

REMEDIAL INVESTIGATION WORK PLAN

PREPARED FOR

**1735 EXPRESS DRIVE NORTH
HAUPPAUGE, NEW YORK**

NYSDEC BCP SITE No. C152238

PREPARED BY

*FPM*group™

**909 MARCONI AVENUE
RONKONKOMA, NY 11779**

DECEMBER 2013

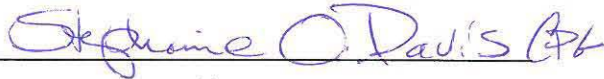
REMEDIAL INVESTIGATION WORK PLAN

Prepared for

Facility: 1735 Express Drive North
Hauppauge, New York

FPM File No: 894-13-04

I, Stephanie O. Davis, CPG, certify that I am currently a Qualified Environmental Professional as defined in 6 NYCRR Part 375 and that this Remedial Investigation Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).



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SECTION 1.0 INTRODUCTION AND PURPOSE

This Remedial Investigation (RI) Work Plan has been prepared by FPM Group (FPM) for the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) Site #C152238, identified as 1735 Express Drive North located in Hauppauge, New York (Site). This work plan describes the procedures to further evaluate the nature and extent of contamination (primarily chlorinated volatile organic compounds, or CVOCs) present on and downgradient of the Site. This work plan has been developed in accordance with the procedures outlined in the New York State Department of Environmental Conservation (NYSDEC) DER-10 Technical Guidance for Site Investigation and Remediation (NYSDEC, May 2010).

1.1 Site Location and Description

The Site is identified as 1735 Express Drive North located in Hauppauge, New York, and is owned by Maggio Data Forms Printing, Ltd. (Maggio). The Site occupies approximately 1.58 acres and consists of one parcel identified by the Suffolk County Tax Map as District 500, Section 37, Block 1, and Lot 23. The Site is located on the north side of Express Drive North between Caleb's Path and Ranick Road. The Site is in an industrial district and is zoned IN-1.

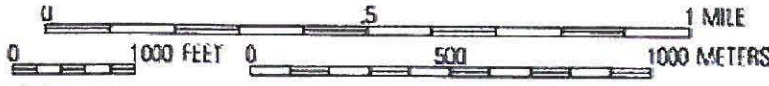
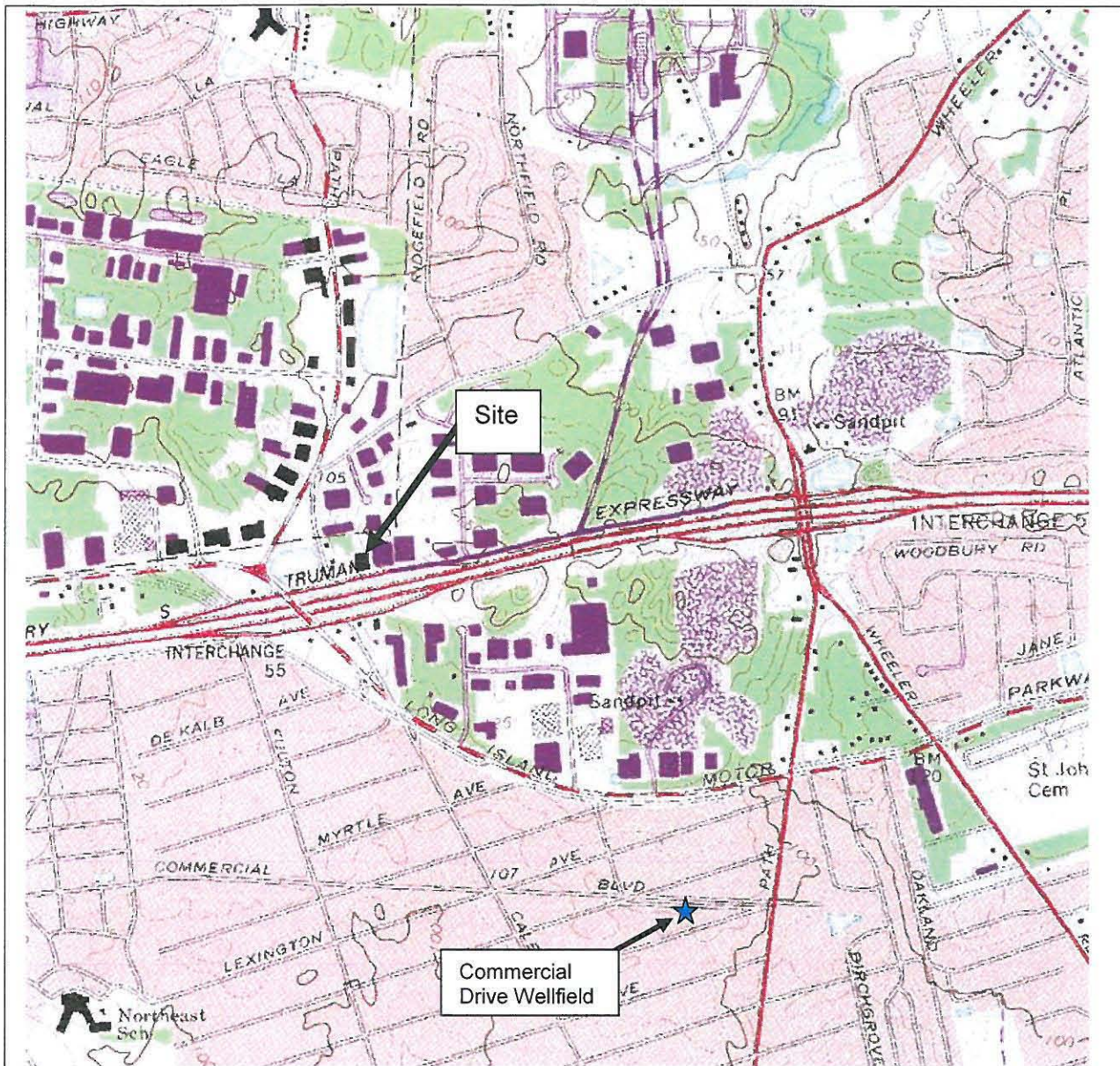
The Site is presently developed with an approximately 30,000-square-foot, one-story commercial building with associated parking that occupies the majority of the property. A location map showing the Site and vicinity is presented in Figure 1.1.1. A plan of the Site and surrounding property is included as Figure 1.1.2.

The building is serviced by municipal water and heated by natural gas-fired units. An onsite sanitary waste disposal system is located on the southwest corner of the building; the system consists of a septic tank and four overflow leaching pools. Two additional onsite sanitary waste disposal systems are located on the east side of the Site, including a system that consists of one septic tank on the southeast corner of the building and a system that consists of two connected septic tanks further to the north. Several storm drains are present around the building and accept roof and surface stormwater runoff.

1.2 Site Environmental Setting

The surface topography of the Site and surrounding vicinity was obtained from the USGS Central Islip, New York Quadrangle (1967, photorevised 1979). The topographic elevation of the Site is approximately 140 feet above mean sea level (MSL). The Site and surrounding area are situated on a regional east-west trending topographic ridge. In the Site vicinity, the terrain appears to slope slightly towards the northwest. The closest downgradient water body is New Millpond Creek located approximately 1.5 miles north of the Site.

The Site and vicinity are immediately underlain by a series of unconsolidated Upper Pleistocene glacial moraine deposits. These deposits are underlain by the Late Cretaceous Magothy Formation, the top of which is mapped at an elevation of approximately -50 feet MSL beneath the Site. Therefore, the top of this unit is approximately 190 feet below the Site surface.



Source: USGS 7.5-Central Islip, NY Quadrangle

FPM GROUP		
FIGURE 1.1.1		
SITE AREA MAP		
1735 EXPRESS DRIVE NORTH SITE		
HAUPPAUGE, NEW YORK		
Drawn by: JB	Checked By: SOD	Date: 08/29/13



Source: Google Earth

<p>FPM GROUP</p> <p>FIGURE 1.1.2</p> <p>SITE VICINITY PLAN</p> <p>1735 EXPRESS DRIVE NORTH</p> <p>HAUPPAUGE, NEW YORK</p>		
<p>Drawn by: JB</p>	<p>Checked By: SOD</p>	<p>Date: 08/29/13</p>

Depth to groundwater at the Site is approximately 83 feet below grade; the water table is found within the Upper Glacial Aquifer. Upper Glacial Aquifer groundwater in the Site vicinity appears to flow generally to the east. Groundwater is also present within the Magothy Aquifer at depths of 190 feet and greater beneath the Site.

The NYSDEC databases of public water supply wells and other types of wells (irrigation, non-contact cooling water, etc.) were reviewed and it was noted that no public or private water supply wells are located within one-half mile downgradient of the Site. The closest reported well is a cooling water well (#S065547, permit #3151) operated by Colonial Wire & Cable at 40 Engineer's Road, located approximately one-third of a mile northwest (cross/upgradient) of the Site. This well is installed in the Upper Glacial Aquifer at a depth of 131 feet. Pumpage was reported for 1985 through 1992, with generally decreasing amounts of pumpage during the latter period of operation. The spent cooling water is reported to be discharged to a diffusion recharge facility. Based on the nature of this well (cooling water), and its apparent cross/upgradient location, it is unlikely that Site-related groundwater conditions have the potential to affect this well.

The closest public water supply wells to the Site are three supply wells operated by the Suffolk County Water Authority (SCWA) at the Commercial Boulevard well field. These wells are located approximately 0.9 miles to the southeast of the Site, as shown on Figure 1.1.1 and are south of the groundwater flow divide. Regional groundwater flow in the area of the wellfield is to the southeast. Based on the mapping of an offsite plume performed by the Suffolk County Department of Health Services (SCDHS), as discussed in Section 2 of this work plan, an offsite groundwater plume downgradient of the Site is moving to the northeast, away from this well field.

There are also three supply wells operated by the SCWA at the Falcon Drive well field. These wells are located over one mile to the north-northwest of the Site (to the north of the area shown on Figure 1.1.1) in an apparent crossgradient position. Based on the mapping of an offsite plume performed by the SCDHS, an offsite groundwater plume is moving to the northeast, away from this well field.

The SCDHS also identified estimated capture areas for source water for public supply wells S-65766 and S-54308 (Dolores Place well field), which are located just over 1.3 miles southeast (crossgradient) of the Site. The boundaries of these estimated source water capture areas are mapped to approximately 100 feet south of the Site and are projected using a groundwater model and average pumping conditions. The SCDHS evaluation does not support migration of the plume into the estimated source water capture areas.

The SCWA's Wheeler Road wellfield is located approximately 1.8 miles northeast of the Site. This wellfield contains four wells, two of which are completed in the Upper Glacial Aquifer at depths of 128 and 131 feet below grade and two of which are completed in the Magothy Aquifer at depths of 403 and 500 feet below grade. It should be noted that although this wellfield is northeast of the Site, the headwaters of the Nissequogue River are present in the vicinity of the wellfield and significantly affect the direction of groundwater flow in this area. Groundwater flow in the vicinity of the wellfield is to the northwest, towards the river, which is not from the direction of the Site.

1.3 Site History

The Site includes a 30,000-square-foot concrete block building on a slab foundation with associated paved parking areas and landscaped areas. The Site was initially developed with a 20,000-square-foot building in 1960 and a 10,000-square-foot addition was made to the north side of the building in 1979.

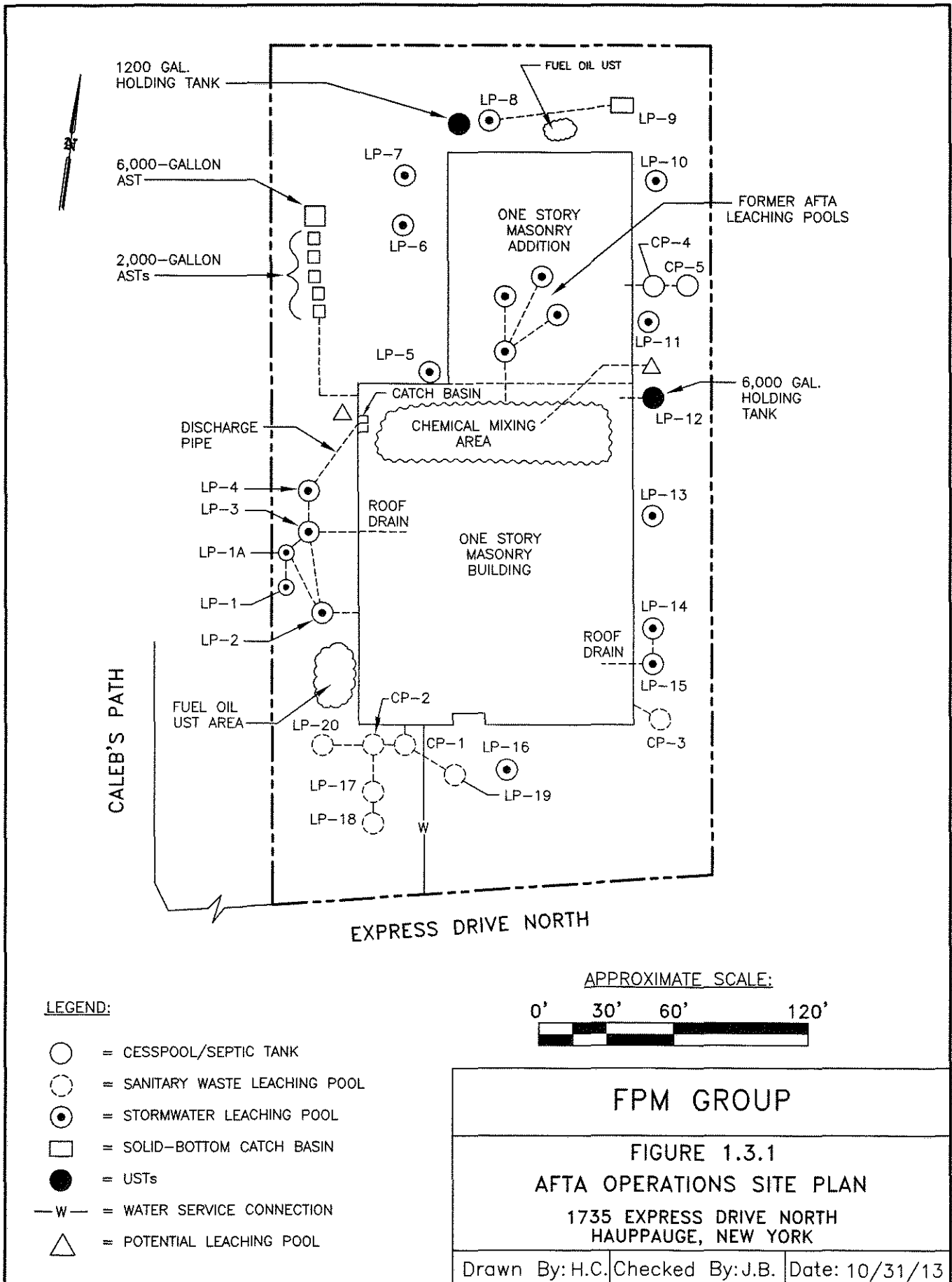
The Site was formerly operated by Afta Chemical Corp. (aka Afta Solvents Corp.) until sometime in 1980 for manufacturing, mixing, repackaging, and distribution of chemicals, including chlorinated and non-chlorinated solvents, shampoos, and cleaning fluids. Afta's operations included operation of multiple tanks and drum storage areas, use of piping, floor drains, and trenches, and discharges of industrial waste to onsite leaching facilities without a permit. A site plan showing the property features at the time of Afta's occupancy of the building is shown as Figure 1.3.1. The chemical mixing area was located on the north side of the original building and included sinks, piping, a trench, and other equipment associated with chemical mixing operations. Specific locations of these features could not be discerned from the historic records; the general area where chemical mixing was conducted is shown on Figure 1.3.1. One floor drain was reported to be present in this area, with discharge reportedly directed to a leaching pool to the east of the building. This leaching pool is not visible at grade. A catch basin was formerly present on the interior west side of the building and a dry well was reported to have been located exterior to the building in proximity to the catch basin. This reported drywell is not visible at grade. An extensive record of SCDHS inspections between 1977 and 1980 documents Afta's chemical handling and management activities and discharges. As of July 31, 1980 Afta reportedly ceased cosmetic manufacturing. By August 29, 1980 Afta had ceased industrial discharges and had sealed floor trenches and outside piping.

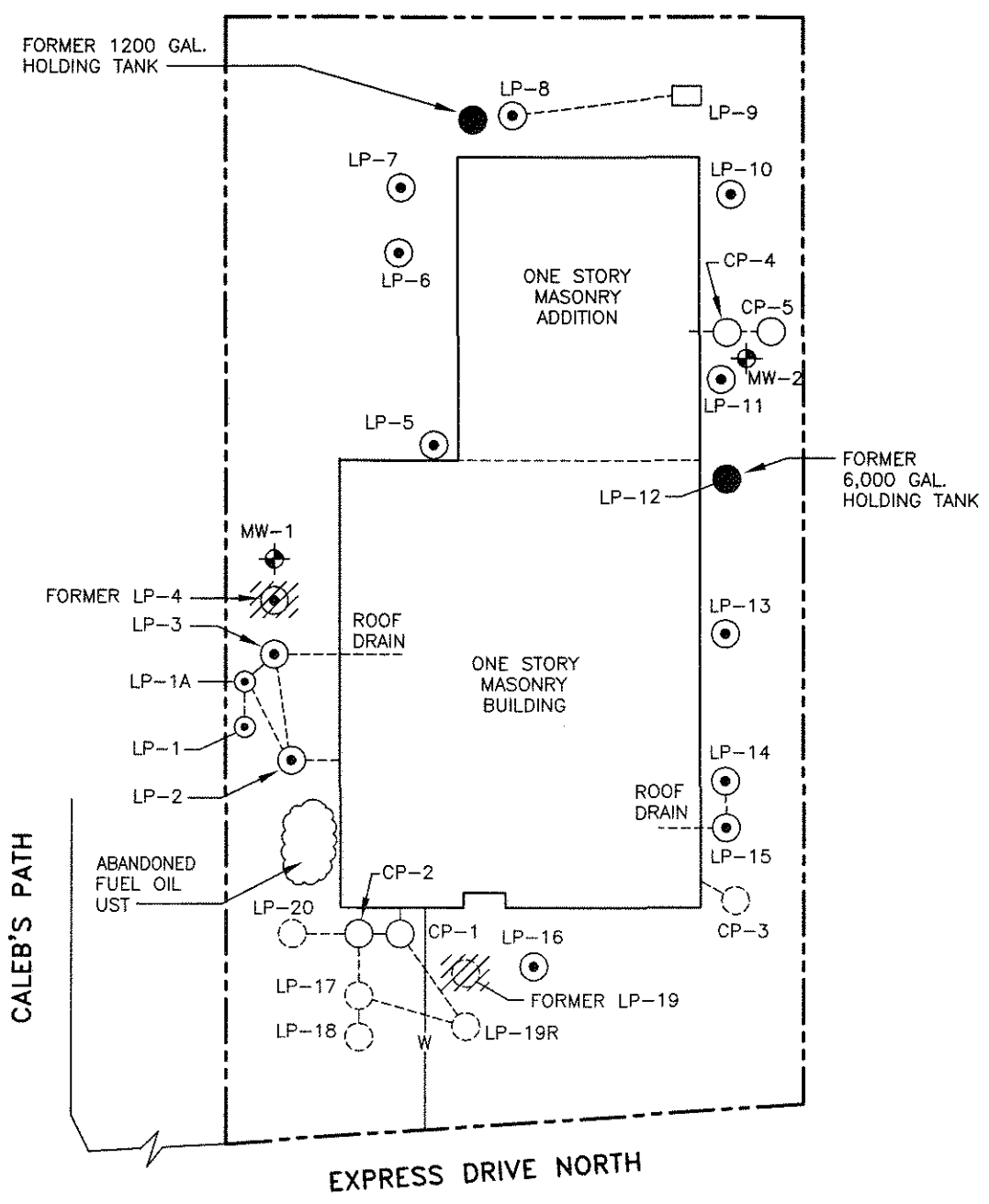
Maggio purchased the property on May 28, 1981 and has occupied the property since 1982. Maggio has used the property solely as a commercial printing facility. Maggio's operations have not involved the use of chlorinated solvents. A plan illustrating the current Site features is shown as Figure 1.3.2.

Extensive subsurface investigations have been performed throughout the Site to evaluate soil, groundwater, and soil vapor conditions. VOCs, including trichloroethylene (TCE), cis-1,2-dichloroethylene (cis-1,2 DCE), 1,1,1-trichloroethane (1,1,1-TCA), vinyl chloride (VC), and petroleum-related VOCs, were identified in soil in several leaching pools. The impacted soils were remediated under SCDHS oversight. Moderately-elevated concentrations of CVOCs were detected in soil vapor at the Site. Soil vapor concentrations at the adjoining property to the west were evaluated and no significant concentrations of VOCs were detected. Groundwater moderately impacted with CVOCs is present in one shallow well on the west side of the Site and in a multi-level well cluster located on the east side of the Site (downgradient). Previous subsurface investigations of the Site and the environmental history are discussed in further detail in Section 2.

1.4 Property Usage Immediately Adjacent to Site

Express Drive North adjoins the Site to the south, commercial properties adjoin the Site to the east and north, and two residential properties and one vacant property adjoin the Site to the west.

