ACTIVITIES

A Citizen Participation Activities Plan will be prepared and submitted within 20 days of executing the brownfield agreement. The CP Plan will outline how members of the affected and interested public are provided with information about how NYSDEC will inform and involve them during the investigation and remediation of the Site. Information such as project contacts, document repositories, site contact lists, and CP activities are provided in the CP Plan.

8.0 REFERENCES

HRP Associates, Inc. Site Characterization Report, Mr. Cleaners 1360 East Main Street, Shrub Oak, New York. November 2012.

New York State Department of Environmental Conservation, Division of Environmental Remediation, DER-10 Technical Guidance for Site Investigation and Remediation, May 2010.

New York State Department of Environmental Conservation, Division of Environmental Remediation, Draft Brownfield Cleanup Program Guide, May 2004 (guidance updated June 22, 2010).

United States Geological Survey (USGS), 1981, 7.5 Minute Map of the Mohegan Lake, New York Quadrangle.

TABLES

TABLE 1
ANALYTICAL TESTING PROGRAM SUMMARY
REMEDIAL INVESTIGATION WORKPLAN
Mr. Cleaners - Shrub Oak Shopping Center Site
Shrub Oak (Yorktown), Westchester County, New York

Location	Number of Proposed Locations	Matrix	Parameter[1]				
			TCL VOCs	TCL SVOCs	TAL Metals	TPHC	PCBs
MS/MSD[2]	-	Soil	1	1	1	1	1
Soil Boring[3]	17	Soil	17	17	---	17	---
Monitoring Well[4]	5	Groundwater	17	5	17	---	5
Total			**35**	**23**	**18**	**18**	**6**

Key:
MS/MSD - Matrix Spike/Matrix Spike Delivery
TCL - Target Contaminant List
VOCs - Volatile Organic Compounds
SVOCs - Semi-Volatile Organic Compounds
TAL - Target Analyte List
TPHC - Total Petroleum Hydrocarbons

Notes:
1. Analyses will be performed via USEPA SW-846 methodology w/ equivalent Category B deliverable package.
2. Blind duplicate and MS/MSD samples will be collected at a frequency of 1 per 20 samples/media collected.
3. Based on the findings of the Phase I ESA proposed in this workplan, additional soil samples may be required.
4. Adding 5 proposed wells, the total number of wells onsite will be 11. The initial sampling round will include 6 existing wells; the comprehensive round of sampling will include a total of 11 wells.

TABLE 2
PROJECT GOALS FOR PRECISION, ACCURACY AND COMPLETENESS
FOR LABORATORY MEASUREMENTS
Mr. Cleaners - Shrub Oak Shopping Center Site
1336-1378 East Main Street
Shrub Oak (Yorktown), Westchester County, New York

Analytical Method	Analyses	Precision Goal[1] (RPD)	Accuracy Goal (%R)		Completeness Goal (%)
		Soil & Water	Soil	Water	
EPA 8260C	TCL SVOC	± 30	± 30	± 30	90
EPA 8270D	TCL VOC	± 30	± 30	± 30	90
EPA 6010C	TAL Metals	± 20	± 25	± 25	90
EPA 8015C	TPHC DRO	± 30	± 30	± 30	90
Water Quality Parameters	---	± 30	NA	± 30	90

Key:
RPD - Relative Percent Difference
%R - Percent Recovery
EPA - Environmental Protection Agency
TCL - Target Compound List
SVOC - Semi-Volatile Organic Compounds
VOC - Volatile Organic Compounds
TPHC - Total Petroleum Hydrocarbons
DRO - Diesel Range Organics

Notes:
1. Precision goals vary depending on the compound being analyzed; the precision goals presented are general in nature.

TABLE 3
PROJECTED GOALS FOR PRECISION, ACCURACY AND COMPLETENESS FOR FIELD MEASUREMENTS
REMEDIAL INVESTIGATION WORKPLAN
Mr. Cleaners - Shrub Oak Shopping Center Site
Shrub Oak (Yorktown), Westchester County, New York

Measurements	Units	Precision Goal	Accuracy Goal	Completeness Goal
pH	pH units	± 0.2 units	± 0.2 units	90%
Temperature	°C	± 0.2 °C	± 0.4 °C	90%
Turbidity	NTU	± 0.05 NTU	± 0.05 NTU	90%
Specific Conductivity	µS/cm at 25°C mS/cm at 25°C	± 100 uS/cm ± 0.1 mS/cm	± 100 uS/cm ± 0.1 mS/cm	90%
Dissolved Oxygen	ppm	± 0.3 ppm	± 0.3 ppm	90%
Water Level	fbTOR	± 0.01 unit	± 0.01 unit	90%

°C - degrees Celsius
NTU - nephelometric turbidity units
µS/cm - micro-Siemans per centimeter
mS/cm - milli-Siemans per centimeter
ppm - parts per million
fbTOR - feet below top of riser

TABLE 4
DATA MEASUREMENT UNITS FOR FIELD AND LABORATORY PARAMETERS
REMEDIAL INVESTIGATION WORKPLAN
Mr. Cleaners - Shrub Oak Shopping Center Site
Shrub Oak (Yorktown), Westchester County, New York

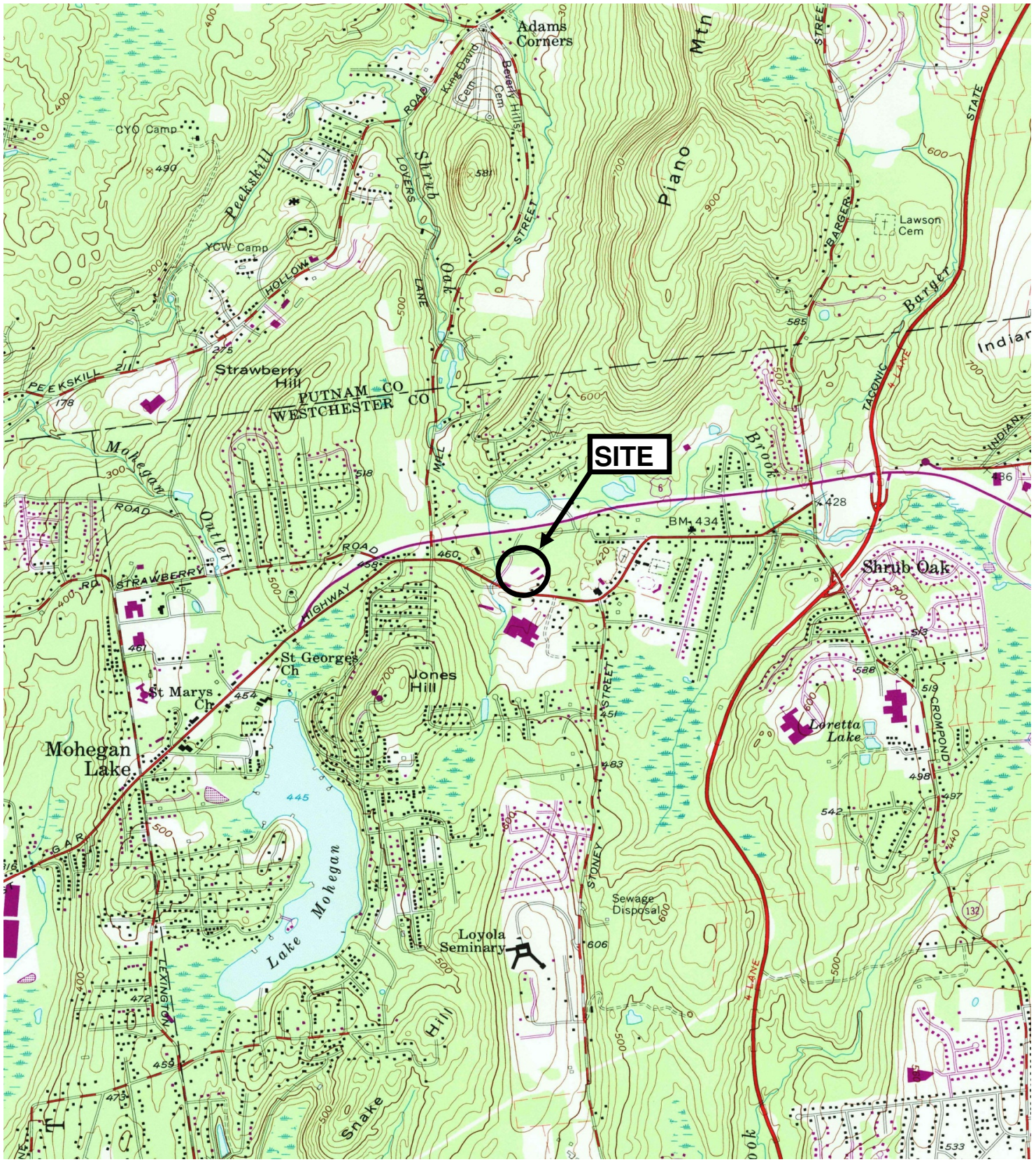
Parameter	Units
Water Level	feet below top of riser (fbTOR)
pH	pH units
Temperature	degrees Celsius (°C)
Turbidity	Nephelometric Turbidity Unit (NTU)
Specific Conductance	micro-Seimens per centimeter at 25°C (µS/cm) milli-Seimens per centimeter at 25°C (mS/cm)
Dissolved Oxygen (DO)	parts per million (ppm)
Concentration of parameter in soil sample	micrograms per kilogram (µg/kg) organic milligrams per kilogram (mg/kg) inorganic
Concentration of parameter in groundwater sample	micrograms per liter (µg/L) organic milligrams per liter (mg/L) inorganic
Hydraulic Conductivity	centimeters per second (cm/sec)
Photoionization Detector (PID)	parts per million by volume (ppmv)

TABLE 5
SAMPLE CONTAINER, VOLUME, PRESERVATION AND HOLDING TIME REQUIREMENTS
REMEDIAL INVESTIGATION WORKPLAN
Mr. Cleaners - Shrub Oaks Shopping Center Site
1336-1378 East Main Street
Shrub Oak (Yorktown), Westchester County, New York

Matrix	Parameter	Method	Container Type	Minimum Volume	Preservation	Holding Time
Soil/Sediment	TCL VOCs	8260C	Wide Mouth Glass	16 oz.	Cool to 2-4°C, Zero Headspace	14 days
	TCL SVOCs	8270D	Wide Mouth Glass	16 oz.	Cool to 2-4°C	14 days extraction/40 days
	TPHC (DRO)	8015C	Wide Mouth Glass	4 oz.	Cool to 2-4°C	14 days extraction/40 days
Groundwater	TCL VOCs	8260C	Glass vial	40 ml	Cool to 2-4°C, HCl to pH<2, Zero Headspace	14 days
	TAL Metals	6010C	Plastic	600 ml	HNO_3 to pH<2, Cool to 2-4°C	6 months/Hg 28 days

Key:
TCL - Target Compound List
VOCs - Volatile Organic Compounds
SVOCs - Semi-Volatile Organic Compounds
TAL - Target Analyte List
TPHC - Total Petroleum Hydrocarbons
GRO - Gasoline Range Organics
DRO - Diesel Range Organics
PCBs - Polychlorinated Biphenyls
°C - Degrees Celsius
ml - milliliters
oz. - ounce
HCL - Hydrochloric Acid
HNO_3 - Nitric Acid
Hg - Mercury

FIGURES



SOURCE:
UNITED STATES GEOLOGICAL SURVEY
7.5 MINUTE SERIES (TOPOGRAPHIC)
MOHEGAN LAKE QUADRANGLE 1981

EXCEL ENVIRONMENTAL RESOURCES, INC.

MR. CLEANERS, 1360 EAST MAIN STREET
SHRUB OAK, YORKTOWN, NEW YORK

FIGURE 1 - SITE LOCATION MAP

DRAWN BY: N/A	SCALE: 1:24,000	7/24/2013
CHECKED BY: RH	REVISION: 0	PROJECT #: 12229

N

LEGEND:

- PROPERTY BOUNDARY (10.73 ACRES)
- BROWNFIELD PARCEL (3.47 ACRES)
- MONITORING WELL LOCATION
- FORMER UST LOCATION AND SUSPECTED SOURCE AREA

0 100 200 400

EXCEL Environmental Resources, Inc.

Solving Environmental Problems & Creating Redevelopment Opportunities

PROJECT : MR. CLEANERS 1360 EAST MAIN STREET SHRUB OAK, YORKTOWN, NEW YORK			
DESCRIPTION : FIGURE 2 GENERALIZED SITE PLAN			
DRAWN BY : RC	SCALE : 1"=100'	DATE : 7/23/13	
CHECKED BY : MM	REVISION :	PROJECT # 12229	

EXCEL Environmental Resources, Inc.

Solving Environmental Problems & Creating Redevelopment Opportunities

PROJECT :
MR. CLEANERS
1360 EAST MAIN STREET
SHRUB OAK, YORKTOWN, NEW YORK

DESCRIPTION :
FIGURE 3
PROPOSED SOIL SAMPLE LOCATIONS

DRAWN BY : RC	SCALE : 1"=20'	DATE : 7/26/13
CHECKED BY : MM	REVISION :	PROJECT # 12229

N

LEGEND:

- PROPERTY BOUNDARY (10.73 ACRES)
- BROWNFIELD PARCEL (3.47 ACRES)
- MONITORING WELL LOCATION
- PROPOSED MONITORING WELL LOCATION

0 80 160 320

EXCEL Environmental Resources, Inc.

Solving Environmental Problems & Creating Redevelopment Opportunities

PROJECT : MR. CLEANERS
1360 EAST MAIN STREET
SHRUB OAK, YORKTOWN, NEW YORK

DESCRIPTION :
FIGURE 4
PROPOSED MONITORING WELL LOCATIONS

DRAWN BY :	RC	SCALE :	1"=80'	DATE :	7/26/13
CHECKED BY :	MM	REVISION :		PROJECT #	12229

LEGEND:

- PROPERTY BOUNDARY (10.73 ACRES)
- BROWNFIELD PARCEL (3.47 ACRES)
- MONITORING WELL LOCATION
- PROPOSED SUB SLAB VAPOR/INDOOR AIR SAMPLE LOCATION

0 80' 160'

EXCEL Environmental Resources, Inc.

Solving Environmental Problems & Creating Redevelopment Opportunities

PROJECT : MR. CLEANERS
1360 EAST MAIN STREET
SHRUB OAK, YORKTOWN, NEW YORK

DESCRIPTION : FIGURE 5
PROPOSED VAPOR INTRUSION INVESTIGATION

DRAWN BY :	RC	SCALE :	1"=80'	DATE :	7/26/13
CHECKED BY :	MM	REVISION :		PROJECT #	12229

APPENDICES

APPENDIX A

SITE CHARACTERIZATION REPORT
DATED NOVEMBER 2012 PREPARED BY HRP ASSOC.

(DISK ENCLOSED)

APPENDIX B

THIRD PARTY DATA VALIDATOR RESUME

Kim Bryant Watson
RQAP-GLP, Quality Assurance Manager & Health and Safety Officer

STONE ENVIRONMENTAL INC

Years of Experience: 32

Years of Experience at Stone: 12

Education

B.S., Environmental Engineering Technology, *cum laude*, 1981, Norwich University, Vermont

Environmental Applications of Gas Chromatographic Mass Spectrometry, 1995 Indiana University

Professional Certifications

Registered Quality Assurance Professional in Good Laboratory Practices, RQAP-GLP, April 2004 - 2017

Skills

Current Trainer of 8-Hr Refresher of the 40-Hour (29 CFR 1910.120) OSHA health and safety training for hazardous waste operations and emergency response, November, 1995-present.

