INTERIM REMEDIAL MEASURES WORK PLAN
FORMER CHARLTON CLEANERS FACILITY
FOREST AVENUE SHOPPERS TOWN
BOROUGH OF STATEN ISLAND
CITY OF NEW YORK

Prepared For

KIOP Forest Avenue, L.P.

March 2009

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March 20, 2009

Mr. Nigel Crawford
New York State Department of
Environmental Conservation, Region II
Division of Environmental Remediation
47-40 21st Street
Long Island City, NY 11101

Dear Mr. Crawford:

Attached are two (2) copies of the Leggette, Brashears & Graham, Inc. (LBG) titled: "Interim Remedial Measures Work Plan, Former Charlton Cleaners Facility, Forest Avenue Shoppers Town, Borough of Staten Island, City of New York", dated March 2009 for your files.

If you have any questions, or need any additional information please do not hesitate to contact me at (914) 694-5711.

Very truly yours,

LEGGETTE, BRASHEARS & GRAHAM, INC.

Paul Woodell
Associate

PW:dmd
Attachments
cc: Bridget Callaghan
Keith Rolick
Scott Gerber
Scott Furman, Esq.
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FORMER CHARLTON CLEANERS FACILITY
FOREST AVENUE SHOPPERS TOWN
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1.0 INTRODUCTION

The following Interim Remedial Measures (IRM) Work Plan was completed on behalf of KIOP Forest Avenue, L.P. (KFA) by Leggette, Brashears & Graham, Inc. (LBG) in accordance with the New York State Department of Environmental Conservation (NYSDEC) and New York State Department of Health (NYSDOH) requirements for New York State's Inactive Hazardous Waste Disposal Site Remedial Program. KFA is an innocent owner volunteer entered into the NYSDEC Voluntary Cleanup Program (VCP), Index Number W3-0891-01-06. This IRM Work Plan has been developed in response to the soil, ground-water and soil vapor contamination identified at the former Charlton Cleaners facility and is based upon agreements made during a meeting of involved parties at NYSDEC Region II offices on January 8, 2009.

2.0 SITE HISTORY AND BACKGROUND

A complete Site history has been submitted in several reports including the LBG report "Remedial Action Selection Report, June 2007" and the LBG report "Remedial Investigation Report, Revised June 2006". The former Charlton Cleaners, a dry-cleaning facility, was located in the Rock-Landau Building in the southeast portion of the Forest Avenue Shoppers Town or FAST (the Site). The FAST shopping center consists of a shopping mall comprised of 5 buildings and approximately 25 retail businesses. This area is illustrated on the Site Area Map shown on figure 1. According to tax and Sanborn Maps, the location of the former Charlton Cleaners occupied the northeast corner of the Rock-Landau Building prior to 1994. The 2,040 ft^2 (square feet) building is currently occupied by one tenant (Michaels Crafts). No information was available regarding the initial occupancy date of the former Charlton Cleaners. For the sake of consistency with prior reports, the Rock-Landau building will be referred to as the Michaels building in this document.

KFA (an innocent owner-volunteer) entered the Site into a Voluntary Cleanup Agreement with the NYSDEC on February 20, 2002 (Site No. V-00252-2, Index No. W2-0891-01-06). The

Site is listed in the New York State Registry of Inactive Hazardous Waste Disposal Sites as a Class 2 site, Registry No. 2-43-019.

The Site has been the focus of various environmental investigations beginning in 1994 and including those performed by LBG in 2000, 2005 and 2008. Environmental media at and beneath the Site including soil, groundwater, soil vapor and indoor air have been impacted by chlorinated volatile organic compounds (CVOCs) aka chlorinated solvents, including tetrachloroethene (perchloroethene, perc, or PCE) and its degradation byproducts: trichloroethene (TCE), cis-1,2-dichloroethene (DCE), vinyl chloride (VC), etc. Historical environmental data collected at the Site is summarized in an LBG Data Consolidation letter to the NYSDEC case manager dated April 15, 2008.

Prior Interim Remedial Measures were conducted in 2007 and 2008 to mitigate the elevated indoor air CVOC concentrations in the Michaels building. They include:

- installing a 40-mil high density polyethylene vapor barrier on the floor of the Michaels building basement with a new concrete floor poured above it;
- installing lids on 3 basement sump pits to reduce vapor infiltration into the basement; and,
- adjustment and repair of the Michaels building HVAC system in order to increase the percentage of outdoor air mixed into the building air, thus diluting VOC concentrations.

3.0 INTERIM REMEDIAL MEASURES OBJECTIVE

The proposed Interim Remedial Measures (IRMs), because of their versatility and the relative speed with which they can be implemented, are designed to expedite mitigation of onsite contaminants. Additionally, the proposed IRMs are designed to be a permanent part of the final remedy.

Based on historical and environmental data, the "source area" for the groundwater contamination found hydraulically downgradient of the former Charlton Cleaners, as well as the contaminated soil vapor and indoor air (within the Michaels store), is beneath the northern portion of the Michaels building basement. The large basement sump located in the equipment room was one possible point of discharge to the environment (figure 2). It is not technically feasible to delineate or define the source area more precisely beyond this description.

Soil in the vicinity of the sump is a likely source of dissolved-phase groundwater contamination both beneath the basement floor and downgradient. Additionally, the soil and groundwater is the source of CVOCs detected in the indoor air of the Michaels building.

The objectives of the IRMs are as follows:

- remove soil to the extent practical which is acting as source material for indoor air and groundwater contamination;
- control and/or stop soil vapor intrusion of residual vapors by installing a fan to maintain negative pressure within the 2 north sump pits; and,
- install an additional sump pit to control groundwater which often infiltrates into basement from outside stairs.

The proposed IRMs consist of the following field activities:

1. Excavation of soil from below basement floor in vicinity of large sump pit
   - saw-cut and break existing basement floor near the large sump;
   - use vacuum truck to excavate soil;
   - expand excavation laterally based on soil contamination and proximity to structural components;
   - groundwater pumped through carbon filters to sanitary sewer;
   - collect endpoint soil samples;
   - possibly modify existing sump pit with holes to admit groundwater; and,
   - backfill excavation, repair vapor barrier and concrete.
2. Install ventilation fan on 2 north sump pits
   - Install piping to lids of both sumps and route to common inline fan or blower;
   - Pipe airflow through vapor-phase carbon vessels; and,
   - Route effluent piping outside building and extend to the roofline.
3. Install sump pit at bottom of outside stairwell
   - Break concrete, dig soil, install plastic sump and pump; and,
   - Run outlet pipe to discharge into large north sump pit.
4. Preparation of IRM report. The report will include the following:
   - detailed descriptions of field activities;

- site maps showing sample locations;
- data summary tables; and,
- laboratory data.

4.0 SCOPE OF WORK

4.1 Soil Excavation

All activities will be supervised by an onsite hydrogeologist. The concrete floor in the vicinity of the large basement sump will be saw-cut and broken with a jackhammer. There is an approximately 4-inch thick new slab (installed in 2005) underlain by the polyethylene vapor barrier and the old floor. This will all be removed by hand out the north exterior stairwell. The lateral extent of excavation will initially be confined to the equipment room and a portion of the adjacent vacant room (figure 2). If soil conditions warrant, additional floor will be cut and broken to extend the excavation.

Soil will be excavated using a high-capacity truck mounted industrial vacuum with attached containment vessel. The vacuum truck will be stationed outside the exterior stairwell and a large diameter hose will extend from the truck to the excavation. The vacuum truck will suck soil and water into the vessel. Once the vessel reaches capacity, the soil and water will be temporarily staged in a polyethylene lined roll-off container outside the building.

As the excavation is expanded, soil will be screened for CVOCs with a photoionization detector (PID). However, as the water table is at or near the elevation of the basement floor, and the soil beneath will be fully saturated with contaminated groundwater. The PID will likely exhibit a response to CVOCs in the groundwater-saturated soil regardless of how much contamination is actually adhered to or adsorbed on the soil particles. Therefore, severity of soil contamination will also be judged by the experienced hydrogeologist using visual and olfactory indicators (free product, staining, etc.). The final excavation dimensions can not be determined at this time and is dependent in part on the soil conditions (ability to hold a vertical face), rate of groundwater infiltration, need to preserve structural wall support, etc.

Soil excavation will occur below the water table. The rate of infiltration of groundwater may be such that the excavation must be dewatered for the vacuum excavation to be effective. Also, the excavation will likely fill with groundwater overnight requiring pumping before work can commence. A large "trash" pump capable of pumping small solids will be placed in the excavation low point. The pump discharge will be directed to a fractionation tank (frac tank) stationed outside

the building. The frac tank will be used for temporary storage and as a sediment settling tank. Ideally, the water will then be pumped through a series of liquid-phase activated carbon filtration vessels then to the sanitary sewer system. A permit would be obtained from the appropriate New York City water treatment facility. If the discharge permit is denied or prohibitively expensive, the water will be transported offsite to an authorized disposal facility. The choice of treatment will be based in part on the anticipated total water volume, estimated after work commences.

Once excavation is complete, endpoint soil samples will be collected to determine the soil quality at the margins. One sample will be collected for every 15 feet of perimeter and at a level equivalent to one half the excavation depth at that point. The samples will be analyzed by a NYSDOH ELAP certified laboratory using EPA Method 8260 including an ASP Category B "deliverables" package. A disposal characterization soil sample will also be collected from the roll-off container. After characterization, the container will be transported with proper manifests to an authorized disposal facility.

Based on a visual inspection of the interior of the existing large north sump pit, it has solid walls and bottom. Water currently enters from horizontal footer drains that appear to extend laterally to the west, parallel to the north foundation wall. A limited amount of water may also enter the sump through the seam between the sides and bottom. During the excavation process, the potential for modifying the sump to use as a low-flow groundwater recovery sump will be evaluated. Depending on the rate of groundwater influx and other design considerations, holes may be drilled in the sides of the existing sump. The sump would be wrapped in filter fabric and the area surrounding the sump backfilled with gravel. The sump would then act as a shallow recovery well to extract contaminated groundwater from beneath the northern portion of the Michaels building. The groundwater would be pumped through liquid-phase activated carbon filtration vessels and discharged to the sanitary sewer under permit.

The excavation will be backfilled with clean imported material, likely recycled concrete aggregate (RCA). The portion of the vapor barrier previously removed will be replaced according to manufacturer's instructions. The new concrete floor will then be poured and tied into the existing floor with reinforcing steel.

4.2 Sump Pit Ventilation

An inline ventilation fan or small regenerative blower will be connected by PVC ducting to the two north sump pits. The fan will operate continuously to induce a negative pressure below the

sump lids. This will prevent CVOC laden vapor from migrating out of the sumps and into the indoor air space. The air stream from the fan or blower will be directed through a series of two vapor-phase activated carbon filtration vessels, then through a duct leading outside the building and up to the roof line where the filtered air will be discharged to the atmosphere. The air flow rate is expected to be low; just enough to maintain a slight negative pressure beneath the sump lids. The post-carbon airflow duct will be equipped with a differential manometer to provide a visual check that the system is operating correctly, even to untrained persons (e.g., Michaels employees).