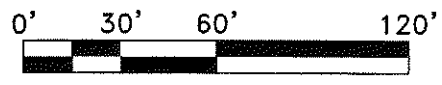




LEGEND:

- ⊕ = GROUNDWATER MONITORING WELL
- = CESSPOOL/SEPTIC TANK
- = SANITARY WASTE LEACHING POOL
- ⊙ = STORMWATER LEACHING POOL
- = SOLID-BOTTOM CATCH BASIN
- = FORMER USTs
- W— = WATER SERVICE CONNECTION
- /// = ABANDONED LEACHING POOL

APPROXIMATE SCALE:



FPM GROUP		
FIGURE 1.3.2		
CURRENT SITE PLAN		
1735 EXPRESS DRIVE NORTH HAUPPAUGE, NEW YORK		
Drawn By: H.C.	Checked By: J.B.	Date: 10/17/13

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SECTION 2.0 SUMMARY OF PREVIOUS INVESTIGATIONS

The results of previous onsite and offsite investigations are summarized in this section. Key supporting information is provided in Appendix A (full documentation was previously provided in the BCP Application for this Site) and summary figures depicting exceedances of applicable regulatory criteria are provided in the following sections. This information was used in the development of the proposed scope of work for the RI.

2.1 Investigations During Afta Operations: 1977 to 1980

Afta's operations included manufacturing, mixing, repackaging, and distribution of chemicals, including chlorinated and non-chlorinated solvents, shampoos, and cleaning fluids. Afta's facilities included operation of multiple tanks, drum storage areas, piping, floor drains, and trenches, and discharges of industrial waste to onsite leaching facilities. A site plan showing the property features at the time of Afta's occupancy of the building is shown in Figure 1.3.1.

Afta's operations are documented through the records of the SCDHS and other regulatory agencies. The SCDHS performed inspections of Afta Chemical Corp.'s operations at the Site beginning in 1977 and documented the presence of 1,1,1-TCA and other chlorinated solvents onsite. In 1978 a sealed inside pit was identified at the Site where solvent drip-off discharges were directed to a storm drain to the west of the building. White sludge and six inches of solvent were noted in storm drains on the west side of the building. A 55-gallon drum leaking carbon tetrachloride was also noted in a dumpster to the rear of the building. A leaking aboveground storage tank (AST) and a leaking pump were also noted. The SCDHS sampled two storm drains and liquid dripping from a tank wagon in 1978 and documented 1,1,1-TCA, TCE, and tetrachloroethylene (PCE) in association with these Afta facilities.

Four leaching pools to the north of the original building were remediated in June 1979 prior to construction of an addition to the building. This leaching system was reported to include one main pool and three overflow pools. This remediation was observed by a SCDHS representative and the pools appeared to have been used for both stormwater management and waste disposal. The former leaching pool area is shown on Figure 1.3.1.

In July 1979 Afta executed an Order on Consent (File No. 1-0393) with the NYSDEC requiring Afta to disconnect certain discharge piping, collect and hold rinse water, design an industrial spill prevention and waste disposal plan, remove sludge from certain storm drains, disconnect certain facilities, and submit an engineering report for a storage area. By late August 1979 storm drain cleaning had been conducted at the Site by Afta.

By October 1979 the onsite building had been expanded, with the addition reportedly used for bulk storage while the main (original) building used for solvent processing. In January 1980 the SCDHS documented continuing discharges of industrial waste from Afta's operations and in August 1980 the NYSDEC cited Afta for violation of Article 17 of NYS ECL for discharge of industrial waste to groundwater without a valid SPDES permit.

By late August 1980 Afta had closed an in-floor trench, disconnected/sealed piping to the outside, and ceased industrial discharges, apparently in preparation for terminating operations at the Site. In early September 1980 Afta executed an Order on Consent (IW-80-27 modified) with the SCDHS requiring the cessation of industrial waste discharges without a permit, removal and proper disposal of industrial waste, sealing of pipes, floor drains and trenches, tank testing, and implementation of proper drum storage. By December 1980 the SCDHS had confirmed that various drains had been sealed, including the main (western) connection to the leaching pools, and that dismantling of manufacturing activities was underway. Subsequent SCDHS inspection documented that the Site building was used as a warehouse only; no repackaging activities or filling was conducted, the floor drains were sealed, and no air sources were present.

In summary, Afta's chemical packaging operations and waste discharges at the Site from at least 1977 through some time in 1980 resulted in subsurface contamination by chlorinated solvents. Afta discontinued manufacturing operations onsite in 1980 and the associated discharge facilities were disconnected.

2.2 Investigations During Maggio Operations: 1982 to Present

Maggio Data Forms Printing, Ltd. purchased the Site on May 28, 1981 and has occupied the Site since 1982. Maggio has used the Site as a commercial printing facility, which has not involved the use of chlorinated solvents. A plan illustrating the operating Site features during Maggio's operations is shown in Figure 1.3.2.

In 1985 the SCDHS conducted a routine inspection and sampling of the sanitary waste disposal system on the south side of the building; no other leaching facilities were reported to have been sampled at this time and this system was not documented to have been cleaned out following Afta's operations. Several chlorinated solvents and petroleum compounds were present in the sanitary waste leaching pool; this pool was reported to have been subsequently promptly cleaned out by Maggio following notice from the SCDHS.

In early 1988 the SCDHS conducted another routine inspection and subsequently notified Maggio of one chlorinated solvent and several petroleum compounds in a sanitary leaching pool on the front (south) side of the building and iron and PCE in a double-walled concrete holding tank on the west side of the building. The holding tank was formerly used by Afta but had not been used by Maggio and was not documented to have been cleaned out following Afta's operations. Maggio promptly obtained approval to dispose of the wastes and this work was reported to have been completed. The holding tank was backfilled following cleanout.

In early 1992 Maggio was notified by the SCDHS that two underground storage tanks (USTs) formerly used to store fuel oil for heating the onsite building during Afta's operations must be brought into compliance with Suffolk County Sanitary Code provisions for testing and inspection. As Maggio used natural gas for heating purposes and these USTs were no longer in use, Maggio had the 4,000-gallon UST cleaned and removed and the 2,000-gallon UST cleaned, filled, and closed in place on July 30, 1992 under a Town of Islip permit and with SCDHS oversight. There are no reported spills or releases associated with these former USTs.

In early January 1998 Maggio applied to the SCDHS for a permit for two drum storage areas to store materials associated with its operations, including isopropyl alcohol, 20W oil, camera fixer, plate developer, 90W oil, ultra cleaner, mineral spirits, Carci wash, dirty press water, plate

finisher, camera developer, and fountain solution. The SCDHS issued a permit to operate the two drum storage areas on April 7, 1998. This permit was renewed on February 1, 2001 and February 1, 2004 and the drum storage areas passed inspection on November 24, 2004. Material Safety Data Sheets (MSDSs) for the product chemicals in the drum storage areas are included in Appendix A.

2.2.1 2006 Phase I Environmental Site Assessment

A Phase I Environmental Site Assessment was performed in January 2006 by Hillmann Environmental Group, LLC (Hillmann) in support of a contemplated property transaction. Recognized environmental conditions (RECs) included the lack of subsurface testing documentation during the removal of the former 4,000-gallon UST and closure of the 2,000-gallon UST, sanitary system and subsurface conditions due to historic use and past violations by Afta, and the potential threat from the Glaro Inc. site (735 Old Willets Path) which is located a short distance north (crossgradient) of the Site and was identified on several environmental databases as a potential source of chlorinated solvent contamination.

2.2.2 2006 Limited Phase II Subsurface Investigation

A Limited Phase II Subsurface Investigation report was prepared in February 15, 2006 by Hillmann documenting soil and/or groundwater sampling performed in the vicinity of the closed 2,000-gallon UST and the sanitary system. The results indicated that the closed UST had not impacted the Site. Groundwater results indicated that two VOCs were detected above NYSDEC Standards.

2.2.3 2006 to 2008 Investigations and Remediation

In 2006 FPM conducted a comprehensive investigation of the Site in accordance with the scope of work in a SCDHS-approved Investigation Work Plan. The investigation was performed to assess potential environmental concerns at the Site and included a geophysical investigation to identify potential buried structures, and soil, leaching pool sediment, and shallow (perched) groundwater sampling. An April 24, 2006 Investigation Results Report submitted to the SCDHS documented the results of the investigation, which included sampling for VOCs, semivolatile organic compounds (SVOCs), and metals. Impacted sediments were found in eight leaching pools, including chlorinated solvents in LP-3, LP-4, and LP-5 and polynuclear aromatic hydrocarbon (PAH) SVOCs in LP-1, LP-6, LP-7, LP-8 and LP-10 in excess of the SCDHS Action Levels for leaching pool sediments. Leaching pools LP-3, LP-4, and LP-5 were formerly used by Afta in their chemical packaging operations; these leaching pools had been disconnected from the building in 1980, prior to Maggio's ownership. The other leaching pools are stormwater leaching pools that received parking lot runoff. Shallow (perched) groundwater was noted to be slightly impacted with VOCs at several locations. Soil sampling performed in the former AST area operated by Afta, adjacent to a 1,200-gallon holding tank UST on the north side of the property, adjacent to a 6,000-gallon holding tank UST on the east side of the property, and the vicinity of a leaching system on the south side of the property did not show any VOCs, SVOCs, or metals in excess of the NYSDEC recommended soil cleanup objectives applicable at that time (TAGM 4046). The CP-1 and CP-4 structures were not sampled as these were determined to be solid-bottom septic tanks designed to remove solids from the sanitary waste streams prior to discharge of the liquids to associated leaching pools. These structures are regularly maintained to remove solids and do not discharge to the ground. Recommendations including sampling three additional overflow leaching pools and remediation

of the impacted leaching pools and an associated septic tank. The SCDHS agreed with these recommendations. A June 6, 2006 letter to the SCDHS documents the results of additional leaching pool sampling. No impacts were found in LP-17 or LP-18. One VOC was found in LP-19 slightly in excess of the SCDHS Action Level and remediation was recommended.

A July 26, 2006 report to the SCDHS documents remediation of 11 leaching pools and the septic tank. Remediation was completed at six leaching pools and the septic tank. No further work was recommended for these structures. It was recommended that additional material be removed from leaching pools LP-4, LP-8, and LP-9. It was also recommended that LP-19 be abandoned in place due to structural integrity issues.

The SCDHS required that additional sampling be performed at LP-19 prior to agreeing to its abandonment. An August 9, 2006 letter documents additional sampling at LP-19 and LP-4 to further evaluate the vertical extent of soil impacts. Based on the results, it was recommended that impacted material be removed from LP-4 to 39 feet below grade and that the leaching pool be abandoned. No further work was recommended at LP-19 and it was reiterated that LP-19 should be abandoned. The SCDHS approved the recommendations regarding abandonment of LP-19 and remediation and abandonment of LP-4.

An August 16, 2006 letter documents additional remediation and endpoint sampling of LP-8 and LP-9. The endpoint sampling results document the complete remediation of LP-8 and that the only impact was for chrysene, which slightly exceeded its SCDHS cleanup objective at LP-9. It should be noted that the chrysene concentration that remained in LP-9 is below the 6 NYCRR Part 375-6 Unrestricted Use Soil Cleanup Objective (Objective). No further remediation was recommended. The SCDHS verbally confirmed agreement with this recommendation on August 17, 2006.

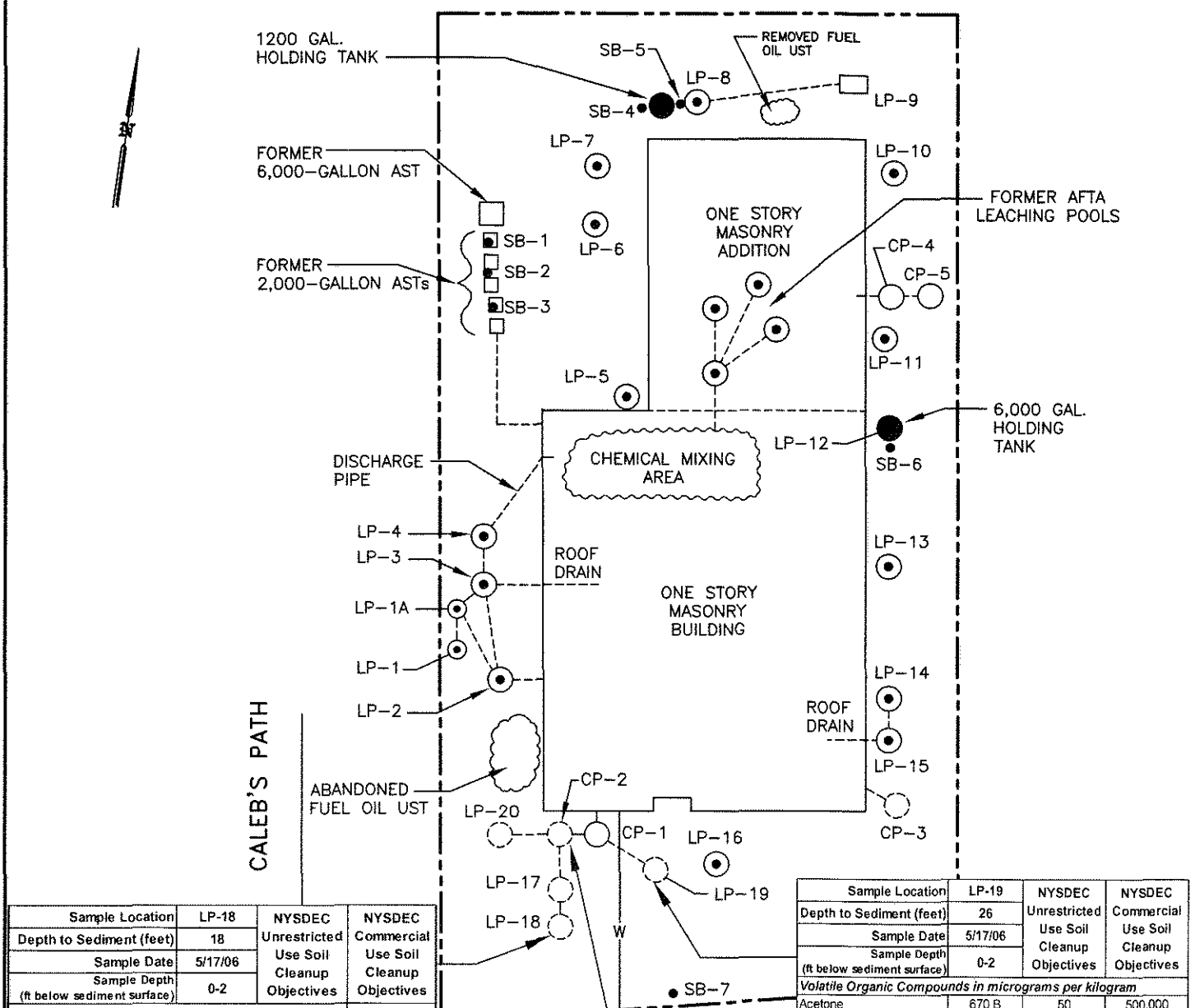
In November 2007 LP-4 was further remediated and then abandoned as required by the SCDHS. This work was documented in a January 28, 2009 letter report to the SCDHS.

In June and July 2008 LP-19 was abandoned and a new leaching facility (LP-19A) was constructed. No further work was recommended for the Site leaching pools and the SCDHS concurred.

The sampling results for the previous soil samples and the materials remaining within each leaching structure at the Site following remediation were compared to the 6 NYCRR Part 375-6 Unrestricted Use Soil Cleanup Objectives (Objectives) as shown on the tables in Appendix A; the results are summarized on Figure 2.2.3.1. None of the soil samples obtained from the vicinity of former ASTs or USTs exhibited any exceedances of the Objectives. Minor exceedances of the Objectives remain present within three subsurface leaching structures: copper and silver in LP-18, two VOCs in LP-19 (LP-19 is now abandoned by backfilling), and one VOC in CP-2. It is noted that none of the detections exceeds the Commercial Use Objectives. These detections are found only at depth within these current and former leaching structures.

2.2.4 2008 to 2012 Groundwater Investigation

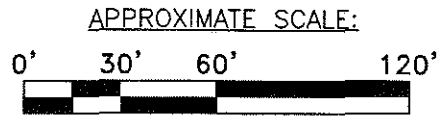
Onsite groundwater conditions have been previously investigated as required by the SCDHS. A table summarizing the available groundwater sampling results is included in Appendix A.



Sample Location	LP-18	NYSDEC	NYSDEC
Depth to Sediment (feet)	18	Unrestricted	Commercial
Sample Date	5/17/06	Use Soil	Use Soil
Sample Depth (ft below sediment surface)	0-2	Cleanup	Cleanup
		Objectives	Objectives
Metals in milligrams per kilogram			
Copper	61.7	50	270
Silver	5.24	2	1,500

Sample Location	LP-19	NYSDEC	NYSDEC
Depth to Sediment (feet)	26	Unrestricted	Commercial
Sample Date	5/17/06	Use Soil	Use Soil
Sample Depth (ft below sediment surface)	0-2	Cleanup	Cleanup
		Objectives	Objectives
Volatile Organic Compounds in micrograms per kilogram			
Acetone	870 B	50	500,000
p-Isopropyltoluene	17,000	10,000	-

Sample Location	CP-2	NYSDEC	NYSDEC
Depth to Sediment (feet)	18	Unrestricted	Commercial
Sample Date	6/28/06	Use Soil	Use Soil
Sample Depth (ft below sediment surface)	0-2	Cleanup	Cleanup
		Objectives	Objectives
Volatile Organic Compounds in micrograms per kilogram			
Acetone	200	50	500,000



- LEGEND:**
- = SOIL BORING
 - = CESSPOOL/SEPTIC TANK
 - = SANITARY WASTE LEACHING POOL
 - ⊙ = STORMWATER LEACHING POOL
 - = SOLID-BOTTOM CATCH BASIN
 - = USTs
 - W— = WATER SERVICE CONNECTION

FPM GROUP

FIGURE 2.2.3.1
PREVIOUS SOIL SAMPLING

1735 EXPRESS DRIVE NORTH
HAUPPAUGE, NEW YORK

Drawn By: H.C.	Checked By: J.B.	Date: 9/4/13
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In 2008 the SCDHS requested installation and sampling of one monitoring well in the vicinity of the former LP-4 leaching structure (now remediated and abandoned by backfilling) to evaluate groundwater conditions in this area. Monitoring well MW-1 was installed near the former LP-4 and was initially sampled in early 2008 and three additional monitoring events were conducted between May 2008 and March 2009. The monitoring results showed levels of CVOCs that declined during the monitoring period, with significantly reduced CVOC concentrations by March 2009 as anticipated following remediation of the former source area at LP-4.

In response to another request by the SCDHS, multi-level well MW-2 was installed on the east side (downgradient) of the Site building in June 2010. This well was constructed with three sampling intervals (shallow at 3 to 5 feet below the water table, intermediate at 13 to 15 feet below the water table, and deep at 23 to 25 feet below the water table). Well MW-2 was initially sampled in June 2010 and was subsequently added to the monitoring program for the Site. CVOCs present in this multi-level well in excess of NYSDEC Standards included 1,1,1-TCA, cis-1,2-DCE, TCE, and PCE.

Wells MW-1 and MW-2 were monitored an additional four times between May 2011 and September 2012. The results indicate that CVOC concentrations at the former source area (well MW-1) declined significantly and that only cis-1,2-DCE remains present slightly in excess of its NYSDEC Standard. CVOC concentrations at downgradient well MW-2 were noted to decline overall since early to mid-2011 and were generally moderately elevated in the shallow interval and decreased downward. These data suggest that the majority of the impact is near the water table surface and do not support the potential presence of dense non-aqueous-phase liquid (DNAPL) at the Site. These data are also consistent with the vertical distribution of CVOCs in offsite groundwater, as discussed below. Exceedances of the NYSDEC Standards noted during the most recent monitoring event are summarized on Figure 2.2.4.1.