Trained auditor in laboratory and field sampling and measurement activities.

Trained in environmental and agrochemical sample collection and analysis; soil water and air.

Department of Justice, expert witness in environmental chemistry principals.

Honors and Awards

Engineering Technology Award, Norwich University, 1981

Employee of the Month – April 19, 2006 and September 2012

Professional and Community Activities

Chair, NEFAP Executive Committee

National Alliance of Independent Crop Consultants – Member 2013-present

American Chemical Society

American Society for Quality

Society of Quality Assurance

2011- TNI FSMO Standard Training (AB Evaluator Training) - February 14, 2011

Contact

kwatson@stone-env.com
802-229-2196

Ms. Watson is the Quality Assurance Manager and Health and Safety Officer at Stone Environmental, Inc. in Montpelier, Vermont. She manages compliance with Good Laboratory Practices (GLP) Standards (40 CFR Part 160), the National Environmental Laboratory Accreditation Program (NELAP) quality system and ISO 17025 Standards, and Corporate Quality Assurance (QA) programs. Her responsibilities include tracking regulatory updates, supervising QA/QC internal procedures and in the field, acting as the Quality Assurance Unit (QAU) for EPA related studies. She is responsible for developing and implementing quality systems for company processes both project and non-project related. She supports investigations for soil, air groundwater and surface water studies, database management, and report and quality assurance project plan (QAPP) writing.

Ms. Watson has over 32 years of experience in all phases of production and laboratory procedures, quality control and quality assurance, QA management and project management in an environmental analytical laboratory encompassing the EPA regulated environments (GLP, RCRA and CERCLA). She has over 19 years of experience in private quality assessment consulting, data and method validation, environmental project planning and coordination, field and laboratory audits, third party review, and single and double blind performance testing programs.

EMPLOYMENT HISTORY

Stone Environmental Inc., Montpelier, Vermont
Quality Assurance Manager, 10/2001 – Present
Health and Safety Officer, 2004-Present

Manages compliance with Good Laboratory Practices (GLP) and other Quality Assurance (QA) programs such as OECD GLPs. Manages and tracks regulatory requirements associated with The National Environmental Accreditation Program (NELAP), National Environmental Field Activities Program (NEFAP) under TNI (The NELAC Institute), and ISO 17025 Quality Standards. Supervises Stone's QA/QC internal procedures, and performs both internal and external audits. 2013 Chair, NEFAP Executive Committee.

Acts as the Quality Assurance Unit (QAU) for EPA related environmental and agrochemical studies. Responsible for reviewing outgoing protocols/reports for GLP compliance. Assesses field activities assessors for compliance to NEFAP standards and ISO 17025 standards.

Responsible for providing assistance in writing and reviewing Standard Operating Procedures (SOPs). Manages corporate quality practices and developed the Quality Management Plan (QMP). Quality Systems Manual (QSM) for Field Sampling and Analysis

Responsible for developing and implementing quality systems for company processes both project and non-project related. Approves Site Specific and Generic Quality Assurance Project Plans (QAPPs).

Administer the Corporate Health and Safety Management Program, Act as a resource for employees of the company and manage the Safety Committee. Review all accident and injury reports and report to Safety Committee. Review and approve project-specific site Health and Safety Plans for field investigations.

Assists in conducting all aspects of pesticide fate and transport studies under FIFRA groundwater monitoring studies including database management and report writing. She has experience in performing modeling scenarios in CXTFIT2, SETBACK, PRZM3, PE5 and EXPRESS.

Project Management in QA Services with master service agreements with Phoenix Chemistry Services and other consultants which includes all Tiers of data validation, data assessment, data production and auditing (laboratory audits, facility audits). Responsible for the marketing and sales of Stone's QA services such as data validation and outside auditing and field inspections.

Quality Assurance Officer for the mobile laboratory operations and supports investigations for soil, groundwater and surface water studies, database management, and report writing.

Administers and facilitates the corporate health and safety program. Updates and reviews the H&S Manual annually. Trains all new and existing employees on H&S policies and procedures.

Severn Trent Laboratories, Colchester, Vermont
Quality Assurance Manager, 6/1997-10/2001

Responsible for the overall laboratory quality assurance. Responsible for the continuous development, documentation of QA procedures dealing with the day to day operation of the laboratory, and the implementation of the QA Program for inorganic and organic analyses of environmental samples.

Trillium, Inc. Home Office, Montpelier, Vermont
Quality Assessment Manager, 4/1995-6/1997

Reviewed and validated CLP-type data packages generated in support of sampling analysis program at clients' industrial/commercial plant sites. Validation was conducted in accordance with EPA's National Functional Guidelines, regional guidelines, other agency procedures, method specific standard operating procedures, and professional judgment as appropriate.

Responsibilities included compilation and evaluation of site data from various on-site analytical programs. Gained experience in design and development of an on-site analytical laboratory.

Upon request from USEPA Region I, provided extensive review and comments on Parts I and II of the Region I, EPA-New England Data Validation Functional Guidelines for Evaluation Environmental Analyses.

Facilitated education seminars on environmental chemistry for Engineers and Lawyers.

Inchcape, Testing Services, Aquatec Laboratory, Colchester, South Burlington, Vermont
GC/MS Data Review Group Leader, Chemistry Project Director, QA/QC Data Review Specialist, Extraction Lab Technician, 11/1983-4/1995

Responsible for a group of seven people working on the review of data, publication, and mass spectral interpretation. Analytical experience in the VOA HP5971A MSD GC/MS Systems.

Project Director for USEPA Special Analytical Service Solicitations Contracts, CLP government contracts, and other private client contracts.

LCIC (Love Canal) Habitability Study; reviewed final data deliverables and responsible for daily electronic upload of GC/MS analytical data to project bulletin board.

PCB Study, New Bedford, MA: Performed review and quality control of GC/MS analysis for the development of analytical procedures published in "Application of a Mixed-Method Analytical Scheme for Analysis of PCB in Water

and Sediment Samples from a Polluted Estuary," Richard A. McGrath, William Steinhauer and Siegfried Stockinger (1987).

Vermont Agency of Environmental Conservation Solid Waste Program, Montpelier, Vermont
Air and Solid Waste Technician, 1981-1982

Responsible for the environmental engineering design of solid waste and waste disposal facilities and water quality monitoring at the solid waste facilities throughout the State of Vermont.

RELATED PROJECT EXPERIENCE

Data Assessment Services, Data Validation, Site Chemist. Watermark Environmental, Inc. 2001-present, Project No. 082065 and 011234.

Silresim Site Data Validation and Permit Reporting.

GLP Field Studies, AgroChemical Companies, QAU , 2001-Present, 95410, 97154, 97155, 97255, 98257, 991106, 001124, 001162, 001198, 011206, 021281, 021292, 021352, 031385, 031387, 031454, 031462, 031475, 061763, 082018, 082045, 102317, 102324, 112549, 13-085.

Field Inspections, sampling, instrumentations and applications Multiple Sites and Multiple Studies, Indiana, Georgia, PEI, Canada, 2013-2014

EPA GLP-Quality Assurance Unit, auditor laboratory and field sampling. Reports and Reporting.

Modeling scenarios in CXTFIT2, SETBACK, PRZM3, PE5 and EXPRESS., AgroChemical Companies, 2008-Present, 102434, 102364, 112468, 12-194.

Assists in conducting all aspects of pesticide fate and transport studies under FIFRA groundwater monitoring studies including database management and report writing. Performing modeling scenarios in PRZM3 and PE5.

Data Validation Services, Gradient Corporation, 112590

Data review and validation services. Manual data validation organic and inorganic analyses.

Data Validation Services, Watermark, Inc. HTRW, Ipswich Antennae Site, 12-106

Data Validation Services, eQAPP preparation and writing, ADR electronic and manual data validation organic and inorganic data sets.

Data Validation Services, PW Grosser, Various Sites, 082074, 13-152

Data review and validation services. Manual data validation organic and inorganic analyses.

Data Validation Services, Phoenix Chemistry Services, Various Sites, 12-093

Data review and validation services. Manual data validation organic and inorganic analyses.

Project Manager for Electronic data deliverables for FIU. Database system setup, Chemical Company, 12-162

Analytical Raw Data and Final Analytical Report Inspection for Spray Drift Study, Bayer CropScience, 14-043.

Field Inspections, sampling, instrumentations and applications Multiple Sites and Multiple Studies, Indiana, Georgia, PEI, Canada, 2013-2014

PUBLICATIONS AND PRESENTATIONS

Watson, Kim. Gaynor, Ph.D., Deborah, 2013, Presented – NEMC, Legal Defensibility of Data. How to Choose a Laboratory that Will Meet Your Data Assessment and Testing Needs?

Watson, Kim. 2013. TNI/NELAP – Presented / Article TNI-Newsletter, Organizations: What Are the Benefits of Accreditation?

Watson, Kim. May 2013. OELA – Presented TNI NEFAP- Field Sampling & Measurement Organization Accreditation Program

Watson, Kim & SQA EPA GLP Specialty Group. February 2005. GLP Inspection Experiences from the Regulated Communities Perspective. 2005 SQA World Conference.

Watson, Kim. April, 2004. The New NELAC and ELAB Update. Presented to SQA Annual Meeting.

Watson, Kim, 2004. Quality Assurance Training. Data Integrity Procedures and Ethics and Laboratory Quality Assurance. Full Day Workshop for ITLA (Independent Testing Laboratory Association), New England.

Watson, Kim. 2003. Manual Integration Basics, Techniques in Manual Integration. Presented to NY&PA AAEL August 2003

Watson, Kim. 2002. GOT ETHICS, Ethics Training, Fraud Prevention and Detection. Presented to NERCSQA November 2002.

PROFESSIONAL AND COMMUNITY ACTIVITIES

2013-NAICC –Quality Systems

2012-2013 NEMC/TNI, Session, Chair

2011-2010 SQA 27th 26th Annual Meetings

2006 - Uniform Federal Policy for Quality Assurance Project Plans Course #06042

TNI FSMO Standard Training (AB Evaluator Training): February 14, 2011. Two years of experience implementing an accreditation program. Two years' experience developing or participating at a managerial level in FSMO or related accreditation programs. Perform on-site evaluation of an Accreditation Body (AB).

2006-Present, Corresponding Secretary, East Montpelier Planning Commission Member (Elected)

2010-Present, East Montpelier Development Review Board Member (Appointed)

Norwich University Engineering Society

President and Co-Founder of Chi Beta Chapter of Tau Alpha Phi

ADDITIONAL EDUCATION

GLP Training, Quality System Consultants, Inc. Patricia Royal, M.S.;D.A.B.T., QAP/GLP Registered, January 2002

Gearing Up for NELAP, National Laboratory Training Network, November 1998

Management Problems of the Technical Person in a Leadership Role, Fred Pryor Seminar, September 1997.

Supervisory Skills in Positive Discipline, October, 1997

Water Environment Federation, "Environmental Labs: Testing the Waters", Cincinnati, Ohio, August 13-16, 1995.

PACS Training Course in Mass Spectral Interpretation, May 4-6, 1994

Inchcape Managerial Skills Training Workshop I - April 12-13, 1993, Training Workshop II - July 7-8, 1994

Review Trail

Employee review: KBW/06-2014

Marketing review and/or edit: Initial/date

Instructions

Keep all headers in this document, even if the section contains no information. This document is intended to be a master file that is cleaned up for proposals and customer-facing purposes.

If information from the text box (left, page 1) is too long, add information to the end of the document, in the applicable "additional" sections.

Update this document every year as part of your employee review. Be sure to correct "years of experience" and add all major projects you've worked on in the past year, as well as any new publications or presentations.

Add your initials and the date above once you have updated the document, so we know when content was last reviewed by you.

Print the full document, sign and date it, and add it into your training file as part of your annual review process.

E-mail Maureen and Kim when you have done the above. (Thank you!)

APPENDIX C

HEALTH AND SAFETY PLAN

HEALTH AND SAFETY PLAN

MR. CLEANERS - SHRUB OAK SHOPPING CENTER SITE
1336-1378 EAST MAIN STREET
SHRUB OAK (YORKTOWN), WESTCHESTER COUNTY, NEW YORK

PREPARED FOR:

SHRUB OAK PARTNERS, LLC
SHRUB OAK (YORKTOWN), WESTCHESTER COUNTY, NEW YORK

PREPARED BY:

EXCEL ENVIRONMENTAL RESOURCES, INC.
111 NORTH CENTER DRIVE
NORTH BRUNSWICK, NEW JERSEY 08902
(732) 545-9525

JULY 2013

HEALTH AND SAFETY PLAN
Mr. Cleaners - Shrub Oak Shopping Center Site
1336-1378 East Main Street
Tax Parcel: 16.09-2-14
Shrub Oak (Town of Yorktown), Westchester County, New York

HEALTH AND SAFETY PLAN
Mr. Cleaners - Shrub Oak Shopping Center Site
1336-1378 East Main Street
Tax Parcel: 16.09-2-14
Shrub Oak (Town of Yorktown), Westchester County, New York

LIST OF TABLES

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HEALTH AND SAFETY PLAN
Mr. Cleaners - Shrub Oak Shopping Center Site
1336-1378 East Main Street
Tax Parcel: 16.09-2-14
Shrub Oak (Town of Yorktown), Westchester County, New York

1.0 INTRODUCTION

This Health and Safety Plan (HASP) has been prepared by Excel Environmental Resources, Inc. (Excel) on behalf of Shrub Oak Partners, LLC (Shrub Oak Partners) for implementation of Remedial Actions to address chlorinated volatile organic compounds (CVOCs) in soil and groundwater atthe Mr. Cleaners – Shrub Oak Shopping Center Site, 1336-1378 East Main Street Street in Shrub Oak (Town of Yorktown), Westchester County, New York (hereafter referred to as the subject property or Site). A Site Location Map is provided as Figure 1 and a Generalized Site Planis provided as Figure 2.

This HASP includes provisions to ensure the safe performance of the work tasks and includes guidelines for air quality monitoring, safe work practices, equipment safety, and an outline of the requirements for health and safety training and medical surveillance required for project team members, including subcontractors, involved in subsurface activities, specifically the potential for encountering impacted soils, groundwater,or unknown hazards during the investigationat theSite. This HASP also includes a site-specific emergency and/or contingency response plan to be implemented in the event of an emergency and which is an integral part of the safety program for the Site activities.

This HASP was prepared in accordance with the applicable requirements of the Occupational Safety and Health Administration (OSHA), Environmental Protection Agency (EPA), and the New York State Department of Environmental Conservation (NYSDEC). The HASP shall not be modified without the prior approval of the Project Manager or, in his/her absence, the Site Field Supervisor.

This document must be easily accessible on-site, and its location must be discussed in the tailgate safety briefings.

2.0 SITE CHARACTERIZATION AND HAZARD ASSESSMENT

The subject property is located in a mixed commercial/residential section of Shrub Oak (in the Town of Yorktown) at 1360 East Main Street. Undeveloped land is located adjacent to the subject property to the north. The subject property is bordered by Wynwood Oaks Senior Living to the east, a parking lot to the west, and residential houses and Lakeland Senior High to the south. East Main Street, New Road, and Mountain Brook Road are located to the south, west, and east, respectively.