4.3 Stairway Sump Pit Installation

The building has a chronic problem with water accumulating at the bottom of the stairwell leading outside from the basement (figure 2). This is not just due to precipitation but is groundwater infiltrating through cracks. The water often appears on the interior floor of the basement along the north wall. The groundwater is contaminated and is a source of CVOCs in indoor air. In order to eliminate the water accumulation on the basement floor, a small sump pit will be installed at the base of the stairwell, outside the foundation wall. The floor will be saw cut and broken out with a jackhammer. A polyethylene sump will be installed with a lid and pump. The discharge water will be directed into the large basement sump. From there, the water will be pumped through carbon filtration vessels to the sanitary sewer as described in Section 4.1.

5.0 HEALTH AND SAFETY

A Site Specific Health and Safety Plan (HASP) designed for the tasks described in this Workplan is included in the Appendix. The HASP is based upon and closely parallels previously submitted and approved plans for the Site including an IRM Workplan submitted in August 2006 and a Supplemental Remedial Investigation Workplan submitted most recently in July 2008. The HASP in this Workplan has been modified to reflect that fact ground-intrusive work will only be performed inside the building.

6.0 POST-IRM SAMPLING

Upon completion of the IRM activities, indoor air will be sampled on a biannual schedule (summer and winter) in accordance with NYSDOH requirements as described in the January 8, 2009 meeting held at the NYSDEC Region II office. Indoor air samples will be collected at 4 previously established locations as well as a fifth location in the retail space, near sub-slab vapor sampling point MSS-7. Sampling protocol will be in accordance with the NYSDOH October 2006 Guidance for Evaluating Soil Vapor Intrusion in the State of New York. Air samples will be submitted to a NYSDOH ELAP certified laboratory for analysis by EPA Method TO-15. Results will include an ASP Category B "deliverables" package.

7.0 REPORTING

Upon completion of the above activities, an IRM Report will be prepared. The Report will describe field activities and will include figures showing sample locations and tables summarizing laboratory results. Data reliability will be confirmed through the submittal of a Data Usability Summary Report. Recommendations for subsequent work will be included.

8.0 PROJECT SCHEDULE

The project is expected to require 3 to 4 weeks to complete. The project start will be scheduled after NYSDEC and NYSDOH approval of this Work Plan and after obtaining all appropriate New York City and local permits.

LEGGETTE, BRASHEARS & GRAHAM, INC.

Paul Woodell

Paul Woodell
Associate

Reviewed By:

Dan C. Buzea, CPG
Senior Vice President

dmd
March 18, 2009
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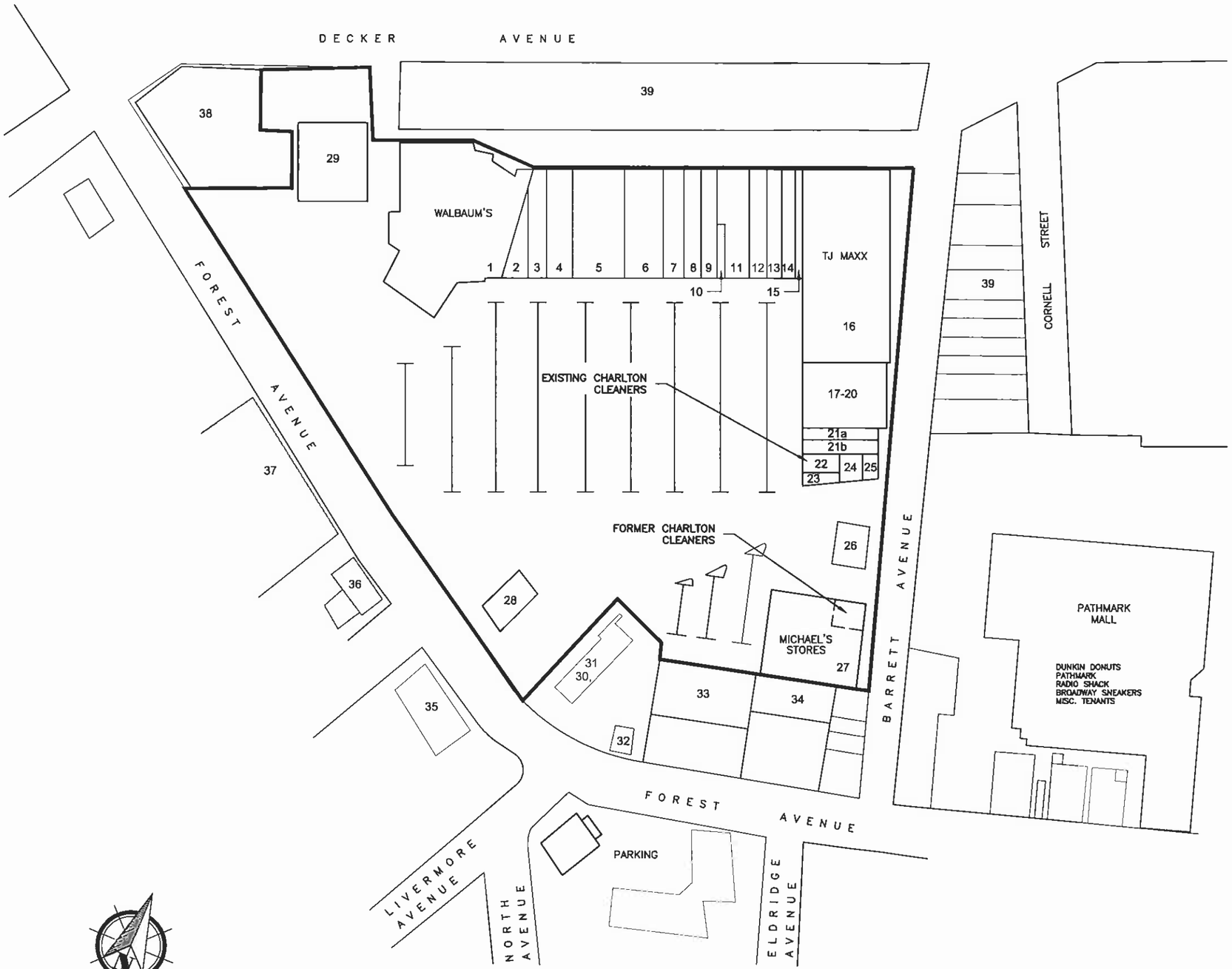
FIGURES



LEGEND

1	WALBAUM'S	24	G.J.'S UNISEX
2	RAINBOW APPAREL	25	PLAZA DELI
3	VACANT	26	FYE
4	LOT STORES	27	MICHAEL'S STORES
5	PARTY CITY	28	NORTHFIELD BANK
6	VACANT	29	CVS
7	KID'S PLACE	30	FORMER PAUL MILLER DRY CLEANING FACILITY
8	ROCKAWAY BEDDING	31	BOSTON MARKET
9	EMPIRE SZECHUAN	32	KFC
10	TOP NAILS	33	LIQUOR STORE
11	PAY HALF	34	MISCELLANEOUS
12	DANICE $10 STORES	35	WEST COAST VIDEO
13	D&G STORES	36	BANK
14	PAYLESS SHOES	37	RICKELS HOME CENTER
15	SNEAKER ZONE	38	FORMER HESS GASOLINE STATION
16	TJ MAXX	39	RESIDENTIAL
17-20	HOME TOWN BUFFET		SITE BOUNDARY
21a	PIZZA STORE		
21b	PETLAND DISCOUNTS		
22	CHARLTON CLEANERS		
23	SPECS FOR LESS		

NOT TO SCALE

FORMER CHARLTON CLEANERS FACILITY
VCP # W3-0891-01-06
FOREST AVENUE SHOPPERS TOWN
24 BARRETT AVENUE
STATEN ISLAND NEW YORK

FOREST AVENUE SHOPPERS TOWN SITE PLAN

DATE	REVISED

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DRAWN:	FCS	CHECKED:	PW	DATE:	3/14/08	FIGURE:	1

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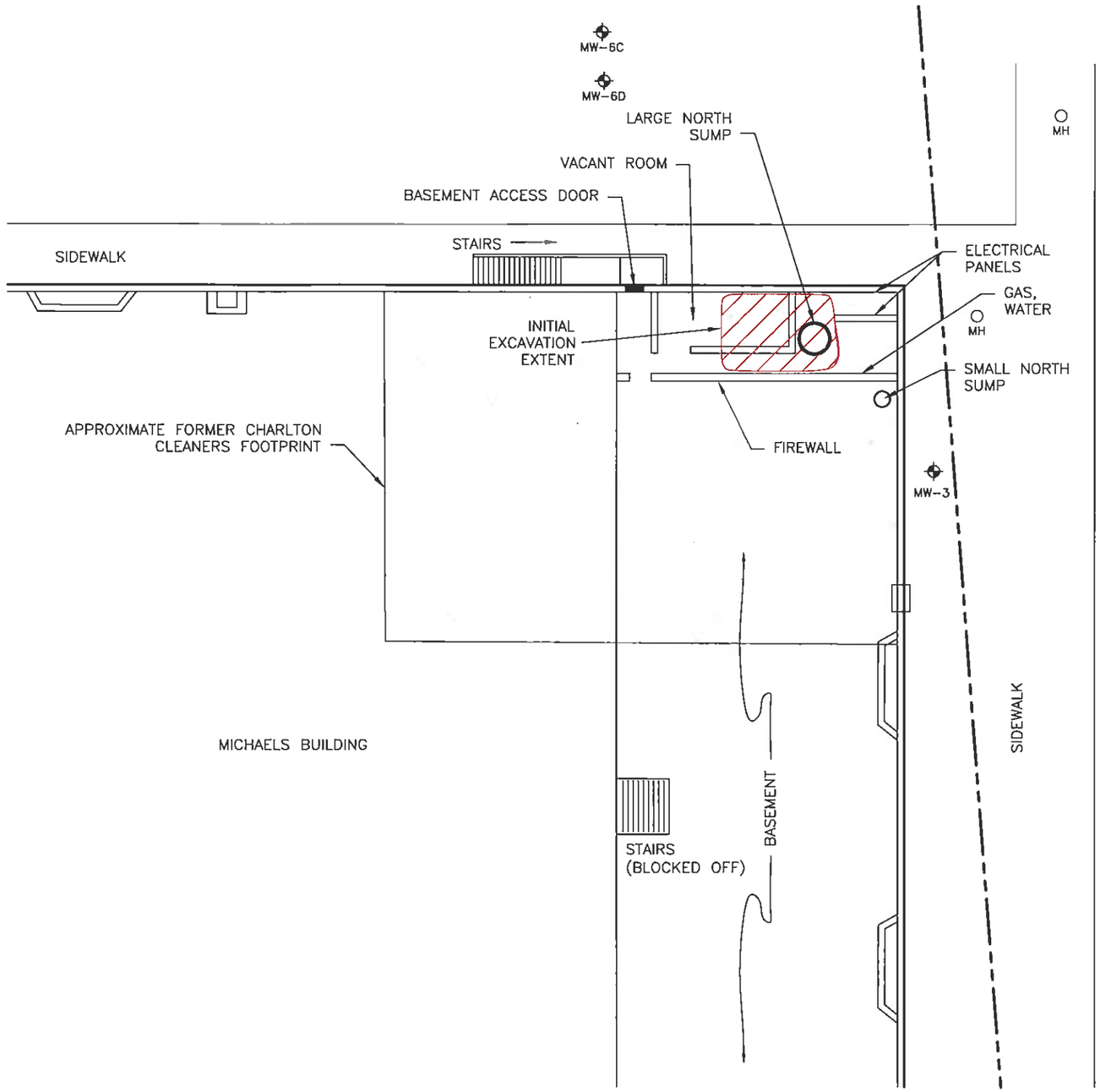