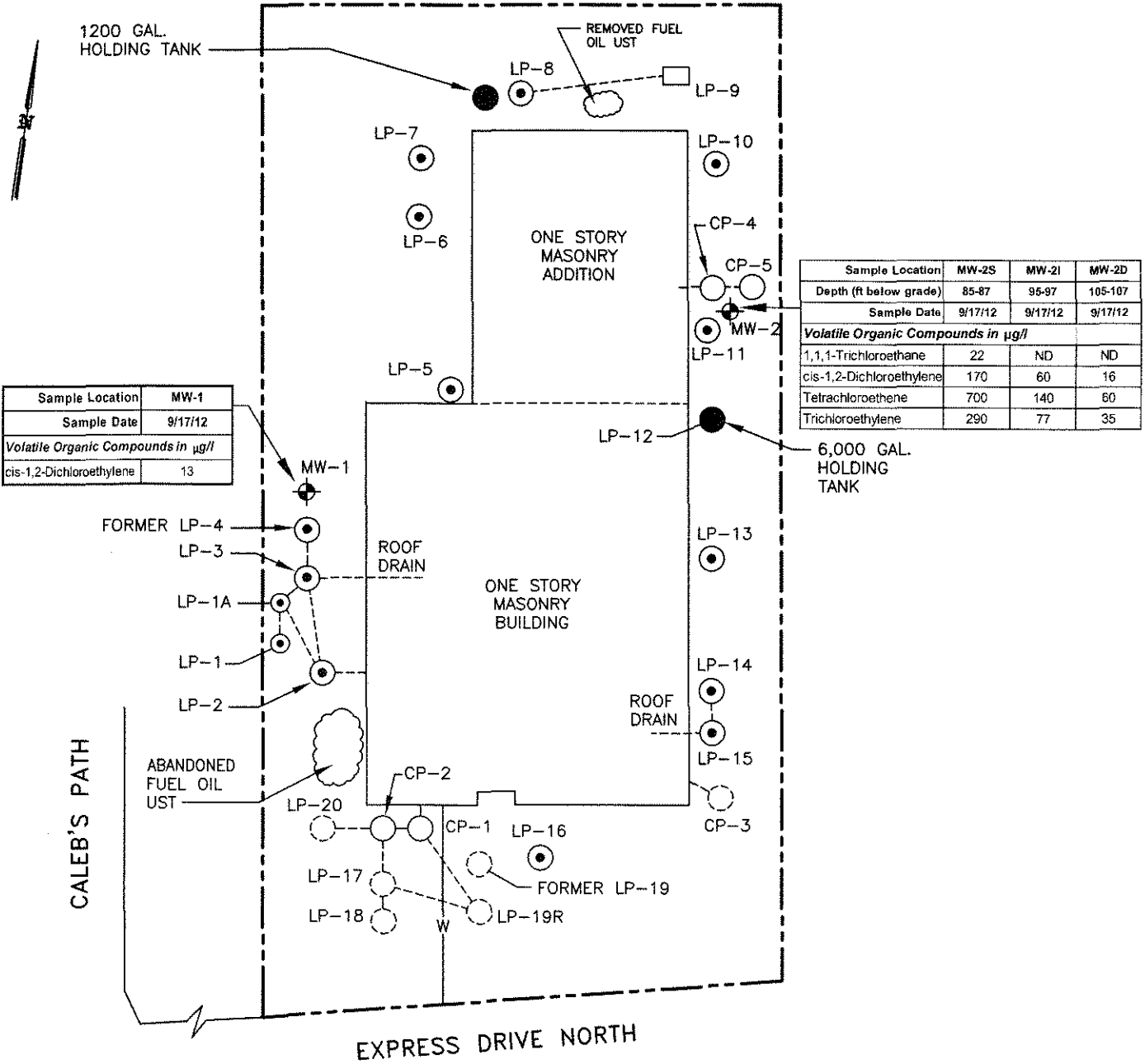
2.2.5 2009 Soil Vapor Sampling

In response to a request from the New York State Department of Health (NYSDOH) and SCDHS, soil vapor sampling was conducted onsite in proximity to the former LP-4 structure in August 2009. The results indicated the presence of elevated concentrations of 1,1,1-TCA, TCE, PCE, cis-1,2-DCE, and carbon tetrachloride in soil vapor. It was recommended that a soil vapor sample be collected from the residential property adjoining the Site to the west. The SCDHS concurred with the recommendation and the additional sampling was performed in proximity to the offsite residence in December 2009. CVOCs were either not detected or were detected at very low concentrations in the offsite sample. It was concluded that soil vapor intrusion into the residence was unlikely and no further sampling was recommended. Tables summarizing the soil vapor sampling data are included in Appendix A and the detected concentrations of CVOCs for which the NYSDOH provides guidance are depicted on Figure 2.2.5.1.

2.2.6 Offsite Groundwater Sampling

The SCDHS has conducted groundwater sampling at several offsite locations downgradient (east-northeast) of the Site. Copies of correspondence documenting this work are included in Appendix A. VOCs were detected at several of the offsite locations in excess of the NYSDEC Standards, including PCE, TCE, 1,1,1-TCA, and cis-1,2-DCE. The highest concentrations were identified at or near the water table, with the concentrations generally decreasing downward. Identified impacts extended to over one-half mile downgradient (east-northeast) from the Site and appear to have been generally delineated to the south (crossgradient) and somewhat

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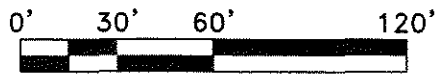
Sample Location	MW-1
Sample Date	9/17/12
Volatile Organic Compounds in µg/l	
cis-1,2-Dichloroethylene	13

Sample Location	MW-2S	MW-2I	MW-2D
Depth (ft below grade)	85-87	95-97	105-107
Sample Date	9/17/12	9/17/12	9/17/12
Volatile Organic Compounds in µg/l			
1,1,1-Trichloroethane	22	ND	ND
cis-1,2-Dichloroethylene	170	60	16
Tetrachloroethene	700	140	60
Trichloroethylene	290	77	35

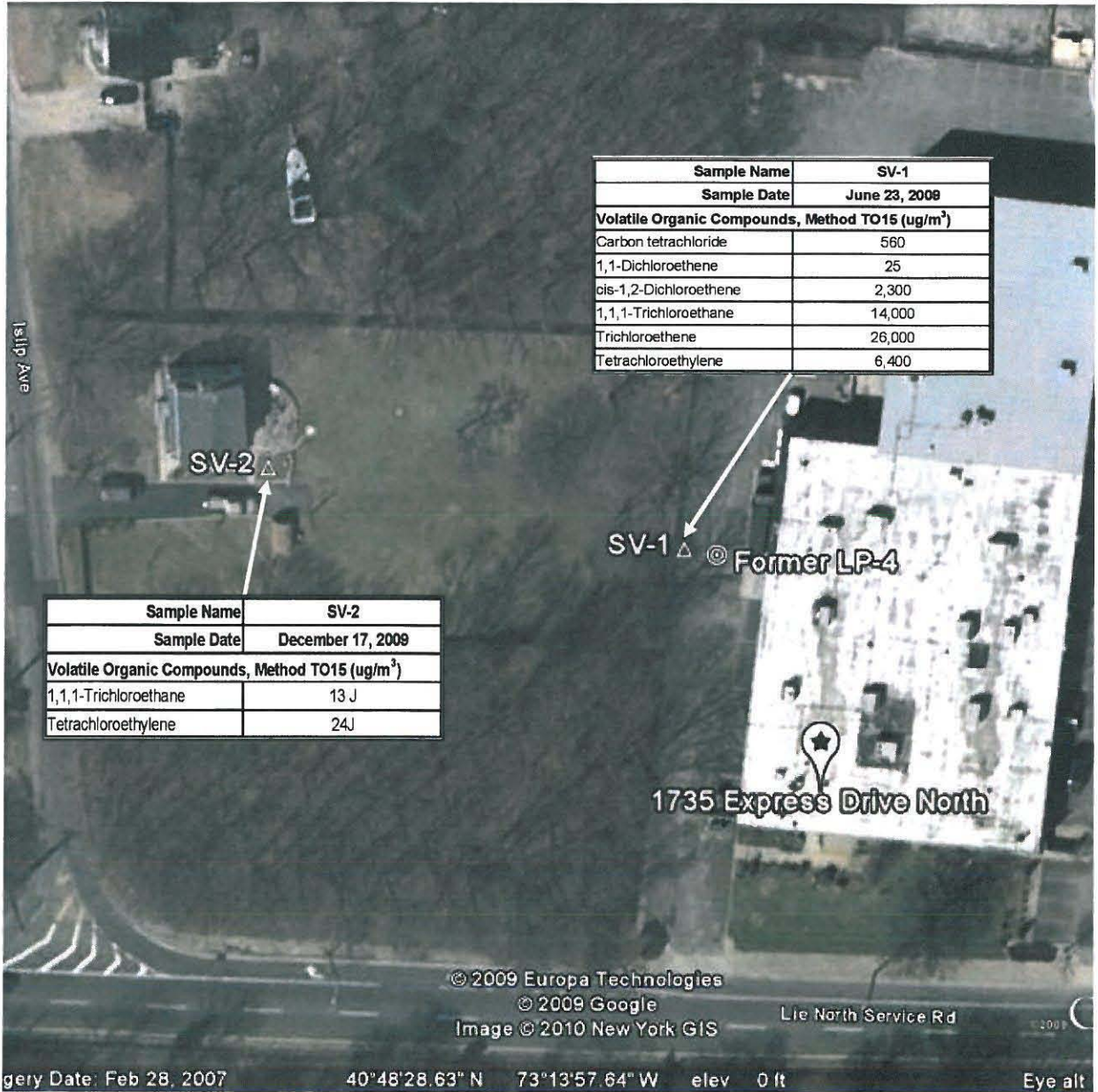
LEGEND:

- = GROUNDWATER MONITORING WELL
- = CESSPOOL/SEPTIC TANK
- = SANITARY WASTE LEACHING POOL
- = STORMWATER LEACHING POOL
- = SOLID-BOTTOM CATCH BASIN
- = FORMER USTs
- = WATER SERVICE CONNECTION

APPROXIMATE SCALE:



FPM GROUP		
FIGURE 2.2.4.1		
PREVIOUS GROUNDWATER SAMPLING		
1735 EXPRESS DRIVE NORTH HAUPPAUGE, NEW YORK		
Drawn By: H.C.	Checked By: J.B.	Date: 9/4/13



Source: Google Earth

FPM GROUP		
FIGURE 2.2.5.1		
PREVIOUS SOIL VAPOR SAMPLING		
1735 EXPRESS DRIVE NORTH		
HAUPPAUGE, NEW YORK		
Drawn by: JB	Checked By: SOD	Date: 09/11/13

delineated to the north (crossgradient). Some detections from locations to the north of the Site appear to be associated with the Glaro site. Figure 2.2.6.1 shows the SCDHS sampling locations and corresponding total VOC concentrations.



FPM GROUP		
FIGURE 2.2.6.1		
SCDHS GROUNDWATER SAMPLING LOCATIONS WITH TOTAL VOC CONCENTRATIONS 1735 EXPRESS DRIVE NORTH HAUPPAUGE, NEW YORK		
Drawn by: JB	Checked By: SOD	Date: 09/11/13

**SECTION 3.0
SCOPE OF REMEDIAL INVESTIGATION**

The scope of RI work presented below has been developed to further evaluate the nature and extent of VOC contamination associated with the Site and to confirm that other constituents do not present a concern. This scope of work has been developed in accordance with the NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation (NYSDEC, May 2010) and includes soil, soil vapor, and groundwater sampling. Existing environmental data and information about former Site operations have been used in the development of the scope of RI work.

FPM will conduct the RI on behalf of the Site owner, Maggio Data Forms Printing, Ltd. All RI work will be overseen by a Qualified Environmental Professional (QEP). Contact information for the principal personnel for this project and the Site owner is provided in Table 3.1. Resumes of the principal technical personnel for this project are included in Appendix B.

**TABLE 3.1
PROJECT PERSONNEL
1735 EXPRESS DRIVE NORTH
HAUPPAUGE, NEW YORK**

Role	Name	Phone Numbers		Email
		Office	Cell	
Senior Manager	Stephanie Davis C.P.G.	631-737-6200 ext. 228	516-381-3400	s.davis@fpm-group.com
Project Manager	John Bukoski	631-737-6200 ext. 209	516-381-3535	j.bukoski@fpm-group.com
Owner/Facility Contact	James Maggio	800-783-6313	-	aajm@maggio.com.com

All field work will be performed using a site-specific Health and Safety Plan (HASP), a copy of which is included in Appendix C. Please note that the HASP includes a Community Air Monitoring Plan (CAMP) prepared in accordance with DER-10, Appendix 1A. FPM will implement the CAMP during all intrusive activities at the Site.

A Citizen Participation Plan (CPP) has been approved for this Site. A copy of the approved CPP is available in Appendix D.

3.1 RI Scope of Work

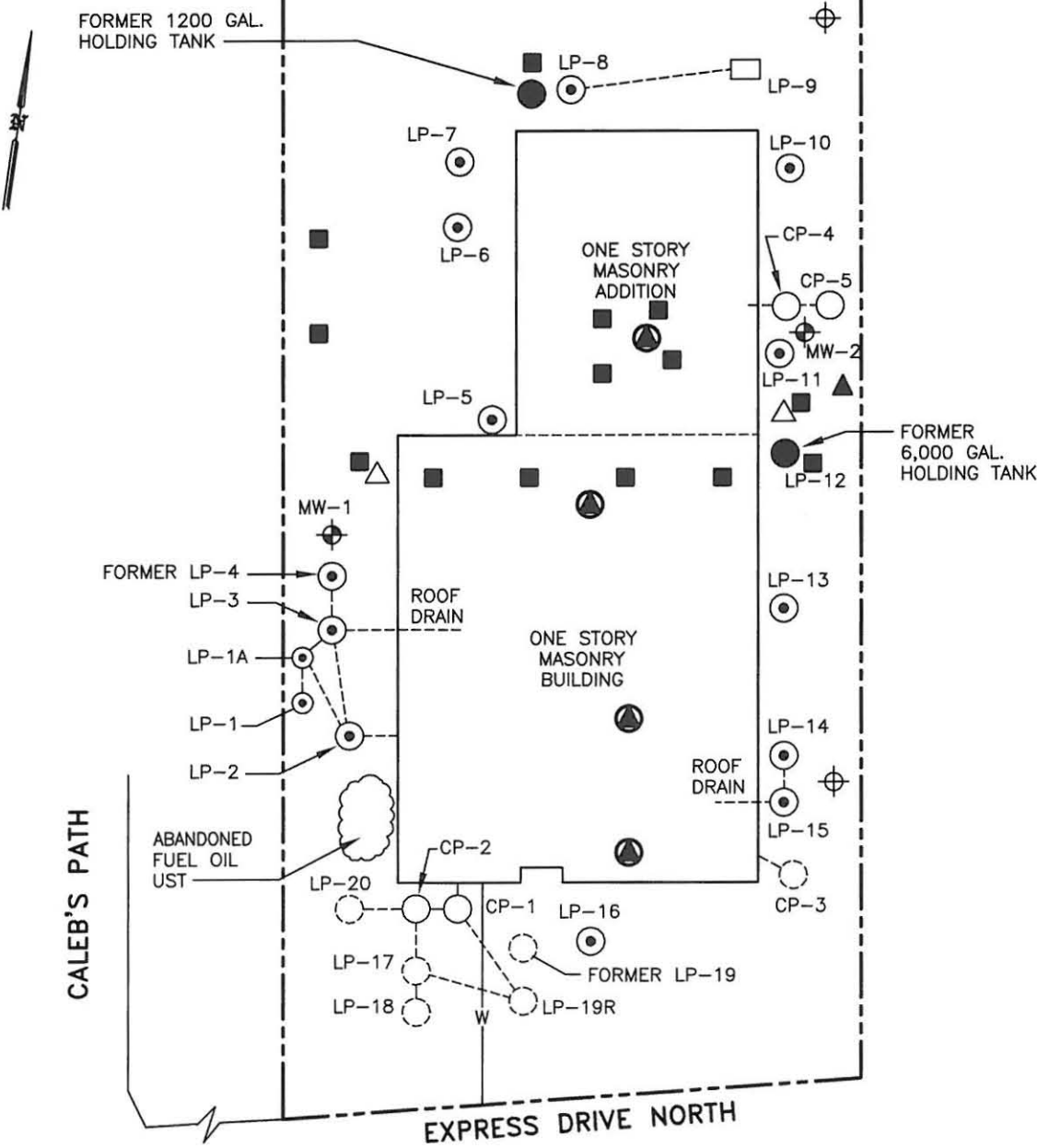
The RI sampling activities have been developed based on an evaluation of the existing Site data presented in Section 2. The sampling locations were selected for the purpose of evaluating the potential presence of impacts in areas of the Site that have not been previously evaluated or where previous activities suggest that additional sampling is indicated. The groundwater sampling locations were selected to evaluate the lateral extent of onsite groundwater impacts. In general, the RI includes a geophysical survey to locate two subsurface leaching structures

that may be present, an evaluation of soil and soil vapor beneath the building, soil vapor at the downgradient edge of the Site, soil in the area of former ASTs and USTs and any leaching structures that are identified during the geophysical survey, onsite groundwater conditions, and the groundwater flow direction onsite and offsite. Additional offsite groundwater sampling will also be conducted.

Additional sampling is not contemplated for previously-sampled leaching pools or septic tanks as these facilities were previously investigated and remediated under the oversight of the SCDHS, as detailed in Section 2.0. Impacted areas identified during previous investigations were remediated to the extent that the only exceedances of Unrestricted Use Objectives are at LP-18, CP-1, and the former LP-19 structure. The remaining impacts do not include any CVOCs.

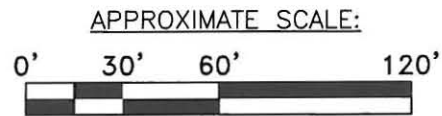
The proposed RI sampling locations are shown on Figure 3.1.1. The scope of work includes the following components:

- A geophysical survey will be conducted in two exterior areas where leaching pools used during Afta's former operations may be present;
- Soil sampling will be conducted at 14 onsite locations to further evaluate the nature and extent of potential impacts to Site soils;
- A soil vapor intrusion evaluation will be performed for the onsite building. This evaluation will include sub-slab soil vapor and indoor air sampling at four locations within the building with concurrent ambient (exterior) air sampling. Soil vapor sampling will also be conducted on the east side of Site in proximity to MW-2 to assess the potential for offsite vapor impacts in the direction of plume migration;
- Two additional multi-level groundwater monitoring wells will be installed onsite. One well will be installed at the northeast corner of the Site and one well will be installed in the southeast quadrant of the Site to delineate the lateral extent of the identified VOC impacts. Each well cluster will be constructed with a shallow and a deep screened interval, with the screens set at the same shallow interval and a comparable deep interval as the existing well MW-2. These new wells will be sampled together with the existing onsite wells to evaluate current groundwater conditions. Aquifer testing will also be performed at one shallow well and one deep well. All onsite wells will be surveyed to a common relative elevation datum and water level information will be obtained to evaluate the Site-specific groundwater flow direction;
- The offsite groundwater monitoring wells will be located and their elevations surveyed to the same relative elevation datum as the onsite wells. Water level measurements will be obtained and evaluated to determine the groundwater flow direction downgradient of the Site. Potential contribution from the Glaro site to the offsite plume will be assessed;
- Based on the results of the groundwater flow direction determination select offsite groundwater monitoring wells will be sampled to assess current groundwater conditions downgradient of the Site; and
- A Qualitative Human Health Exposure Assessment will be performed, as described in DER-10, to identify the areas and chemicals of concern, actual or potential exposure



LEGEND:

- ⊕ = GROUNDWATER MONITORING WELL
- = CESSPOOL/SEPTIC TANK
- (dashed) = SANITARY WASTE LEACHING POOL
- ⊙ (solid) = STORMWATER LEACHING POOL
- (solid) = SOLID-BOTTOM CATCH BASIN
- △ (solid) = POTENTIAL LEACHING POOL
- (solid) = FORMER USTs
- W— = WATER SERVICE CONNECTION
- ▲ (solid) = PROPOSED SOIL VAPOR SAMPLE LOCATION
- ⊙ (solid with triangle) = PROPOSED SUB-SLAB SOIL VAPOR & INDOOR AIR LOCATION
- (solid) = PROPOSED SOIL SAMPLE LOCATION
- ⊕ (dashed) = PROPOSED GROUNDWATER WELL LOCATION



FPM GROUP		
FIGURE 3.1.1		
PROPOSED ONSITE SAMPLING LOCATIONS		
1735 EXPRESS DRIVE NORTH HAUPPAUGE, NEW YORK		
Drawn By: H.C.	Checked By: J.B.	Date: 10/31/13

pathways, potentially exposed receptors, and how any unacceptable exposures might be eliminated/mitigated.

3.2 Investigation Procedures

A site plan showing the proposed RI sampling locations is presented in Figure 3.1.1. The procedures for each type of sampling are described below. Quality assurance/quality control (QA/QC) procedures are presented in Section 4.

Prior to any onsite or offsite intrusive work the One-Call service will be contacted and requested to mark out the utilities in the streets in proximity to the work area. The Site owner will be requested to provide information concerning the locations of any onsite subsurface obstructions in the work areas.

➤ Site Inspection

The areas of the Site targeted for sampling will be visually inspected to identify and mark the sample locations and to confirm access. The inspection will include observations of visible features that indicate the appropriate locations and use of historic site plans that show feature locations. Use of geophysical survey equipment (ground-penetrating radar and/or electromagnetic methods) to identify interior sample locations will be considered if visible features and/or historic site plans do not provide sufficient information to locate planned borings. However, the use of geophysical survey equipment for this purpose will only be considered if Site conditions (clear surface access, absence of in-slab reinforcing materials, etc.) indicate a reasonable potential for successful use of such equipment.

➤ Geophysical Survey

A geophysical survey will be conducted on the west and east exterior areas of the Site building to locate the two potential leaching pools identified in historic records that are not visible at grade. This survey will be conducted by a geophysical survey contractor using ground-penetrating radar and electromagnetic methods. The results of the geophysical survey will be marked on the ground surface and used in the selection of boring locations. As noted above, this survey may include interior areas if necessary to identify potential sample locations and if Site conditions indicate a reasonable potential for successful use of this equipment.

➤ Soil Sampling

Soil borings will be performed at 14 onsite locations utilizing direct-push sampling equipment or a stainless steel hand auger, as appropriate. Two soil borings will be performed on the west side of the Site in the vicinity of the former ASTs to a depth of at least five feet below grade. Four soil borings will be performed beneath the original building in the area of the former Afta chemical mixing area to a depth of at least five feet below grade. As the specific locations of facilities formerly associated with this area (floor drain, sinks, etc.) are not apparent in the historic records, the borings will be spaced evenly across this area, with the western-most boring located in the vicinity of a former catch basin. Four soil borings will be performed beneath the one-story masonry addition in the area of the former Afta leaching pools, with one boring targeted for each former leaching structure to a depth of at least 20 feet below grade. One soil boring will be performed to a depth of at least 20 feet below grade at each of the two locations where leaching pools associated with Afta's historic operations were reported to be

present. If these structures are identified during the geophysical survey, then the borings will be advanced through the structures. If no structures are identified, then the borings will be advanced in the area(s) where these structures were reported to be present. Soil borings will also be performed in close proximity to the former holding tanks located on the north and east sides of the building to a depth of 25 feet at each location. If visible indications or potential contamination are noted at the bottom of a boring, the boring will be advanced deeper so as to delineate the visible impacts.