2.1 Operational History

The Site is comprised of the Mr. Cleaners tenant space within the Shrub Oak Shopping Center and the associated parking area. The subject property is reported to have been in operation as a dry cleaner for at least the last 30 years, and has been occupied by its current tenant since 1999.

2.2 Summary of Previous Site Investigations

On December 31, 2010 the NYSDEC was notified of a release from a 550-gallon No. 2 fuel oil aboveground storage tank (AST). The AST was located behind the Mr. Cleaners dry cleaning operation and was utilized to heat the Mr. Cleaners tenant space. NYSDEC emergency response contractor Tri-State Environmental Services, Inc. (Tri-State) was contacted to respond to the reported release. According to Tri-State, product leaked from a seam at the bottom of the AST to the asphalt parking lot surface and impacted a sewer manhole.

The dry-cleaner tenant arranged for a temporary No. 2 fuel oil AST to be installed to provide heat to the building. The spill appeared to be confined to the asphalt parking lot area and sewer manhole, which later was determined to discharge to the sanitary sewer. The product was observed along the edge of the building behind the A&P compactor dumpster. Once the compactor dumpster was moved to allow for continued assessment and remediation, fuel oil was observed to be seeping into and penetrating below the asphalt pavement. According to Tri-State and onsite NYSDEC responders, no surface water was impacted as a result of the release.On January 13, 2011 the AST was cut, cleaned and removed from the property.

During amarkout being conducted to locate underground utilities, an underground storage tank (UST) was discovered adjacent to the AST location.

On January 20, 2011 the initial spill area was excavated. Based on their field observations, Tri-State indicated that most of the impacted soil seemed to be alongside the building wall. The UST was also uncovered during the excavation activity.One soil sample was collected from within the excavation area along the north wall at a depth of approximately 2.0-3.0 feet below ground surface (bgs). Review of the analytical results indicated that CVOCsTetrachloroethene (PCE) at 160 parts per million (ppm) and Trichloroethene (TCE) at 5.1 ppm were reported above the NYSDEC Soil Cleanup Criteria. The excavation was extended to the top of the UST and the vent pipe was cut at

the top of the tank. A section of the top of the UST was opened and a mixture of product/water/sludge was observed within the UST.

During a NYSDEC and Tri-State onsite meeting, the UST ends and the northern side of the UST were uncovered. It was determined that the UST was 1,000 gallons in size and contained approximately 100 gallons of sludge. Since it was determined that the UST was leaking, the NYSDEC directed the removal of the UST and a new spill number designated for this UST.

Three monitoring wells were installed in the area of the spill to evaluate soil and groundwater quality associated with the No. 2 fuel oil spill. Depth to groundwater ranged from 18 to 20 feet below ground surface. Analytical data from an initial round of groundwater sampling indicated that CVOCs were reported in all three monitoring wells. The highest CVOC concentrations were reported at well location MW-2 with cis-1,2-dichloroethene (c-DCE) detected at a concentration of 8,700 parts per billion (ppb), TCE detected at a concentration of 750 ppb, and PCE detected at a concentration of 640 ppb.

Following the proper offsite disposal of fuel oil-contaminated soil and the UST, the NYSDEC retained HRP Associates, Inc.(HRP) and approved their workscope to conduct a Site Characterization Investigation including the installation and sampling (two rounds) of six overburden monitoring wells designated as MW-1 through MW-6.

HRP conducted the first groundwater sampling round and CVOCs were reported in three (MW-1 through MW-3) of the six wells above NYSDEC GA Criteria. GA Criteria pertain to groundwater that is considered a "Source of Drinking Water", provided in the June 1998 Division of Water Technical and Operational Guidance Series (1.1.1). The second round of groundwater sampling indicated the results to be consistent with the exception of CVOCs being reported at MW-6 at concentrations greater than the GA Criterion. Also, the data indicate an overall decreasing CVOC concentration trend at MW-1 through MW-3 as compared to the first round of data. Based on Excel's review of the available data, vertical delineation down to the till aquitard unit in the area of monitoring wells MW-5 and MW-6 is warranted.

A summary of key compounds that have been reported at the Site in groundwater and soil are included in Table 1.

2.3 Health Standards

Permissible Exposure Limits (PELs) and Threshold Limit Values (TLVs) refer to the concentration of substances and represent conditions under which it is believed that nearly all workers may be repeatedly exposed day after day without adverse health effects, based on an 8-hour daily/40-hour workweek. The PELs are standards enforced by OSHA and the TLVs are guidelines recommended by the American Conference of Governmental Industrial Hygienists (ACGIH). The National Institute of Occupational Safety and Health (NIOSH) also has guidelines for exposure limits, including the Immediately Dangerous to Life and Health (IDLH) and Short Term Exposure Limit (STEL). These guidelines are based upon the best available information from industrial experience, experimental human, and/or experimental animal studies, or a combination of the three. The health standard guidelines for the contaminants of concern are included in Table 2.

Because of the wide variation in individual susceptibility, a small percentage of workers may experience discomfort from some substances at concentrations below the recommended IDLHs, STELs, PELs and TLVs. As a best management safety practice, the strictest guidelines will be used for determining worker protection levels during field activities.

2.4 Physical Controls

The existing soil and groundwater quality data indicate that the key compounds of potential concern in soil and groundwater include Volatile Organic Compounds (VOCs). Several of these compounds are readily monitored in the field with real-time instrumentation and visual field observation can also be used to aid in the identification of oil-stained soils or existence of hazardous materials. Potential exposure to these materials occurs primarily through inhalation, direct contact, skin absorption, ingestion, and inhalation of soil particulates as dust.

The following work is anticipated at the subject property:

- Monitoring Well Installation;
- Groundwater Sampling;
- Soil Sampling;
- Drilling; and
- Vapor Sampling.

Any aboveground, non-intrusive activities without risk for exposure to contaminants require workers to adhere to general OSHA construction safety regulations. Workers performing aboveground, non-intrusive activities are required to work in the specified minimum level of personnel protection for construction activities which is **Level D**. Level D personnel protection is defined in Section 5.1 of this HASP.

Only authorized individuals will be permitted in the work area during performance of subsurface activities. These authorized individuals must have completed an OSHA training course per the OSHA Hazard Communication Standard 29 CFR 1910.120 and 29 CFR 1926 Subpart "P" and must have completed an eight hour Refresher within the last year. Workers onsite during

subsurface activities must also follow general OSHA construction safety regulations. Based on the existing information regarding site conditions, workers performing subsurface activities are required to work in a higher level of personnel protection which is **Modified Level D.** Modified Level D personnel protection is defined in Section 5.2 of this HASP.

The primary means for controlling exposure to the contaminants of concern identified in soil and/or groundwater during performance of subsurface activities is through air quality monitoring, minimization of skin contact and ingestion, and employing strict adherence to dust control protocol. Physical controls will therefore be established for field work at the subject property during subsurface activities. Physical controls are summarized as follows:

- To minimize the potential for ingestion, good hygiene practices will be discussed and reinforced on a daily basis and materials will be provided in the decontamination and break zones for all personnel to wash hands and faces prior to taking breaks. In addition, eating, drinking, and smoking will be strictly prohibited in any of the work areas.

- To minimize the potential for exposure through inhalation, routine air quality monitoring will be conducted and dust control measures will be utilized during all soil sampling, excavation, and other soil handling activities. Where necessary, water misting will be used to control dust generation during subsurface soil excavation as discussed in Section 4.2.

2.5 Air Monitoring

In addition to physical controls, air monitoring will be conducted as an added precaution during work activities, test pit/trenching excavation, and soil sampling activities to minimize the potential for exposure through inhalation. Since the potential exists for VOCsor fugitive dust to be encountered during work activities, air monitoring will include the use of a Photoionization Detector (PID) and/or a Multi 5 Gas Meter, and a DataRam.

During all subsurface field activities, air quality monitoring will be conducted for the following parameters using the specified instrumentation:

- A PID (Rae Systems Model MiniRae or equivalent) will be used to monitor ambient air VOC levels.

- A DataRam (MIE pDR-1000 or equivalent) will be used to monitor particulates (i.e. fugitive dust) during soil excavation activities.

Each field monitoring instrument will be calibrated in the field at the beginning of each day and, as applicable, background readings will be taken upwind of the work area. Air monitoring will be conducted at the beginning of every shift, at every change in work procedure, and periodically during daily field work. If confined space entry is required, combustible gas monitoring will always be the first step in the sequence of monitoring steps.

VOCs -The following outlines the action level guidelines for the VOC air monitoring data:

- In the unlikely event that the 15-minute running average total VOC concentration at the downwind perimeter of the Site (equivalent to the Exclusion Zone boundaries), or individual Work Area, exceeds five ppm above ambient background concentrations, work activities will be temporarily halted and air monitoring will continue. If the total VOC level readily decreases (per instantaneous readings) below five ppm over ambient background, work activities will resume with continued monitoring;
- If total VOC levels at the downward perimeter of the Site, or individual Work Area, persist at levels above five ppm over ambient background but less than 25 ppm, work activities will be halted, the source of the vapors identified, corrective actions taken to abate the emissions, and monitoring continued;
- Work activities will then resume if the 15-minute running average total VOC concentration is below five ppm in comparison to ambient background concentrations 200 feet downwind of the Site or Work Area, or half the distance to the nearest potential receptor or residential/commercial structure (whichever is less, but in no case less than 20 feet); and
- If the 15-minute total VOC concentration at the downward perimeter of the Site, or individual Work Area, exceeds 25 ppm, work activities will be discontinued.

Particulates (i.e. fugitive dust) – The following outlines the action level guidelines for the particulate monitoring data:

- In the unlikely event that the downwind PM-10 particulate level is 100 micrograms per cubic meter (ug/m^3) greater than the ambient background, or upwind perimeter levels, for the 15-minute period or if airborne dust is observed leaving the Site, or the Work Area, then additional dust suppression techniques will be utilized;
- Work will continue with the additional dust suppression techniques provided that the downwind PM-10 particulate levels do not exceed 150 ug/m^3 above the upwind levels and there is no visible dust migrating from the Site and/or individual Work Area;
- After implementation of the additional dust suppression techniques, if the downwind PM-10 particulate levels are greater than 150 ug/m^3 above the upwind perimeter levels, work will be stopped and work activities will be re-evaluated; and
- Work will resume if the additional dust suppression measures effectively reduce the downwind PM-10 particulate concentration to within 150 ug/m^3 of the upwind perimeter levels and prevent visible dust migration.

If the aforementioned action levels are equaled or exceeded, work will stop immediately and personnel will move upwind of the work area. The area will be allowed to vent for a minimum of five minutes. At the end of the five-minute waiting period, air quality measurements will be recorded again. If the measured concentrations continue to exceed the action levels, the fieldwork may be postponed until the situation has been re-evaluated, the source of the material is determined and new health and safety guidelines are established.

3.0 WORK AREAS

During all subsurface field activities (e.g., test pit/trenching excavation, soil sampling, soil and debris handling, and backfilling) each primary work area will include three zones: the work zone, the decontamination zone, and the support/break zone. Each of these zone designations is further discussed below.

3.1 Work Zone

The work zone includes the immediate area of activity plus a minimum of 10 feet (i.e. during soil excavation the work zone includes a minimum of a 10-foot radius around the heavy equipment and the excavation). All on-site project team personnel will use the proper personnel protective equipment designated for the specific task while working in any one of the work zones. As specified in Section 2.3, the specified level of personnel protection for the site is **Level D** for abovegrade, non-intrusive work and **Modified Level D** for all subsurface activities.

Since there may be several subsurface field activities in progress concurrently, the limits of each work zone will be clearly marked by hazard tape and/or hazard cones, as appropriate. The personnel within the work zone are responsible for restricting access to unauthorized personnel (e.g. client representatives, site visitors, unauthorized contractor or vendor personnel, or pedestrian traffic) during the performance of the work. Field personnel must use judgment to determine if work should be stopped until unauthorized personnel leave the work area.

3.2 Decontamination Zone

The decontamination zone will be located in an upwind area adjacent to the perimeter of the work zone during performance of all subsurface activities. Upon exiting the work zone, all personnel, small hand tools, sampling equipment, and air monitoring instrumentation will be decontaminated in this area prior to entering the support/break zone. Air monitoring, first aid and emergency response equipment, including a fire extinguisher, will be staged in the decontamination zone. **Decontamination procedures will be in accordance with NYSDEC requirements**.

Large tools, equipment, and heavy machinery will be decontaminated using a high pressure steam cleaner and tap water, as appropriate. Decontamination will be conducted at a temporary decon location designed to contain the washwaters. The decon location will be designated in the field. The location will vary depending upon the size of the equipment and the location of the field activity, and must be pre-approved by the Site Manager prior to set-up and use.

Since cleaning solvents and surfactants may be used for decontamination of sampling equipment in accordance with NYSDEC requirements, washwaters generated from the decontamination of sampling equipment will be collected in 5-gallon buckets and/or 55-gallon drums, as appropriate, and transferred to an on-site storage area for subsequent sampling prior to determining final disposition options.

3.3 Support/Break Zone

The support/break zone is the area adjacent to the decontamination zone, also located upwind of the work zone for all subsurface activities. This area can be used for personnel who are not directly involved in the field work for purposes of observation and additional technical support or as a sampling equipment preparation area, field support vehicles parking area, etc. Support/break zone personnel are responsible for alerting proper agencies in the event of an emergency. The emergency telephone numbers are summarized in Table 3 and the map showing the evacuation route to Hudson Valley Hospital Center in Cortlandt Manor, New York is provided as Figure 3. These documents will be made available in the support/break zone.

4.0 SAFE WORK PRACTICES

4.1 General

General safe work practices will be conducted in accordance with the following procedures;

- Protective clothing and equipment will be used as needed during the various field activities. The levels of protection are specified depending upon the degree of potential hazard for both above grade and subsurface activities as detailed in Section 5.0 of this HASP.

- All information regarding work to be performed, emergency procedures, and health and safety hazards will be reviewed before the work begins during a daily Tailgate Safety Meeting. The Tailgate Safety Meeting Form provided in Appendix A will be completed by the contractor's Site Supervisor each day. No work will be performed prior to completion of the Tailgate Safety Meeting.All contractor and subcontractor personnel must review and sign the Tailgate Safety Meeting Form before they are permitted to work. The Tailgate Safety Meeting will be used to discuss:

    - The work scheduled for the day,
    - The health and safety considerations for that particular day's activities,
    - The protective equipment and other materials necessary to perform the work,
    - The potential physical and chemical hazards associated with the work, **including heat and cold stress,**and
    - The procedures to be used to signal an emergency or an injury, as well as any questions on the work scope and/or safety issues.

- Operators of trucks and heavy equipment used onsite will be properly trained in the inspection and operation of their equipment. The contractor's Site Supervisor will be responsible to check the proficiency of each of their operators.

- One team member will provide guidance to the equipment operator using pre-established hand signals. Audio backup alarms will be utilized on all heavy equipment onsite. Perimeter barricades will be placed around equipment used in a fixed location.

- A fire extinguisher will be kept onsite during all field activities.

- Smoking will not be permitted on the premises except in the support areas or other specified locations. Any employee not willing to comply with this procedure will be dismissed from the project.

- No unapproved electrical equipment for hazardous atmospheres will be permitted in areas where a flammable atmosphere exists. Static ignition sources will be identified and eliminated by the use of bonding and grounding techniques.