LEGEND

- PROPERTY BOUNDARY
- APPROXIMATE LOCATION OF FORMER CHARLTON CLEANERS
- MW-1 MONITORING WELL LOCATION
- MH MANHOLE

0 15
SCALE IN FEET

FORMER CHARLTON CLEANERS FACILITY
VCP # W3-0891-01-06
FOREST AVENUE SHOPPERS TOWN
24 BARRETT AVENUE
STATEN ISLAND NEW YORK

MICHAEL'S BUILDING BASEMENT DETAIL

DATE	REVISED

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DRAWN:	MRV	CHECKED:	PW	DATE:	02/19/09	FIGURE:	2

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APPENDIX

SITE SPECIFIC HEALTH AND SAFETY PLAN FOR ENVIRONMENTAL WORK RELATED TO VOLATILE ORGANIC COMPOUNDS FORMER CHARLTON CLEANERS FACILITY FOREST AVENUE SHOPPERS TOWN STATEN ISLAND, NEW YORK VCP SITE ID NO. W3-0891-01-06

Prepared For

KIOP Forest Avenue, LP

March 2009

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FOR ENVIRONMENTAL WORK RELATED
TO VOLATILE ORGANIC COMPOUNDS
FORMER CHARLTON CLEANERS FACILITY
FOREST AVENUE SHOPPERS TOWN
STATEN ISLAND, NEW YORK
VCP SITE ID NO. W3-0891-01-06

This Health and Safety Plan (HASP) is intended to provide a basic framework for the safe conduct of field investigations related to the Charlton Cleaners site. The procedures provided herein are intended as a guide for all Leggette, Brashears & Graham, Inc. (LBG) and subcontractor employees who will be involved in the performance of the project.

The primary objective of the HASP is to establish work-safety guidelines, requirements and procedures before field activities begin and during the field activities. The following information was prepared specifically for field operations by personnel to enforce and adhere to the established rules as specified in the HASP. The HASP will be provided to all personnel to aid in accomplishing the following objectives:

- monitoring the effectiveness of the HASP as it is conducted in the field by performing field operation audits;
- following up on any necessary corrective actions;
- interacting with regulatory agencies and/or client representatives regarding modifications of health and safety actions; and
- stopping work should work-site conditions warrant such action.

All personnel will have had health and safety training in accordance with OSHA Interim Final Standard 29 CFR 1910 or as may be amended. A copy of LBG's Corporate Safety Policy and Drug and Alcohol Policy is attached in Section 9.0.

1.0 ORGANIZATION AND RESPONSIBILITIES

The organization and responsibilities for implementing safe site-investigation procedures, and specifically for the requirements contained in this manual, are described in this section.

1.1 Project Manager

The LBG Project Manager will be responsible for the overall implementation and monitoring of the health and safety program by:

- ensuring appropriate protective equipment is available and properly used by all personnel, in accordance with the HASP;
- ensuring personnel health and safety awareness by providing them with proper training and familiarity with procedures and contingency plans;
- ensuring all personnel are apprised of potential hazards associated with the site conditions and operations;
- supervising and monitoring the safety performance of all personnel to ensure their work practices are conducted in accordance with the HASP;
- correcting any work practices or conditions that would expose personnel to possible injury or hazardous condition;
- communications with the onsite Health and Safety Officer (HSO);
- ensuring sufficient protective equipment is provided and used;
- promptly initiating emergency alerts; and,
- communicating with the client and/or regulatory agency representatives.

1.2 Onsite Health and Safety Officer

The LBG HSO will be onsite during all field activities. The HSO will be accountable for the direct supervision of personnel from the subcontractors and other LBG personnel with regard to:

- health and safety program compliance;
- maintaining a high level of health and safety consciousness among employees at the work site;
- reporting accidents within LBG jurisdiction and undertaking corrective action; and,
- the Community Air Monitoring Plan which is described in Section 3.1 of this HASP.

1.3 Field Personnel

All field personnel will report directly to the onsite HSO, and will be required to:

- be familiar with, and conform to, provisions of the HASP;
- report any accidents or hazardous conditions to the onsite HSO; and,
- have complete familiarity with their job requirements and the health and safety procedures involved.

1.4 Reporting of Accidents and Unsafe Conditions

If an accident occurs, the HSO and the injured person(s) are to complete an Accident Report for submittal to the project manager, who will forward a copy to the principal-in-charge who should ensure that follow-up action is taken to correct the situation that caused the accident.

1.4.1 Disciplinary Actions for Safety Related Infractions

If an infraction of the Health and Safety Plan is discovered by the Project Manager or the onsite HSO, each case will be dealt with individually. The infraction will be investigated and a disciplinary meeting held with the offender. Disciplinary actions may include a performance deficiency evaluation entered into the employee's personnel file, correction of problem after the disciplinary meeting or removal of the offender from the project. Repeated infractions will not be tolerated and will be dealt with accordingly.

1.4.2 Safety Inspections

Safety inspections will be conducted periodically by the Project Manager. The Project Manager will be familiar with the Health and Safety Plan before performing an onsite visit. While onsite, the Project Manager will evaluate the effectiveness of the plan and offer any suggestion for improvement. Although the Project Manager is responsible for periodic safety inspections and evaluation of the Health and Safety Plan, the onsite HSO is responsible for daily observation and evaluation of Health and Safety Plan effectiveness.

1.4.3 Safety Meetings

Prior to the start of field activities, a meeting will be held to discuss the potential hazards at the site, with a review of the required protective clothing and procedures observed at this site. As needed, daily meetings will be held to discuss any changes in the hazards. A site safety briefing form will be filled out each day the HSO holds a meeting and signed by all of the attendees of the briefing.

2.0 HAZARD EVALUATION

The exposure limits of chemical constituents which may be encountered are listed in table 1 at the end of this section. These constituents would possibly be encountered in ground water and/or soil and comprise the major concerns for personal health. The protection of personnel and the public from exposure to these substances by inhalation, oral ingestion, dermal absorption or eye contact is included as a primary purpose of this plan.

The onsite HSO is responsible for determining the level of personal protection equipment required. The HSO will perform a preliminary evaluation to confirm personal protective equipment requirements once the site has been entered. When work-site conditions warrant, the onsite HSO will modify the level of protection to be utilized. The existence of a situation more hazardous than anticipated will result in the suspension of work until the Project Manager and volunteer have been notified and appropriate instructions have been provided to the field team.

TABLE 1

Exposure Limits

COMPOUND	EXPOSURE STANDARDS			RECOGNITION QUALITIES		
	TLV/PEL (a) (ppm)	STEL (b) (ppm)	IDLH (c) (ppm)	Odor/ Threshold (ppm)	LEL (d) (%)	Ionization Potential (eV)
Tetrachloroethene[1/]	Ca[2/]	Ca[2/]	150	Chloroform	-	9.32
Trichloroethene	Ca[2/]	25	1,000	Chloroform	8.0	9.45
1,2-Dichloroethylene	200	-	1,000	Chloroform	5.6	9.65
Vinyl Chloride	Ca[2/]	Ca[2/]	Not determined	Pleasant	3.6	9.99
1,1-Dichloroethane	100	Ca[2/]	3,000	Chloroform	5.4	11.06
1,1,2-Trichloroethane	Ca[2/]	10	100	Chloroform	6.0	11.00
Chlorobenzene	75[3/]	-	1,000	Almonds	1.3	-
Benzene[1/]	0.1	1	500	12	1.2	9.24
Toluene	100	150	500	Sweet benzene like/2.9	1.1	8.82
Ethylbenzene	100	125	800	Aromatic	0.8	8.76
Xylenes	100	150	900	Aromatic/1.1	0.9	8.56

Notes:

1/ Potential occupational carcinogen
2/ NIOSH recommends occupational exposures to carcinogens to be limited to the lowest feasible concentration
3/ OSHA guideline, NIOSH questions the adequacy of 75 ppm
- = No published value

(a) The more stringent of either: (1) Occupational Safety and Health Administration (OSHA) 1989 permissible Exposure Limit (PEL), (2) American Conference Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV), or (3) National Institute for Occupational Safety and Health (NIOSH) recommended exposure limits (RELs), time-weighted average concentrations for up to a 10-hour work day.
(b) Short Term Exposure Limit - 15 minute exposure.
(c) Immediately dangerous to life and health.
(d) Lower Explosive Limit

3.0 MONITORING REQUIREMENTS

A photoionization detector (PID) will be used to monitor ambient air quality at the drilling or excavation sites. Records of these data will be maintained by the onsite HSO. During drilling operations or excavation activities, air quality will be monitored, especially near the top of the boreholes as samples are taken and at the perimeters of any excavations. Work operations which involve handling of potentially hazardous substances will include continuous contaminant monitoring using the PID. When deemed necessary or desirable by the onsite HSO, area monitoring will be used in potentially hazardous zones. Area monitoring will be performed as plans and conditions dictate, and in accordance with the HASP and with the goal of accident and hazardous condition prevention in mind. Instrument calibration information is included in Section 10.0.

For the compounds previously identified to be most prevalent, the lowest 8-hour exposure limit is listed on table 1 (Section 2.0).

3.1 Community Air Monitoring Plan

During all field activities, a Community Air Monitoring Plan (CAMP) will be followed. The CAMP is outlined below.

Real-time air monitoring for volatile compounds and particulate levels at the perimeter of the work area is necessary. The plan includes the following:

- VOCs will be monitored in real-time in the building basement (the work area) and within 50 feet of exhaust fan discharge points (building exterior) on a continuous basis using a PID. If total organic vapor levels exceed 5 ppm (parts per million) above background, work activities will be halted and monitoring continued under the provisions of a Vapor Emission Response Plan. All readings will be recorded and be available for State (DEC and DOH) personnel to review.
- Particulates will be monitored in real-time in the building basement and within 50 feet of exhaust fan discharge points (building exterior) using a personal Data RAM dust meter capable of measuring particulate matter less than 10 micrometers in size. If particulate levels exceed 100 ug/m^3 (micrograms per cubic meter), dust

suppression techniques will be employed and work will continue. All readings will be recorded and be available for State Agency (DEC and DOH) review.

- Should dust be observed leaving the work area, regardless of real-time particulate measurements, dust suppression techniques will be implemented.