The soil samples will be obtained continuously from each boring, screened by a QEP with a calibrated photoionization detector (PID), and classified using the Unified Soil Classification System (USCS). The QEP will record the soil observations on boring logs.

Two samples will be collected from each boring for laboratory analysis, including one sample from the 0 to 2-foot interval and one sample from the interval showing the greatest potential for impact. Additional samples may be collected if necessary to vertically delineate visible contamination or if intervals of significant visible contamination are noted. Upon completion of sampling, the sample containers shall be sealed, labeled, managed, transported, and tracked as described in Section 3.3.

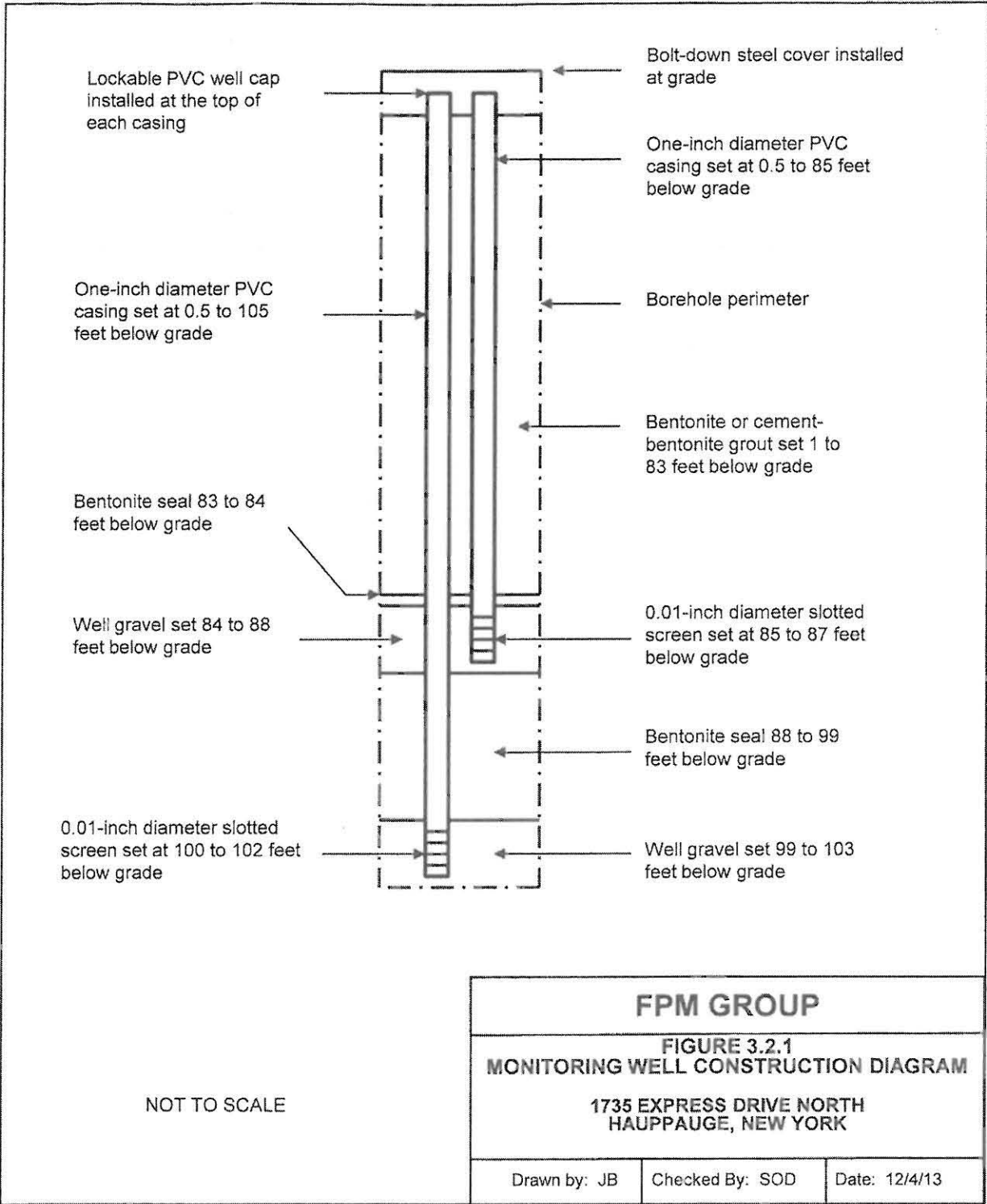
The completed borings will be backfilled with soil cuttings that have been screened for indications of potential contamination and have been found to be free of such indications. If necessary, clean sand shall be used as backfill. Any borings that have been advanced through pavement or the building slab shall be sealed at the top with asphalt or concrete in kind with the surrounding materials. Management of soil cuttings exhibiting indications of potential contamination is discussed in Section 3.4 below.

➤ Well Installation and Surveying Procedures

The proposed monitoring wells will be installed by a licensed well driller using the hollow-stem auger method. A QEP will observe the well installation and prepare well installation diagrams to document the well construction. The monitoring well locations will be identified using a GPS. Drill cuttings will be visually examined by the QEP during well installation, screened for organic vapors with a calibrated PID, and classified using the Unified Soil Classification System (USCS). The QEP will record the soil observations on boring logs. Management of drill cuttings is further described in Section 3.4 below.

Each well cluster will be comprised of two one-inch diameter wells installed in the same borehole in a similar manner as the existing MW-2 well cluster. The wells will be completed with two feet of 0.01-inch slotted screen set at 85 to 87 feet and 100 to 102 feet below grade. The depth to water is noted to be approximately 82 feet below grade; therefore, the well screens will be set at approximately 3 to 5 feet and 18 to 20 feet below the water table. Figure 3.2.1 shows the planned well construction.

The annulus around each well screen will be backfilled using Morie #2 gravel to approximately one foot above the top of each screen. A bentonite seal will be placed in the annulus above the gravel around the lower well screen to one foot below the gravel surrounding the upper well screen. A bentonite seal will also be placed into the interval above the shallow well screen. The annulus surrounding the well casings above the upper bentonite seal will be backfilled with bentonite or cement-bentonite grout. The top of each well cluster will be protected with a traffic-rated bolt-down manhole set in concrete.



Following installation, the wells will be developed by pumping and surging until the produced groundwater is clear (turbidity less than 50 NTU) and the parameters pH, temperature, and conductivity vary by less than 10 percent between removals of successive casing volumes of groundwater. Development shall be accomplished using dedicated tubing equipped with a downhole check valve. Management of development water is discussed in Section 3.4 below.

Following well installation, a survey will be performed in which the elevation of the top of the PVC casing for each onsite well will be determined to the nearest 0.01 foot relative to a common datum. The static water level for each of the Site wells will be measured to the nearest 0.01 foot and used in conjunction with the surveyed well casing elevations to calculate the Site-specific groundwater flow direction and hydraulic gradient.

The locations of the offsite wells will be confirmed and measured with a GPS. The depth of each well will be measured and the SCDHS will be contacted to obtain information concerning the screen interval of each well. The elevation of the top of the PVC casing for each offsite well will be determined to the nearest 0.01 foot relative to the same common datum as the onsite wells. The static water level for each of the offsite wells will be measured to the nearest 0.01 foot and used in conjunction with the surveyed well casing elevations to calculate the groundwater flow direction and hydraulic gradient downgradient from the Site.

➤ Aquifer Testing

Aquifer testing will be by means of conducting slug tests on one shallow well and one deep well: the MW-2S and MW-2D wells. Each test will be conducted by placing a decontaminated small-diameter water level transducer and datalogger (In-Situ MiniTROLL datalogger, or equivalent) into each well and allowing the water level to stabilize. A decontaminated small-diameter solid slug will then be introduced into the well to displace water and the resulting recovery of the water level will be recorded. Once the water level has stabilized, the slug will be smoothly and rapidly withdrawn and the resulting recovery of the water level will be recorded. This process will be repeated three times for each of the two wells so as to obtain sufficient data for a confident analysis.

The resulting water level data will be analyzed using appropriate aquifer test analysis software (Aqtesolve, or similar) to determine the hydraulic conductivity (K) of the aquifer in the shallow and deep intervals. These results will be compared with published values of K for the Upper Glacial Aquifer and any significant variance will be noted. These results will also be used together with the groundwater flow direction and hydraulic gradient information and published values of retardation to evaluate the rate of groundwater and contaminant flow in the aquifer.

➤ Groundwater Sampling

Groundwater sampling will be performed during a single event after the two new onsite well clusters are completed, all wells have been surveyed, and the groundwater flow direction(s) have been determined. The existing results from the previous offsite groundwater sampling performed by the SCDHS will be evaluated together with the groundwater flow direction information to select representative offsite wells to be sampled so as to assess current groundwater conditions downgradient of the Site. The results of this evaluation will be presented to the NYSDEC together with a recommendation for sampling. Sampling will be performed following concurrence from the NYSDEC as to the offsite locations to be sampled.

All onsite wells (two proposed multi-level wells and existing wells MW-1 and MW-2, shallow and deep intervals) will be sampled along with the selected offsite wells. For the purposes of this work plan it is assumed that approximately six offsite wells will be sampled. At each well the depth to the static water level and depth of the well will be measured with a water level indicator. Dedicated polyethylene tubing will be connected to a decontaminated check valve and utilized to purge each well until at least three well volumes of water have been purged or the well goes dry. Following the removal of each well volume, field parameters, including pH, turbidity, specific conductivity, and temperature, will be monitored. When all stability parameters vary by less than 10 percent between the removal of successive well volumes, the well will be sampled. Well sampling forms documenting the well purging and sampling procedures will be completed. Purged groundwater will be containerized and managed as described in Section 3.4 below.

Following purging, sampling will be performed. Samples will be obtained using dedicated disposable polyethylene bailers suspended from dedicated cotton or polypropylene lines. The retrieved samples will be decanted into laboratory-supplied sample containers. Upon completion of sampling, the sample containers shall be sealed, labeled, managed, transported, and tracked as described in Section 3.3.

➤ Soil Vapor Intrusion Sampling

Soil vapor intrusion sampling will be performed for the onsite building and will include sub-slab soil vapor, indoor air, and ambient air sampling. The potential for offsite soil vapor intrusion will also be assessed by sampling soil vapor at the downgradient (east) perimeter of the Site at a location above the plume. Sampling will be scheduled appropriately to avoid any building renovation activities; building windows and exterior doors will be closed during the majority of the sample collection period. Proposed soil vapor intrusion sampling locations are shown on Figure 3.1.1.

At each sub-slab sampling location a rotary hammer drill will be used to penetrate the concrete slab and a temporary vapor sampling point will be installed to a depth of approximately two inches below the existing floor slab. At the exterior soil vapor sampling location a boring shall be advanced using a hand auger or direct-push rig to approximately six feet below grade and a temporary vapor sampling point shall be installed. A bentonite seal will be placed so as to seal each sampling point from the surrounding atmosphere. Following installation, up to three volumes of air shall be purged through the implant and polyethylene tubing using an air pump so as to ensure that a representative sample is obtained. To confirm the integrity of the bentonite seal a helium tracer gas will be confined over the surface seal and the potential presence of helium in the polyethylene tubing will be checked with a helium meter. Following purging and the seal integrity check, the soil vapor sample shall be collected into a laboratory-supplied 6L Summa canister equipped with a calibrated flow controller. Co-located indoor air samples and an ambient (outdoor) air sample will also be collected concurrently with the sub-slab vapor samples over an approximate 8-hour time period during normal working hours when the HVAC system is operational. The outdoor soil vapor sample will also be collected over an approximate 8-hour period. The flow controller for each canister will be set so as not to exceed 0.2 liters per minute. FPM shall observe the flow controllers and shall seal the canisters while some vacuum remains. Upon completion of sampling, each canister shall be sealed, labeled, managed, transported, and tracked as described in Section 3.3. The soil vapor, indoor air, and outdoor air sample locations will be identified using a GPS.

During the sampling event, a building inventory shall be completed for each area sampled using the most current NYSDOH inventory form. The building conditions will be detailed and any spills or odors, including their locations, will be noted. The information obtained will be used to assess factors that may affect the indoor air sample results.

3.3 Sample Management and Analyses

Each sample container will be labeled, and the labeled containers containing soil or groundwater samples will be placed in a cooler with ice to depress the sample temperature. The filled labeled Summa canisters shall be secured in shipping containers. A chain of custody form will be completed and kept with the coolers and shipping containers to document the sequence of sample possession. At the end of each day, the filled coolers and shipping containers will be transported by courier to the analytical laboratory.

The anticipated analytical laboratory for soil and groundwater samples is TestAmerica of Edison, New Jersey, which is NYSDOH ELAP-certified for the proposed analyses. All of the soil and groundwater samples will be analyzed for TCL VOCs plus TICs using EPA Method 5035/5035A and 8260B. In addition, the shallow soil samples, samples from leaching structures, and all of the onsite shallow groundwater samples will also be analyzed for TCL SVOCs plus TICs using Methods 3541 or 3510C/8270C, TAL metals using Methods 3050B or 3010A/6010B, mercury using Methods 7471B or 7470A, PCBs using Methods 3546/8082A, and pesticides using Methods 3510C or 3535A and 8141A/8151B/8081B/8082A. In the event that visible contamination is observed in the deeper soil samples, then these samples will be analyzed for additional analyte groups, as appropriate. The analytical methods used will be as per NYS Analytical Services Protocol (ASP) with Category B deliverables. Electronic data deliverables (EDDs) will be prepared and uploaded into the NYSDEC's environmental information management system.

The anticipated analytical laboratory for soil vapor and indoor/outdoor samples is Alpha Analytical of Mansfield, MA. Alpha Analytical is a NYSDOH ELAP-certified laboratory. The soil vapor samples will be analyzed for VOCs using Method TO-15. Low-level TO-15 analyses will be performed for the indoor air samples. The analytical methods used will be as per NYS ASP with Category B-equivalent deliverables. EDDs will also be prepared and uploaded into the NYSDEC's environmental information management system.

Additional details concerning sampling, analysis, and QA/QC is provided in the Quality Assurance Project Plan presented in Section 4.

3.4 Management of Investigation-Derived Waste

3.4.1 Soil Cuttings

Soil cuttings are anticipated to be generated during the performance of soil borings and installation of groundwater monitoring wells and will be managed in accordance with DER-10, Section 3.3(e). In general, soil cuttings will be screened and used as backfill in completed borings if there are no indications of potential contamination in the cuttings. Cuttings will not be used as backfill in monitoring well borings. Cuttings that exhibit indications of potential contamination will be containerized and properly disposed offsite in compliance with applicable regulations.

3.4.2 Well Development and Purge Water

All groundwater generated during well development and purging will be containerized. The containers will be staged onsite in a designated area. The containerized groundwater will be examined by the QEP for visual and olfactory indications of contamination and, if free of indications of potential contamination, will be tested for VOCs. If VOCs are not found at levels in excess of the NYSDEC Standards, the water will be recharged to the ground in a manner that does not result in surface water runoff.

If visible contamination is observed or VOC levels are in excess of NYSDEC Standards, the containerized groundwater will be disposed offsite, as described below.

3.4.3 Waste Disposal

Any soil cuttings that are generated and cannot be managed onsite in accordance with DER-10, soil cuttings that exhibit indications of potential contamination, and groundwater that exhibits indications of potential contamination or exceeds NYSDEC Standards will be transported by a licensed waste transporter and properly disposed offsite at permitted waste disposal facilities. Waste transport and disposal shall be documented with manifests, copies of which shall be included in the RI Report. Dedicated disposable investigation equipment (gloves, etc.) shall be containerized and properly disposed offsite as solid waste.

3.5 Exposure Assessment

A qualitative human health exposure assessment will be performed during the RI in accordance NYSDEC DER-10 Section 3.3(c)4 to identify the areas and chemicals of concern, actual or potential exposure pathways, potentially exposed receptors, and how any unacceptable exposures might be eliminated/mitigated. The five exposure pathway elements that will be examined include:

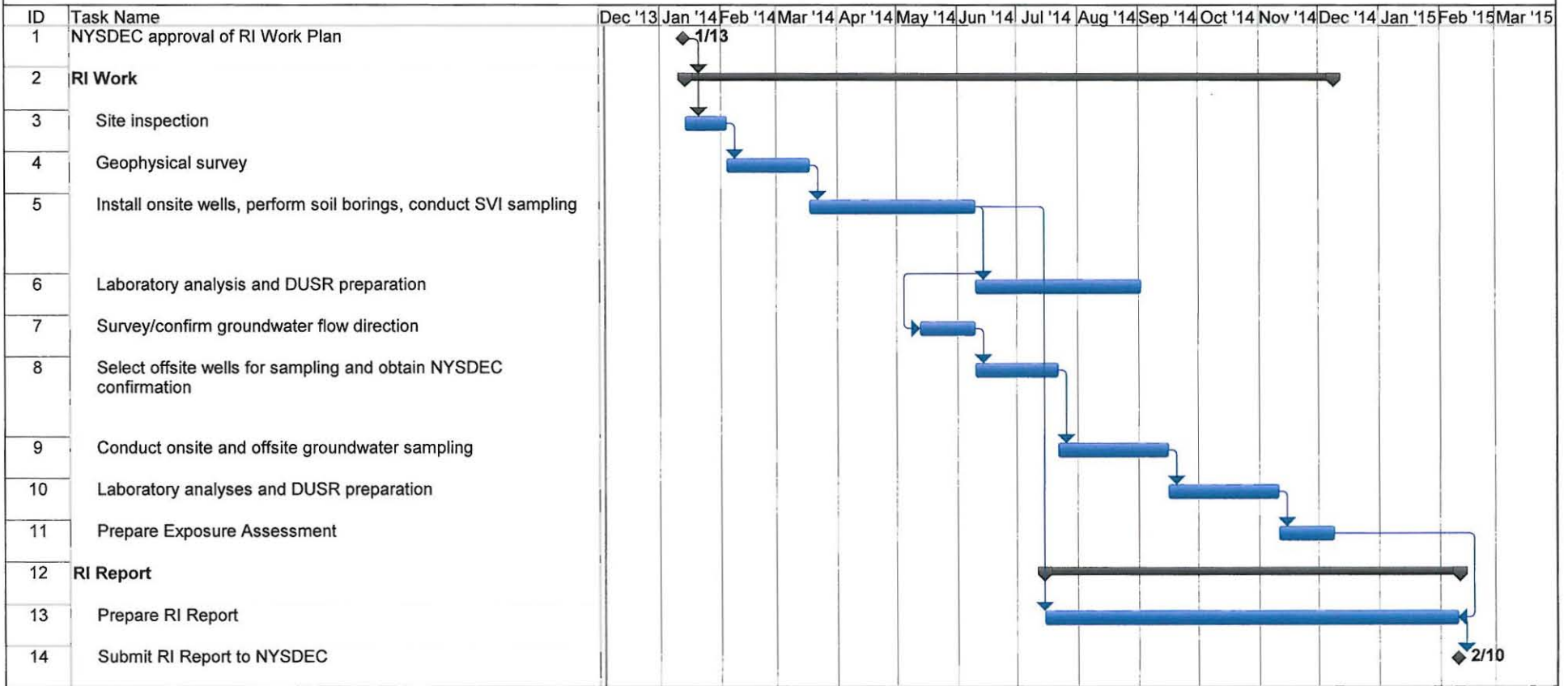
- Descriptions of the contaminants and affected media;
- An explanation of the contaminant release and transport mechanisms to the potentially exposed population;
- Identification of potential exposure points where the potential for human contact with contaminated media may occur;
- A description of routes of exposure (i.e., ingestion , inhalation, dermal contact); and
- A characterization of the receptor population that may be exposed to contaminants at a point of exposure.

3.6 Reporting and Schedule

The proposed schedule for the RI is shown in Figure 3.6.1.

Following the completion of the RI sampling activities, the receipt of all sample results, and preparation of the qualitative human health exposure assessment, FPM will prepare an RI Report. The RI Report will be prepared in accordance with NYSDEC DER-10 Section 3.14.

**FIGURE 3.6.1
RI SCHEDULE
1735 EXPRESS DRIVE NORTH
HAUPPAUGE, NEW YORK**



Project: RI Schedule rev12-13 Date: Wed 12/4/13	Task		External Milestone		Manual Summary Rollup	
	Split		Inactive Task		Manual Summary	
	Milestone		Inactive Milestone		Start-only	
	Summary		Inactive Summary		Finish-only	
	Project Summary		Manual Task		Progress	
	External Tasks		Duration-only		Deadline	

The report will include an updated site plan, a summary of the work performed, the resulting chemical analytical data, an interpretation of the data, the qualitative exposure assessment, and conclusions. The RI Report will also include a table listing public water supply wells located within three miles of the Site. Included on the table will be the well identifiers, depths, distance from the wells to the Site, and their hydrologic position with respect to the Site. If any well fields are identified in hydrogeologic downgradient or crossgradient proximity to the Site, then information concerning their current operation and treatment (if any) will be included if this information can be obtained from the SCWA and/or SCDHS via the FOIL process. An assessment will be made as to the potential for Site-related constituents to impact public supply wells. Copies of all field logs, the complete laboratory analytical packages, and the Data Usability Summary Reports (DUSRs) will be provided separately from the RI Report as an electronic submission, in accordance with DER-10 Section 3.14(b).