- A complete first-aid kit, eye wash, and wash station will be readily available onsite. If a serious injury occurs, the local hospital and ambulance will be summoned to evacuate the injured person.

Note that during all subsurface activities, only authorized personnel will be permitted in the work area. These authorized individuals must have successfully completed an OSHA training course per the OSHA Hazard Communication Standard 29 CFR 1910.120 and 29 CFR 1926 Subpart "P" and must have completed an 8-hour OSHA Refresher within the last year.

4.2 Well Installation

Monitoring well installation will be conducted in accordance with the following procedures:

- Before any subsurface drilling, the existence and location of underground piping, electrical equipment and gas lines will be determined. A utility mark-out will be conducted and existing drawings and site plans will be reviewed.

- As specified in Sections 3.1 and 5.2 of this HASP, **Modified Level D protective gear** will be worn for all subsurface activities and sampling activities. Depending upon site conditions, other protective gear determined appropriate for a specific work task or work area will also be worn as directed by the Site Manager.

- A clearly marked work area will be established around the work area using hazard cones and/or tape prior to the commencement of subsurface activities. Workers should be aware of vehicular traffic in areas located proximate to roadways or driveways. Workers will wear brightly colored clothing or a traffic vest under such conditions.

- In areas where an unknown subsurface materials and/or objects are encountered (specifically during soil excavation activities), the inspecting geologist, engineer, and/or support personnel will stand outside the immediate area in an upwind location and air quality monitoring will be conducted by the Site Manager while the soils are removed. Soil removal will proceed with care and no one will enter the immediate area until the area has been cleared for **Modified Level D** entry by the Site Manager or her/his designee.

- Field operations will be suspended if the airborne PID concentration exceeds five ppm of total VOCs on the PID in the immediate area (a one-foot radius) of the point of soil boring. The Excel Site Safety Officer will take the necessary actions as outlined in Section 2.5 of this HASP.

- Dust generation will be minimized during all soil boring or other soil handling activities. Sufficient sources of water will be made available for application of water mist to control dust generation. If soil stockpiling is required, all stockpiled soils will be kept moist to minimize dust. Stockpiles will be covered with plastic sheeting if they remain onsite for more than four hours prior to transport and disposal.

4.3 Groundwater Sampling

Monitoring well sampling will be conducted in accordance with the following procedures:

- As specified in Sections 3.1 and 5.2 of this HASP, **Modified Level D protective gear** will be worn for all subsurface activities and sampling activities. Depending upon Site conditions, other protective gear determined appropriate for a specific work task or work area will also be worn as directed by the Site Manager.

- A clearly marked work area will be established around the work area using hazard cones and/or tape prior to the commencement of groundwater sampling activities. Workers should be aware of vehicular traffic in areas located proximate to roadways or driveways. Workers will wear brightly colored clothing or a traffic vest under such conditions.

- Field operations will be suspended if the airborne PID concentration exceeds five ppm of total VOCs on the PID in the immediate area (a one-foot radius) of the point of soil sampling. The Excel Site Safety Officer will take the necessary actions as outlined in Section 2.5 of this HASP.

- All purge waters will be containerized until a determination can be made on proper handling and disposal requirements for the purge water.

4.4 Soil Sampling

Soil sampling will be conducted in accordance with the following procedures:

- **Modified Level D protective gear** will be worn for all subsurface activities and sampling activities. Depending upon Site conditions, other protective gear determined appropriate for a specific work task or work area will also be worn as directed by the Site Manager.

- A clearly marked work area will be established around the work area prior to the commencement of sampling activities. Workers should be aware of vehicular traffic in areas located proximate to roadways or driveways. Workers will wear brightly colored clothing or a traffic vest under such conditions.

- Field operations will be suspended if the airborne PID concentration exceeds five ppm of total VOCs on the PID in the immediate area (a one-foot radius) of the point of soil sampling. The Site Field Supervisor will take the necessary actions as outlined in Section

2.5 of this HASP.

4.5 Drilling

Employees should minimize their time working near the drill rig. In fact, a non-driller employee should only be near the rig when his or her work activity at that time requires it. During the tailgate safety meeting, all employees should be made aware of all emergency cut-off switches for the drill rig. The driller employees should do most of the work required on or near the drill rig, even clearing debris from the hole.

It is the responsibility of the Drilling Contractor to ensure the following safe work practices:

- Employees should NEVER be on the MAST when the drill is in motion or when the driller is making an initial "pull" on the rods.Note: Many drill rigs manufactured today, e.g. auger rigs, do not ever requirethat an employee be on the mast when it is "towered up."

- Neither stepladders nor any other method should be used to "access" any rotating part while the drill is in operation. Note: It is strongly recommended that such climbing be completelyavoided.It is the responsibility of the subcontractor to make sure that the drillis never operated when anyone is on or near the equipment or in a locationother than the normal work platforms that the driller and helper would occupy.In fact, the helper should only be near the rig when his or her work activity atthat time requires it. During other times, the helper should be performing his orher tasks in an area away from the drill.

- **Visitors to the drill site should never be allowed near the drill when it is being operated**. Also, any visitor to the drill site must be dressed in appropriate attire to include proper Personal Protective Clothing. It is the operator's responsibility to keep unauthorized individuals away from the equipment.

This section is not intended to address every possible situation which may arise, or every possible hazard which may come to exist during drilling activities. It is the sole intent of this section to address some of the most common safety concerns which should be considered while performing drilling field work.

4.6 Heat Stress

For each day of work, one or more of the following measures will be used to help control heat stress as needed:

- An adequate on-site supply of liquids will be provided to replace lost body fluids. Replacement fluids can be a 0.1 percent salt-water solution, commercial mixes such as Gatorade or Powerade, or a combination of these with fresh water.

- Establishment of a work regimen that will provide adequate rest periods for cooling down.

- Provide cooling devices such as vortex tubes or cooling vests which will be worn beneath protective garments, as appropriate.

- Take breaks in a cool area.

- Inform employees of the importance of adequate rest, acclimation and proper diet in the prevention of heat stress.

Symptoms of heat stress may include **fatigue; irritability; headache; faintness; weakness, rapid pulse; shallow breathing; cold, clammy skin; profuse perspiration.** Heat related problems are further discussed below:

- **Heat Rash** - caused by continual exposure to heat and humid air, and aggravated by chaffing clothes. Heat rash decreases a person's ability to tolerate heat as well as becoming a nuisance.

- **Heat Cramps** - caused by profuse perspiration with inadequate water intake and chemical electrolyte imbalance. This results in muscle spasms and pain in the extremities and abdomen.

- **Heat Exhaustion** - increased stress on various organs to meet increasing demands to cool the body which will result in the following signs and symptoms: shallow breathing; pale, cool, moist skin; profuse sweating; dizziness; and lassitude.

- **Heat Stroke** - the most severe form of heat stress which requires immediate treatment by cooling the body or death may result. Signs and symptoms include red, hot, dry skin; no perspiration; nausea, dizziness and confusion; strong, rapid pulse; and coma.

If symptoms of heat stress are observed, the following procedures will be implemented:

- Instruct victim to lie down in a cool, shaded area, or air-conditioned room and elevate feet.

- Massage legs toward heart.

- Give cold salt water (1/2 teaspoon salt to 1/2 glass of water) or cool, sweetened drink, (especially not iced tea or coffee) every 15 minutes until victim recovers.

- **DO NOT** let victim sit up, even after feeling recovered. Victim should rest for a while longer.

4.7 Cold Stress

This section applies to work which may be conducted for this project in the late fall and/or winter months. Workers should be protected from exposure to extreme cold temperatures so that the body temperature does not fall below 36 degrees Celsius (98.6 degrees Fahrenheit). Lower body temperature may result in reduced mental alertness, irrational decision making or loss of consciousness.

When the ambient air temperature is below 40 to 45 degrees Fahrenheit, workers must wear warm clothing, such as whole-body thermal underwear, wool socks, insulated gloves and knit caps. If the clothing of the worker may become wet on the job site, an outer impermeable layer should be worn. When the worker's underclothing becomes wet, the worker will change into dry clothing.

If symptoms of cold stress are observed, the following procedures will be implemented:

- Victim will be moved into a warm room as soon as possible.
- Be alert for breathing difficulties; start rescue breathing techniques, if necessary.
- Wet or frozen clothing will be removed; immediately rewarm victim by wrapping in blankets.
- If conscious, give victim warm liquids to drink.
- Treat for frostbite, if necessary.
- Consult professional medical help, if required.

5.0 PERSONNEL PROTECTION PROGRAM

Equipment for personnel protection will be selected based on the known and potential site-specific contaminants of concern and the ambient air quality conditions, as determined through air monitoring by the Site Manager. It is the responsibility of the Project Manager or, in his/her absence, the Site Manager to specify the appropriate level of protection required for all site work.

The levels of protection which may be required for this project include, in decreasing order of likelihood, **Level D,** and **Modified Level D**. If determined necessary by the Site Health and Safety Officer, **Level C** protection may be required for specific tasks. If conditions exist which would require upgrading to **Level B**, which necessitates the use of a self-contained breathing apparatus or SCBA in addition to the Level C protective clothing, then the work will be discontinued and the situation will be further evaluated.

It is anticipated that abovegrade, non-intrusive work will be conducted primarily in **Level D**, and that all activities which involve subsurface excavation or the potential for contact with contaminants will be conducted primarily in **ModifiedLevel D,** however, certain tasks may require an upgrade in the level of worker protection that may be encountered during soil excavation activities. Therefore, provisions will be made to have the necessary equipment at the Site during subsurface activities to upgrade from Modified Level D to Level C, which includes respiratory protection. Provisions can also be made for emergency upgrade to Level B, including an onsite SCBA, if conditions warrant (e.g., to assist in an emergency or to further assess a situation). This action will require temporary postponement of field activities.

The final determination regarding the appropriate level of protection for each work area will be made by the Project Manager or, in his/her absence, the Site Manager based upon the known or suspected hazards and conditions of each work area. The required elements of Modified LevelD and Level C personnel protection are described below.

5.1 Level D Protection

The minimum level of personnel protection which will be required for abovegrade, non-intrusive work activities is **Level D**. This level of protection shall be used for abovegrade, non-intrusive work only and shall not be permitted for any other work tasks conducted onsite. The following personal protection equipment is required for Level D protection:

- Work coveralls or work clothes during all on-site activities;
- Steel-toed boots during all on-site activities;
- Work gloves during all on-site activities;
- Safety glasses during all on-site activities;

- Safety vest during all on-site activities;
- Hard hat during all on-site activities; and
- Hearing protection, as necessary.

5.2 Modified Level D Protection

The minimum level of protection which will be required for all on-site personnel during all subsurface activities is **Modified Level D**. This level of protection shall be used for soil excavation, well drilling, free-phase oil and groundwater recovery and sampling, and any other waste handling activities. The following equipment will comprise the required **Modified Level D** personal protection:

- Dedicated protective work coveralls or work clothes during all on-site activities;
- Steel-toed boots with chemical protection (latex boot protectors) are required during all on-site activities;
- Outer chemical-resistant Nitrile or polyvinylchloride (PVC) gloves with inner latex or vinyl gloves during all on-site activities;
- Safety vest during all on-site activities;
- Safety glasses during all on-site activities;
- Hard hat during all excavation and drilling activities; and
- Hearing protection, as necessary.

5.3 Level C Protection

Level C personnel protection will be required when the nature of the material and airborne concentration of known or suspected contaminants are at or above the OSHA PEL or ACGIH TLV, or when the PID readings are greater than five ppm in the ambient air within the breathing zone. The following equipment will be used for Level C personal protection:

- Full-face, air purifying respirators with NIOSH/Mine Safety Association approved organic vapor and acid gas cartridge (GMC) in combination with high efficiency particulate filter (HEPA); if specified by the Project Manager, or in her/his absence the Site Manager, half-face respirators may be utilized if accompanied by chemical splash goggles;
- Hooded, chemical-resistant Saranex-coated Tyvek (outer);

- Gloves (inner) - latex or vinyl;
- Gloves (outer) - chemical-resistant Nitrile or PVC;
- Boots (outer) - chemical-resistant Neoprene boots with steel toes;
- Hard hatsduring all on-site activities;
- Emergency egress respirator protection; and
- Hearing protection, as necessary.

6.0 WORKER TRAINING

The following health and safety training programs are required for on-site personnel involved in subsurface activities at the Site, specifically soil excavation, well installation, sampling, manual free-phase oil and groundwater recovery, and any other soil or waste handling activities:

- **Health and Safety Training** - Satisfactory completion of a 40-hour course that covers all topics required in accordance with OSHA standard 1910.120, as well as satisfactory completion of the required 8-hour annual refresher training course.

- **First Aid and CPR** - At least one on-site project team member will have completed both the first aid and the cardiopulmonary resuscitation (CPR) training.

- **Site-Specific Safety Training** - Instructions will be given during a Tailgate Safety Meeting at the beginning of the project to acquaint field personnel with project-specific health and safety requirements. This meeting will address the key aspects of this HASP.

Workers involved in subsurface activities must complete all of the training described above, with the exception of the site-specific training, prior to entering the Site. Workers who do not supply a copy of their up to date 40-hour OSHA training or up to date 8-hour OSHA refresher training requirements to the representative will not be permitted to work onsite. Visitors and/or client representatives who do not have the appropriate training must remain outside the Work Zone during site visits while subsurface activities are in progress. In addition, a Tailgate Safety Meeting will be conducted at the beginning of each day, or whenever new Site field workers arrive at the job site. A copy of the Tailgate Meeting Form is provided as Appendix A.

7.0 MEDICAL SURVEILLANCE PROGRAM

In accordance with OSHA Standard 1910.120 and 1910.134, all on-site field personnel involved in subsurface activities, specifically soil excavation and sampling and any other soil or waste handling activities, must complete a baseline physical examination prior to start of work in the Work Zone. Tests that are performed for field worker employment physicals should include the following:

- Medical and occupational history and past gastrointestinal, hematologic, renal cardiovascular, reproductive, immunological and neurological problems, along with a history of respiratory disease and personal smoking habits;
- A medical evaluation to determine if the employee is qualified to use a respirator;
- Blood pressure measurements;
- Complete blood count and differential to include hemoglobin and hematocrit determinations, red cell indices and smear of peripheral morphology;
- Blood urea nitrogen and serum creatinine;
- Blood Polychlorinated Biphenyls (PCBs) testing (Gas Chromatography);
- Urinalysis (dipstick and microscopic examination);
- Urine testing for heavy metals including arsenic, lead, mercury, chromium, and cadmium (Atomic Adsorption Spectrophotometry);
- Audiometric examination;
- Pulmonary function test (FEV1.0 and FVC);
- SMA-25 or equivalent liver function test; and
- EKG for employees over 45 years old or when other complications indicate the necessity.

The medical surveillance provided to employees includes a judgment by the medical examiner of the ability of the employee to use either positive or negative pressure respiratory equipment. Any employee found to have a medical condition which could directly or indirectly be aggravated by exposure to chemical substances or by the use of respiratory equipment will not be employed for the project.

Visitors and/or client representatives who have not had the appropriate medical surveillance must remain outside the Work Zone during Site visits while subsurface activities are in progress.