3.2 Vapor Emission Response Plan

If the ambient air concentration of organic vapors exceeds 5 ppm above background within the work area, activities will be halted and monitoring continued. If the organic vapor level decreases below 5 ppm above background, work activities can resume. If the organic vapor levels are greater than 5 ppm over background but less than 25 ppm over background at the perimeter of the work area, activities can resume provided:

- the organic vapor level 50 feet from exhaust fan discharge, or half the distance to the nearest residential or commercial structure, whichever is less, is below 5 ppm over background.

If the organic vapor level is above 25 ppm within the work area, activities will be shutdown. When work shutdown occurs, downwind air monitoring as directed by the Safety Officer will be implemented to ensure that vapor emission does not impact the nearest residential or commercial structure at levels exceeding those specified in the Major Vapor Emission section.

3.3 Major Vapor Emission

If any organic levels greater than 5 ppm over background are identified 50 feet from exhaust fan discharge or half the distance to the nearest residential or commercial property, whichever is less, all work activities will be halted.

If, following the cessation of the work activities, or as the result of an emergency, organic levels persist above 5 ppm above background 50 feet from exhaust fan discharge or half the distance to the nearest residential or commercial property from the work area, then the air quality will be monitored within 20 feet of the perimeter of the nearest residential or commercial structure (20 Foot Zone).

If efforts to abate the emission source are unsuccessful and if the following levels persist for more than 30 minutes in the 20 Foot Zone, then the Major Vapor Emission Response Plan shall automatically be placed into effect.

3.4 Major Vapor Emission Response Plan

Upon activation, the following activities will be undertaken:

1. All Emergency Response Contacts as listed in the Health and Safety Plan of the Work Plan will be notified.
2. The local police authorities will immediately be contacted by the Safety Officer and advised of the situation.
3. Frequent air monitoring will be conducted at 30 minute intervals within the 20 Foot Zone. If two successive readings below action levels are measured, air monitoring may be halted or modified by the Safety Officer.

4.0 LEVELS OF PROTECTION

The level of protection anticipated to perform work on this investigation is Level D, unless otherwise upgraded. Only protective equipment deemed suitable by the onsite HSO for use at the work site will be worn. Any changes in protection levels shall be documented by the onsite HSO. Field personnel should exercise informed judgment on protective equipment requirements at active work sites or at work sites that have been repeatedly entered or occupied without apparent harm. In any case where doubt exists, the safest course of action must be taken. The protective equipment to be used by field personnel is listed below.

4.1 Level D

- hard hat;
- safety glasses, shatter-proof prescription glasses or chemical splash goggles;
- boots/shoes, leather or chemical-resistant, steel toe and shank;
- coveralls; and,
- chemical resistant gloves.

At a minimum, protective headgear, including protective hearing devices, eyewear and footwear will be worn at all times by personnel working around the drilling equipment. When work-site conditions dictate, protective gloves and chemical-resistant boots shall be required for those personnel handling contaminated soils or water.

Typically, for VOC-related work, a sustained level of 0 to 5 ppm above background as measured with a PID provides a large safety margin for the 8-hour exposure limit.

4.2 Level C

- hard hat;
- boots, leather, steel toe and shank;
- outer boots, chemical resistant;
- chemical-resistant gloves (solvex);
- Tyvek or Saranex suit; and,
- Air purifying respirator with organic vapor cartridge and dust and mist filter.

Level C protection will be considered for sustained PID readings of 5 to 100 ppm above background in the breathing zone.

Respirators for all personnel will be available with both particulate and organic vapor protection cartridges. The onsite HSO will direct when the protective clothing and respirators will be utilized based on the conditions encountered at the work site.

4.3 Level B

- pressure-demand, self-contained breathing apparatus;
- standby escape pack;
- chemical resistant clothing (Saranex suit);
- outer gloves (Solvex);
- inner gloves (surgical);
- outer boots (chemical resistant);
- inner boots (leather, steel shank and toe); and,
- hard hat.

Level B will be considered for sustained PID readings of 100 ppm above background in the breathing zone. In the event that the work space atmosphere contains in excess of 100 ppm of total ionizable compounds above background, colorimetric tubes or a portable gas chromatograph will be used to determine the levels of individual chemicals. The use of Level B equipment will be based on the specific compounds present and will include discussions with the regulatory authorities and/or the client representative.

Level A conditions will require specialized procedures to be formulated on a case-by-case basis.

5.0 SAFE WORK PRACTICES AND HYGIENE

In addition to the use of protective equipment, other procedures will be followed to minimize risk:

- all consumptive activities including eating, drinking or smoking are prohibited during the drilling, sampling and decontamination activities;
- an adequate source of potable water for emergency use will be available at the drilling sites (two liters per person per day);
- fire extinguishers will be available at the work sites for use on equipment or small fires when appropriate; and,
- an adequately stocked first-aid kit will be maintained at the work site at all times during operational hours.

5.1 Heat Stress

In order to avoid heat stress several preventative measures will be observed:

- Workers will be urged to drink a 16-ounce glass of water prior to work (in the morning and after lunch). Water will be contained in a cooler, maintained at a temperature below 60°F. Workers will be encouraged to drink approximately every 20 minutes during days of extreme heat.
- In extreme hot weather, field activities will be conducted in the early mornings and late afternoons.
- Rest breaks in cool or shaded areas will be enforced as needed.

- Toilet facilities will be made available to site workers, unless transportation is readily available to nearby toilet facilities.
- Good hygiene practices will be encouraged, stressing the importance of allowing the clothing to dry during rest periods. Anyone who notices skin problems should receive medical attention immediately.
- If there are support personnel available outside the work zone, they should observe the workers in the exclusion zone to monitor signs of stress, frequency of breaks, etc.

5.2 Cold Stress and Exposure

In order to avoid cold stress, several preventative measures will be observed;

- work will not take place when the temperature falls below -20°F. (The wind chill factor should be a major consideration);
- clothing should be worn in layers, so that personnel can adapt to changing conditions and various levels of physical stress;
- if possible, breaks should be taken in a heated vehicle or building, but care should be taken to remove outer clothing during the break;
- have on hand extra inner clothing in case perspiration builds up;
- keep insulated containers of warm liquids available for breaks outside of the exclusion zone;
- be aware of the signs of frostbite and take immediate remedial measures; and,
- take extra precautions around areas subject to ice buildup, such as sanding slippery surfaces.

6.0 WORK ZONE

To prevent unauthorized personnel from entering areas where active operations are being performed, the area enclosing the operation will be marked.

Typically, VOC projects such as this one involve installation of wells, monitoring of wells, installation and operation of treatment systems and observation of tank and trench excavation work. Safety issues with respect to this type of work are attached in Section 11.0.

7.0 DECONTAMINATION

An area will be set aside within the work zone for decontamination. The type of decontamination procedures used will be based on the level of protection required. Decontamination of Level D protective wear will consist of brushing heavily soiled boots to remove soils, rinsing gloves and safety glasses (and overboots, if worn) with water, and removing and storing coveralls in plastic bags before leaving the work zone, if heavily soiled or suspected of having been in contact with site contaminants. For detailed decontamination, equipment and procedures, refer to Section 12.0.

8.0 CONTINGENCY PLAN FOR EMERGENCIES

In the event of a safety or health emergency, appropriate corrective measures must immediately be taken to assist those who have been injured or exposed and to protect others from hazard. The onsite HSO will be notified of the incident immediately. If necessary, first aid will be rendered. A contact sheet showing the closest police, hospital and NYSDEC office will be maintained onsite within this HASP as Section 13.0.

9.0 LEGGETTE, BRASHEARS & GRAHAM, INC., SAFETY POLICY AND GENERAL DRUG AND ALCOHOL POLICY

9.1 Safety Policy

Job safety is a common-sense part of everyone's life, but requires constant alertness to possible dangers. When we work on industrial sites, LBG employees are expected to observe the safety rules of our Client hosts.

You are the first line of defense for your own personal safety. In the field, appropriate clothing should be worn at all times. Where appropriate, work shoes with hard toes and/or ankle protection should be worn at all times. **Sneakers/tennis shoes should never be worn in the field, regardless of the circumstances.**

LBG provides hard hats that should be worn around any drilling operations and in any other "hard hat zones". Where required, safety glasses, goggles, protective gloves, respirators, and other safety clothing or equipment should be worn and disposed of as specified by the Project Safety Officer.

Periodically, LBG provides special safety seminars which satisfy the OSHA requirements for work on hazardous waste sites. In-house safety training is conducted on an ongoing basis and as dictated by case-by-case needs. There is a Corporate Safety Officer in the Trumbull, Connecticut headquarters and a designated Safety Officer in each regional office to whom questions and problems relating to job safety should be referred.

Any project that involves or may involve hazardous or toxic waste or any potentially dangerous condition requires the preparation, filing, use and compliance with a Health and Safety Plan (HASP). LBG has a petroleum related work HASP that can be readily adapted to most petroleum jobs and has numerous site-specific HASPs that comply with state and federal CERCLA requirements that can be used for guidance in developing site-specific HASPs.

9.2 General Drug and Alcohol Policy

In any company, certain common-sense rules of conduct and performance must be established for the employees to follow in order to avoid any misunderstanding and to protect the right of all concerned. Breaches of acceptable conduct which include, but are not limited to, abusive language, insubordination, intoxication, moral turpitude, or substance abuse/possession can lead to disciplinary action or to dismissal.

While performing any service for LBG or LBG's clients, employees, agents, and subcontractors of LBG shall not: (1) be under the influence of alcohol or any controlled substance; (2) use, possess, distribute, or sell illicit or unprescribed controlled drugs, drug paraphernalia, or alcoholic beverages; or (3) misuse legitimate prescription drugs.

LBG may remove from active project status any of its employees any time there is a reasonable basis for suspicion of alcohol/drug use, possession, or impairment involving such employee, and at any time an incident occurs where drug or alcohol use could have been a contributing factor. In such cases, employee may only be considered for return to work after LBG certifies as a result of a for-cause test, conducted immediately following removal, that said employee is in compliance with this policy.

LBG reserves the right to require drug and alcohol testing for its employees, either for its own purposes or at the direction of Clients. Such testing may take place periodically, or for

specific projects. The testing will be in compliance with Department of Transportation drug testing regulations.

10.0 AIR MONITORING EQUIPMENT OPERATION

10.1 Instrument Calibration

All applicable instruments will be calibrated daily before use. Readings will be recorded on the Air Monitoring form.

10.2 Background Readings

Before any field activities commence, the background levels of the site must be read and noted. Daily background readings must be conducted away from areas of potential contamination to obtain accurate results.

10.3 Air Monitoring Frequency

All site readings must be noted on the Air Monitoring form along with the date, time, background level, weather conditions, wind direction and speed, and the location where the background level was recorded.