In accordance with 6 NYCRR Part 375-2, the soil data shall be evaluated with respect to the NYSDEC Objectives for unrestricted use (Table 375-6(a)). However, as the Site is zoned as a industrial property and is occupied by a commercial business, the soil data will also be compared to the NYSDEC Objectives for commercial use (Table 375-6(b)). Groundwater data shall be compared to the NYSDEC Class GA Ambient Water Quality Standards. Soil vapor and air data will be evaluated in accordance with NYSDOH guidance. A further discussion of standards, criteria and guidance (SCGs) is included in Section 4.

Monthly progress reports will be prepared and submitted to the NYSDEC and NYSDOH during the above-described RI work. The monthly progress reports shall include information regarding activities conducted during the reporting period, activities planned for the next reporting period, a summary of any sampling results and community monitoring results, any changes to the schedule, any problems encountered, and other pertinent project information.

SECTION 4.0 QUALITY ASSURANCE PROJECT PLAN

This Quality Assurance Project Plan (QAPP) is applicable to all RI activities at this Site. The RI work is intended to address data gaps and assess the current extent of soil, groundwater, and soil vapor impacts onsite and to evaluate current offsite downgradient groundwater conditions.

The RI will be performed by FPM on behalf of the Site owner, Maggio. The FPM project manager is John Bukoski. Additional project personnel are identified on Table 3.1. Resumes for project personnel are included in Appendix B.

Sampling procedures are presented in Section 3.2 and sample management is presented in Section 3.3 of this RI Work Plan. A site map showing onsite sample locations is presented on Figure 3.1.1. Table 4.1 presents a summary of the analytical methods and the QA/QC sample program. QA/QC samples are further discussed below.

4.1 Data Quality Objectives

The Data Quality Objectives (DQOs) will be applicable to all data-gathering activities at the Site. DQOs will be incorporated into sampling, analysis, and quality assurance tasks associated with SC activities.

The data users for this project are FPM, the NYSDEC, and the NYSDOH. The Site owner will also be provided with the data. No other data users are anticipated. The collected data are intended to further evaluate the nature and extent contaminants in onsite soil, groundwater, indoor air, and soil vapor, and VOCs in offsite groundwater and soil vapor.

For this project, field screening will be performed during sampling activities. Field screening includes monitoring for organic vapors in any generated soil cuttings and in the air in the work zone using a Photovac MicroTIP PID (or equivalent) and visual observations of soil or groundwater characteristics. All readings and observations will be recorded by the QEP in his or her field notebook.

4.2 Standards, Criteria, and Guidance

The following standards, criteria, and guidance (SCGs) have been identified for the Site:

- The 6 NYCRR Subpart 375-6 Remedial Program Soil Cleanup Objectives, which are used to evaluate soil sample results;
- The NYSDEC Class GA Ambient Water Quality Standards (1998), which are used to evaluate the groundwater chemical analytical results;
- The 6 NYCRR Parts 370, 371, and 372 regulations for hazardous waste management, which are used to guide hazardous waste characterization and disposal; and

**TABLE 4.1
REMEDIAL INVESTIGATION SAMPLING MATRIX
1735 EXPRESS DRIVE NORTH, HAUPPAUGE, NEW YORK**

Sample Location/Type	Matrix	Sample Depth (feet below grade)	Number Frequency	Preparation and Analysis	Sample Bottles/Preservation	Holding Time
Soil Samples	Soil	Variable, depending on stratigraphy. Generally 0 to 2 at each location, 4 to 5 beneath former ASTs and chemical mixing areas, 10 to 15 in former Afta leaching pool area, and 15 to 20 feet next to former holding tanks.	28/once	TCL VOCs plus TICs (Methods 5035/5035a and 8260B)	One Glass VOA Vial with MEQH Two Glass VOA vials with water One 2 oz CWM glass	Frozen within 48 hours of collection, 14 days until analysis
			22/once	BN-TCL SVOCs plus TICs, TAL Metals, pesticides, and PCBs (Methods 3541/ 8270C, 3050B/6010B, 3546/8081B/8082A, and 7470A/7241B) [shallow samples only]	Two 8 oz CWM glass	SVOCs, pesticides and PCBs: 7 days until extraction, 40 days after extraction, Metals: 28 days
Sub-Slab Soil Vapor Samples	Vapor	Two inches Below Slab	4/once	VOCs (Method TO-15)	One 6L Summa Canister	30 days
Soil Vapor Samples	Vapor	Six Feet Below Surface	1/once	VOCs (Method TO-15)	One 6L Summa Canister	30 days
Indoor/Outdoor Air Samples	Air	3 to 5 feet above grade	5/once	VOCs (Method TO-15, low-level)	One 6L Summa Canister	30 days
Groundwater monitoring wells MW-1, MW-2 and proposed onsite wells (shallow & deep intervals), and select offsite wells (TBD).	Groundwater	82-92 for MW-1, 82-87 and 102-107 for all other onsite wells, TBD for offsite wells	13/once	TCL VOCs plus TICs (Methods 5030B/ 8260B) [All wells]	Two 40 ml glass VOA vials with HCL	14 days
			4 onsite shallow/once	BN-TCL SVOCs plus TICs, pesticides, and PCBs (Methods 3541/ 8270C, and 3546/8081B/8082A) [Shallow wells]	1-liter amber glass	7 days until extraction, 40 days after extraction
				TAL metals (Methods 3050B/6010B and 7470A/7241B) [Shallow wells]	500 ml plastic w/HNO3	28 days
Equipment blanks	Lab water	-	One per day during soil or groundwater sampling	TCL VOCs (Methods 5030B/ 8260B)	Two glass VOA vials with HCL	14 days
				BN-TCL SVOCs plus TICs, pesticides, and PCBs (Methods 3541/ 8270C, and 3546/8081B/8082A)	1-liter amber glass	7 days until extraction, 40 days after extraction
				TAL metals (Methods 3050B/6010B and 7470A/7241A)	500 ml plastic w/HNO3	28 days
Trip blanks	Lab water	-	One per cooler	TCL VOCs (Method 8260B)	Two glass VOA vials with HCL	14 days
	Lab Air	-	One per shipment	VOCs (Method TO-15)	One 6L Summa Canister	30 days
Blind duplicates	Soil Vapor/Air	Same as associated primary samples	One per 20 primary samples	VOCs (Method TO-15)	One 6L Summa Canister	30 days
	Soil		One per 20 primary samples	TCL VOCs (Methods 5035/5035a and 8260B)	One Glass VOA Vial with MEQH Two Glass VOA vials with water One 2 oz CWM glass	Frozen within 48 hours of collection, 14 days until analysis
				BN-TCL SVOCs plus TICs, TAL Metals, pesticides, and PCBs (Methods 3541/ 8270C, 3050B/6010B, 3546/8081B/8082A, and 7470A/7241B)	Two 8 oz CWM glass	SVOCs, pesticides and PCBs: 7 days until extraction, 40 days after extraction, Metals: 28 days
	Groundwater		One per 20 primary samples	TCL VOCs plus TICs (Methods 5030B/ 8260B)	Two 40 ml glass VOA vials with HCL	14 days
				BN-TCL SVOCs plus TICs, pesticides, and PCBs (Methods 3541/ 8270C, and 3546/8081B/8082A)	1-liter amber glass	7 days until extraction, 40 days after extraction
				TAL metals (Methods 3050B/6010B and 7470A/7241B)	500 ml plastic w/HNO3	28 days
MS/MSD	Soil	Same as associated primary samples	One per 20 primary soil samples	TCL VOCs (Methods 5035/5035a and 8260B)	One Glass VOA Vial with MEQH Two Glass VOA vials with water One 2 oz CWM glass	Frozen within 48 hours of collection, 14 days until analysis
				BN-TCL SVOCs plus TICs, TAL Metals, pesticides, and PCBs (Methods 3541/ 8270C, 3050B/6010B, 3546/8081B/8082A, and 7470A/7241B)	Two 8 oz CWM glass	SVOCs, pesticides and PCBs: 7 days until extraction, 40 days after extraction, Metals: 28 days
	Groundwater		One per 20 primary groundwater samples	TCL VOCs plus TICs (Methods 5030B/ 8260B)	Two 40 ml glass VOA vials with HCL	14 days
				BN-TCL SVOCs plus TICs, pesticides, and PCBs (Methods 3541/ 8270C, and 3546/8081B/8082A)	1-liter amber glass	7 days until extraction, 40 days after extraction
				TAL metals (Methods 3050B/6010B and 7470A/7241B)	500 ml plastic w/HNO3	28 days

Notes:

MS/MSD = Matrix spike/matrix spike duplicate
VOCs = Volatile organic compounds
SVOCs = Semivolatile organic compounds

TAL = Target Analyte List
HCL = hydrochloric acid
CWM = clear wide-mouth

BN = Base-neutral
TICs = tentatively-identified compounds
MEQH = Methanol

TCL = Target Compound List
HNO3 = nitric acid

TBD = To be determined
PCBs = polychlorinated biphenyls

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- The NYSDOH *Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York (October 2006)*, which is available at http://www.health.state.ny.us/environmental/investigations/soil_gas/svi_guidance/

4.3 Quality Assurance/Quality Control Procedures

QA/QC procedures will be utilized during the performance of the RI field work to ensure that the resulting chemical analytical data accurately represent subsurface conditions. The following sections include descriptions of the QA/QC procedures to be utilized.

➤ Equipment Decontamination Procedures

All non-disposable downhole equipment (i.e., direct-push rods and augers) used during sampling activities will be decontaminated by washing in a potable water and Alconox solution and rinsing in potable water prior to use at each location to reduce the potential for cross contamination. All sampling equipment will be either dedicated disposable equipment or will be decontaminated prior to use at each location. The decontamination procedures utilized for all non-disposable sampling equipment will be as follows:

1. The equipment will be scrubbed in a bath of potable water and low-phosphate detergent followed by a potable water rinse;
2. The equipment will be rinsed with distilled water; and
3. The equipment will be allowed to air dry, if feasible, and wrapped in aluminum foil (shiny side out) for storage and transportation.

➤ QA/QC Samples

QA/QC samples will be collected and utilized to evaluate the potential for field or laboratory contamination and to evaluate the laboratory's analytical precision and accuracy. A sampling chart showing the number and types of primary samples, analytical methods, and QA/QC samples was presented on Table 4.1. The specific types of QA/QC samples to be collected are described below.

The decontamination procedures will be evaluated by the use of equipment blank samples. These samples consist of aliquots of laboratory-supplied water that are poured over or through the dedicated or decontaminated sampling equipment and then submitted to the laboratory for analysis. An equipment blank sample will be prepared for each matrix for each day that sampling is conducted at the Site and will be analyzed for the target constituents for that day. The equipment blanks will be labeled in a manner to prevent identification by the analytical laboratory.

Trip blank samples will be utilized to evaluate the potential for VOC cross-contamination between samples in the same cooler. Trip blank samples consist of laboratory-provided containers filled with laboratory water that are sealed in sample containers at the laboratory and that are transported to and in the field with the other sample containers. A trip blank will be shipped with each group of groundwater, soil, and vapor/air samples and will be managed in the field and analyzed in the laboratory in the same manner as the primary environmental samples.

Blind duplicate samples will be obtained at a frequency of at least one per every 20 environmental samples per matrix and will be used to attest to the precision of the laboratory. A blind duplicate consists of a separate aliquot of sample collected at the same time, in the same manner, and analyzed for the same parameters as the primary environmental sample. The blind duplicate samples are labeled in a manner such that they cannot be identified by the laboratory. The sample results are compared to those of the primary environmental sample to evaluate if the results are similar.

Matrix spike/matrix spike duplicate (MS/MSD) samples will be collected at a frequency of one per 20 environmental samples per matrix. The purpose of the MS/MSD samples is to confirm the accuracy and precision of laboratory results based on a particular matrix. The MS/MSD results will be evaluated during the preparation of the DUSRs, as discussed below.

➤ Chain-of-Custody Procedures

For each day of sampling, chain-of-custody (COC) sheets will be completed and submitted to the laboratory with the samples collected that day. A copy of each COC sheet will be retained by the FPM QEP for sample tracking purposes. Each COC sheet will include the project name, the sampler's signature, the sampling locations and intervals, and the analytical parameters requested.

➤ Data Usability Summary Reports

All chemical analytical results will be evaluated using the sample data packages, sample data summary packages, and case narratives provided by the analytical laboratory. The data evaluation will be performed to verify that the analytical results are of sufficient quality to be relied upon to assess the potential presence of VOCs, SVOCs, pesticides, PCBs, and/or metals in the groundwater, soil vapor, and/or soil samples. A DUSR shall be prepared for each data package following the "Guidance for the Development of Data Usability Summary Reports" provided by the NYSDEC (Appendix 2B of DER-10). The resume of the anticipated DUSR preparer, Richard Baldwin, CPG, who is independent from this project is included in Appendix B.

4.4 Sample Analysis

All samples will be submitted to NYSDOH ELAP-certified laboratories. The anticipated analytical laboratory for soil and groundwater samples is TestAmerica of Edison, New Jersey. The anticipated analytical laboratory for soil vapor and air samples is Alpha Analytical of Mansfield, MA. Analytical data will be provided by the laboratories in electronic format, in accordance with DER-10, Section 1.15.

The soil and groundwater samples will be analyzed for TCL VOCs plus 10 TICs using EPA Method 5035/5035A and 8260B. Eight of the shallow soil samples and all of the onsite shallow groundwater samples will also be analyzed for TCL SVOCs plus TICs using Methods 3541 or 3510C/8270C, TAL metals using Methods 3050B or 3010A/6010B, mercury using Methods 7471B or 7470A, PCBs using Methods 3546/8082A, and pesticides using Methods 3510C or 3535A and 8141A/8151B/8081B/8082A. The analytical methods used will be as per NYS ASP with Category B deliverables. The laboratory reporting limits will be in accordance with the information in Appendix E. EDDs will be prepared and uploaded into the NYSDEC's environmental information management system.

The soil vapor, sub-slab soil vapor and indoor/outdoor air samples will be analyzed for VOCs using Method TO-15. Low-level analyses will be performed for the indoor air samples. The analytical methods used will be as per NYS ASP with Category B-equivalent deliverables. EDDs will also be prepared and uploaded into the NYSDEC's environmental information management system.

4.5 Data Evaluation

The data collected will be assembled, reviewed, and evaluated following each sampling event. The groundwater and soil samples will be used to further assess the nature and extent of impacts at the Site. The offsite groundwater samples will be utilized to evaluate current offsite VOC impacts. The soil vapor and indoor/outdoor air samples will be used to assess the potential for soil vapor intrusion into the Site building and offsite in the downgradient direction.

4.6 Project Organization

The project manager and field supervisor for this project will be John Bukoski. Mr. Bukoski will also serve as the health and safety officer. The senior project manager and QA/QC officer will be Stephanie Davis, Senior Hydrogeologist. Resumes for project personnel are included in Appendix B. Subcontracted services will include geophysical survey services (subcontractor to be determined), direct-push/drilling services (subcontractor to be determined), and laboratory services (TestAmerica and Alpha Analytical).

SECTION 5.0 REFERENCES

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APPENDIX A

**PREVIOUS INVESTIGATION DATA
AND
MATERIAL SAFETY DATA SHEETS**

SOIL SAMPLE RESULTS
1735 EXPRESS DRIVE NORTH, HAUPPAUGE, NEW YORK

Sample No.	SB-1	SB-2	SB-3	SB-4	SB-5	SB-6	SB-7	6 NYCRR Part 375 Unrestricted Use Soil Cleanup Objectives	6 NYCRR Part 375 Commercial Use Soil Cleanup Objectives
Sample Depth (feet)	1-3	1-3	1-3	8-10	8-10	15-20	22-24		
Sample Date	4/5/06	4/5/06	4/5/06	4/6/06	4/6/06	4/6/06	4/7/06		
Volatile Organic Compounds in ug/kg									
Tetrachloroethene	15	ND	150	ND	ND	ND	ND	1,300	150,000
Semivolatile Organic Compounds in ug/kg									
	ND	ND	ND	ND	ND	ND	ND	-	-
Metals in mg/kg									
Arsenic	1.34	1.40	1.10	2.52	2.03	2.67	3.05	13	16
Chromium	4.34	4.62	5.27	7.58	28.7	14.1	13.8	30	1,500
Copper	6.15	5.71	5.46	7.59	11.1	9.22	13.2	50	270
Lead	5.72	4.25	8.38	4.25	6.73	4.10	5.76	63	1,000
Nickel	5.50	4.06	4.10	5.53	7.65	6.09	10.0	30	310

Notes:

Only detected compounds are reported. See lab reports for full reporting.
 NYSDEC = New York State Department of Environmental Conservation
 ND = Not Detected
 ug/kg = micrograms per kilogram
 mg/kg = milligrams per kilogram
 - = Not established