8.0 SITE SECURITY

The following Site security procedures will be implemented at the subject property to monitor individuals entering the property:

- Upon arriving at the Site, all persons will sign in with the Contractor's Site Supervisor on the Tailgate Health and Safety form;

- All persons will be equipped with the appropriate personnel protective equipment as necessary to perform the work task(s) in accordance with the requirements of this HASP;

- All persons entering the regulated area must be familiar with and abide by this HASP;

- All persons involved in intrusive subsurface work must have completed the necessary 40 hours of training for uncontrolled hazardous waste site operations and emergency response per 29 CFR 1910.120; and

- Upon completion of each day of work onsite, all persons will sign out with the Contractor's Site Supervisor.

- Measures including but not limited to traffic cones, safety fence, and caution tape may be required to prevent unauthorized personnel from entering the work zone. In the event that unauthorized personnel enter and refuse to leave the work zone, work will be stopped and the proper authorities will be contacted. Contact information is provided in Table 2.

9.0 EMERGENCY RESPONSE PLAN

Emergencies must be dealt with in a manner designed to minimize the health and safety risk to Site personnel. Work activities will therefore be conducted in groups of at least two workers (e.g. the "buddy system") to provide continuous monitoring of team members during performance of the work and in the event of an emergency. Emergency hand signals and/or the use of blow horns will be discussed and reviewed daily during the Tailgate Safety Meeting so that all on-site personnel are familiar with the emergency signals applicable to this project.

The Emergency Route to the nearest hospital, specifically the Hudson Valley Hospital Center, is provided as Figure 3 and the Tailgate Safety Meeting Form is provided as Appendix A.

9.1 Emergency Chain of Command

In the event of an emergency, the chain of command will be the Site Manager, the contractor's Site Supervisor, and team members. Of those present on-site at the time of an emergency, the person highest in the chain of command shall have the responsibility for directing the response activity in the event of an emergency. The actions to be taken by that individual are described as follows:

- Assess the emergency situation and notify the Project Manager, as applicable;
- Determine the required response measures and coordinate with the Site Supervisor(s);
- As necessary, contact the appropriate client and public response agency (See Emergency Notification Information provided as Table 3);
- Notify the on-site personnel of the specific actions that will be taken;
- Coordinate the on-site personnel actions;
- Contact contractor representatives, as necessary and appropriate; and
- Complete the Supervisor Injury Report, as applicable, and list on the OSHA Occupational Injury/Illness Form 200, provided as Appendix B.

9.2 Emergency Notification

Emergency notification information is summarized in Table 3. The Emergency Notification Information summary shall be posted in clear view at the Site at all times and a copy of the list will be provided to each member of the on-site project team. The list shall be clearly posted at several locations at the Site. Local authorities shall be notified by the Site Manager prior to the start of each of the Remedial Action (RA) work tasks.

10.0 ACCIDENT, INJURY AND RECORD KEEPING PROCEDURES

If any person working onsite is physically injured or becomes ill, first-aid will be administered by a qualified individual. Depending upon the severity of the injury or illness, the individual may be given emergency first-aid treatment onsite and/or the local emergency medical facility will be contacted along with an ambulance, as necessary. Directions to the nearest hospital, Hudson Valley Hospital Center, are provided in Figure 3.

The Contractor's Site Supervisor will prepare a written report detailing the accident, its causes, and consequences within three days from the time of the accident. If the injury to the worker is of a chemical nature, the following first-aid procedures will be instituted as soon as possible:

- **Eye Exposure -** If contaminated material gets into the eyes, the eyes will be flushed immediately using copious amounts of water while lifting up the lower and upper eyelids.

- **Skin Exposure -** If contaminated material gets on the skin, the affected area will be washed with soap or mild detergent.

- **Inhalation -** If an individual inhales a volume of toxic or corrosive vapors, the employee will be removed to a fresh air breathing space at once. If breathing has stopped, artificial respiration will be performed on the affected individual until medical attention arrives and transports the patient to the nearest medical facility.

- **Ingestion -** In the event a person ingests a toxic liquid or solid material, medical attention shall be obtained at once.

All exposure monitoring conducted during the project will be recorded with a description of the field activities. The recorded results and the methodologies will be kept for a period of least 30 years. All logs and reports required by either local, state, and federal regulations will be kept and submitted accordingly.

TABLES

TABLE 1
SUMMARY OF KEY COMPOUNDS IN GROUNDWATER AND SOIL
Mr. Cleaners Shrub Oak Shopping Center Site
1336-1378 East Main Street
Shrub Oak (Yorktown), Westchester County, New York

GROUNDWATER

VOLATILE ORGANIC COMPOUNDS
Tetrachloroethene
Trichloroethane
cis-1,2-Dichloroethene

SOIL

VOLATILE ORGANIC COMPOUNDS
Tetrachloroethene
Trichloroethane

TABLE 2
SUMMARY OF EXPOSURE LIMITS FOR KEY COMPOUNDS OF CONCERN
Mr. Cleaners Shrub Oak Shopping Center Site
1336-1378 East Main Street
Shrub Oak (Yorktown), Westchester County, New York

Contaminant	Tetrachloroethene	Trichloroethane	cis 1,2-Dichloroethene
TWA/IDLH	1 ppm / 100 ppm	10 ppm / 100 ppm	Not Determined
Source of Concentration Onsite	Soil and Groundwater	Soil and Groundwater	Groundwater
Route of Exposure	Inh, Ing, Con	Inh, Abs, Ing, Con	Inh, Abs, Ing, Con
Symptoms of Acute Exposure	Irrit eyes, skin, lass, restless, irreg respiration, musc inco	Irrit eyes, skin, nose; CNS depres; liver, kidney damage, derm	Irrit eyes, skin, nose, resp sys, CNS depres, liver, kidney, lung damage
First Aid	Eyes: Irrigate immediately Breath: Resp Support Swallow: Medical Attention immediately Skin: Water flush prompt	Eyes: Irrigate immediately Breath: Resp Support Swallow: Medical Attention immediately Skin: Soap wash prompt	Eyes: Irrigate immediately Breath: Resp Support Swallow: Medical Attention immediately Skin: Soap wash immed
Monitoring Device	PID, visual, olfactory, dust monitor	PID, visual, olfactory, dust monitor	PID, visual, olfactory, dust monitor

KEY:

ppm - parts per million
TWA - Time weighted Average
IDLH - Immediate Danger to Life and Health
mg/m^3 - miligrams per cubic meter
perf - Perforation
gidd - Giddiness
ftg - Fatigue
lass - Lassitude (weakness, exhaustion)
jaun - Jaundice
verti - Vertigo (an illusion of movement)
anos - Anosmia (loss of sense of smell)
som - Somnolence (sleepiness, unnatural drowsiness)
eryt - Erythema (skin redness)
low-wgt - Low Weight

Inh - Inhalation
Ing - Ingestion
Con - Skin or Eye Contact
Abs - Skin Absorption
Musc ache - Muscle Ache
drow - Drowsiness
anor - Anorexia
nau - Nausea
pulm - Pulmonary
prot - Proteinuria
com opac - Com Opacity
dysp - Dyspnea (breathing difficulty)
emphy - Emphysema

NOTES:

All values obtained from the National Institute for Occupational Safety and Health (NIOSH) "Pocket Guide To Chemical Hazards," September 2005 edition.

To obtain other information about occupational safety and health problems, call 1-800-356-4674 or visit the NIOSH website at www.cdc.gov/niosh

* denotes that contaminant is not listed in September 2005 "Pocket Guide to Chemical Hazards

TABLE 3
EMERGENCY NOTIFICATION INFORMATION

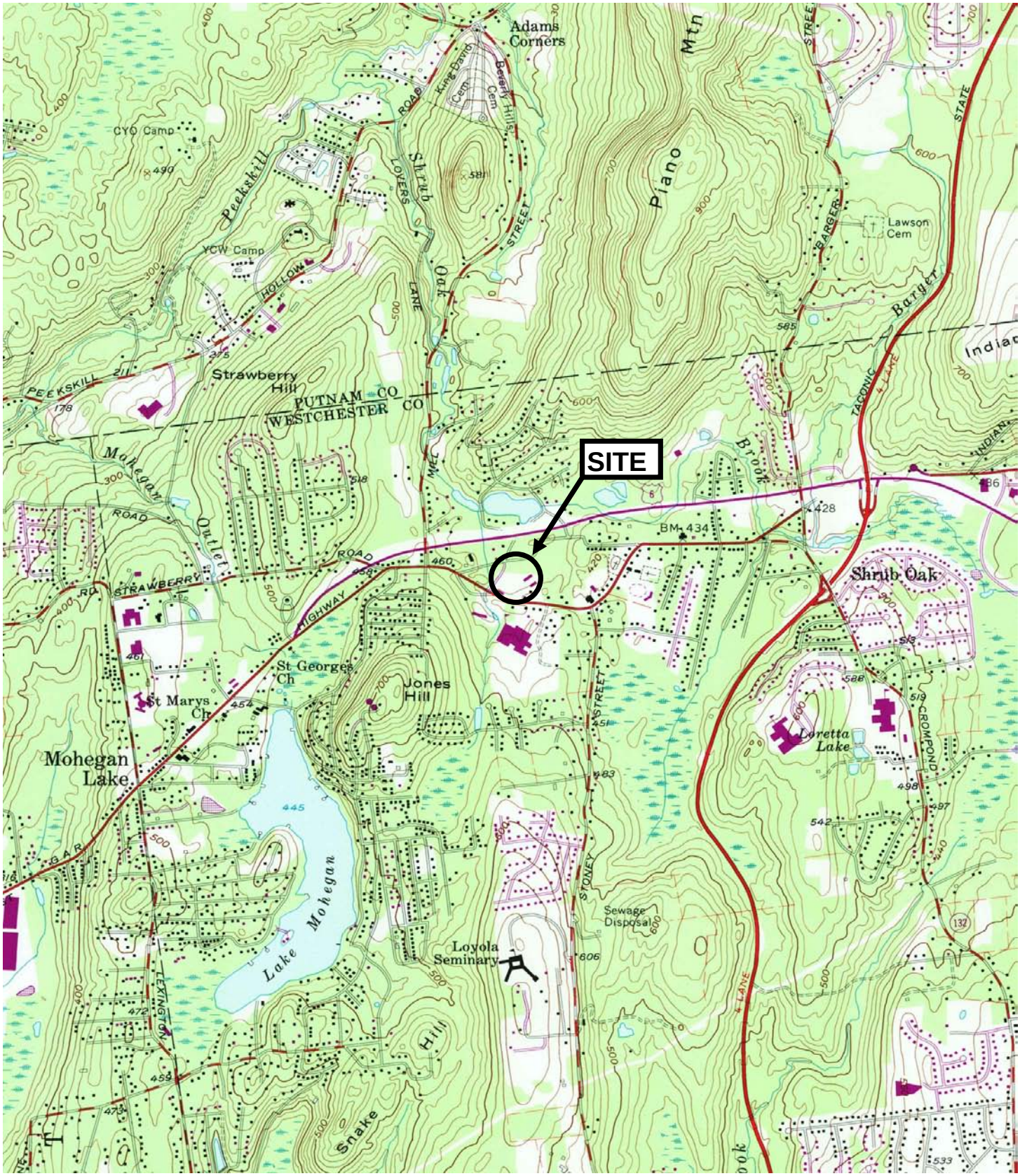
SITE LOCATION: 1336-1378 East Main Street
Shrub Oak (Yorktown), Westchester County, New York
CROSS ROAD: Algonquin Street
NEAREST HOSPITAL: Hudson Valley Hospital Center
1980 Crompond Rd, Cortlandt Manor, NY

PHONE NUMBERS	
ORGANIZATION	**TELEPHONE NO.**
LOCAL	
YORKTOWN POLICE DEPARTMENT:	(914) 962-4141
YORKTOWN FIRE DEPARTMENT:	(201) 962-2148
AMBULANCE/RESCUE:	911
HUDSON VALLEY EMERGENCY ROOM:	(914) 737-9000
GOVERNMENTAL	
NYSDEC HOTLINE:	(800) 457-7362
USEPA EMERGENCY RESPONSE TEAM:	(800) 424-8802
POISON CONTROL:	(800) 222-1222
CHEMTREC:	(800) 424-9300
OSHA REGIONAL OFFICE:	(212) 337-2378
EXCEL ENVIRONMENTAL CONTACTS	
Office:	(732) 545-9525
Ron Harwood:	(908) 872-9809
Eric Mertz	(732) 921-3918
Craig McCarrick	(732) 921-3920
Allison Kaplan	(732) 330-4308
Office Fax:	(732) 545-9425
SHRUB OAK PARTNERS, LLC	
Sam Liebman	(516)-625-4266
CONTRACTOR CONTACTS	
TBD	

TABLE 4
ATMOSPHERIC HAZARD GUIDELINES

MONITORING EQUIPMENT	HAZARD	LEVEL	ACTION
Combustible Gas Indicator	Explosive Atmosphere	<5% LEL	Continue Investigation.
		5% - 10%	Continue on-site monitoring with extreme caution as higher levels are encountered.
		>10% LEL	Explosion hazard, withdraw from area immmediately.
Oxygen Concentration Meter	Oxygen	<19.5%	Monitor wearing SCBA. NOTE: Combustible gas readings are not valid in atmospheres with <19.5% oxygen.
		19.5 - 23%	Continue work with caution, SCBA not needed, based on oxygen content only.
		>23%	Discontinue work, fire hazard potential. Consult specialist.
Photoionization Detector	Organic Vapors/Gases	Depends on species	Consult standard reference manuals for air concentration/toxicity data.
		Total response mode	For unknown contaminents. Use strict guidelines to determine level of protection.

FIGURES



SOURCE:
UNITED STATES GEOLOGICAL SURVEY
15 MINUTE SERIES (TOPOGRAPHIC)
MOHEGAN LAKE QUADRANGLE 1981

EXCEL ENVIRONMENTAL RESOURCES, INC.

MR. CLEANERS
1360 EAST MAIN STREET
SHRUB OAK (YORKTOWN), NEW YORK

FIGURE 1 - SITE LOCATION MAP

DRAWN BY: N/A	SCALE: 1:24,000	7/24/2013
CHECKED BY: RH	REVISION: 0	PROJECT #: 12229

N

LEGEND:

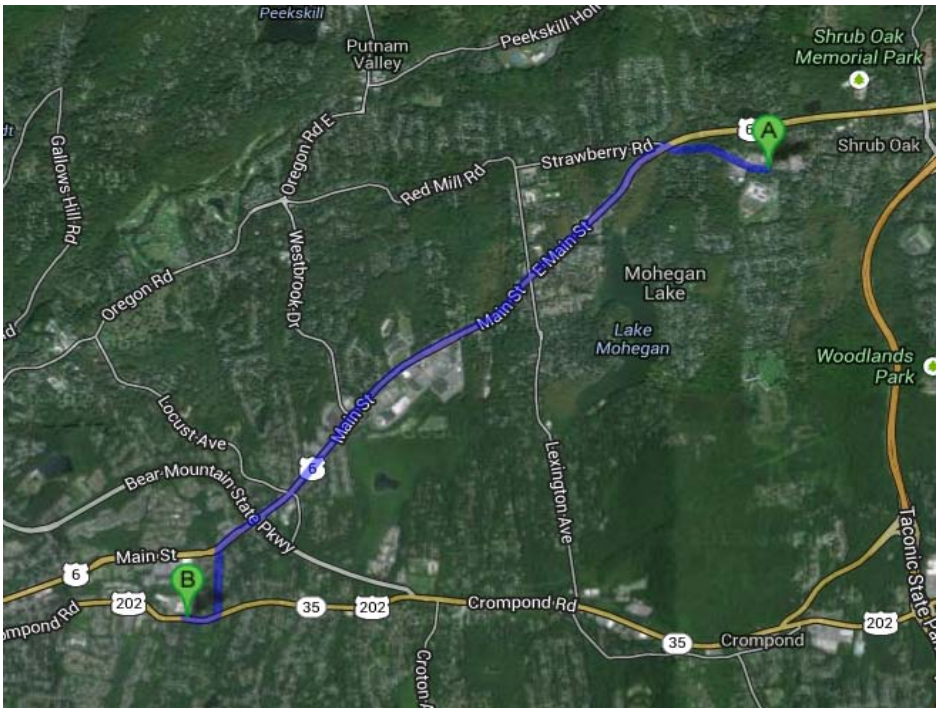
- PROPERTY BOUNDARY (10.73 ACRES)
- BROWNFIELD PARCEL (5.75 ACRES)
- MONITORING WELL LOCATION
- FORMER UST LOCATION AND SUSPECTED SOURCE AREA

0 100 200 400

EXCEL Environmental Resources, Inc.