10.4 OVM 580B Photoionization Detector Calibration

- Turn the OVM on by pressing the ON/OFF switch.
- With the OVM running, press the MODE/STORE switch and then press the -/CRSR switch when the OVM reads if "logging is desired".
- Keep pressing the -/CRSR switch until OVM will display "reset to calibrate".
- Enter the calibration mode by pressing the RESET switch. The OVM will then display "restore backup + = Yes".
- Press the -/INC switch and the OVM will display "zero gas reset when ready".
- Connect zero gas to OVM and press RESET switch. The OVM will display "Model 580B zeroing".
- After the OVM calibrates the zero gas, it will display "span gas reset when ready".
- Connect span gas to OVM and press RESET switch.

- When OVM displays "reset to calibrate", the OVM has calibrated the span gas.
- To exit calibration mode, press MODE/STORE switch.

10.5 MiniRAE 2000 Photoionization Detector Calibration

- Press [MODE] to turn on. Wait for startup to finish
- To calibrate, from "Ready" or "0.0ppm", press and hold [N/-] and [MODE] for 3 seconds.
- "Calibration/select gas?" press [Y/+]
- "Fresh Air Cal?" press [Y/+], unit zeros in about 15 seconds, press [N/-]
- "Span Cal?" press [Y/+], unit will tell when to apply Span Gas (typically isobutylene) from tedlar bag. Calibration takes about 30 seconds. Reading should be very near the Span Gas concentration (e.g. 100 ppm). Unit will tell when to turn gas off.
- Press [MODE] twice to return to Survey Mode.

10.6 Thermo MIE Mod. PDR-1000AN Dust Monitor Calibration

- Press [ON/OFF] to turn unit on. To zero-calibrate unit, press [ENTER]. Note unit must be in a dust-free environment (e.g. a very clean office) to zero-calibrate.
- Unit will display "ZEROING" then "CALIBRATION: OK".
- To start measurement run press [ENTER].

11.0 VOLATILE ORGANIC COMPOUNDS PROJECT WORK ZONE CONSIDERATIONS

11.1 EXCAVATION

The following requirements, which apply to all types of excavation operations, except tunnels and shafts, are taken from the U.S. Department of the Interior, Bureau of Reclamation's Construction Safety Standards. They are not intended to be an exhaustive set of requirements, but rather, a summary of current practices that are being enforced at construction activities by Federal and state government agencies and private industry. The requirements were assembled in

cooperation with the Associated General Contractors of America, the American National Standards Institute, labor unions, and other interested in improving safety.

11.1.1 Preliminary Inspection

Prior to excavation, the site should be thoroughly inspected to determine conditions that require special safety measures. The location of underground utilities, such as sewer, telephone, gas, water, and electric lines, must be determined and plainly staked. Necessary arrangements must be made with the utility company or owner for the protection, removal, or relocation of the underground utilities. In such circumstances, excavation will be done in a manner that does not endanger the employees engaged in the work or the underground utility. Utilities left in place should be protected by barricading, shoring, suspension, or other measures, as necessary.

11.1.2 Protection of the Public

Necessary barricades, walkways, lighting, and posting should be provided for the protection of the public prior to the start of excavation. Excavation operations on or near state, county, or city streets, accessways, or other locations where there is extensive interface with the public and/or motorized equipment will not start until all of the following actions have been taken:

- The contractor has contacted the authority having jurisdiction and obtained written permission to proceed with protective measures required.
- The contractor, using the authority's instructions and these standards, has developed an extensive and detailed standard operating plan.
- The plan has been discussed with affected employees, and applicable protective measures are in place and functioning.

11.1.3 Access and Lighting

Safe access will be provided for employees, including installation of walkways, stairs, ladders, etc. When operations are conducted during hours of darkness, adequate lighting will be provided at the excavation, borrow pits, and waste areas.

Where employees are required to enter excavations over 4 feet in depth, stairs, ladders, or ramps must be provided, so as to require no more than 25 feet of lateral travel. When access to excavations exceeds 20 feet vertically, ramps, stairs, or personnel hoists should be provided. Ladders extending from the bottom of the trench to at least 3 feet above the top must be placed within 25 feet of workers in the trench.

11.1.4 Personal Protective Equipment

PPE will be provided and used in accordance with the specific requirements set forth in the plan. Drillers and helpers must wear approved safety goggles or safety glasses with side shields, hearing protection, hard hats, and safety shoes.

11.1.5 Removal of Trees and Brush

Prior to excavation, trees, brush, boulders, and other surface obstacles that present a hazard to employees should be removed.

11.1.6 Slide Prevention and Trenching Requirements

All trench excavations over 4 feet in depth must use a trench box. Excavations should be inspected following rainstorms or other hazardous events. Additional protection against possible slides or cave-ins shall be provided, as necessary.

11.1.7 Angle of Repose

The determination of the angle of repose and design of supporting systems should be based on a thorough evaluation of all pertinent factors, including depth of cut; possible variation in water content of the material; anticipated changes in the material from exposure to air, sun, water, or freezing; loading imposed by structures, equipment, or overlying or stored material; and vibrations from sources such as traffic, equipment, and blasting. The angle of repose for all excavations, including trenching, should be determined by a professional engineer, but in no event should the slope be less than 3/4 horizontal to 1 vertical (i.e., 37 degrees from vertical) from the bottom of the excavation.

11.1.8 Support Systems

Materials used for support systems, such as sheeting, piling, cribbing, bracing, shoring, and underpinning, should be in good serviceable condition, and timbers should be sound and free of large or loose knots. The design of support systems should be based on calculations of the forces and their directions, with consideration for surcharges, the angle of internal friction of materials, and other pertinent characteristics of the material to be retained.

When tight sheeting or sheet piling is used; full loading due to the groundwater table should be assumed unless relieved by weep holes, drains, or other means. Cross braces and trench jacks should be placed in true horizontal position and secured to prevent sliding, falling, or kickouts. Additional stingers, ties, and bracing should be provided to allow for any necessary temporary removal of individual supports. Support systems should be planned and designed by a professional engineer competent in the field.

Backfilling and removal of trench support systems should progress together from the bottom of the trench. Jacks or braces should be released slowly. In unstable soil, ropes or other safe means will be used to remove the braces from the surface after workers have left the trench.

Special precaution must be taken in sloping or shoring the sides of excavations adjacent to a previously backfilled excavation or fill area. The use of compacted backfill as backforms on slopes that are steeper than the angle of repose of the compacted material in its natural state is prohibited.

11.1.9 Structural Foundations and Footings

Except in hard rock, excavations below the level of the base of any foundation, footing, or retaining wall will not be permitted unless the wall is underpinned and all necessary precautions are taken to ensure the stability of adjacent walls. If the excavation endangers the stability of adjacent buildings or structures, shoring, bracing, or underpinning designed by a qualified person will be installed. Such supporting systems must be inspected at least daily by qualified persons to ensure that protection is adequate and effectively maintained.

Small diameter footings that workers are required to enter, including bell-bottomed footings over 4 feet deep, must be provided with a steel casing or support system of sufficient

strength to support the earth walls and prevent cave-ins. The casing or support system shall be provided for the full depth, except for the bell portion of bell footings.

Fixed or portable ladders must be provided for access. A lifeline, securely attached to a shoulder harness, should be worn by every employee entering the footing. The lifeline should be manned from above and should be separate from any line used to raise or lower materials.

11.1.10 Vertical Cuts and Slopes

Before a slope or vertical cut is undercut, the residual material must be adequately supported and the undercutting method and support system must be inspected.

When exposed to falling, rolling, or sliding rocks, earth, or other materials, employees working below or on slopes or cuts should be protected in the following manner:

- By effective scaling performed prior to exposure and at intervals necessary to eliminate the danger.
- By the installation of rock bolting, wire mesh, or equivalent support if the material continues to ravel and fall after scaling.
- By the installation of protective timber or wire mesh barricades at the slope of the cut and at necessary intervals down the slope. Wherever practical, benching sufficient to retain falling material may be used in lieu of barricades.
- By ensuring that personnel do not work above one another where there is danger of falling rock or earth. Personnel performing work on vertical cuts or slopes where balance depends on a supporting system must wear appropriate safety equipment.

11.1.11 Ground Water

Ground water should be controlled. Freezing, pumping, draining, and other major control measures should be planned. Full consideration should be given to the existing moisture balance in surrounding soil and the effects on foundations and structures if it is disturbed. When continuous operation of groundwater control equipment is necessary, an emergency power source should be provided.

11.1.12 Surface Water

The accumulation of surface water in excavations must not be permitted and should be controlled by diversion ditches, dikes, dewatering sumps, or other effective means.

11.1.13 Excavated Materials

Excavated materials should be laced and retained at least 2 feet from the depth of the excavation, or at a greater distance when required to prevent hazardous loading on the face of the excavation.

11.1.14 Protective Devices

Guardrails, fences, barricades, and warning lights or other illumination systems will be maintained from sunset to sunrise on excavations adjacent to walkways, driveways, and other pedestrian or vehicle thoroughfares. Walkways or bridges that are protected by standard guardrails should be provided where employees are required or permitted to cross over excavations.

Wells, calyx holes, pits, shafts, and all similar hazardous excavations must be effectively barricaded or covered and posted. All temporary excavations of this type should be backfilled as soon as possible. When mobile equipment is permitted adjacent to excavations with steep slopes or cuts, substantial stoplogs or barricades should be installed.

11.1.15 Equipment Operation

Equipment that is operated on loading or waste areas must be equipped with an automatic backup alarm. Additionally, when employees are on foot or otherwise endangered by equipment in dumping or waste areas, a competent signalman should be used to direct traffic. The signalman must have no other assignment that interferes with signaling duties. If the equipment or truck cab is not shielded, the operator should stand clear of the vehicle during loading. Excavating or hoisting equipment should not be allowed to raise, lower, or swing loads over workers unless effective overhead protection is provided.

11.1.16 Drilling Operations

When drilling in rock or other dust-producing material, the dust should be controlled within the OSHA Permissible Exposure Limits (PELs). Except in shaft and tunnel excavation, dust control devices are not required on jackhammers as long as the operators wear approved dust respirators.

11.2 DRILLING SAFETY

11.2.1 Basic Requirements

Employees will not proceed with work on, or in the proximity of, hazardous equipment until they have been properly trained and have received a safety briefing. If drilling is at a hazardous substance site, the site-specific safety plan must be reviewed onsite and discussed in the safety briefing.

Potential hazards (e.g., overhead or underground power, oil, or gas lines in the immediate vicinity of the drilling location) must be removed, avoided by relocating the drill site, or adequately barricaded to eliminate the hazard.

The use of unsafe or defective equipment is not permitted. Equipment must be inspected regularly and, if found to be defective, must be immediately removed from use and either repaired or replaced.

Employees will be familiar with the location of first-aid kits and fire extinguishers. Telephone numbers for emergency assistance must be prominently posted and kept current.

11.2.2 Housekeeping

Good housekeeping conditions should be observed in and around the work area. Suitable storage places should be provided for all materials and supplies. Pipe, drill rods, etc., must be securely stacked on solid, level sills.

Work surfaces, platforms, stairways, walkways, scaffolding, and accessways will be kept free of obstructions. All debris will be collected and stored in piles or containers for removal and disposal.