LEACHING POOL SEDIMENT CHEMICAL ANALYTICAL RESULTS
1735 EXPRESS DRIVE NORTH
HAUPPAUGE, NEW YORK

Sample Location	LP-1		LP-1A		LP-2		LP-3		LP-4		LP-5		LP-6		LP-7		6 NYCRR Part 375 Unrestricted Use Soil Cleanup Objectives	6 NYCRR Part 375 Commercial Use Soil Cleanup Objectives												
Depth to Liquids (feet)	-		2.5		2.5		9.5		6		4		16.5		-															
Depth to Sediment (feet)	1.5		8		12		13		12.5		16		14		16.5				4.5		9		19		21		16.5		19	
Sample Date	4/5/06		6/28/06		4/5/06		4/5/06		4/5/06		7/5/2006		4/5/06		7/5/06				8/5/06		4/5/06		6/28/06		4/6/06		6/27/06		4/6/06	
Sample Depth (feet below sediment surface)	2-3	8-9	0-2	0-2	6-7	0-1	6-7	3-4	16-18	0-2	0-3	13-15	0-2	24-26	34-36	44-46	54-56	59-61	0-2	9-10	0-2	0-2	0-2	0-2	0-2	0-2	0-2	0-2		
Volatiles Organic Compounds in micrograms per kilogram																														
1,1,1-Trichloroethane	120	ND	NA	ND	11	26	ND	ND	ND	NA	130,000	ND	250,000	ND	ND	ND	ND	ND	ND	ND	NA	ND	NA	ND	NA	680	500,000			
1,1,2-Trichloroethane	ND	ND	NA	ND	ND	ND	ND	ND	ND	NA	ND	ND	87,000	ND	ND	ND	ND	ND	ND	ND	NA	ND	NA	ND	NA	-	-			
1,2,4-Trimethylbenzene	ND	ND	NA	ND	ND	ND	ND	1,300	ND	NA	51,000	290	190,000	ND	ND	ND	ND	ND	ND	41	NA	ND	NA	ND	NA	3,600	190,000			
1,2-Dichlorobenzene	ND	ND	NA	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	33	NA	ND	NA	ND	NA	1,100	500,000			
1,3,5-Trimethylbenzene	ND	ND	NA	ND	ND	ND	ND	1,000	ND	NA	ND	ND	70,000	ND	ND	ND	ND	ND	ND	82	NA	ND	NA	ND	NA	8,400	190,000			
1,4-Dichlorobenzene	ND	ND	NA	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	NA	ND	NA	1,800	130,000			
1,1-Dichloroethene	ND	ND	NA	ND	ND	ND	ND	ND	ND	NA	ND	ND	17,000	ND	ND	ND	ND	ND	ND	ND	NA	ND	NA	ND	NA	330	500,000			
cis-1,2-Dichloroethene	ND	ND	NA	ND	ND	ND	ND	ND	ND	NA	ND	ND	58,000	ND	ND	ND	ND	ND	ND	25	NA	ND	NA	ND	NA	250	500,000			
Ethylbenzene	ND	ND	NA	ND	ND	ND	ND	ND	ND	NA	ND	ND	66,000	ND	ND	ND	ND	ND	ND	ND	NA	ND	NA	ND	NA	1,000	390,000			
Isopropylbenzene	ND	ND	NA	ND	ND	ND	ND	ND	ND	NA	ND	ND	15,000	ND	ND	ND	ND	ND	ND	ND	NA	ND	NA	ND	NA	2,300	-			
Methyl isobutyl ketone	ND	ND	NA	ND	ND	ND	ND	11,000	ND	660	140,000	850	ND	ND	ND	ND	ND	ND	ND	88	NA	ND	NA	ND	NA	-	-			
Naphthalene	ND	ND	NA	ND	ND	ND	ND	ND	ND	NA	45,000	360	210,000	ND	ND	ND	ND	ND	ND	26	NA	ND	NA	ND	NA	12,000	500,000			
n-Butylbenzene	ND	ND	NA	ND	ND	ND	ND	1,400	ND	NA	ND	ND	28,000	ND	ND	ND	ND	ND	ND	ND	NA	ND	NA	ND	NA	12,000	500,000			
p-Isopropyltoluene	ND	ND	NA	ND	ND	ND	ND	920	ND	NA	ND	ND	53,000	ND	ND	ND	ND	ND	ND	ND	NA	ND	NA	ND	NA	10,000	-			
sec-Butylbenzene	ND	ND	NA	ND	ND	ND	ND	590	ND	NA	ND	ND	19,000	ND	ND	ND	ND	ND	ND	ND	NA	ND	NA	ND	NA	11,000	500,000			
n-Propylbenzene	ND	ND	NA	ND	ND	ND	ND	ND	ND	NA	ND	ND	37,000	ND	ND	ND	ND	ND	ND	ND	NA	ND	NA	ND	NA	3,900	500,000			
Tetrachloroethene	15	ND	NA	ND	ND	63	ND	ND	12	NA	1,400,000	260	150,000	ND	ND	ND	ND	ND	3,500	2,800	ND	NA	ND	NA	ND	NA	1,300	150,000		
Toluene	ND	ND	NA	ND	ND	ND	ND	ND	ND	NA	ND	ND	14,000	ND	ND	ND	ND	ND	ND	ND	NA	ND	NA	ND	NA	700	500,000			
Trichloroethene	ND	ND	NA	ND	ND	ND	ND	ND	11	NA	ND	ND	29,000	ND	ND	ND	ND	ND	ND	290	NA	ND	NA	ND	NA	470	200,000			
Xylenes (total)	ND	ND	NA	ND	ND	ND	ND	ND	ND	NA	140,000	210	310,000	ND	ND	ND	ND	ND	ND	33	NA	ND	NA	ND	NA	260	500,000			
Semivolatile Organic Compounds in micrograms per kilogram																														
Anthracene	490	ND	NA	ND	ND	ND	ND	ND	ND	NA	ND	ND	NA	NA	NA	NA	NA	NA	NA	ND	ND	NA	ND	NA	ND	ND	100,000	500,000		
Benzo(a)anthracene	1,800	ND	NA	ND	ND	ND	ND	ND	ND	NA	ND	ND	NA	NA	NA	NA	NA	NA	270	ND	NA	590	NA	6,300	ND	1,000	5,600			
Benzo(a)pyrene	1,900	ND	NA	ND	ND	ND	ND	ND	ND	NA	ND	ND	NA	NA	NA	NA	NA	NA	310	190	NA	800	NA	8,700	400	1,000	1,000			
Benzo(b)fluoranthene	1,700	ND	NA	ND	ND	ND	ND	ND	ND	NA	ND	ND	NA	NA	NA	NA	NA	NA	400	230	NA	950	NA	8,400	570	1,000	5,600			
Benzo(g,h,i)perylene	1,000	ND	NA	ND	ND	ND	ND	ND	ND	NA	ND	ND	NA	NA	NA	NA	NA	NA	240	ND	NA	ND	NA	4,700	ND	100,000	500,000			
Benzo(k)fluoranthene	1,700	ND	NA	ND	ND	ND	ND	ND	ND	NA	ND	ND	NA	NA	NA	NA	NA	NA	300	210	NA	920	NA	8,800	780	800	56,000			
Chrysene	2,200	ND	NA	ND	ND	ND	ND	ND	ND	NA	ND	ND	NA	NA	NA	NA	NA	NA	350	230	NA	1,100	ND	11,000	380	1,000	56,000			
Dibenz(a,h)anthracene	550	ND	NA	ND	ND	ND	ND	ND	ND	NA	ND	ND	NA	NA	NA	NA	NA	NA	ND	ND	NA	ND	NA	ND	ND	330	560			
Fluoranthene	3,700	ND	NA	ND	ND	ND	ND	ND	ND	NA	ND	ND	NA	NA	NA	NA	NA	NA	710	ND	NA	1,700	NA	19,000	780	100,000	500,000			
Fluorene	ND	ND	NA	ND	ND	ND	ND	ND	ND	NA	ND	ND	NA	NA	NA	NA	NA	NA	ND	ND	NA	ND	NA	ND	ND	30,000	500,000			
Indeno(1,2,3-cd)pyrene	1,100	ND	NA	ND	ND	ND	ND	ND	ND	NA	ND	ND	NA	NA	NA	NA	NA	NA	250	ND	NA	ND	NA	5,100	ND	500	5,600			
Phenanthrene	1,900	ND	NA	ND	ND	ND	ND	ND	ND	NA	ND	ND	NA	NA	NA	NA	NA	NA	290	180	NA	810	NA	7,900	ND	100,000	500,000			
Pyrene	3,000	ND	NA	ND	ND	ND	ND	ND	ND	NA	ND	ND	NA	NA	NA	NA	NA	NA	510	ND	NA	1,200	NA	14,000	600	100,000	500,000			
Metals in milligrams per kilogram																														
Arsenic	3.73	1.48	NA	1.98	1.28	2.20	2.45	1.52	1.27	NA	2.84	1.56	NA	NA	NA	NA	NA	NA	0.86	2.08	NA	1.15	NA	1.87	NA	13	16			
Cadmium	ND	ND	NA	ND	ND	ND	ND	ND	ND	NA	ND	ND	NA	NA	NA	NA	NA	NA	ND	ND	NA	ND	NA	ND	NA	2.5	9.3			
Chromium	13.7	3.97	NA	7.42	4.35	7.72	10.4	5.51	4.92	NA	7.62	5.62	NA	NA	NA	NA	NA	NA	4.28	6.85	NA	6.05	NA	24.2	NA	30	1,500			
Copper	18.8	5.45	NA	9.75	7.46	9.48	11.1	61.2	7.18	NA	46.2	6.78	NA	NA	NA	NA	NA	NA	7.54	9.19	NA	9.35	NA	24.3	NA	50	270			
Lead	26.8	5.14	NA	6.53	4.94	9.20	6.96	12.9	3.87	NA	8.97	4.38	NA	NA	NA	NA	NA	NA	9.08	5.12	NA	15.9	NA	42.3	NA	63	1,000			
Nickel	8.21	2.99	NA	7.54	4.14	6.14	10.3	2.35	4.56	NA	5.18	6.03	NA	NA	NA	NA	NA	NA	3.63	5.29	NA	4.72	NA	9.63	NA	30	310			
Mercury	ND	ND	NA	ND	ND	ND	ND	ND	ND	NA	ND	ND	NA	NA	NA	NA	NA	NA	ND	ND	NA	ND	NA	ND	NA	0.18	2.8			
Silver	4.24	ND	NA	ND	ND	ND	ND	ND	ND	NA	ND	ND	NA	NA	NA	NA	NA	NA	ND	ND	NA	ND	NA	2.51	NA	2	1,500			

Notes:
Only detected compounds are reported on this table. See laboratory reports for a complete list of analytes.
ND = Not Detected
NA = Not Analyzed
- = Not Established.

Boxed samples represent material remaining in place.
Bold shaded values on final confirmatory samples exceed Unrestricted Use Objectives.



LEACHING POOL SEDIMENT CHEMICAL ANALYTICAL RESULTS (CONTINUED)
1735 EXPRESS DRIVE NORTH
HAUPPAUGE, NEW YORK

Sample Location	LP-8			LP-9		LP-10		LP-11		LP-13		LP-14	LP-15		LP-16	CP-2		LP-17	LP-18	LP-19		CP-3	CP-5	6 NYCRR Part 375 Unrestricted Use Soil Cleanup Objectives	6 NYCRR Part 375 Commercial Use Soil Cleanup Objectives	
Depth to Liquids (feet)	14.5			0		-		17		11		12	4		12.5	4		12	12	12.5		5	6			12
Depth to Sediment (feet)	20	22	24	4	6	20	21.5	14.5		12.5		12.5	12.5		18	16	18	18	18	26	27	13				16
Sample Date	4/6/06	7/5/06	8/9/06	6/27/06	8/9/06	4/6/06	7/5/06	4/5/06		4/6/06		4/6/06	4/6/06		4/6/06	4/6/06	6/28/06	5/17/06	5/17/06	5/17/06	7/5/06	4/6/06				4/6/06
Sample Depth (feet below sediment surface)	0-2	0-2	0-0.5	0-2	0-0.5	0-2	0-2	1-3	8-10	0-2	6-7.5	2-4	0-2	8-10	0-2	0-2	0-2	0-2	0-2	0-2	0-2	0-1	0-2	5-7	0-2	
Volatile Organic Compounds in micrograms per kilogram																										
1,1,1-Trichloroethane	ND	NA	NA	ND	NA	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	680	500,000
1,2,4-Trimethylbenzene	ND	NA	NA	ND	NA	120	NA	ND	ND	ND	ND	ND	ND	ND	ND	23,000	ND	840	1,200	1,700	630	ND	ND	ND	3,600	190,000
1,2-Dichlorobenzene	ND	NA	NA	ND	NA	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	7,200	ND	ND	ND	ND	ND	ND	ND	ND	1,100	500,000
1,3,5-Trimethylbenzene	ND	NA	NA	ND	NA	44	NA	ND	ND	ND	ND	ND	ND	ND	ND	12,000	ND	ND	570	ND	280	ND	ND	ND	8,400	190,000
1,4-Dichlorobenzene	ND	NA	NA	ND	NA	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	6,500	ND	ND	900	2,300	4,500	140	ND	46	1,800	130,000
Acetone	ND	NA	NA	ND	NA	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	200	ND	ND	ND	670 B	ND	ND	ND	50	500,000
cis-1,2-Dichloroethene	ND	NA	NA	ND	NA	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	250	500,000
Methyl isobutyl ketone	ND	NA	NA	ND	NA	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-
Naphthalene	ND	NA	NA	ND	NA	140	NA	ND	ND	ND	ND	ND	ND	ND	ND	4,200	ND	600	ND	ND	ND	ND	ND	ND	12,000	500,000
n-Butylbenzene	ND	NA	NA	ND	NA	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	7,800	ND	ND	650	ND	ND	ND	ND	ND	12,000	500,000
n-Propylbenzene	ND	NA	NA	ND	NA	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	170	ND	ND	ND	3,900	500,000
p-Isopropyltoluene	ND	NA	NA	ND	NA	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	97,000	15	1,200	2,500	8,500	17,000	ND	ND	ND	10,000	-
sec-Butylbenzene	ND	NA	NA	ND	NA	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	3,000	ND	ND	ND	ND	ND	ND	ND	ND	11,000	500,000
Tetrachloroethene	66	NA	NA	ND	NA	ND	NA	ND	ND	65	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1,300	150,000
Toluene	ND	NA	NA	ND	NA	150	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	700	500,000
Trichloroethene	ND	NA	NA	ND	NA	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	470	200,000
Xylenes (total)	ND	NA	NA	ND	NA	42	NA	ND	ND	ND	ND	ND	ND	ND	ND	5,200	ND	ND	ND	ND	150	ND	ND	ND	260	500,000
Semivolatile Organic Compounds in micrograms per kilogram																										
Anthracene	ND	NA	NA	ND	ND	5,100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	NA	ND	ND	ND	100,000	500,000
Benzo(a)anthracene	ND	NA	NA	3,200	300	20,000	230	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	NA	ND	ND	210	1,000	5,600
Benzo(a)pyrene	ND	NA	NA	2,900	280	22,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	NA	ND	ND	270	1,000	1,000
Benzo(b)fluoranthene	ND	NA	NA	3,500	340	34,000	290	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	NA	ND	ND	460	1,000	5,600
Benzo(g,h,i)perylene	ND	NA	NA	1,000	ND	5,500	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	NA	ND	ND	ND	100,000	500,000
Benzo(k)fluoranthene	ND	NA	NA	2,700	330	35,000	280	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	NA	ND	ND	380	800	56,000
Chrysene	1,000	17,000	220	4,500	420	28,000	410	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	NA	ND	ND	280	1,000	56,000
Dibenz(a,h)anthracene	ND	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	NA	ND	ND	ND	330	560
Fluoranthene	1,700	NA	NA	7,300	700	52,000	740	ND	ND	1,400	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	NA	ND	ND	490	100,000	500,000
Fluorene	ND	NA	NA	ND	ND	6,600	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	NA	ND	ND	ND	30,000	500,000
Indeno(1,2,3-cd)pyrene	ND	NA	NA	1,300	170	6,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	NA	ND	ND	ND	500	5,600
Phenanthrene	ND	NA	NA	3,800	280	35,000	360	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	NA	ND	ND	ND	100,000	500,000
Pyrene	1,200	NA	NA	5,600	520	37,000	520	ND	ND	1,100	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	NA	ND	ND	370	100,000	500,000
Metals in milligrams per kilogram																										
Arsenic	1.71	NA	NA	1.06	NA	3.90	NA	2.60	1.53	1.60	2.03	2.69	2.57	2.60	4.44	3.99	NA	1.22	4.31	3.00	NA	3.39	2.19	ND	13	16
Cadmium	ND	NA	NA	ND	NA	0.69	NA	ND	ND	ND	ND	ND	ND	ND	ND	2.61	NA	ND	ND	ND	NA	ND	ND	ND	2.5	9.3
Chromium	14.1	NA	NA	4.91	NA	58.6	NA	6.97	8.73	7.24	5.61	10.3	16.3	8.23	11.5	6.09	NA	11.9	7.36	14.4	NA	10.6	6.56	1.42	30	1,500
Copper	17.8	NA	NA	13.5	NA	39.0	NA	48.7	23.8	16.8	10.1	11.7	11.5	7.14	10.2	313	NA	8.17	61.7	91.6	NA	25.9	11.2	20.9	50	270
Lead	57.3	NA	NA	6.93	NA	215	NA	4.29	4.56	79.9	18.7	6.35	7.01	4.05	7.50	42.4	NA	6.07	12.1	15.1	NA	23.6	4.18	3.52	63	1,000
Nickel	3.95	NA	NA	3.51	NA	8.58	NA	4.99	5.97	4.83	3.76	10.3	9.59	6.70	8.30	0.64	NA	7.94	5.99	11.7	NA	5.43	4.35	ND	30	310
Mercury	ND	NA	NA	ND	NA	0.20	NA	ND	ND	ND	ND	ND	0.15	ND	ND	ND	NA	ND	ND	ND	NA	ND	ND	ND	0.18	2.8
Silver	ND	NA	NA	ND	NA	0.71	NA	ND	ND	ND	ND	ND	ND	ND	ND	52.1	NA	ND	5.24	99.9	NA	ND	ND	ND	2	1,500

Notes:
Only detected compounds are reported on this table. See laboratory reports for a complete list of analytes.
ND = Not Detected
NA = Not Analyzed
- = Not Established.
Boxed samples represent material remaining in place.
Bold shaded values on final confirmatory samples exceed Unrestricted Use Objectives.



**WELL MW-1 GROUNDWATER MONITORING RESULTS
1735 EXPRESS DRIVE NORTH, HAUPPAUGE, NEW YORK**

Sample Location	MW-1								NYSDEC Class GA Ambient Water Quality Standards
	Sample Date	1/17/08	5/9/08	10/8/08	3/19/09	5/25/11	10/21/11	3/23/12	
<i>Volatile Organic Compounds in µg/l</i>									
1,1,1-Trichloroethane	ND	170	200	29	27	96	80	2.3 J	5
1,2,4-Trimethylbenzene	ND	17	ND	ND	ND	ND	ND	ND	5
1,3,5-Trimethylbenzene	ND	ND	ND	ND	0.42 J	ND	ND	ND	5
1,1-Dichloroethane	ND	ND	16	ND	3.8 J	15	4.4 J	ND	5
1,1-Dichloroethylene	ND	ND	ND	ND	1.7 J	4.6 J	5.6	ND	5
cis-1,2-Dichloroethylene	ND	230	ND	110	120	370	120	13	5
trans-1,2-Dichloroethylene	ND	ND	6	ND	2.4 J	8.0	3.6 J	ND	5
Ethylbenzene	ND	22	ND	ND	1.0 J	ND	ND	ND	5
Methylene chloride	ND	ND	ND	ND	ND	5.8 JB	7.4 JB	ND	5
Xylene (total)	ND	81	20	ND	5.0 J	ND	ND	ND	5
Tetrachloroethene	1,100	130	150	37	26	66	66	1.9 J	5
Toluene	ND	7	ND	ND	0.55 J	ND	ND	ND	5
Trichloroethylene	ND	210	68	10	15	47	22	1.1 J	5
Total VOCs (rounded)*	1,100	867	460	186	203	612	304	18	-

Notes:

ND = Not Detected

NYSDEC = New York State Department of Environmental Conservation

Bold and shaded values exceed NYSDEC Class GA Ambient Water Quality Standards

µg/l = micrograms per liter

* = Excludes suspected lab contamination.

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**MULTI-LEVEL WELL MW-2 GROUNDWATER MONITORING RESULTS
1735 EXPRESS DRIVE NORTH, HAUPPAUGE, NEW YORK**

Sample Location Depth (feet below grade)	MW-2S 85-87						MW-2I 95-97						MW-2D 105-107						NYSDEC Class GA Ambient Water Quality Standards	
	Sample Date	6/17/10	1/5/11	5/25/11	10/21/11	3/23/12	9/17/12	6/17/10	1/5/11	5/25/11	10/21/11	3/23/12	9/17/12	6/17/10	1/5/11	5/25/11	10/21/11	3/23/12		9/17/12
Volatle Organic Compounds in µg/l																				
Acetone	ND	ND	ND	ND	3.5 JB	ND	ND	ND	ND	ND	ND	3.5 JB	ND	ND	ND	ND	ND	3.2 JB	ND	5
1,1,1,2-Tetrachloroethane	ND	ND	1.0 J	ND	ND	ND	ND	ND	0.80 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
1,1,1-Trichloroethane	72	100	220 J	23	65	22 J	51	160	150 J	31	43	4.3 J	19	8.5	27	ND	ND	2.6 J	ND	5
1,1,2,2-Tetrachloroethane	ND	ND	0.81 J	ND	ND	ND	ND	ND	0.76 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
1,1,2-Trichloroethane	ND	ND	3.2 J	ND	2.0 J	ND	ND	ND	ND	ND	0.82 J	ND	ND	ND	ND	ND	ND	ND	ND	5
1,1-Dichloroethane	7.5	ND	17	1.7 J	6.2	ND	5.3	ND	17	2.0 J	4.6 J	ND	1.9 J	ND	1.2 J	ND	ND	ND	ND	5
1,1-Dichloroethylene	ND	ND	5.4	ND	ND	ND	ND	ND	5.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
1,2-Dichlorobenzene	ND	ND	1.0 J	ND	ND	ND	ND	ND	1.6 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
1,2-Dichloroethane	ND	ND	1.3 J	ND	0.93 J	ND	ND	ND	1.2 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
1,3-Dichlorobenzene	ND	ND	0.48 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
1,4-Dichlorobenzene	ND	ND	0.96 J	ND	0.71 J	ND	ND	ND	0.85 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
Carbon tetrachloride	ND	ND	2.2 J	ND	ND	ND	ND	ND	2.2 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
Chloroform	2.5 J	ND	5.8	ND	2.3 J	ND	1.9 J	ND	5.6	ND	1.5 J	ND	1.3 J	ND	0.43 J	ND	ND	ND	ND	5
cis-1,2-Dichloroethylene	190	140	470	70	220	170	140	500	370	76	210	60	48	24	25	ND	6.7	16	ND	5
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	28 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
Methylene chloride	5.0 JB	3.8 JB	ND	8.6 JB	7.2 JB	ND	4.6 JB	4.6 JB	ND	9.0 JB	6.0 JB	ND	4.4 JB	1.9 JB	ND	1.5 JB	7.7 JB	ND	ND	5
Naphthalene	ND	ND	0.54 JB	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
o-xylene	ND	20 J	1.4 J	ND	ND	ND	ND	69 J	5.3	ND	ND	ND	ND	ND	0.97 J	ND	ND	ND	ND	5
p&m-xylenes	ND	28 J	0.65 J	ND	ND	ND	ND	120 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
Tetrachloroethene	300	1,900	2,300	180	660	700	170	2,800	1,780	400	600	140	89	220	330	1.1 J	45	60	ND	5
Toluene	ND	46 J	0.45 J	ND	ND	ND	ND	89 J	0.35 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
trans-1,2-Dichloroethylene	1.9 J	ND	12	1.0 J	2.8 J	ND	1.4 J	ND	12	1.5 J	1.9 J	ND	2.6 J	ND	0.84 J	ND	ND	ND	ND	5
Trichloroethylene	380	750	1,300	100	250	290	220	1,600	990	150	230	77	110	120	130	ND	24	35	ND	5
Total VOCs (rounded)*	954	2,984	4,344	373	1,210	1,182	590	5,366	3,263	657	1,092	281	272	373	515	1	76	114	-	

Notes:

ND = Not Detected
 NYSDEC = New York State Department of Environmental Conservation
Bold and shaded values exceed NYSDEC Class GA Ambient Water Quality Standards
 µg/l = micrograms per liter
 * = Excludes suspected lab contamination.



SOIL VAPOR ANALYTICAL DATA
1735 EXPRESS DRIVE NORTH, HAUPPAUGE, NEW YORK

Sample Name	SV-1	SV-2
Location	Onsite	Adjacent Residence
Sample Date	June 23, 2009	December 17, 2009
Volatile Organic Compounds, Method TO15 (ug/m³)		
Chloromethane	0.38	<10
Carbon tetrachloride	560	<32
Chloroethane	1.3	<13
Acetone	88	18J
Isopropyl alcohol	30	<12
Carbon Disulfide	0.54	<16
Methylene chloride	0.74	4.6J
Methyl Ethyl Ketone	31	<30
1,1-Dichloroethene	25	<20
cis-1,2-Dichloroethene	2,300	<20
trans-1,2-Dichloroethene	280	<20
1,1-Dichloroethane	170	<21
4-Ethyltoluene	1.3	<25
Chloroform	190	<25
1,1,1-Trichloroethane	14,000	13 J
Benzene	8.1	<16
Hexane	<0.54	5.8J
Trichloroethene	26,000	<27
Toluene	100	5.7J
Styrene	2.1	<22
Tetrachloroethylene	6,400	24J
Tetrahydrofuran	6.1	<15
Ethylbenzene	2.1	<22
m,p-Xylene	5.1	<44
o-Xylene	2.3	<22
1,3,5-Trimethylbenzene	2.1	<25
1,2,4-Trimethylbenzene	4.1	<25
Freon 11	21	8.2J
Freon 113	16	<39
Freon 12	1.8	<25

Notes:

Only detected analytes are summarized herein.