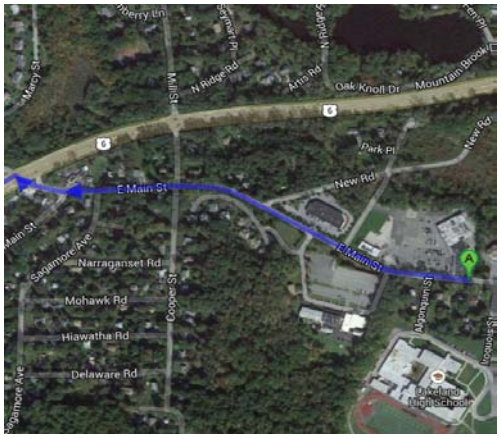
Solving Environmental Problems & Creating Redevelopment Opportunities

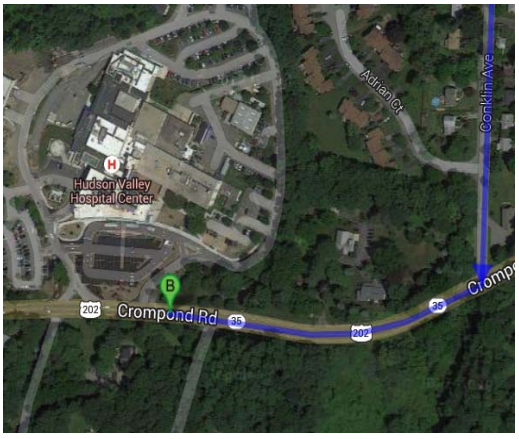
PROJECT : MR. CLEANERS 1360 EAST MAIN STREET SHRUB OAK, YORKTOWN, NEW YORK			
DESCRIPTION : FIGURE 2 GENERALIZED SITE PLAN			
DRAWN BY : RC	SCALE : 1"=100'	DATE : 7/23/13	
CHECKED BY : MM	REVISION :	PROJECT # 12229	



Start: **1336-1378 East Main Street**
Cross Street is Algonquin Street
Shrub Oak, New York

End: **Hudson Valley Hospital Center**
1980 Crompond Rd
Cortlandt Manor, New York
ER (914) 737-9000





DRIVING DIRECTIONS

Head west on E Main St toward Algonquin St	0.5 mi
Continue onto Strawberry Rd	322 ft
Turn left onto US-6W	3.2 mi
Turn Left onto Conklin Ave	0.4 mi
Turn right onto NY-35/US-202W/Crompond Rd	0.2 mi
Follow signs for the Emergency Room	

Estimated drive time is 11 minutes, total of 4.3 miles.

Source:
Google© Maps

EXCEL ENVIRONMENTAL RESOURCES, INC.		
1336-1378 EAST MAIN STREET SHRUB OAK (YORKTOWN), NEW YORK		
FIGURE 3 HOSPITAL ROUTE		
DRAWN BY: N/A	SCALE: N/A	7/25/2013
CHECKED BY: RH	REVISION: 0	PROJECT #: 12229

Appendix A

Tailgate Safety Meeting Form

TAILGATE SAFETY MEETING

DATE: _____ **TIME:** _____ **EXCEL PROJECT NO:** 12229

PROJECT NAME:	Mr. Cleaners - Shrub Oak Shopping Center Site
CLIENT:	Shrub Oak Partners, LLC
LOCATION:	1336-1378 East Main Street Shrub Oak (Yorktown), Westchester County, New York
TYPE OF WORK:	Drilling, Borings, Vapor Intrusion Investigation
POTENTIAL HAZARDS:	Vehicular traffic, equipment operation, slips, trips, falls, sidewall collapse, unknown waste.

SAFETY TOPICS PRESENTED

PROTECTIVE CLOTHING/EQUIPMENT: Modified level D required : hard hats, safety vests, safety glasses steel toe boots, hearing protection, protective coveralls, gloves, booties etc. Various Safety Equipment as needed.

CHEMICAL HAZARDS: Chlorinated compounds in the groundwater and soil

PHYSICAL HAZARDS: Vehicular traffic, various equipment, open excavations, debris, rocky slopes.

EMERGENCY PROCEDURES: Clear the work area, call 911, notify Excel Site Manger, Project Manager, and Client

HOSPITAL/CLINIC: Hudson Valley Hospital Center **PHONE:** ER (914) 737-9000

HOSPITAL ADDRESS: 1980 Crompond Rd, Cortlandt Manor, NY

DIRECTIONS TO HOSPITAL: Head west on E Main St, continue to Strawberry Rd, left on US-6W, left to Conklin Ave, right to NY-35/US-202W/Crompound Rd, Arrive Onsite, Go to Emergency Room Entrance

POLICE: Yorktown Police Department Emergency 911 **PHONE:** (914) 962-4141

FIRE: Yorktown Fire Department Emergency 911 **PHONE:** (201) 962-2148

SPECIAL EQUIPMENT: PID, Data Ram

OTHER: work safe, watch slips, trips, and falls, be cautious of road traffic and equipment, be cautious of temperature and weather, take breaks as needed

ATTENDEES

NAME PRINTED	SIGNATURE	COMPANY/AFFILIATE

MEETING CONDUCTED BY:

NAME PRINTED **SIGNATURE**

Appendix B

OSHA Occupational Injury/Illness Form 300

U.S. Department of Labor
Occupational Safety and Health Administration

OSHA
Forms for Recording Work-Related Injuries and Illnesses

Dear Employer:

This booklet includes the forms needed for maintaining occupational injury and illness records for 2004. These new forms have changed in several important ways from the 2003 recordkeeping forms.

In the December 17, 2002 Federal Register (67 FR 77165-77170), OSHA announced its decision to add an occupational hearing loss column to OSHA's Form 300, Log of Work-Related Injuries and Illnesses. This forms package contains modified Forms 300 and 300A which incorporate the additional column M(5) Hearing Loss. Employers required to complete the injury and illness forms must begin to use these forms on January 1, 2004.

In response to public suggestions, OSHA also has made several changes to the forms package to make the recordkeeping materials clearer and easier to use:

- On Form 300, we've switched the positions of the day count columns. The days "away from work" column now comes before the days "on job transfer or restriction."
- We've clarified the formulas for calculating incidence rates.
- We've added new recording criteria for occupational hearing loss to the "Overview" section.
- On Form 300, we've made the column heading "Classify the Case" more prominent to make it clear that employers should mark only one selection among the four columns offered.

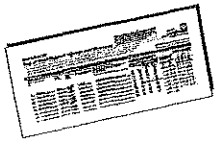
The Occupational Safety and Health Administration shares with you the goal of preventing injuries and illnesses in our nation's workplaces. Accurate injury and illness records will help us achieve that goal.

Occupational Safety and Health Administration
U.S. Department of Labor

What's Inside...

In this package, you'll find everything you need to complete OSHA's *Log* and the *Summary of Work-Related Injuries and Illnesses* for the next several years. On the following pages, you'll find:

- ***An Overview: Recording Work-Related Injuries and Illnesses*** — General instructions for filling out the forms in this package and definitions of terms you should use when you classify your cases as injuries or illnesses.
- ***How to Fill Out the Log*** — An example to guide you in filling out the *Log* properly.
- ***Log of Work-Related Injuries and Illnesses*** — Several pages of the *Log* (but you may make as many copies of the *Log* as you need.) Notice that the *Log* is separate from the *Summary*.



- ***Summary of Work-Related Injuries and Illnesses*** — Removable *Summary* pages for easy posting at the end of the year. Note that you post the *Summary* only, not the *Log*.

- ***Worksheet to Help You Fill Out the Summary*** — A worksheet for figuring the average number of employees who worked for your establishment and the total number of hours worked.
- ***OSHA's 301: Injury and Illness Incident Report*** — A copy of the OSHA 301 to provide details about the incident. You may make as many copies as you need or use an equivalent form.

Take a few minutes to review this package. If you have any questions, ***visit us online at www.osha.gov or call your local OSHA office.*** We'll be happy to help you.

U.S. Department of Labor
Occupational Safety and Health Administration

An Overview: Recording Work-Related Injuries and Illnesses

The Occupational Safety and Health (OSH) Act of 1970 requires certain employers to prepare and maintain records of work-related injuries and illnesses. Use these definitions when you classify cases on the Log. OSHA's recordkeeping regulation (see 29 CFR Part 1904) provides more information about the definitions below.

The *Log of Work-Related Injuries and Illnesses* (Form 300) is used to classify work-related injuries and illnesses and to note the extent and severity of each case. When an incident occurs, use the *Log* to record specific details about what happened and how it happened. The *Summary* — a separate form (Form 300A) — shows the totals for the year in each category. At the end of the year, post the *Summary* in a visible location so that your employees are aware of the injuries and illnesses occurring in their workplace.

Employers must keep a *Log* for each establishment or site. If you have more than one establishment, you must keep a separate *Log* and *Summary* for each physical location that is expected to be in operation for one year or longer.

Note that your employees have the right to review your injury and illness records. For more information, see 29 Code of Federal Regulations Part 1904.35, *Employee Involvement.*

Cases listed on the *Log of Work-Related Injuries and Illnesses* are not necessarily eligible for workers' compensation or other insurance benefits. Listing a case on the *Log* does not mean that the employer or worker was at fault or that an OSHA standard was violated.

When is an injury or illness considered work-related?

An injury or illness is considered work-related if an event or exposure in the work environment caused or contributed to the condition or significantly aggravated a preexisting condition. Work-relatedness is presumed for injuries and illnesses resulting from events or exposures occurring in the workplace, unless an exception specifically applies. See 29 CFR Part 1904.5(b)(2) for the exceptions. The work environment includes the establishment and other locations where one or more employees are working or are present as a condition of their employment. See 29 CFR Part 1904.5(b)(1).

Which work-related injuries and illnesses should you record?

Record those work-related injuries and illnesses that result in:

- death,
- loss of consciousness,
- days away from work,
- restricted work activity or job transfer, or
- medical treatment beyond first aid.

You must also record work-related injuries and illnesses that are significant (as defined below) or meet any of the additional criteria listed below.

You must record any significant work-related injury or illness that is diagnosed by a physician or other licensed health care professional. You must record any work-related case involving cancer, chronic irreversible disease, a fractured or cracked bone, or a punctured eardrum. See 29 CFR 1904.7.

What are the additional criteria?

You must record the following conditions when they are work-related:

- any needlestick injury or cut from a sharp object that is contaminated with another person's blood or other potentially infectious material;
- any case requiring an employee to be medically removed under the requirements of an OSHA health standard;
- tuberculosis infection as evidenced by a positive skin test or diagnosis by a physician or other licensed health care professional after exposure to a known case of active tuberculosis.
- an employee's hearing test (audiogram) reveals 1) that the employee has experienced a Standard Threshold Shift (STS) in hearing in one or both ears (averaged at 2000, 3000, and 4000 Hz) and 2) the employee's total hearing level is 25 decibels (dB) or more above audiometric zero (also averaged at 2000, 3000, and 4000 Hz) in the same ear(s) as the STS.

What is medical treatment?

Medical treatment includes managing and caring for a patient for the purpose of combating disease or disorder. The following are not considered medical treatments and are NOT recordable:

- visits to a doctor or health care professional solely for observation or counseling;

What do you need to do?

1. Within 7 calendar days after you receive information about a case, decide if the case is recordable under the OSHA recordkeeping requirements.
2. Determine whether the incident is a new case or a recurrence of an existing one.
3. Establish whether the case was work-related.
4. If the case is recordable, decide which form you will fill out as the injury and illness incident report.

   You may use *OSHA's 301: Injury and Illness Incident Report* or an equivalent form. Some state workers compensation, insurance, or other reports may be acceptable substitutes, as long as they provide the same information as the OSHA 301.

How to work with the Log

1. Identify the employee involved unless it is a privacy concern case as described below.
2. Identify when and where the case occurred.
3. Describe the case, as specifically as you can.
4. Classify the seriousness of the case by recording the **most serious outcome** associated with the case, with column G (Death) being the most serious and column J (Other recordable cases) being the least serious.
5. Identify whether the case is an injury or illness. If the case is an injury, check the injury category. If the case is an illness, check the appropriate illness category.

U.S. Department of Labor
Occupational Safety and Health Administration

- diagnostic procedures, including administering prescription medications that are used solely for diagnostic purposes; and
- any procedure that can be labeled first aid. *(See below for more information about first aid.)*

What is first aid?

If the incident required only the following types of treatment, consider it first aid. Do NOT record the case if it involves only:

- using non-prescription medications at non-prescription strength;
- administering tetanus immunizations;
- cleaning, flushing, or soaking wounds on the skin surface;
- using wound coverings, such as bandages, BandAids™, gauze pads, etc., or using SteriStrips™ or butterfly bandages.
- using hot or cold therapy;
- using any totally non-rigid means of support, such as elastic bandages, wraps, non-rigid back belts, etc.;
- using temporary immobilization devices while transporting an accident victim (splints, slings, neck collars, or back boards).
- drilling a fingernail or toenail to relieve pressure, or draining fluids from blisters;
- using eye patches;
- using simple irrigation or a cotton swab to remove foreign bodies not embedded in or adhered to the eye;
- using irrigation, tweezers, cotton swab or other simple means to remove splinters or foreign material from areas other than the eye;
- using finger guards;
- using massages;
- drinking fluids to relieve heat stress

How do you decide if the case involved restricted work?

Restricted work activity occurs when, as the result of a work-related injury or illness, an employer or health care professional keeps, or recommends keeping, an employee from doing the routine functions of his or her job or from working the full workday that the employee would have been scheduled to work before the injury or illness occurred.

How do you count the number of days of restricted work activity or the number of days away from work?

Count the number of calendar days the employee was on restricted work activity or was away from work as a result of the recordable injury or illness. Do not count the day on which the injury or illness occurred in this number. Begin counting days from the day after the incident occurs. If a single injury or illness involved both days away from work and days of restricted work activity, enter the total number of days for each. You may stop counting days of restricted work activity or days away from work once the total of either or the combination of both reaches 180 days.

Under what circumstances should you NOT enter the employee's name on the OSHA Form 300?