11.2.3 Salamander Heaters

Salamanders will be used only with approved fuels (e.g., do not use gasoline). Salamander heaters must not be refueled or moved until they have been extinguished and permitted to cool. Heaters will be equipped with exhaust stacks and will not be set on or placed near combustible material. They should be equipped with metal stands that will provide adequate stability and permit at least a 2-inch clearance under the unit.

Burning salamanders must be attended at all times, with suitable fire extinguishers available to each attendant. If tarpaulins or other flexible materials and used to form a heating enclosure, they must be fire resistant and installed to prevent contact with the heater. Worn salamanders that have developed holes or have been otherwise damaged will be replaced and removed from service.

11.2.4 Lighting

In addition to providing required or recommended illumination intensities of at least 5 foot-candles, consideration should be given to the selection and placement of lighting equipment. Proper lighting should provide minimum glare, eliminate harsh shadows, and provide adequate illumination to perform work efficiently and safely.

Light bulbs should be of the heavy duty, outdoor, nonshattering type.

All lighting circuits, including drop cords, should be grounded and have ground fault interrupters. Lighting circuits will be inspected periodically, and defective wiring or fixtures will be removed from service.

11.2.5 Flammable Liquids

All highly flammable liquids should be stored and handled only in approved containers. Portable containers must be the approved red safety containers equipped with flame arresters and self-closing lids.

Approved hand pumps will be used to dispense gasoline from barrels. Gasoline must not be used for degreasing or to start fires. Also, gasoline containers should be clearly labeled, and storage areas should be posted with "No Smoking" signs. Fire extinguishers should be installed in all areas that contain flammable liquids.

11.2.6 Public Safety

Work areas will be regulated so that the public will be protected from injury or accident. Adequate danger signs, barriers, etc., will be placed to effectively warn the public of hazards as well as to restrict access to dangerous areas.

11.2.7 Off-Road Movement of Drill Rigs

The following rules apply to the off-road movement of drill rigs:

- Before moving a drill rig, an inspection should be made of the route of travel for depressions, slumps, gullies, ruts, and similar obstacles.
- The brakes of a drill rig carrier should always be checked before traveling, particularly on rough, uneven, or hilly ground.
- All passengers should be discharged before a drill rig is moved on rough or hilly terrain.
- The front axle of 4 x 4 or 6 x 6 vehicles or carriers should be engaged when traveling off-road on hilly terrain.
- Caution should be used when traveling on a hillside. The hillside capability of drill rigs should be evaluated conservatively, because the addition of drilling tools may raise the center of mass. When possible, travel should be made directly uphill or downhill.
- Obstacles such as small logs, small erosion channels, or ditches should be crossed squarely, not at an angle.
- When lateral or overhead clearance is close, someone on the ground should act as a guide.
- After the drill rig has been moved to a new drilling site, all brakes or locks should be set. Wheels should be blocked on steep grades.
- The mast (derrick) of the drill rig should not be in the raised or partially raised position during off-road travel.
- Loads on the drill rig and supporting trucks should be tied down during transport.

11.2.8 Skid-Mounted Units

Labels clearly indicating the function and direction of control levers should be posted on the lower unit controls of all drills.

An emergency safety power shutoff device should be installed within reach of the operator on all units. The device should be clearly labeled or otherwise made readily identifiable and checked daily to ensure that it is operable. The power unit should be operated only by authorized and qualified personnel.

Equipment will be shut down during manual lubrication and while repairs or adjustments are being made. Equipment such as internal combustion engines will not be refueled while running. Where practical, the gasoline tank should be positioned or shielded to avoid accidental spillage of fuel on the engine or exhaust manifold during refueling operations. Hazardous gears and moving parts also should be shielded to prevent accidental contact.

A dry chemical or carbon dioxide fire extinguisher, rated 5 pounds or larger, should be carried on the unit and removed to a position within 25 feet of the work site during drilling operations. Extinguishers will be inspected and tagged at least once every 3 months.

Engine exhaust systems should be equipped with spark arresters when operated in areas where sparks constitute a fire hazard.

11.2.9 Overhead and Underground Utilities

Special precaution must be taken when using a drill rig on a site within the vicinity of electrical power lines and other utilities. Electricity can shock, burn, and cause death.

Overhead and underground utilities should be located, noted, and emphasized on all boring location plans and assignment sheets. When overhead electrical power lines exist at or near a drilling site, all wires should be considered dangerous.

A check should be made for sagging power lines before a site is entered. Power lines should not be lifted to gain entrance. The appropriate utility company should be contacted and a request should be made that it lift or raise and cut off power to the lines.

The area around the drill rig should be inspected before the drill rig mast (derrick) is raised at a site in the vicinity of power lines. The minimum distance from any point on the drill rig to the nearest power line should be determined when the mast is raised or is being raised. The mast

should not be raised and the drill rig should not be operated if this distance is less than 20 feet, because hoist lines and overhead power lines can be moved toward each other by the wind.

The existence of underground utilities, such as electric power, gas, petroleum, telephone, sewer, and water lines, should always be suspected. These underground electric lines are as dangerous as overhead lines, so a utility locating service should always be contacted.

There are generally two types of utility locating services. One is a "free" service that is paid for by companies with underground pipes, lines, etc., to protect the public and to prevent costly repairs. However, these services have access only to drawings for primary pipes or lines, typically on public property or right-of-way easements, but not to drawings showing supply or feeder lines from a primary system to the interior of a property. Therefore, they are not required, and in fact hesitate, to locate interior lines. Sites can be cleared for drilling by such services, but without the drill operator's knowledge of the locations of underground feeder or supply lines.

A second type of locating service is provided by a paid subcontractor who physically sweeps or clears interior locations using locating equipment. Locating costs can be minimized by obtaining all available maps, drawings, and employee interview information before contracting with the locating company. This is especially important at large industrial plants or military bases, which can have an intricate network of underground utilities. It is important that every location be cleared, even those for hand-auger borings.

If a sign warning of underground utilities is located on a site boundary, it should not be assumed that underground utilities are located on or near the boundary or property line under the sign; they may be a considerable distance from the sign. The utility company should be contacted to check it out.

The owners of utility lines or the nearest underground utility location service should always be contacted before drilling is started. However, remember that some services provide information on utilities going to, but not within, a site. Metal detectors or other locating equipment may be necessary to determine the presence of shallow (surface) utilities onsite. The utility personnel should mark or flag the location of the underground lines and determine what specific precautions must be taken to ensure safety.

11.2.10 Site Selection and Working Platforms

In preparing a work site located on adverse topography, precautions must be taken against cave-ins, slides, and loose boulders. The drill platform should be stabilized by outriggers or adequate timbering.

Prior to drilling, adequate site clearing and leveling should be performed to accommodate the drill rig and supplies and to provide a safe working area. Drilling should not commence when tree limbs, unstable ground, or site obstructions result in unsafe tool-handling conditions.

Suitable storage locations should be provided that allow for the convenient handling of tools, materials, and supplies without danger that they could fall and injure anyone. Storing or transporting tools, materials, or supplies within or on the drilling mast (derrick) should be avoided. Pipes, drill rods, bits, casings, augers, and similar drilling tools should be securely stacked in an orderly manner on racks or sills.

Penetration hammers or other types of driving hammers should be placed at a safe location on the ground or secured when unattended on a platform. Work areas, platforms, walkways, scaffolding, and other accessways should be kept free of obstructions and substances such as ice, grease, or oil that could create a hazardous surface. All controls, control linkages, and warning and operation lights and lenses also should be kept free of ice, grease, or oil.

In the vicinity of power transmission or distribution lines, drills should be adequately grounded and set with at least a 15-foot clearance between any part of the drill or mast and the power lines.

Toilet facilities will be convenient to drill crews, or transportation will be readily available to nearby toilet facilities. Toilets will be either the chemical type or constructed over ground pits, which will be backfilled when abandoned. They should be fly tight and maintained in a sanitary condition.

Truck-mounted drills will be equipped with a "safetyline" or with clearly marked and conspicuously located emergency switches. The safetyline emergency stop consists of a taut wire that runs around the back of the machine and connects to a special switch that turns off the power unit when the line is contacted. When emergency switches are used in lieu of a safetyline, there should be a minimum of two switches--one located within easy reach of the operator, and one located within easy reach of workers at ground level near the drill or auger head.

Trucks should not be moved backward unless the driver has personally inspected the area behind the truck. In restricted or congested areas, or areas where workmen are located, the assistance of a "spotter" is mandatory. Also, trucks will be equipped with serviceable automatic backup alarms.

Before the mast is raised, personnel will be cleared from the immediate area--with the exception of the operator and a helper, when necessary. A check should be made to ensure safe clearance from energized power lines or equipment. Unsecured equipment must be removed from the mast, and cables, mud lines, and catline ropes must be adequately secured to the mast before raising. After it is raised, the mast must be secured to the rig in an upright position with steel pins.

Drill equipment will not be moved until a thorough inspection has been made to ensure that the mast, drill rods, tools, and other equipment are secured. A check will also be made of the steering mechanism, brakes, lights, load limits, and proper flagging and lighting of load extensions. Applicable traffic laws will be observed when moving drill equipment over public roads.

11.2.11 Surface Drilling Operations

Before the mast of a drill rig is raised and drilling is commenced, the drill rig must first be leveled and stabilized with leveling jacks and/or solid cribbing. The drill rig should be releveled if it settles after the initial setup. The mast should only be lowered when the leveling jacks are down, and the leveling jack pads should not be raised until the mast is completely lowered. Before drilling operations start, the mast should be secured or locked, if required by the drill's manufacturer.

Before the power unit is started, all gears should be disengaged, the cable drum brake should be set, and no rope should be in contact with the cathead.

Before the mast is raised, a check should be made for overhead obstructions. Everyone (with the exception of the operator) should be cleared from the areas immediately to the rear and sides of the mast and informed that the mast is being raised. The drill rig should not be driven from hole to hole with the mast in the raised position.

The drill rig should only be operated from the position of the controls. The operator should shut down the drill engine before leaving the vicinity of the drill. "Horsing around" in the vicinity of the drill rig and tool and supply storage areas is strictly prohibited, even when the drill rig is shut down. Caution should be taken when mounting/dismounting the platform.

Drill operations should be terminated during an electrical storm.

The consumption of alcoholic beverages, depressants, stimulants, or any other chemical substance while on the job is strictly prohibited. All unattended boreholes must be adequately covered or protected to prevent people or animals from stepping or falling into the hole. When the drilling project has been completed, all open boreholes should be adequately covered, protected, or backfilled, according to local or state regulations.

A safety chain and cable arrangement should be used to prevent water swivel and mud line whip. All water swivels and hoisting plugs should be checked for possible frozen bearings and should be properly lubricated before use. A frozen bearing could cause mud line whip, which could injure the operator.

Only drill operators should brake or set the chucks to prevent engagement of the transmission prior to removal of the chuck wrench. Also, the chuck jaws should be periodically checked and replaced as necessary.

A string of drill rods should not be braked by the chuck jaws during lowering into the hole. A catline or hoisting cable and plug should be used for braking prior to tightening of the chuck. Failure to follow this procedure could result in steel slivers on the rods, possible hand injuries, and loss of the rods into the hole. Following braking, drill rods should be allowed to drain completely before removal from the working area.