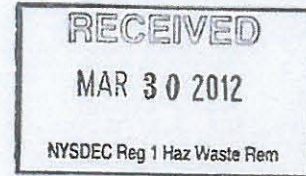
ug/m³ = micrograms per cubic meter

FPM

COUNTY OF SUFFOLK



STEVEN BELLONE
SUFFOLK COUNTY EXECUTIVE



DEPARTMENT OF HEALTH SERVICES

JAMES L. TOMARKEN, MD
MSW, MPH, MBA, FRCPC, FACP
Commissioner

March 20, 2012

Mr. Walter Parish, P.E.
New York State Department of Environmental Conservation
Building 40 – SUNY Stony Brook
Stony Brook, NY 11790-2356

Re: Supplemental analytical results for the investigation conducted in the vicinity of Ranick Road and Rason Court, and Maggio Printing, located in Hauppauge, NY.

Dear Mr. Parish,

Enclosed for your use is a supplemental investigative report prepared by the Suffolk County Department of Health Services (SCDHS) Office of Water Resources with respect to the above referenced area. This information is being provided to your office as an addition to the report that was previously prepared by the Department on June 8, 2011. This report includes groundwater test results from eleven (11) additional monitoring wells that were installed down-gradient of the subject area. Based upon this data, VOCs, including perchloroethylene, trichloroethene, trichloroethane, dichloroethene, and dichloroethane were discovered at significant concentrations in groundwater over one-half mile down-gradient of the subject area. In addition, as mentioned in our prior correspondence, we are concerned about potential impacts to neighboring properties from soil vapor intrusion that could be emanating from this groundwater contamination.

Should you require any additional information or have any questions regarding this matter, please feel free to contact me at (631) 852-5810 or Ronald Paulsen at (631) 852-5774.

Sincerely,

A handwritten signature in cursive script, appearing to read "Douglas J. Feldman".

Douglas J. Feldman, P.E.
Chief - Office of Water Resources



Public Health
Prevent Promote Protect

OFFICE OF WATER RESOURCES

DIVISION OF ENVIRONMENTAL QUALITY – 360 YAPHANK AVENUE SUITE 1C – YAPHANK, NY

cc: Dr. James Tomarken, M D, Commissioner - SCDHS
Walter Dawydiak, P.E., J.D., Acting Director - SCDHS
Charlotte Bethoney, NYS Department of Health
Ron Paulsen, Associate Hydrogeologist - SCDHS
Andrew Rapijko, Associate Hydrogeologist - SCDHS
Geraldynn Rosser, Hydrogeologist - SCDHS
James Meyers, P.E. - SCDHS
Amy Juchatz, - SCDHS

February 27, 2012
Suffolk County Department of Health - Office of Water Resources
Groundwater Investigative Report (Hauppauge, N.Y.)
 (update)

Monitoring Well Installation and Sampling Techniques

Suffolk County Department of Health Services (SCDHS) staff installed and sampled an additional eleven profile wells in accordance with established SCDHS protocols. The two-inch diameter PVC profile wells with five foot slot 10 screens were installed using hollow stem augers at locations further down gradient of the fourteen previously installed monitoring wells (Figure 1). Groundwater samples were collected from the newly installed profile wells at ten foot intervals through the water column, starting at the deepest depth and ending at the top of the water table. Tables 2-1 through 2-9 show the sample depth intervals of each monitoring well. Each sampling event was performed in accordance with SCDHS protocols and included purging the well a minimum of three well casing volumes and using low flow sampling techniques. Additionally, field parameters including pH, conductivity, temperature and dissolved oxygen were monitored to assure that ambient water was being collected. Sample aliquots were collected for Volatile Organic Compounds (VOCs), Standard Inorganics and Dissolved Metals at each profile well interval.

Laboratory Analysis

Water analyses for this study were conducted by the SCDHS Public Environmental Health Laboratory, which is certified by the New York State Department of Health's Environmental Laboratory Approval Program and the U.S. Environmental Protection Agency's National Environmental Laboratory Approval Program. Quality control measures are detailed in the laboratory's Quality Assurance Program Plan (QAPP). Table 1 below provides a summary of analytical methods that were used, and Appendix A contains laboratory analyses data sheets showing all possible analytes by method.

Analytical Methods Utilized for Groundwater Samples

Analysis	Method	Analysis	Method
Volatile Organic Compounds	EPA 524.2	Standard Inorganics	EPA 300.0
Metals	EPA 200.8		

Table 1 Analytical methods

Results and Findings

Water quality results of samples collected from the 26 profile wells are provided in Tables 2-1 through 2-9. The newly installed profile wells show maximum total VOC concentrations of 2,556 and 1,937ppb in profile wells MP-25 (100-105 fbg) and MP-23 (120-125 fbg) respectively (Figure 2). Based upon these latest analytical results, it appears the VOC plume extends over one-half mile and impacts a significant portion of the upper aquifer system.



Figure 1: Locations of SCDHS Monitoring Wells



Figure 2: Shows the Maximum Total VOC Concentration (ppb) and Associated Sample Screen Interval (feet below grade) for each Well

Product #: 387422 Name: ISOPROPYL ALCOHOL 99% Desc:
From: BRENTAG NORTHEAST INC. To: MAGGIO Friday, April 20, 2012

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Haltermann
A Division of Monument Chemical

MSDS # 4
Brenntag Northeast 40769-1 Isopropanol
1 of 8
8/18/2011

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Identification

Product Name: Isopropanol
Product Number: 40769-1
CAS Number: 67-63-0

Company Identification

Company Name: Johann Haltermann, Ltd.
Company Address: 16717 Jacintoport Blvd.
Houston, TX 77015 USA
Product Information: 281-452-5951; Fax: 281-457-1127
24 HR Emergency Assistance: 832-376-2026
24 HR CHEMTREC: 800-424-9300

2. COMPOSITION/INFORMATION ON INGREDIENTS

Component Listing

Chemical Name	Amount	CAS #
ISOPROPANOL	>99%	67-63-0

(See section 8 for exposure guidelines)

(See section 15 for regulatory information)

HAZARDS DISCLOSURE:

This product contains hazardous materials as defined by the OSHA Hazard Communication Standard 29 CFR 1910.1200.

As defined under SARA 311 and 312, this product contains materials that are designated as the following hazards: Acute Chronic Fire

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

Highly flammable liquid.
May be harmful if ingested or inhaled.
Irritating to eyes and skin.

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Product #: 387422 Name: ISOPROPYL ALCOHOL 99% Desc:
From: BRENNTAG NORTHEAST INC. To: MAGGIO Friday, April 20, 2012

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NFPA Rating:

Health: 1
Flammability: 3
Reactivity: 0

POTENTIAL HEALTH EFFECTS

EYE:

Contact with eyes may cause redness and pain.

SKIN:

Contact with this material may cause slight irritation and dryness.

INHALATION:

Inhalation of this material may cause: cough, dizziness, drowsiness, headache, sore throat, abdominal pain, labored breathing, nausea, unconsciousness, and vomiting.

INGESTION:

Ingestion of this material may cause: abdominal pain, labored breathing, nausea, unconsciousness, vomiting, cough, dizziness, drowsiness, headache, and sore throat.

CHRONIC EFFECTS:

Long term or repeated exposure to this material may defat the skin.

SUBCHRONIC EFFECTS:

This substance is irritating to the eyes and respiratory tract. The substance may cause effects on the central nervous system, resulting in depression. Exposure above the OEL may result in unconsciousness.

CARCINOGENICITY INFORMATION:

No known cancer hazards.

REPRODUCTIVE EFFECTS:

No known reproductive effects.

TARGET ORGANS:

Target organs include: eyes, skin, respiratory system.

4. FIRST AID MEASURES

EYE CONTACT FIRST AID:

After initial flushing, remove contacts if possible and continue flushing.
Get medical attention if irritation develops or persists.

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SKIN CONTACT FIRST AID:

Wash affected area immediately with large amounts of soap and water.
Remove contaminated clothing and shoes
Seek medical attention if irritation develops or persists.

INHALATION FIRST AID:

Remove to fresh air and rest. If not breathing, give artificial respiration.
Refer for medical attention.

INGESTION FIRST AID:

If swallowed, do NOT induce vomiting. Rinse mouth. Contact physician or poison control center immediately.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES:

FLASH POINT:	11.7 °C	53 °F
AUTOIGNITION TEMPERATURE:	456 °C	853 °F
FLAMMABLE LIMITS:	2-12 percent in air	

EXTINGUISHING MEDIA:

Use carbon dioxide, dry chemicals, foam, or water spray when fighting fires involving this material.
Use water spray to cool fire exposed containers.

FIRE AND EXPLOSION HAZARDS:

The vapor mixes well with air, explosive mixtures are easily formed.

FIRE FIGHTING INSTRUCTIONS:

As in any fire, wear self-contained breathing apparatus pressure-demand (OSHA/NIOSH approved or equivalent) and full protective gear.

COMBUSTION PRODUCTS:

In the case of fire, oxides of carbon, hydrocarbons, fumes and smoke may be produced.

6. ACCIDENTAL RELEASE MEASURES

SAFEGUARDS (PERSONNEL):

Evacuate non-emergency personnel to a safe area. Eliminate all sources of ignition. Ventilate area.
Wear appropriate personal protective equipment.

INITIAL CONTAINMENT:

Collect leaking and spilled liquid in sealable containers as far as possible.
Absorb remaining liquid in sand or inert absorbent material and place in container.

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Product #: 387422 Name: ISOPROPYL ALCOHOL 99% Desc:
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Treat or dispose of waste material in accordance with all local, state/provincial, and national requirements.

LARGE SPILLS PROCEDURE:

Prevent contamination of soil, surface water, and ground water.

MISCELLANEOUS:

Notify local, state, and federal authorities as required by law.

7. HANDLING AND STORAGE

HANDLING (PERSONNEL):

Do not inhale or ingest. Avoid contact with eyes, skin, and clothing.
Do not eat, drink, or smoke while handling this material.
Use only in a well-ventilated area.

HANDLING (PHYSICAL ASPECTS):

No open flames, no sparks, and no smoking.
Use closed system, ventilation, and explosion-proof electrical equipment and lighting.

STORAGE PRECAUTIONS:

Eliminate all sources of ignition - heat, sparks, flame, electricity, impact and friction.
Avoid contact with strong oxidizing agents.
Store in a cool, fireproof, well ventilated area separated from strong oxidants

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS:

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.
Use only with adequate ventilation.

EYE/FACE PROTECTION REQUIREMENTS:

Wear safety glasses with side shields or goggles.

SKIN PROTECTION REQUIREMENTS:

Where contact is likely, wear chemical resistant gloves and protective clothing.

RESPIRATORY PROTECTION REQUIREMENTS:

When there is potential for airborne exposures in excess of applicable limits, wear NIOSH/MSHA approved respiratory protection.

EXPOSURE GUIDELINES:

Compound Name	CAS #	Exposure Guidelines
ISOPROPANOL	67-63-0	ACGIH TWA: 200 ppm; ACGIH STEL: 400 ppm; OSHA TWA: 400 ppm

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9. PHYSICAL AND CHEMICAL PROPERTIES

Form:	Liquid	
Color:	Colorless	
Boiling Point:	83 °C	181 °F
Melting Point:	-90 °C	-130 °F
Specific Gravity:	0.79 (water = 1)	
Relative Vapor Density:	2.1 (air = 1)	
Vapor Pressure:	33.0 mm Hg @ 20° C	
Solubility in water:	Miscible	
Molecular Weight:	60.1	
Chemical Formula:	C ₃ H ₈ O	
Octanol/Water Partition Coefficient:	0.05	

10. STABILITY AND REACTIVITY

STABILITY:
Stable.

POLYMERIZATION:
Hazardous polymerization will not occur.

INCOMPATIBILITY WITH OTHER MATERIALS:
Avoid contact with strong oxidizing agents.

DECOMPOSITION:
In the case of a fire, oxides of carbon, hydrocarbons, fumes, and smoke may be produced.

11. TOXICOLOGICAL INFORMATION

TOXICOLOGICAL DATA:

Compound Name	CAS #	TEST - SPECIES - RESULT
ISOPROPANOL	67-63-0	Oral LD50 - Rat: 400 PPM

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL FATE:

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According to the National Library of Medicine's Hazardous Substances Data Bank:

"Isopropanol has been identified as a metabolic product of aerobic microorganisms, anaerobic microorganisms, fungi, and yeast. If released to air, a vapor pressure of 45.4 mm Hg at 25 deg C indicates isopropanol will exist solely as a vapor in the ambient atmosphere. Vapor-phase isopropanol will be degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals; the half-life for this reaction in air is estimated to be 3.2 days. If released to soil, isopropanol is expected to have very high mobility based upon an estimated Koc of 25. Volatilization from moist soil surfaces is expected to be an important fate process based upon a Henry's Law constant of 8.10×10^{-6} atm-cu m/mole. Isopropanol may volatilize from dry soil surfaces based upon its vapor pressure. If released into water, isopropanol is not expected to adsorb to suspended solids and sediment based upon the estimated Koc. Isopropanol is readily degraded in aerobic aqueous systems; the range of half-lives for aerobic degradation using a sewage sludge inocula are <1 day to 48 days. Isopropanol has also been shown to be readily degraded under anaerobic aqueous conditions. Volatilization from water surfaces is expected to be an important fate process based upon this compound's Henry's Law constant. Estimated volatilization half-lives for a model river and model lake are 57 hours and 29 days, respectively. An estimated BCF of 3 suggests the potential for bioconcentration in aquatic organisms is low. Hydrolysis is not expected to occur due to the lack of hydrolyzable functional groups. Occupational exposure to isopropanol may occur through inhalation and dermal contact with this compound at workplaces where isopropanol is produced or used. Monitoring data indicate that the general population may be exposed to isopropanol via inhalation of ambient air, ingestion of food and drinking water, and dermal contact with this compound directly and from consumer products containing isopropanol."

ECOLOGICAL DATA:

Compound Name	CAS #	TEST-SPECIES-RESULTS
ISOPROPANOL	67-63-0	LC 50 - Carassius Auratus: >5000 mg/L/24 Hr; LC 50 - Crangon Crangon: 1150 mg/L/ 96 Hr

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL:

DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER.

It is the responsibility of the waste generator to determine the physical characteristics and toxicity of the material generated in order to properly designate the waste classification and disposal methods in compliance with applicable regulations.

Treat or dispose of waste material in accordance with all local, state/provincial, and national requirements.

CONTAMINATED MATERIALS:

Treat or dispose of contaminated material in accordance with all local, state/provincial, and national requirements.

CONTAINER DISPOSAL:

Follow all MSDS/label precautions even after container is emptied because they may retain product residues.

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14. TRANSPORTATION INFORMATION

PRODUCT LABEL: Isopropanol
D.O.T. SHIPPING NAME: Isopropyl Alcohol
UN HAZARD CLASS: 3
UN NUMBER: UN 1219
PACKAGE CLASS: II

15. REGULATORY INFORMATION

REGULATORY DISCLOSURES:

This material or all of its components are listed on the Inventory of Existing Chemical Substances under the Toxic Substance Control Act (TSCA) or are exempt from reporting.

This material or all of its components are listed on the Canadian Domestic Substances List (DSL).

FEDERAL REGULATORY LISTS:

Compound Name	CAS #	SARA 313	CERCLA	RCRA	CAA
ISOPROPANOL	67-63-0	313	N.L.	N.L.	N.L.

N.L. - Not listed on regulatory list

CALIFORNIA REGULATIONS:

This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.

PENNSYLVANIA REGULATIONS:

The following product components are cited on the Pennsylvania Hazardous Substances List and/or the Pennsylvania Environmental Hazardous Substances List, and are present at levels which require reporting.

Compound Name	CAS #	LISTING	AMOUNT
ISOPROPANOL	67-63-0	PA RTK	>99

To the best of our knowledge, this product does not contain any components cited on the Pennsylvania Special Hazardous Substances List.

ADDITIONAL STATE REGULATIONS:

Components of this product are found on the following state lists:

Compound Name	CAS #	STATE LISTS
ISOPROPANOL	67-63-0	FL, NJ, MN, RI

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CANADIAN REGULATIONS:

WHMIS INFORMATION: The Canadian Workplace Hazardous Materials Information System (WHMIS) classification for this product is:
B2 - Flammable liquid with a flash point of <37.8° C (100° F).
D2B - Eye or skin irritant.

Compound Name	CAS #	REPORTING LIMIT (%)
ISOPROPANOL	67-63-0	1.0

Refer elsewhere in the MSDS for specific warnings and safe handling information.
Refer to the employer's workplace education program.
Canadian Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

16. OTHER INFORMATION

REASON FOR ISSUE: New MSDS
PREPARED BY: PH
APPROVED BY: JJ
TITLE: E, H & S Specialist
APPROVAL DATE: August 18, 2011
SUPERSEDES DATE: New

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END OF MSDS

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Atlantic

MATERIAL SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: MOBIL VACTRA OIL NO. 3
Product Description: Base Oil and Additives
Product Code: 600502-00, 971180
Intended Use: Lubricant

COMPANY IDENTIFICATION

Supplier:	EXXON MOBIL CORPORATION 3225 GALLOWS RD. FAIRFAX, VA. 22037	USA
24 Hour Health Emergency		609-737-4411
Transportation Emergency Phone		800-424-9300
ExxonMobil Transportation No.		281-834-3296
Product Technical Information		800-662-4525, 800-947-9147
MSDS Internet Address		http://www.exxon.com , http://www.mobil.com

SECTION 2 COMPOSITION / INFORMATION ON INGREDIENTS

No Reportable Hazardous Substance(s) or Complex Substance(s).

SECTION 3 HAZARDS IDENTIFICATION

This material is not considered to be hazardous according to regulatory guidelines (see (M)SDS Section 15).

POTENTIAL HEALTH EFFECTS

Low order of toxicity. Excessive exposure may result in eye, skin, or respiratory irritation. High-pressure injection under skin may cause serious damage.

NFPA Hazard ID:	Health: 0	Flammability: 1	Reactivity: 0
HMIS Hazard ID:	Health: 0	Flammability: 1	Reactivity: 0

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

SECTION 4 FIRST AID MEASURES

INHALATION

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use

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mouth-to-mouth resuscitation.

SKIN CONTACT

Wash contact areas with soap and water. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

INGESTION

First aid is normally not required. Seek medical attention if discomfort occurs.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

Appropriate Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO₂) to extinguish flames.

Inappropriate Extinguishing Media: Straight Streams of Water

FIRE FIGHTING

Fire Fighting Instructions: Evacuate area. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Firefighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Hazardous Combustion Products: Smoke, Fume, Aldehydes, Sulfur oxides, Incomplete combustion products, Oxides of carbon

FLAMMABILITY PROPERTIES

Flash Point [Method]: >210C (410F) [ASTM D-92]

Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0

Autoignition Temperature: N/D

SECTION 6 ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. US regulations require reporting releases of this material to the environment which exceed the applicable reportable quantity or oil spills which could reach any waterway including intermittent dry creeks. The National Response Center can be reached at (800)424-8802.

SPILL MANAGEMENT

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Land Spill: Stop leak if you can do it without risk. Recover by pumping or with suitable absorbent.

Water Spill: Stop leak if you can do it without risk. Confine the spill immediately with booms. Warn other shipping. Remove from the surface by skimming or with suitable absorbents. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

ENVIRONMENTAL PRECAUTIONS

Large Spills: Dike far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

SECTION 7 HANDLING AND STORAGE

HANDLING

Prevent small spills and leakage to avoid slip hazard.

Static Accumulator: This material is a static accumulator.

STORAGE

Do not store in open or unlabelled containers. Keep away from incompatible materials.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure limits/standards for materials that can be formed when handling this product: When mists / aerosols can occur, the following are recommended: 5 mg/m³ - ACGIH TLV, 10 mg/m³ - ACGIH STEL, 5 mg/m³ - OSHA PEL.

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:

No special requirements under ordinary conditions of use and with adequate ventilation.

PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator

Product Name: MOBIL VACTRA OIL NO. 3

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selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:

No special requirements under ordinary conditions of use and with adequate ventilation.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapor warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

No protection is ordinarily required under normal conditions of use.

Eye Protection: If contact is likely, safety glasses with side shields are recommended.

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:

No skin protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid skin contact.

Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

ENVIRONMENTAL CONTROLS

See Sections 6, 7, 12, 13.

SECTION 9

PHYSICAL AND CHEMICAL PROPERTIES

Typical physical and chemical properties are given below. Consult the Supplier in Section 1 for additional data.

GENERAL INFORMATION

Physical State: Liquid
Color: Amber
Odor: Characteristic
Odor Threshold: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 15 C): 0.887
Flash Point [Method]: >210C (410F) [ASTM D-92]
Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0
Autoignition Temperature: N/D
Boiling Point / Range: > 316C (600F)
Vapor Density (Air = 1): > 2 at 101 kPa
Vapor Pressure: < 0.013 kPa (0.1 mm Hg) at 20 C
Evaporation Rate (n-butyl acetate = 1): N/D
pH: N/A

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Log Pow (n-Octanol/Water Partition Coefficient): > 3.5
 Solubility In Water: Negligible
 Viscosity: >150 cSt (150 mm²/sec) at 40 C | 14.5 cSt (14.5 mm²/sec) at 100C
 Oxidizing Properties: See Sections 3, 15, 16.