You must consider the following types of injuries or illnesses to be privacy concern cases:

- an injury or illness to an intimate body part or to the reproductive system,
- an injury or illness resulting from a sexual assault,
- a mental illness,
- a case of HIV infection, hepatitis, or tuberculosis,
- a needlestick injury or cut from a sharp object that is contaminated with blood or other potentially infectious material (see 29 CFR Part 1904.8 for definition), and
- other illnesses, if the employee independently and voluntarily requests that his or her name not be entered on the log.

You must not enter the employee's name on the OSHA 300 *Log* for these cases. Instead, enter "privacy case" in the space normally used for the employee's name. You must keep a separate, confidential list of the case numbers and employee names for the establishment's privacy concern cases so that you can update the cases and provide information to the government if asked to do so.

If you have a reasonable basis to believe that information describing the privacy concern case may be personally identifiable even though the employee's name has been omitted, you may use discretion in describing the injury or illness on both the OSHA 300 and 301 forms. You must enter enough information to identify the cause of the incident and the general severity of the injury or illness, but you do not need to include details of an intimate or private nature.

What if the outcome changes after you record the case?

If the outcome or extent of an injury or illness changes after you have recorded the case, simply draw a line through the original entry or, if you wish, delete or white-out the original entry. Then write the new entry where it belongs. Remember, you need to record the most serious outcome for each case.

Classifying injuries

An injury is any wound or damage to the body resulting from an event in the work environment.

Examples: Cut, puncture, laceration, abrasion, fracture, bruise, contusion, chipped tooth, amputation, insect bite, electrocution, or a thermal, chemical, electrical, or radiation burn. Sprain and strain injuries to muscles, joints, and connective tissues are classified as injuries when they result from a slip, trip, fall or other similar accidents.

U.S. Department of Labor
Occupational Safety and Health Administration

Classifying illnesses

Skin diseases or disorders

Skin diseases or disorders are illnesses involving the worker's skin that are caused by work exposure to chemicals, plants, or other substances.

Examples: Contact dermatitis, eczema, or rash caused by primary irritants and sensitizers or poisonous plants; oil acne; friction blisters, chrome ulcers; inflammation of the skin.

Respiratory conditions

Respiratory conditions are illnesses associated with breathing hazardous biological agents, chemicals, dust, gases, vapors, or fumes at work.

Examples: Silicosis, asbestosis, pneumonitis, pharyngitis, rhinitis or acute congestion; farmer's lung, beryllium disease, tuberculosis, occupational asthma, reactive airways dysfunction syndrome (RADS), chronic obstructive pulmonary disease (COPD), hypersensitivity pneumonitis, toxic inhalation injury, such as metal fume fever, chronic obstructive bronchitis, and other pneumoconioses.

Poisoning

Poisoning includes disorders evidenced by abnormal concentrations of toxic substances in blood, other tissues, other bodily fluids, or the breath that are caused by the ingestion or absorption of toxic substances into the body.

Examples: Poisoning by lead, mercury, cadmium, arsenic, or other metals; poisoning by carbon monoxide, hydrogen sulfide, or other gases; poisoning by benzene, benzol, carbon tetrachloride, or other organic solvents; poisoning by insecticide sprays, such as parathion or lead arsenate; poisoning by other chemicals, such as formaldehyde.

Hearing Loss

Noise-induced hearing loss is defined for recordkeeping purposes as a change in hearing threshold relative to the baseline audiogram of an average of 10 dB or more in either ear at 2000, 3000 and 4000 hertz, and the employee's total hearing level is 25 decibels (dB) or more above audiometric zero (also averaged at 2000, 3000, and 4000 hertz) in the same ear(s).

All other illnesses

All other occupational illnesses.

Examples: Heatstroke, sunstroke, heat exhaustion, heat stress and other effects of environmental heat; freezing, frostbite, and other effects of exposure to low temperatures; decompression sickness; effects of ionizing radiation (isotopes, x-rays, radium); effects of nonionizing radiation (welding flash, ultra-violet rays, lasers); anthrax; bloodborne pathogenic diseases, such as AIDS, HIV, hepatitis B or hepatitis C; brucellosis; malignant or benign tumors; histoplasmosis; coccidioidomycosis.

When must you post the Summary?

You must post the *Summary* only — not the *Log* — by February 1 of the year following the year covered by the form and keep it posted until April 30 of that year.

How long must you keep the Log and Summary on file?

You must keep the *Log* and *Summary* for 5 years following the year to which they pertain.

Do you have to send these forms to OSHA at the end of the year?

No. You do not have to send the completed forms to OSHA unless specifically asked to do so.

How can we help you?

If you have a question about how to fill out the *Log*,

- ❑ **visit us online at www.osha.gov** or
- ❑ **call your local OSHA office.**

U.S. Department of Labor
Occupational Safety and Health Administration

Optional

Calculating Injury and Illness Incidence Rates

What is an incidence rate?

An incidence rate is the number of recordable injuries and illnesses occurring among a given number of full-time workers (usually 100 full-time workers) over a given period of time (usually one year). To evaluate your firm's injury and illness experience over time or to compare your firm's experience with that of your industry as a whole, you need to compute your incidence rate. Because a specific number of workers and a specific period of time are involved, these rates can help you identify problems in your workplace and/or progress you may have made in preventing work-related injuries and illnesses.

How do you calculate an incidence rate?

You can compute an occupational injury and illness incidence rate for all recordable cases or for cases that involved days away from work for your firm quickly and easily. The formula requires that you follow instructions in paragraph (a) below for the total recordable cases or those in paragraph (b) for cases that involved days away from work, *and* for both rates the instructions in paragraph (c).

(a) *To find out the total number of recordable injuries and illnesses that occurred during the year,* count the number of line entries on your OSHA Form 300, or refer to the total recordable cases or those in paragraph (b) for cases that involved days away from work, *and* for both rates the instructions in paragraph (c).

(b) *To find out the number of injuries and illnesses that involved days away from work,* count the number of line entries on your OSHA Form 300 that received a check mark in column (H), or refer to the entry for column (H) on the OSHA Form 300A.

(c) *The number of hours all employees actually worked during the year.* Refer to OSHA Form 300A and optional worksheet to calculate this number.

You can compute the incidence rate for all recordable cases of injuries and illnesses using the following formula:

Total number of injuries and illnesses x *200,000* ÷ *Number of hours worked by all employees* = *Total recordable case rate*

(The 200,000 figure in the formula represents the number of hours 100 employees working 40 hours per week, 50 weeks per year would work, and provides the standard base for calculating incidence rates.)

You can compute the incidence rate for recordable cases involving days away from work, days of restricted work activity or job transfer (DART) using the following formula:

(Number of entries in column H + Number of entries in column I) x *200,000* ÷ *Number of hours worked by all employees* = *DART incidence rate*

You can use the same formula to calculate incidence rates for other variables such as cases involving restricted work activity (column (I) on Form 300A), cases involving skin disorders (column (M-2) on Form 300A), etc. Just substitute the appropriate total for these cases, from Form 300A, into the formula in place of the total number of injuries and illnesses.

What can I compare my incidence rate to?

The Bureau of Labor Statistics (BLS) conducts a survey of occupational injuries and illnesses each year and publishes incidence rate data by various classifications (e.g., by industry, by employer size, etc.). You can obtain these published data at www.bls.gov/iif or by calling a BLS Regional Office.

Worksheet

Total number of injuries and illnesses			Number of hours worked by all employees		Total recordable case rate
	X 200,000	÷		=	

Number of entries in Column H + Column I			Number of hours worked by all employees		DART incidence rate
	X 200,000	÷		=	

How to Fill Out the Log

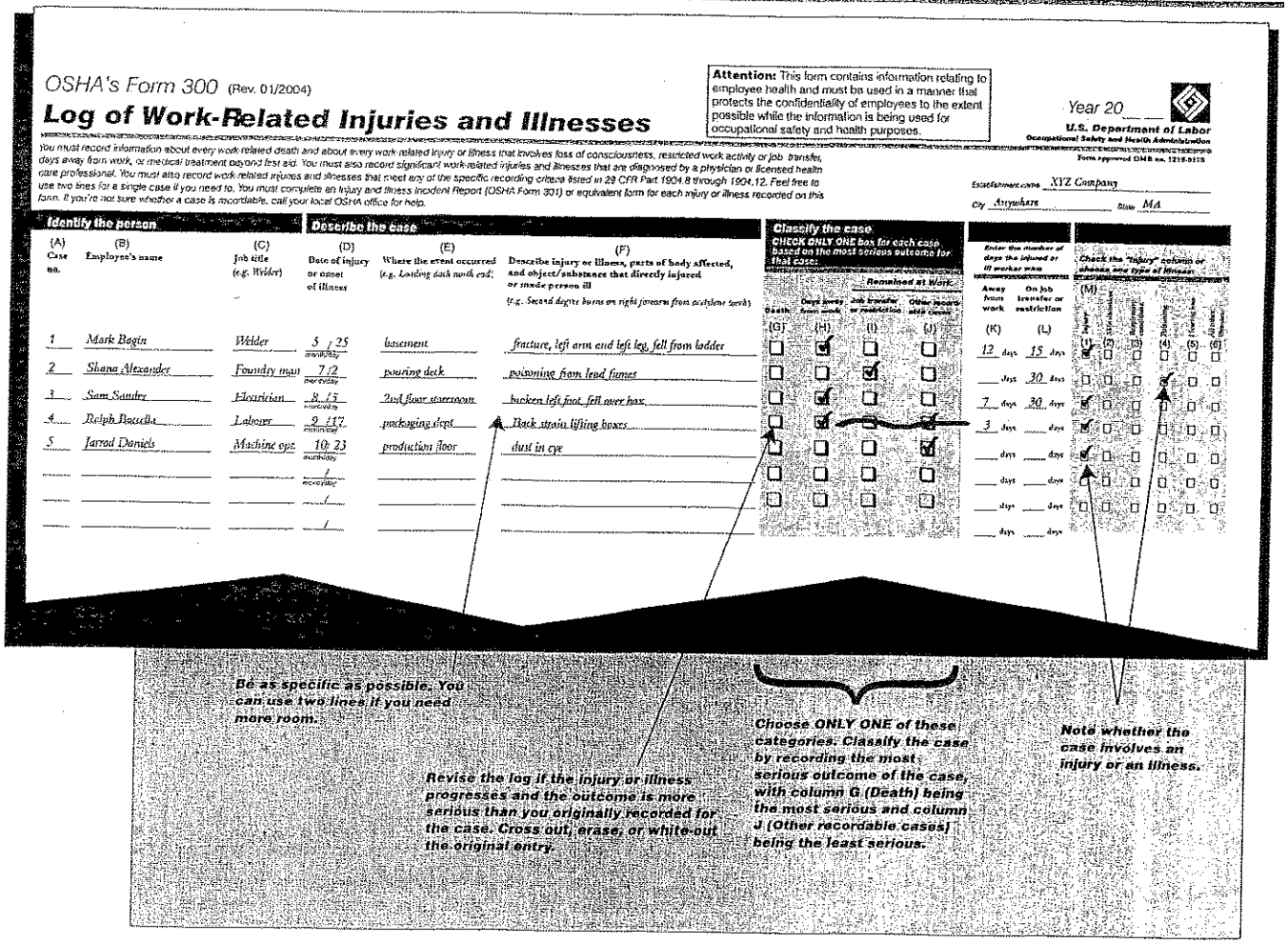
The *Log of Work-Related Injuries and Illnesses* is used to classify work-related injuries and illnesses and to note the extent and severity of each case. When an incident occurs, use the *Log* to record specific details about what happened and how it happened.

If your company has more than one establishment or site, you must keep separate records for each physical location that is expected to remain in operation for one year or longer.

We have given you several copies of the *Log* in this package. If you need more than we provided, you may photocopy and use as many as you need.

The *Summary* — a separate form — shows the work-related injury and illness totals for the year in each category. At the end of the year, count the number of incidents in each category and transfer the totals from the *Log* to the *Summary*. Then post the *Summary* in a visible location so that your employees are aware of injuries and illnesses occurring in their workplace.

You don't post the Log. You post only the Summary at the end of the year.



OSHA's Form 300 (Rev. 01/2004)

Log of Work-Related Injuries and Illnesses

Attention: This form contains information relating to employee health and must be used in a manner that protects the confidentiality of employees to the extent possible while the information is being used for occupational safety and health purposes.

Year 20 ____

U.S. Department of Labor
Occupational Safety and Health Administration

You must record information about every work-related death and about every work-related injury or illness that involves loss of consciousness, restricted work activity or job transfer, days away from work, or medical treatment beyond first aid. You must also record significant work-related injuries and illnesses that are diagnosed by a physician or licensed health care professional. You must also record work-related injuries and illnesses that meet any of the specific recording criteria listed in 29 CFR Part 1904.8 through 1904.12. Feel free to use two lines for a single case if you need to. You must complete an Injury and Illness Incident Report (OSHA Form 301) or equivalent form for each injury or illness recorded on this form. If you're not sure whether a case is recordable, call your local OSHA office for help.

Establishment name XYZ Company

City Anywhere State MA

Identify the person			Describe the case			Classify the case (CHECK ONLY ONE box for each case based on the most serious outcome for that case)				Enter the number of days the injured or ill worker was		Check the "Injury" column or choose one type of illness					
(A) Case no.	(B) Employee's name	(C) Job title (e.g. Welder)	(D) Date of injury or onset of illness	(E) Where the event occurred (e.g. Loading dock north end)	(F) Describe injury or illness, parts of body affected, and object/substance that directly injured or made person ill (e.g. Second degree burns on right forearm from acetylene torch)	Death (G)	Days away from work (H)	Remained at Work: Job transfer or restriction (I)	Remained at Work: Other recordable cases (J)	Away from work (K)	On job transfer or restriction (L)	(M) Injury	Skin disorders	Respiratory conditions	Poisonings	Hearing loss	All other illnesses
1	Mark Bagin	Welder	5/25 mm/dd/yy	basement	fracture, left arm and left leg, fell from ladder		☑	☐	☐	12 days	15 days	☑	☐	☐	☐	☐	☐
2	Shana Alexander	Foundry man	7/2 mm/dd/yy	pouring deck	poisoning from lead fumes		☐	☑	☐	____ days	30 days	☐	☐	☐	☑	☐	☐
3	Sam Sandler	Electrician	8/15 mm/dd/yy	2nd floor storeroom	broken left foot, fell over box		☑	☐	☐	7 days	30 days	☑	☐	☐	☐	☐	☐
4	Ralph Bourdin	Laborer	9/17 mm/dd/yy	packaging dept	Back strain lifting boxes		☑	☐	☐	3 days	____ days	☑	☐	☐	☐	☐	☐
5	Jarrod Daniels	Machine op.	10/23 mm/dd/yy	production floor	dust in eye		☐	☐	☑	____ days	____ days	☐	☐	☐	☐	☐	☐
			/ mm/dd/yy			☐	☐	☐	☐	____ days	____ days	☐	☐	☐	☐	☐	☐
			/ mm/dd/yy			☐	☐	☐	☐	____ days	____ days	☐	☐	☐	☐	☐	☐
			/ mm/dd/yy			☐	☐	☐	☐	____ days	____ days	☐	☐	☐	☐	☐	☐

Be as specific as possible. You can use two lines if you need more room.

Revise the log if the injury or illness progresses and the outcome is more serious than you originally recorded for the case. Cross out, erase, or white-out the original entry.

Choose ONLY ONE of these categories. Classify the case by recording the most serious outcome of the case, with column G (Death) being the most serious and column J (Other recordable cases) being the least serious.

Note whether the case involves an injury or an illness.