Drill rods will not be lowered into the hole with a pipe wrench. Serious back and hand injuries may result if the rods are lowered by this method.

When using drilling fluids, a rubber or other suitable wiper should be used to remove the material from the drill rods when removing them from the drill hole. When drilling with air, the exhaust and cuttings should be directed away from workers with devices such as diverter heads, the use of which should be stipulated on drilling agreements where appropriate.

Care must be exercised by the operator to avoid a sudden hoist release of the drill rod while the rod is being carried from the hole. The hoisting capacity and weight of the drill rod

must be known to prevent collapse of the mast during drill string removal from the hole. The operating capacity of the mast and hoist also must be known and must not be exceeded.

When tool joints are broken on the ground or on a drilling platform, fingers should be positioned so they will not be caught between the wrench handle and the ground or the platform if the wrench slips or the joint suddenly lets go. Pipe wrench jaws should be checked periodically and replaced as they become worn.

11.2.12 Use of Augers

The use of mismatched auger sections should be avoided. Different brands and different weights should not be used in the same auger flight.

Because some pins lose their temper after very little use, causing the spring or clip section to fail, only tight-fitting pins designed for the auger should be used.

A daily inspection--to include a thorough check of the hydraulic hoses, connections, and valves--will be made before equipment is used. Deficiencies should be corrected or safe condition verified before the equipment is started.

A durable sign containing the following wording should be installed on all equipment in full view of the operator:

- All personnel must be clear before starting this machine
- Stop the auger to clean it
- Stop engine when repairing, lubricating, or refueling
- Do not wear loose-fitting clothing or gauntlet-type gloves.

The following general procedures should be used when advancing a boring with continuous flight or hollow-stem augers:

- An auger boring should be started with the drill rig level, the clutch or hydraulic rotation control disengaged, the transmission in low gear, and the engine running at low revolutions per minute (rpm).
- A system of responsibility should be established for the series of activities required for auger drilling, such as connecting or disconnecting auger sections and inserting

or removing the auger fork. The operator must be sure that the tool handler is well away from the auger column and that the auger fork has been removed before rotation is started.

- Only the manufacturer's recommended method of securing the auger to the power coupling should be used. The coupling or the auger should not be touched with the hands, a wrench, or any other tool during rotation.
- Tool hoists should be used to handle auger sections whenever possible. Hands or fingers should never be placed under the bottom of an auger section when the auger is being hoisted over the top of the auger section in the ground or other hard surface, such as the drill rig platform. Feet should never be allowed to get under the auger section that is being hoisted.
- Workers should stay clear of the auger and other rotating components of the drill rig. Workers should never reach behind or around a rotating auger for any reason.
- Hands or feet should never be used to remove cuttings from the auger.
- Augers should be cleaned only when the drill rig is in neutral and the augers have stopped rotating. A special paddle should be designed for cleaning auger flights; if available, pressurized water is recommended for jet cleaning.

11.3 REMEDIATION SYSTEM EQUIPMENT

LBG operates remediation system equipment at various sites. Remediation equipment includes but is not limited to pump and treat, soil vapor extraction, two-phase vapor extraction, liquid and vapor phase granular activated carbon, thermal destruction and air stripping tower systems. This brief list of safety requirements cover hazards specific to this type of operation. The list assumes that safety requirements for standard operations inherent in SVE operations are already being followed, such as 29 CFR 1910.120 "Hazwoper" planning, training, and other requirements; or drilling, trenching, and shoring safety practices.

The components of a typical remediation system equipment can include an electric or gasoline powered motor, a carbon absorption bed, and various filters, piping, and controls.

11.3.1 Basic Requirements

Employees will not proceed with work on, or in the proximity of, the remediation equipment until they have been properly trained and have attended a safety briefing covering the hazards involved. This may in the form of a "tailgate" safety briefing or a more extensive session, depending upon the extent of the hazards, the employees' safety knowledge, and site-specific exposures.

The use of unsafe or defective equipment is not permitted. Equipment must be inspected regularly and, if found to be defective, immediately removed from use and repaired or replaced.

Employees should be familiar with the location of first-aid kits and fire extinguishers. Telephone numbers or radio frequencies for emergency assistance must also be prominently posted and kept current.

11.3.2 Housekeeping

Good housekeeping practices should be observed in and around the work area. Suitable storage should be provided for all materials and supplies.

Any work surfaces, platforms, stairways, walkways, scaffolding, or accessways should be kept free of obstructions. Any debris should be collected and stored in piles or containers for removal and proper disposal.

11.3.3 Flammable Liquids

All highly flammable liquids should be stored and handled only in approved containers. Portable containers must be of the approved, red safety container type, equipped with flame arresters and self-closing lids.

Approved hand pumps should be used to dispense gasoline from drums. Gasoline must not be used for degreasing or starting fires. Also, gasoline containers should be clearly labeled, and any storage areas should be posted with "No Smoking" signs. Fire extinguishers should be installed in all areas that contain flammable liquids.

11.3.4 Public Safety

Work areas should be regulated so that the public will be protected from injury or accident. Adequate danger signs, barriers, etc., should be placed to effectively warn the public of hazards as well as to restrict access to dangerous areas.

11.3.5 Drilling Safety

Construction of soil-vapor extraction systems requires installation of soil-vapor extraction wells and separate air inlet wells. Safety requirements for drilling operations should be followed.

11.3.6 Chemical Hazards

Some of the primary chemical hazards at remediation operations are site contaminants related to volatile organic compounds. Typically, contaminants are drawn from extraction wells and treated with carbon absorption units and/or are incinerated. Additional chemical hazards associated with these treatment technologies include fuel for the incinerator and activated carbon saturated with site contaminants. Manufacturers' Material Safety Data Sheets should be available on site for all neat chemical compounds used.

Personnel can be exposed to site contaminants during sampling and equipment maintenance. Because soil-vapor extraction systems are typically closed systems terminating in contaminant oxidization or absorption apparatus, chances of exposure incidents during normal operations are minimal. If chemical exposure occurs, however, it is most likely during sampling or equipment maintenance. Sampling typically includes sampling of site soils or ground water to measure the long-term effectiveness of remediation activities, or sampling process water or vapors to determine the efficiency of treatment technologies in capturing or destroying the contaminants.

A potential for exposure exists during maintenance procedures because of cleaning sediment from knockout pots and from general piping system repairs.

In order to minimize the potential hazards associated with chemical exposure, all site workers should have a knowledge of particular site hazards and contaminants. Based upon site conditions, proper personal protective equipment should be worn such as hard hats, chemical protective clothing, and safety shoes.

11.3.7 Physical Hazards

Physical hazards can be managed by general housekeeping in work areas and routine equipment maintenance. Scaffolding may be erected around water stripping towers and incinerators and should be inspected periodically, as part of a routine maintenance procedure.

11.3.8 Pressure

Remediation systems typically recover soil vapors or ground water from beneath the ground surface. Remedial equipment should be shut off when maintenance activities or repairs occur.

11.3.9 Electric Hazards

Because several types of equipment in remediation systems are commonly powered by electricity, electrical hazards exist at these remedial sites. Liquid ring vacuum pumps, knockout pumps, air stripper holding tanks and pumps, and other elements of the treatment units are frequently powered by electricity. General housekeeping and equipment maintenance are necessary to prevent electrical safety hazards. Worn switches and wiring should be quickly repaired, use of water should be controlled, and unnecessary spills prevented. Ground fault interrupters (GFI) should be used on all circuits carrying power from a nearby indoor source to outdoor equipment or from an outdoor portable generator to equipment. Equipment should also be properly grounded as a protection against shocks, static electricity, and lightning if an electrical storm occurs.

11.3.10 Vapor Emission Response Plan

If the air concentration of (chlorinated) organic vapors exceeds 5 ppm above background in the exhaust of the treatment system, the system exhaust will be continuously monitored and necessary actions will be taken to reduce system emissions to 5 ppm--for example, by bleeding air into the system, changing carbon canisters, etc. If the organic vapor levels measured in the treatment system exhaust are between 5 ppm and 50 ppm above background, continue site activities and perform continuous monitoring. If the organic vapor level exceeds 50 ppm above background in the treatment system exhaust, shut down work activities until the system is repaired.

Prior to beginning construction activities, notify fire departments and police as well as the local emergency facility of planned site activities. These organizations should be briefed on the nature of planned site work and given a schedule of the proposed tasks. Changes or modifications to the planned work or schedule which could affect the need for emergency services shall be communicated to these organizations. LBG shall communicate to the local hospital and fire department what types of materials may be encountered at the site.

Should the level of total (chlorinated) hydrocarbons exceed 100 ppm for any single reading, or should the explosimeter indicate in excess of 10 percent of the lower explosive limit on any single reading, work in that area will be shut down and personnel will be evacuated upwind. Work will not resume there until authorized by the Site Safety Officer.

11.3.11 System Start-Up and Initial Operating Period

The VE system is designed to operate unattended 24 hours per day, 7 days per week. Once the electrical connections are complete, LBG will begin system start-up.

LBG will monitor the system on a weekly basis during the month of operation. LBG field personnel will use a photoionization detector (PID) to monitor the VE system emissions before GAC treatment. LBG will monitor between GAC units and at the point of vapor emissions to determine GAC breakthrough and compare those concentrations to air emissions standards. These measurements will be used to estimate the amount of VOCs removed from the soil and the rate at which the GAC is being used to treat vapor phase emissions. As part of the daily monitoring, LBG will follow the Vapor Emission Response Plan.

11.3.12 Continued Operations and Maintenance

After the first month of operation, LBG will monitor the system biweekly for the second and third month. From the beginning of the fourth month to the remainder of the treatment period, LBG will monitor the system once a month. The following data will be recorded on each visit:

- operating time;
- applied vacuum at blower inlet;

- induced vacuum at air inlet wells;
- vapor temperature at blower inlet;
- vapor temperature at blower outlet;
- pressure at blower outlet;
- concentrations of VOCs at blower outlet; and,
- concentrations of VOCs in treated emissions.

LBG field personnel will analyze and record the vapor-phase VOC concentrations before and after GAC treatment.

12.0 DECONTAMINATION PROCEDURES

12.1 Procedure for Level C Decontamination

Level C decontamination, if required, will take place on plastic sheeting so all contaminated material can be contained for proper disposal.

Station 1: Segregated Equipment Drop

Deposit equipment used onsite (tools, sampling devices and containers, monitoring instruments, radios, clipboards, etc.) on plastic drop cloths or in different containers with plastic liners. Segregation at the drop reduces the probability of cross-contamination.

Equipment: various size containers
plastic liners
plastic drop cloths

Station 2: Suit/Safety Boot Wash

Thoroughly wash splash suit and safety boots. Scrub with long-handle, soft-bristle scrub brush and copious amounts of decon solution or detergent/water. Repeat as many times as necessary.

Equipment: container (30-50 gallons)
decon solution
or

detergent/water

2-3 long-handle, soft-bristle scrub brushes

Station 3: Suit/Safety Boot Rinse

Rinse off decon solution or detergent/water using copious amounts of water. Repeat as many times as necessary.