OSHA's Form 300 (Rev. 01/2004)

Log of Work-Related Injuries and Illnesses

Attention: This form contains information relating to employee health and must be used in a manner that protects the confidentiality of employees to the extent possible while the information is being used for occupational safety and health purposes.

Year 20___

U.S. Department of Labor
Occupational Safety and Health Administration

Form approved OMB no. 1218-0176

You must record information about every work-related death and about every work-related injury or illness that involves loss of consciousness, restricted work activity or job transfer, days away from work, or medical treatment beyond first aid. You must also record significant work-related injuries and illnesses that are diagnosed by a physician or licensed health care professional. You must also record work-related injuries and illnesses that meet any of the specific recording criteria listed in 29 CFR Part 1904.8 through 1904.12. Feel free to use two lines for a single case if you need to. You must complete an Injury and Illness Incident Report (OSHA Form 301) or equivalent form for each injury or illness recorded on this form. If you're not sure whether a case is recordable, call your local OSHA office for help.

Establishment name ____________________

City ____________________ State ________

Identify the person			Describe the case			Classify the case — CHECK ONLY ONE box for each case based on the most serious outcome for that case:				Enter the number of days the injured or ill worker was:		Check the "Injury" column or choose one type of illness: (M)					
								Remained at Work									
(A) Case no.	(B) Employee's name	(C) Job title (*e.g., Welder*)	(D) Date of injury or onset of illness	(E) Where the event occurred (*e.g., Loading dock north end*)	(F) Describe injury or illness, parts of body affected, and object/substance that directly injured or made person ill (*e.g., Second degree burns on right forearm from acetylene torch*)	Death (G)	Days away from work (H)	Job transfer or restriction (I)	Other record-able cases (J)	Away from work (K)	On job transfer or restriction (L)	Injury (1)	Skin disorder (2)	Respiratory condition (3)	Poisoning (4)	Hearing loss (5)	All other illnesses (6)
___	___	___	___/___ month/day	___	___	☐	☐	☐	☐	___ days	___ days	☐	☐	☐	☐	☐	☐
___	___	___	___/___ month/day	___	___	☐	☐	☐	☐	___ days	___ days	☐	☐	☐	☐	☐	☐
___	___	___	___/___ month/day	___	___	☐	☐	☐	☐	___ days	___ days	☐	☐	☐	☐	☐	☐
___	___	___	___/___ month/day	___	___	☐	☐	☐	☐	___ days	___ days	☐	☐	☐	☐	☐	☐
___	___	___	___/___ month/day	___	___	☐	☐	☐	☐	___ days	___ days	☐	☐	☐	☐	☐	☐
___	___	___	___/___ month/day	___	___	☐	☐	☐	☐	___ days	___ days	☐	☐	☐	☐	☐	☐
___	___	___	___/___ month/day	___	___	☐	☐	☐	☐	___ days	___ days	☐	☐	☐	☐	☐	☐
___	___	___	___/___ month/day	___	___	☐	☐	☐	☐	___ days	___ days	☐	☐	☐	☐	☐	☐
___	___	___	___/___ month/day	___	___	☐	☐	☐	☐	___ days	___ days	☐	☐	☐	☐	☐	☐
___	___	___	___/___ month/day	___	___	☐	☐	☐	☐	___ days	___ days	☐	☐	☐	☐	☐	☐
___	___	___	___/___ month/day	___	___	☐	☐	☐	☐	___ days	___ days	☐	☐	☐	☐	☐	☐
___	___	___	___/___ month/day	___	___	☐	☐	☐	☐	___ days	___ days	☐	☐	☐	☐	☐	☐
___	___	___	___/___ month/day	___	___	☐	☐	☐	☐	___ days	___ days	☐	☐	☐	☐	☐	☐
					Page totals ➤	___	___	___	___	___	___	___	___	___	___	___	___
												Injury (1)	Skin disorder (2)	Respiratory condition (3)	Poisoning (4)	Hearing loss (5)	All other illnesses (6)

Be sure to transfer these totals to the Summary page (Form 300A) before you post it.

OSHA's Form 300A (Rev. 01/2004)

Summary of Work-Related Injuries and Illnesses

Year 20 ___

U.S. Department of Labor
Occupational Safety and Health Administration

Form approved OMB no. 1218-0176

All establishments covered by Part 1904 must complete this Summary page, even if no work-related injuries or illnesses occurred during the year. Remember to review the Log to verify that the entries are complete and accurate before completing this summary.

Using the Log, count the individual entries you made for each category. Then write the totals below, making sure you've added the entries from every page of the Log. If you had no cases, write "0."

Employees, former employees, and their representatives have the right to review the OSHA Form 300 in its entirety. They also have limited access to the OSHA Form 301 or its equivalent. See 29 CFR Part 1904.35, in OSHA's recordkeeping rule, for further details on the access provisions for these forms.

Number of Cases

Total number of deaths	Total number of cases with days away from work	Total number of cases with job transfer or restriction	Total number of other recordable cases
_____	_____	_____	_____
(G)	(H)	(I)	(J)

Number of Days

Total number of days away from work	Total number of days of job transfer or restriction
_____	_____
(K)	(L)

Injury and Illness Types

Total number of . . .	(M)		
(1) Injuries	_____	(4) Poisonings	_____
		(5) Hearing loss	_____
(2) Skin disorders	_____	(6) All other illnesses	_____
(3) Respiratory conditions	_____		

Post this Summary page from February 1 to April 30 of the year following the year covered by the form.

Establishment information

Your establishment name _____

Street _____

City _____ State _____ ZIP _____

Industry description (*e.g., Manufacture of motor truck trailers*)

_____

Standard Industrial Classification (SIC), if known (*e.g., 3715*)

____ ____ ____ ____

OR

North American Industrial Classification (NAICS), if known (e.g., 336212)

____ ____ ____ ____ ____ ____

Employment information *(If you don't have these figures, see the Worksheet on the back of this page to estimate.)*

Annual average number of employees _____

Total hours worked by all employees last year _____

Sign here

Knowingly falsifying this document may result in a fine.

I certify that I have examined this document and that to the best of my knowledge the entries are true, accurate, and complete.

_____ _____
Company executive Title

( ) - / /
Phone Date

U.S. Department of Labor
Occupational Safety and Health Administration

Optional

Worksheet to Help You Fill Out the Summary

At the end of the year, OSHA requires you to enter the average number of employees and the total hours worked by your employees on the summary. If you don't have these figures, you can use the information on this page to estimate the numbers you will need to enter on the Summary page at the end of the year.

How to figure the average number of employees who worked for your establishment during the year:

❶ ***Add*** the total number of employees your establishment paid in all pay periods during the year. Include all employees: full-time, part-time, temporary, seasonal, salaried, and hourly.

The number of employees paid in all pay periods = ❶ _____

❷ ***Count*** the number of pay periods your establishment had during the year. Be sure to include any pay periods when you had no employees.

The number of pay periods during the year = ❷ _____

❸ ***Divide*** the number of employees by the number of pay periods.

❶ _____ / ❷ _____ = ❸ _____

❹ ***Round the answer*** to the next highest whole number. Write the rounded number in the blank marked *Annual average number of employees.*

The number rounded = ❹ _____

For example, Acme Construction figured its average employment this way:

For pay period...	Acme paid this number of employees...
1	10
2	0
3	15
4	30
5	40
▼	▼
24	20
25	15
26	+10
	830

Number of employees paid = 830 ❶

Number of pay periods = 26 ❷

830 / 26 = 31.92 ❸

31.92 rounds to 32 ❹

32 is the annual average number of employees

How to figure the total hours worked by all employees:

Include hours worked by salaried, hourly, part-time and seasonal workers, as well as hours worked by other workers subject to day to day supervision by your establishment (e.g., temporary help services workers).

Do not include vacation, sick leave, holidays, or any other non-work time, even if employees were paid for it. If your establishment keeps records of only the hours paid or if you have employees who are not paid by the hour, please estimate the hours that the employees actually worked.

If this number isn't available, you can use this optional worksheet to estimate it.

Optional Worksheet

_____ ***Find*** the number of full-time employees in your establishment for the year.

X _____ ***Multiply*** by the number of work hours for a full-time employee in a year.

_____ This is the number of full-time hours worked.

\+ _____ ***Add*** the number of any overtime hours as well as the hours worked by other employees (part-time, temporary, seasonal)

_____ ***Round*** the answer to the next highest whole number. Write the rounded number in the blank marked *Total hours worked by all employees last year.*

OSHA's Form 301
Injury and Illness Incident Report

Attention: This form contains information relating to employee health and must be used in a manner that protects the confidentiality of employees to the extent possible while the information is being used for occupational safety and health purposes.

U.S. Department of Labor
Occupational Safety and Health Administration

Form approved OMB no. 1218-0176

This *Injury and Illness Incident Report* is one of the first forms you must fill out when a recordable work-related injury or illness has occurred. Together with the *Log of Work-Related Injuries and Illnesses* and the accompanying *Summary*, these forms help the employer and OSHA develop a picture of the extent and severity of work-related incidents.

Within 7 calendar days after you receive information that a recordable work-related injury or illness has occurred, you must fill out this form or an equivalent. Some state workers' compensation, insurance, or other reports may be acceptable substitutes. To be considered an equivalent form, any substitute must contain all the information asked for on this form.

According to Public Law 91-596 and 29 CFR 1904, OSHA's recordkeeping rule, you must keep this form on file for 5 years following the year to which it pertains.

If you need additional copies of this form, you may photocopy and use as many as you need.

Completed by _____

Title _____

Phone (_____)_____-_____ Date ___/___/___

Information about the employee

1) Full name _____

2) Street _____

City _____ State _____ ZIP _____

3) Date of birth ___/___/___

4) Date hired ___/___/___

5) ☐ Male
☐ Female

Information about the physician or other health care professional

6) Name of physician or other health care professional _____

_____

7) If treatment was given away from the worksite, where was it given?

Facility _____

Street _____

City _____ State _____ ZIP _____

8) Was employee treated in an emergency room?
☐ Yes
☐ No

9) Was employee hospitalized overnight as an in-patient?
☐ Yes
☐ No

Information about the case

10) Case number from the Log _____ *(Transfer the case number from the Log after you record the case.)*

11) Date of injury or illness ___/___/___

12) Time employee began work _____ AM / PM

13) Time of event _____ AM / PM ☐ Check if time cannot be determined

14) ***What was the employee doing just before the incident occurred?*** Describe the activity, as well as the tools, equipment, or material the employee was using. Be specific. *Examples:* "climbing a ladder while carrying roofing materials"; "spraying chlorine from hand sprayer"; "daily computer key-entry."

15) ***What happened?*** Tell us how the injury occurred. *Examples:* "When ladder slipped on wet floor, worker fell 20 feet"; "Worker was sprayed with chlorine when gasket broke during replacement"; "Worker developed soreness in wrist over time."

16) ***What was the injury or illness?*** Tell us the part of the body that was affected and how it was affected; be more specific than "hurt," "pain," or sore." *Examples:* "strained back"; "chemical burn, hand"; "carpal tunnel syndrome."

17) ***What object or substance directly harmed the employee?*** *Examples:* "concrete floor"; "chlorine"; "radial arm saw." *If this question does not apply to the incident, leave it blank.*

18) ***If the employee died, when did death occur?*** Date of death ___/___/___

U.S. Department of Labor
Occupational Safety and Health Administration

If You Need Help...

If you need help deciding whether a case is recordable, or if you have questions about the information in this package, feel free to contact us. We'll gladly answer any questions you have.

- **Visit us online at www.osha.gov**
- **Call your OSHA Regional office and ask for the recordkeeping coordinator**

  or

- **Call your State Plan office**

Federal Jurisdiction

Region 1 - 617 / 565-9860
Connecticut; Massachusetts; Maine; New Hampshire; Rhode Island

Region 2 - 212 / 337-2378
New York; New Jersey

Region 3 - 215 / 861-4900
DC; Delaware; Pennsylvania; West Virginia

Region 4 - 404 / 562-2300
Alabama; Florida; Georgia; Mississippi

Region 5 - 312 / 353-2220
Illinois; Ohio; Wisconsin

Region 6 - 214 / 767-4731
Arkansas; Louisiana; Oklahoma; Texas

Region 7 - 816 / 426-5861
Kansas; Missouri; Nebraska

Region 8 - 303 / 844-1600
Colorado; Montana; North Dakota; South Dakota

Region 9 - 415 / 975-4310

Region 10 - 206 / 553-5930
Idaho

State Plan States

Alaska - 907 / 269-4957

Arizona - 602 / 542-5795

California - 415 / 703-5100

*Connecticut - 860 / 566-4380

Hawaii - 808 / 586-9100

Indiana - 317 / 232-2688

Iowa - 515 / 281-3661

Kentucky - 502 / 564-3070

Maryland - 410 / 767-2371

Michigan - 517 / 322-1848

Minnesota - 651 / 284-5050

Nevada - 702 / 486-9020

*New Jersey - 609 / 984-1389

New Mexico - 505 / 827-4230

*New York - 518 / 457-2574

North Carolina - 919 / 807-2875

Oregon - 503 / 378-3272

Puerto Rico - 787 / 754-2172

South Carolina - 803 / 734-9669

Tennessee - 615 / 741-2793

Utah - 801 / 530-6901

Vermont - 802 / 828-2765

Virginia - 804 / 786-6613

Virgin Islands - 340 / 772-1315

Washington - 360 / 902-5554

Wyoming - 307 / 777-7786

*Public Sector only

U.S. Department of Labor
Occupational Safety and Health Administration

Have questions?

If you need help in filling out the *Log* or *Summary*, or if you have questions about whether a case is recordable, contact us. We'll be happy to help you. You can:

- Visit us online at: **www.osha.gov**
- Call your regional or state plan office. You'll find the phone number listed inside this cover.

Appendix C

Health and Safety Plan Acknowledgment

HEALTH AND SAFETY PLAN (HASP) ACKNOWLEDGMENT
Mr. Cleaners - Shrub Oak Shopping Center Site
1336-1378 East Main Street
Shrub Oak (Yorktown), New York

I am a representative of _____ authorized to accept responsibility for compliance with all provisions of the HASP.
(Company)

_____ _____ _____
(Name) (Title) (Date)
Please Print

The following project personnel have read, understand, and agree with the information set forth in the referenced HASP and will adhere to all protocols and requirements specified therein for all onsite and offsite activities at Mr. Cleaners - Shrub Oak Shopping Center Site conducted by employees, representatives, subcontractors, or vendors of

_____.
(Company)

COMPANY	NAME (print)	SIGNATURE	DATE	DATE OF OSHA 40-HR TRAINING (1)	DATE OF OSHA 8-HR REFRESHER (1)

HEALTH AND SAFETY PLAN ACKNOWLEDGMENT (Continued)
Mr. Cleaners - Shrub Oak Shopping Center Site
1336-1378 East Main Street
Shrub Oak (Yorktown), New York

COMPANY	NAME (print)	SIGNATURE	DATE	DATE OF OSHA 40-HR TRAINING (1)	DATE OF OSHA 8-HR REFRESHER (1)

NOTES:
(1) During all subsurface activities in environmentally restricted areas, only authorized personnel will be permitted in the work area. These authorized individuals must have successfully completed an OSHA training course per the OSHA Hazard Communication Standard 29 CFR 1910.120 and 29 CFR 1926 Subpart "P" and must have completed an 8-hour OSHA Refresher within the last year.