Equipment: container (30-50 gallons)

or

high-pressure spray unit

water

2-3 long-handle, soft-bristle scrub brushes

Station 4: Canister or Mask Change

If worker leaves Exclusion Zone to change canister (or mask), this is the last step in the decontamination procedure. Worker's canisters will be exchanged, depositing the old canisters in containers with plastic liners. The worker will enter the work area and return to duty.

Equipment: canister (or mask)

boot covers

gloves

Station 5:

Step 1 - Tape, Safety Boot and Outer Glove Removal

Remove safety boots and gloves and deposit in container with plastic liner.

Equipment: container (30-50 gallons)

plastic liners

bench or stool

boot jack

Step 2 - Splash Suit Removal

With assistance of helper, remove splash suit. Deposit in container with plastic liner.

Equipment: container (30-50 gallons)
bench or stool
liner

Step 3 - Facepiece Removal

Remove facepiece. Avoid touching face with gloves. Deposit facepiece in container with plastic liner.

Equipment: container (30-50 gallons)
plastic liners

Masks will be collected at a central location. Decontamination will be performed as follows:

- remove all cartridges, canisters and filters, plus gaskets or seals not affixed to their seats;
- remove elastic headbands;
- remove exhalation cover;
- remove speaking diaphragm or speaking diaphragm-exhalation valve assembly;
- remove inhalation valves;
- wash facepiece and breathing tube in cleaner mixed with warm water, preferably at 120°F to 140°F; wash components separately from the face mask; remove heavy soil from surfaces with a hand brush;
- remove all parts from the wash water and rinse twice in clean warm water;
- air dry parts in a designated clean area; and,
- wipe facepiece, valves and seats with a damp lint-free cloth to remove any remaining soap or other foreign materials.

Station 6: Inner Glove Removal

Remove inner gloves and deposit in container with plastic liner.

Equipment: container (20-30 gallons)
plastic liners

Station 7: Inner Clothing Removal (optional)

Remove clothing soaked with perspiration. Place in container with plastic liner. Do not wear inner clothing offsite if there is a possibility small amounts of contaminants might have been transferred in removing splash suit.

Equipment: container (30-50 gallons)
plastic liners

Station 8: Field Wash (optional)

Shower if highly toxic, skin-corrosive or skin-absorbable materials are known or suspected to be present. Wash hands and face if shower is not available.

Equipment: water
soap
tables
wash basins/buckets
field showers

Station 9: Redress

Put on clean clothes. A dressing trailer is needed in inclement weather.

12.2 Procedure for Level B Decontamination

Level B decontamination, if required, will take place on plastic sheeting so all contaminated material can be contained for proper disposal.

Station 1: Segregated Equipment Drop

Deposit equipment used onsite (tools, sampling devices and containers, monitoring instruments, radios, clipboards, etc.) on plastic drop cloths or in different containers with plastic liners. Each will be contaminated to a different degree. Segregation at the drop reduces the probability of cross-contamination.

Equipment: various size containers
plastic liners
plastic drop cloths

Station 2: Suit/Safety Boot Wash

Thoroughly wash chemical-resistant splash suit, SCBA, gloves, and safety boots. Scrub with long-handle, soft-bristle scrub brush and copious amounts of decon solution or detergent/water. Wrap SCBA regulator (if belt-mounted type) with plastic to keep out water. Wash backpack assembly with sponges or cloths.

Equipment: container (30-50 gallons)
decon solution
or
detergent/water
2-3 long-handle, soft-bristle scrub brushes
sponges or cloths

Station 3: Suit/SCBA/Boot/Glove Rinse

Rinse off decon solution or detergent/water using copious amounts of water. Repeat as many times as necessary.

Equipment: container (30-50 gallons)
or
high-pressure spray unit
water
small buckets
2-3 long-handle, soft-bristle scrub brushes
sponges or cloths

Station 4: Tank Change

If worker leaves Exclusion zone to change air tank, this is the last step in the decontamination procedure. Worker's air tank is exchanged and worker returns to duty.

Equipment: air tanks
tape
boot covers
gloves

Station 5: Tape, Safety Boot and Outer Glove Removal

Remove safety boots and gloves and deposit in container with plastic liner.

Equipment: container (30-50 gallons)
plastic liners
bench or stool
boot jack

Station 6: SCBA Backpack Removal

While still wearing facepiece, remove backpack and place on table. Disconnect hose from regulator valve and proceed to next station.

Equipment: table

Station 7: Splash Suit Removal

With assistance of helper, remove splash suit. Deposit in container with plastic liner.

Equipment: container (30-to gallons)
plastic liners
bench or stool

Station 8: Facepiece Removal

Remove facepiece. Avoid touching face with gloves. Deposit in container with plastic liner.

Equipment: container (30-50 gallons)
plastic liners

Masks will be collected at a central location. Decontamination will be performed as follows:

- remove all cartridges, canisters and filters, plus gaskets or seals not affixed to their seats;
- remove elastic headbands;
- remove exhalation cover;
- remove speaking diaphragm or speaking diaphragm-exhalation valve assembly;
- remove inhalation valves;
- wash facepiece and breathing tube in cleaner mixed with warm water, preferably 120°F to 140°F; wash components separately from the face mask; remove heavy soil from surfaces with a hand brush;
- remove all parts from the wash water and rinse twice in clean warm water;
- air dry parts in a designated clean area; and,
- wipe facepiece, valves and seats with a damp lint-free cloth to remove any remaining soap or other foreign materials.

Station 9: Inner Glove Removal

Remove inner gloves and deposit in container with plastic liner.

Equipment: container (20-30 gallons)
plastic liners

Station 10: Inner Clothing Removal (optional)

Remove clothing soaked with perspiration. Place in container with plastic liner. Do not wear inner clothing offsite since there is a possibility small amounts of contaminants might have been transferred in removing fully encapsulating suit.

Equipment: container (30-50 gallons)
plastic liners

Station 11: Field Wash (optional)

Shower if highly toxic, skin-corrosive, or skin-absorbable materials are known or suspected to be present. Wash hands and face if shower is not available.

Equipment: water
soap
small tables
basins or buckets
field showers

Station 12: Redress

Put on clean clothes. A dressing trailer is needed in inclement weather.

Equipment: tables
chairs
lockers
clothes

12.3 Procedures for Level A Decontamination

(to be formulated on a case-by-case basis)

13.0 CONTACT SHEET AND DIRECTIONS TO HOSPITAL

13.1 Contact Sheet

Client:	KIOP Forest Ave., LP (212) 508-6700
Project:	Forest Avenue Shoppers Town, (site of former Charlton Cleaners Facility)
Location:	24 Barrett Avenue Staten Island, New York
Client Contact:	Scott Furman, (Tannenbaum Helpern Syracuse & Hirschtritt LLP)

Leggette, Brashears & Graham, Inc.
Telephone: (914) 694-5711 (914) 694-5744 (fax)
Field Supervisor (HSO): Mike De Felice/Jason Stouffer
Project Manager: Paul Woodell
Principal-in-Charge: Dan C. Buzea

Local Police Headquarters: 120th Precinct
78 Richmond Terrace
St. George, New York
(718) 876-8500

Local Hospital: Staten Island University Hospital
500 Seaview Avenue
Staten Island, New York
(718) 979-0831

State Police: Troop NYC
2 Pennyfield Avenue, Bronx, New York,
(718) 319-5100

Miscellaneous: New York State Department of Environmental Conservation
(NYSDEC) Region 2, (718) 482-4933

13.2 Directions to the Hospital

Staten Island University Hospital
500 Seaview Avenue
Staten Island, New York

Total Distance: 5.4 miles
Approximate Travel Time: 17 minutes

- Go northeast on Forest Avenue, 0.9 mile.
- Turn right onto Clove Road, 2.1 miles.
- Turn right at Richmond Road, 0.9 mile.
- Turn left at Old Town Road, 0.4 mile.
- Turn right at Hylan Boulevard, 0.7 mile.
- Turn left at Seaview Avenue, 0.4 mile.
- Hospital is on the left.

(See map next page)

Driving Directions to SI University Hospital

Start **30 Barrett Ave**
Staten Island, NY 10302
End **500 Seaview Ave**
Staten Island, NY 10305
Travel **5.4 mi – about 17 mins**

14.0 FORMS

14.1 Site Safety Briefing

SITE SAFETY BRIEFING

Job Name: Environmental Investigation Activities Work Plan
Date: Spring 2008
Site Location: Forest Avenue Shoppers Town, Staten Island, New York

SAFETY ISSUES (Circle appropriate information)

Tasks:	Soil Boring Drilling, Groundwater Monitoring and Delineation Well Installation, Trench Excavation
Protective Clothing/Equipment:	Level D, Level C, Level B, Level A
Chemical Hazards:	Benzene, Toluene, Ethylbenzene, Xylene, Tetrachloroethylene (and decay products), Acetone, Chloroform, Fuel Oil, Waste Oil
Physical Hazards:	Car Traffic, Construction Equipment, Confined Space, Overhead Wires
Control Methods:	Cones, Restricted Access, Traffic Control Personnel
Other:	_____
Hospital Name/Address:	Staten Island University Hospital 500 Seaview Avenue Staten Island, New York (718)979-0831

ATTENDEES

Print Name:	Sign Name:
_____	_____
_____	_____
_____	_____
_____	_____

Meeting conducted by: _____

_____

14.2 Air Monitoring

AIR MONITORING

General Information

Name(s): _____ Background Level: _____

Date: _____ Weather Conditions: _____

Time: _____ _____

Project: Forest Avenue Shoppers Town

Staten Island, New York

Equipment Calibration

PID _____ CGI _____

Wind Direction	Time	Work Location	PID Reading (ppm)			Particulate Reading (mg/m3)		
			Upwind	Work Zone	Downwind	Upwind	Work Zone	Downwind

14.3 Plan Acceptance Form, Project Health and Safety Plan

PLAN ACCEPTANCE FORM

PROJECT HEALTH AND SAFETY PLAN

INSTRUCTIONS: This form is to be completed by each Leggette, Brashears & Graham, Inc. employee to work on the subject project work site and returned to the Office Safety Coordinator prior to site activities.

Client/Project: Forest Avenue Shoppers Town
Staten Island, New York

Date: _____

I represent that I have read and understand the contents of the above Plan and agree to perform my work in accordance with it.

_____	_____
Signed	Signed
_____	_____
Print Name	Print Name
_____	_____
Date	Date
_____	_____
Signed	Signed
_____	_____
Print Name	Print Name
_____	_____
Date	Date

14.4 Exclusion Zone Log Sheet

EXCLUSION ZONE LOG SHEET

LEGGETTE, BRASHEARS & GRAHAM, INC.
110 CORPORATE PARK DRIVE, SUITE 112
WHITE PLAINS, NEW YORK 10604

Client: Forest Avenue Shoppers Town

Location: Staten Island, New York

Name	Date	Time In	Time Out	Elapsed Time

dmd/March 18, 2009
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