OTHER INFORMATION

Freezing Point: N/D
 Melting Point: N/A
 Pour Point: -6°C (21°F)
 DMSO Extract (mineral oil only), IP-346: < 3%wt

SECTION 10 STABILITY AND REACTIVITY

STABILITY: Material is stable under normal conditions.
CONDITIONS TO AVOID: Excessive heat. High energy sources of ignition.
MATERIALS TO AVOID: Strong oxidizers
HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures.
HAZARDOUS POLYMERIZATION: Will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

ACUTE TOXICITY

Route of Exposure	Conclusion / Remarks
Inhalation	
Toxicity (Rat): LC50 > 5000 mg/m ³	Minimally Toxic. Based on test data for structurally similar materials.
Irritation: No end point data.	Negligible hazard at ambient/normal handling temperatures. Based on assessment of the components.
Ingestion	
Toxicity (Rat): LD50 > 5000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials.
Skin	
Toxicity (Rabbit): LD50 > 5000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials.
Irritation (Rabbit): Data available.	Negligible irritation to skin at ambient temperatures. Based on test data for structurally similar materials.
Eye	
Irritation (Rabbit): Data available.	May cause mild, short-lasting discomfort to eyes. Based on test data for structurally similar materials.

CHRONIC/OTHER EFFECTS

Contains:
 Base oil severely refined: Not carcinogenic in animal studies. Representative material passes IP-346, Modified Ames test, and/or other screening tests. Dermal and inhalation studies showed minimal effects; lung non-specific infiltration of immune cells, oil deposition and minimal granuloma formation. Not sensitizing in test animals.



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Additional information is available by request.

The following Ingredients are cited on the lists below: None.

--REGULATORY LISTS SEARCHED--

1 = NTP CARC
2 = NTP SUS

3 = IARC 1
4 = IARC 2A

5 = IARC 2B
6 = OSHA CARC

SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data available for the material, the components of the material, and similar materials.

ECOTOXICITY

Material -- Not expected to be harmful to aquatic organisms.

MOBILITY

Base oil component -- Low solubility and floats and is expected to migrate from water to the land. Expected to partition to sediment and wastewater solids.

PERSISTENCE AND DEGRADABILITY

Biodegradation:

Base oil component -- Expected to be inherently biodegradable

BIOACCUMULATION POTENTIAL

Base oil component -- Has the potential to bioaccumulate, however metabolism or physical properties may reduce the bioconcentration or limit bioavailability.

SECTION 13 DISPOSAL CONSIDERATIONS

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

DISPOSAL RECOMMENDATIONS

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products.

REGULATORY DISPOSAL INFORMATION

RCRA Information: The unused product, in our opinion, is not specifically listed by the EPA as a hazardous waste (40 CFR, Part 261D), nor is it formulated to contain materials which are listed as hazardous wastes. It does not exhibit the hazardous characteristics of ignitability, corrosivity or reactivity and is not formulated with contaminants as determined by the Toxicity Characteristic Leaching Procedure (TCLP). However, used product may be regulated.

Empty Container Warning Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be



Product Name: MOBIL VACTRA OIL NO. 3
Revision Date: 17Oct2008
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completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

SECTION 14 TRANSPORT INFORMATION

LAND (DOT): Not Regulated for Land Transport
LAND (TDG): Not Regulated for Land Transport
SEA (IMDG): Not Regulated for Sea Transport according to IMDG-Code
AIR (IATA): Not Regulated for Air Transport

SECTION 15 REGULATORY INFORMATION

OSHA HAZARD COMMUNICATION STANDARD: When used for its intended purposes, this material is not classified as hazardous in accordance with OSHA 29 CFR 1910.1200.
NATIONAL CHEMICAL INVENTORY LISTING: AICS, ECSC, DSL, EINECS, ENCS, KECI, PICCS, TSCA
EPCRA: This material contains no extremely hazardous substances.
SARA (311/312) REPORTABLE HAZARD CATEGORIES: None.
SARA (313) TOXIC RELEASE INVENTORY: This material contains no chemicals subject to the supplier notification requirements of the SARA 313 Toxic Release Program.
The Following Ingredients are Cited on the Lists Below: None.

--REGULATORY LISTS SEARCHED--

- | | | | |
|---------------|------------------|-------------------|-------------|
| 1 = ACGIH ALL | 6 = TSCA 5a2 | 11 = CA P65 REPRO | 16 = MN RTK |
| 2 = ACGIH A1 | 7 = TSCA 5e | 12 = CA RTK | 17 = NJ RTK |
| 3 = ACGIH A2 | 8 = TSCA 6 | 13 = IL RTK | 18 = PA RTK |
| 4 = OSHA Z | 9 = TSCA 12b | 14 = LA RTK | 19 = RI RTK |
| 5 = TSCA 4 | 10 = CA P65 CARC | 15 = MI 293 | |

Code key: CARC=Carcinogen; REPRO=Reproductive

SECTION 16 OTHER INFORMATION

N/D = Not determined, N/A = Not applicable

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:



Product Name: MOBIL VACTRA OIL NO. 3
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No revision information is available.

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MHC: 0B, 0B, 0, 0, 0, 0

PPEC: A

DGN: 2007237XUS (1015527)

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GraphLine Inc.

1100 International Pkwy.
Sunrise FL 33323
800-998-3200

MATERIAL SAFETY DATA SHEET

FROM SAS

Film Fixer

IN CASE OF TRANSPORTATION EMERGENCY (Spill, Leak, Fire, Exposure, Accident)
Call CHEMTREC 1-800-424-9300 (24 Hour)

SECTION 1: IDENTIFICATION

Name: UNIVERSAL FIXER CONCENTRATE

Revision 5/5/2005

Product Number 6017710013A

Size 2 X 2.5 Gallons

Formula: Aqueous Mixture

SECTION 2: COMPOSITION / INFORMATION ON INGREDIENTS

C.A.S. #	INGREDIENTS	%
64-19-7	ACETIC ACID	2-6
7732-18-5	WATER	15-20
7757-83-7	Sodium Sulfite	10-15
7783-18-8	AMMONIUM THIOSULFATE	50-60

EXPOSURE LIMITS	OSHA		ACGIH		CANADA	
	TWA	STEL	TWA	STEL	TWA	STEL
ACETIC ACID	10 ppm	None	25 mg/m ³	37 mg/m ³	26 mg/m ³	39 mg/m ³
WATER	None	None	None	None	None	None
Sodium Sulfite	None	None	None	None	None	None
AMMONIUM THIOSULFATE	None	None	None	None	None	None

Source of Exposure Limit Data:

OSHA: Occupational Safety and Health Administration

ACGIH: American Conference of Governmental Industrial Hygienists

CANADA: Province of Alberta's Occupational and Health and Safety Act.

ADDITIONAL EXPOSURE INFORMATION

CAS. NUMBER	SKIN DESIGNATION *			CARCINOGENS			PRIMARY HAZARD	IDLH (ppm)
	OSHA	ACGIH	CANADA	IARC	NTP	OSHA		
64-19-7	No	No	No	No	No	No	Sensory Irritation	1000
7732-18-5	No	No	No	No	No	No	Not classified	None
7757-83-7	No	No	No	No	No	No	Not classified	None
7783-18-8	No	No	No	No	No	No	Not classified	None

* For substances designated as a 'Skin' hazard, protective measures are recommended to prevent or reduce skin absorption. These measures may include the use of gloves, aprons, goggles or other equipment, as well as engineering controls or work practices.

SECTION 3: HAZARDS IDENTIFICATION**EYES CONTACT:**

May cause irritation or damage to tissue.

SKIN CONTACT:

May cause irritation.

INHALATION:

May cause irritation to nasal mucous membranes and respiratory tract.

INGESTION:

ABBREVIATIONS: N/D= Not Determined • N/A= Not Applicable • N/E=Not Established

May cause irritation or corrosion to digestive tract.

H.M.I.S. CODES: HEALTH: 3 FIRE: 0 REACTIVITY: 1 PROTECTION: D

SECTION 4: FIRST AID MEASURES

EYE CONTACT:

Irrigate with water for 20 min. contact physician (preferably an ophthalmologist) immediately.

SKIN CONTACT:

Rinse with copious amounts of water and/or wash with soap and water for at least 20 minutes. If irritation occurs, contact physician.

INHALATION:

Remove victim to fresh air, if not breathing, have certified person administer first aid/CPR. Contact physician immediately.

INGESTION:

Administer 2-4 glasses milk or water-contact physician or poison control center immediately.

SECTION 5: FIRE FIGHTING MEASURES

Flash point (F): None FLAMMABILITY LEL- N/A UEL- N/A

Extinguishing media: Any applicable to primary cause of fire

Special fire fighting procedures :

May produce Sulfur dioxide and ammonia if exposed to intense heat. Wear NIOSH approved self contained breathing apparatus when entering building.

Unusual fire and explosion hazards :

NONE

NATIONAL FIRE PROTECTION ASSOC. CODES

HEALTH: 3 FIRE: 0 REACTIVITY: 1 SPECIAL: NONE

SECTION 6: ACCIDENTAL RELEASE MEASURES

SPILL RESPONSE:

Dike spill and soak up with sand or a commercially available acid spill kit, sweep up absorbent and place in a hazardous waste container.

SECTION 7: HANDLING AND STORAGE

Store away from strong oxidizers, acids, bases . Store in well ventilated area. Keep container tightly closed. Remove and wash contaminated clothing immediately. Do not store near heat. **OTHER PRECAUTIONS:** Do not store food, drink or tobacco in area where they may become contaminated with this material.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

RESPIRATORY PROTECTION: N/A - LOCAL EXHAUST: Recommended - SPECIAL: N/A. - MECHANICAL: N/A. - OTHER: N/A. - PROTECTIVE GLOVES: Latex , Rubber or neoprene waterproof gloves. EYE PROTECTION: Chemical safety goggles/splash shield. OTHER PROTECTIVE EQUIPMENT: Rubber or plastic apron

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Boiling point (C): 100

Melting point: N/A

Percent volatile by volume: 33-45

Evaporation rate: <1 (Water=1)

Specific gravity (water = 1): 1.32

Appearance: light yellow

Volatile Organic Compounds: N/D

Vapor pressure: 17.0

Vapor density: APPROX. 0.6

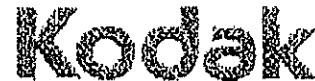
Solubility in water: COMPLETE

pH: 5.2

Odor: slight vinegar odor

ABBREVIATIONS: N/D= Not Determined - N/A= Not Applicable - N/E=Not Established

Material Safety Data Sheet



956 Plate Developer

1. Chemical Product and Company Identification

Common Name : 956 Plate Developer

Synonym : CIN 10095686; PCD 6316; C-0109.100

Catalog number : 8741399; 8016982; 1683685

Area of Application : Industrial applications. Graphic Arts product. Plate developer.

Supplier : Eastman Kodak Company
343 State Street
Rochester, New York, 14650
USA

Emergency telephone number : In Case of Emergency (medical/roadside) (24hrs)

For other Health, Safety and Environment Information : Eastman Kodak Company, Graphic Communications Group
Health, Safety & Environment
11465 Johns Creek Parkway, Suite 260, Duluth GA 30097 USA
EnviroServices Hotline: 1-877-574-7274 or 770-232-2133
Email: PEP@kodek.com; Fax: 770-232-2180

MSDS#	214
Version	3.11
Validation Date	2007-05-08
Responsible Name	Eastman Kodak Company

KPG# 30021

CALL 1-800-451-8346

2. Composition, Information on Ingredients

Name	CAS #	% by Weight	Exposure Limits
1) Water	7732-18-6	80-90	Not available.
2) Glycerol	56-81-5	1-5	ACGIH TLV (United States, 1/2004). TWA: 10 mg/m ³ 8 hour/8 hours, Form: Mist OSHA PEL (United States, 8/1997). TWA: 5 mg/m ³ 8 hour/8 hours. Form: Respirable fraction TWA: 15 mg/m ³ 8 hour/8 hours. Form: Total dust
3) Sodium methylnaphthalene sulfonate	26264-58-4	1-5	Not available.
4) 2-Phenoxyethanol	122-99-6	4	Not available.
5) Sodium octyl sulfate	142-31-4	1-5	Not available.
6) Diethanolamine	111-42-2	1	ACGIH TLV (United States, 1/2006). Skin TWA: 2 mg/m ³ 8 hour/8 hours. NIOSH REL (United States, 12/2003). TWA: 16 mg/m ³ 10 hour/10 hours.

3. Hazards Identification

Physical State and Appearance : Liquid.

Emergency Overview : **WARNING 1**
HARMFUL IF INHALED, ABSORBED THROUGH SKIN OR SWALLOWED.
CAUSES EYE AND SKIN IRRITATION.
Avoid breathing vapors, spray or mists. Avoid contact with eyes, skin and clothing. Use with adequate ventilation. Wash thoroughly after handling.

Routes of Entry : Absorbed through skin. Eye contact. Inhalation. Ingestion.

Potential Acute Health Effects

Eyes : Hazardous in case of eye contact (Irritant).

Skin : Sensitizing properties of the product: Not available.
Hazardous in case of skin contact (Irritant). Skin inflammation is characterized by itching, scaling, reddening or, occasionally, blistering.

Inhalation : Slightly hazardous in case of inhalation.

Ingestion : Slightly hazardous in case of ingestion.

Continued on Next Page

Potential Chronic Health Effects : **CARCINOGENIC EFFECTS:** Not available.
MUTAGENIC EFFECTS: Not available.
TERATOGENIC EFFECTS: Not available.
 May cause kidney damage based on animal data.
 May cause liver damage based on animal data.
 May cause blood disorders based on animal data.

Medical Conditions Aggravated by Overexposure: : Repeated or prolonged exposure is not known to aggravate medical condition.

See Toxicological Information (section 11)

4. First Aid Measures

Eye Contact : Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.

Skin Contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention. Wash contaminated clothing before reusing.

Inhalation : Allow the victim to rest in a well-ventilated area. If irritation persists, get medical attention.

Ingestion : Do not induce vomiting. Have conscious person drink several glasses of water or milk. Get medical attention immediately.

5. Fire Fighting Measures

Flammability of the Product : May be combustible at high temperature.

Hazardous thermal (de)composition products : These products are carbon oxides (CO, CO₂), sulfur oxides (SO₂, SO₃...).

Fire Hazards in Presence of Various Substances : Not applicable.

Explosion Hazards in Presence of Various Substances : Not available.

Fire Fighting Media and Instructions : Use dry chemical, CO₂, water spray (fog) or foam.

Protective Clothing (ifrc) : Be sure to use an approved/certified respirator or equivalent.

6. Accidental Release Measures

Small Spill and Leak : Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. If necessary, neutralize the residue with a dilute solution of acetic acid. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Large Spill and Leak : Absorb with an inert material and place in an appropriate waste disposal container. Neutralize the residue with a dilute solution of acetic acid. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

7. Handling and Storage

Handling : Avoid breathing vapors, spray or mists. Avoid contact with eyes, skin and clothing. Use with adequate ventilation. Wash thoroughly after handling.

Storage : Store at room temperature 25°C (77°F) or lower. Prevent from freezing

Continued on Next Page

8. Exposure Controls, Personal Protection

Engineering Controls : Use good general ventilation (>10 air changes/hour) and engineering controls (local exhaust, filters, process enclosures if necessary) to maintain airborne levels below ACGIH Threshold Limit Values (TLV) and OSHA Permissible Exposure Limits (PEL). Ensure that eyewash station and safety shower is proximal to the work-station location.

Personal Protection

Eyes : Safety glasses.

Body : Synthetic apron.

Respiratory : Not applicable. Wear appropriate respirator when ventilation is inadequate.

Hands : Impervious gloves.

Feet : Not applicable.

Protective Clothing (Pictograms) :



Personal Protection in Case of a Large Spill : Splash goggles. Lab coat. Impervious gloves. Ventilation is normally required when handling or using this product. Wear appropriate respirator when ventilation is inadequate.

Product Name

- 1) Water
- 2) Glycerol

Exposure Limits

Not available.

ACGIH TLV (United States, 1/2006).

TWA: 10 mg/m³ 8 hour/hours. Form: Mist

OSHA PEL (United States, 8/1997).

TWA: 6 mg/m³ 8 hour/hours. Form: Respirable fraction

TWA: 16 mg/m³ 8 hour/hours. Form: Total dust

Not available.

Not available.

Not available.

ACGIH TLV (United States, 1/2006). Skin

TWA: 2 mg/m³ 8 hour/hours.

NIOSH REL (United States, 12/2003).

TWA: 16 mg/m³ 10 hour/hours.

Consult local authorities for acceptable exposure limits.

9. Physical and Chemical Properties

Physical State and Appearance : Liquid.

Odor : Not available.

Color : Clear. Orange.

pH : 9.8 [Basic.]

Boiling/Condensation Point : >100°C (212°F)

Melting/Freezing Point : <0°C (32°F)

Specific Gravity : 1.041 (Water = 1)

Vapor Pressure : 2.4 kPa (@ 20°C)

Vapor Density : 0.6 (Air = 1)

Volatility : 80 to 85% (w/w).

VOC content - calculated : 60.7 g/l (0.423 lbs/Gal.).

Dispersion Properties : See solubility in water.

Solubility : Easily soluble in cold water.

Continued on Next Page

10. Stability and Reactivity

- Stability and Reactivity : The product is stable.
- Conditions of Instability : Not available.
- Incompatibility with Various Substances : Incompatible with strong oxidizing agents.
- Hazardous Decomposition Products : These products are carbon oxides (CO, CO₂), sulfur oxides (SO₂, SO₃...).
- Hazardous Polymerization : Will not occur.

11. Toxicological Information

- Toxicity to Animals :
- Water:
 - ORAL (LD50): Acute: >90000 mg/kg [Rat].
 - Glycerol:
 - ORAL (LD50): Acute: 12600 mg/kg [Rat].
 - DERMAL (LD50): Acute: >10000 mg/kg [Rabbit].
 - 2-Phenoxyethanol:
 - ORAL (LD50): Acute: 1260 mg/kg [Rat]. 1850 mg/kg [Rat].
 - DERMAL (LD50): Acute: 14422 mg/kg [Rat]. >2000 mg/kg [Rabbit].
 - Sodium methylnaphthalene sulfonate:
 - ORAL (LD50): Acute: 5620 mg/kg [Rat].
 - Sodium octyl sulfate:
 - ORAL (LD50): Acute: 3200 mg/kg [Rat].
 - Diethanolamine:
 - ORAL (LD50): Acute: 620 mg/kg [Rat].
 - DERMAL (LD50): Acute: 12200 mg/kg [Rabbit].
- Chronic Effects on Humans : Contains: 2-phenoxyethanol. May cause blood disorders based on animal data. Contains: diethanolamine. Based on animal data, may cause adverse effects on the following organs/systems: kidney, liver, blood, nervous system, testes.
- Other Toxic Effects on Humans : Hazardous in case of skin contact (irritant), of eye contact (irritant). Slightly hazardous in case of ingestion, of inhalation.

12. Ecological Information

- Organics Readily Degradable (70%) : Not available.
- Ecotoxicity : Ecotoxicity in water (LC50): 64000 mg/l, 96 hour/hours [Fish]. (Glycerol). 344 mg/l, 96 hour/hours [Fish (Fathead minnow (*Pimephales promelas*))]; (2-Phenoxyethanol). 460 mg/l, 48 hour/hours [Daphnia]. (2-Phenoxyethanol). 1480 mg/l, 96 hour/hours [Fish]. (Diethanolamine).
- Toxicity of the Products of Biodegradation : The product itself and its products of degradation are not toxic.

13. Disposal Considerations

- Waste Information : Waste must be disposed of in accordance with federal, state and local environmental control regulations.
- Consult your local or regional authorities.

Continued on Next Page

14. Transport Information

DOT Classification : Not a DOT controlled material (United States).



TDG Classification : Not controlled under TDG (Canada).

ADR/RID Classification : Not controlled under ADR (Europe).

IMO/IMDG Classification : Not controlled under IMDG.

ICAO/IATA Classification : Not controlled under IATA.

15. Regulatory Information

HCS Classification : HCS Class: Irritating substance.

U.S. Federal Regulations : TSCA 8(b) Inventory: All the ingredients are on the TSCA list.
SARA 302 extremely hazardous substances: No products were found.
SARA 304 emergency planning and notification: No products were found.

SARA 313

Reporting Requirements : 2-Phenoxyethanol 4%
Diethanolamine 1%

Clean Water Act (CWA) 307: No products were found.
Clean Water Act (CWA) 311: No products were found.
Clean Air Act (CAA) 112(r) accidental release prevention: No products were found.

International Regulations

WHMIS (Canada) : Class D-2B: Material causing other toxic effects (Toxic).

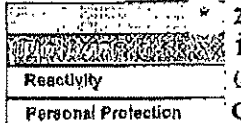
This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

CEPA DSL/NDSL : CEPA DSL: All the ingredients are on the DSL list.

DSCL (EEC) : R36- Irritating to eyes.

State Regulations : No products were found.
California prop. 65: No products were found.

16. Other Information

Hazardous Material Information System (U.S.A.) :  Z National Fire Protection Association (U.S.A.)



References : Not available.

Other Special Considerations : Not available.

Validated by Kodak Polychrome Graphics on 2007-05-08. Verified by Eastman Kodak Company.
Printed 2007-05-08.

In Case of Emergency CALL 1-800-451-8346

Notice to Reader

Continued on Next Page

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

FOR INDUSTRIAL USE ONLY

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ExxonMobil

Product Name: MOBILUBE HD PLUS 80W-90
Revision Date: 08Aug2008
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Atlantic

MATERIAL SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: MOBILUBE HD PLUS 80W-90
Product Description: Base Oil and Additives
Product Code: 511402-00, 97W827
intended Use: Gear oil

COMPANY IDENTIFICATION

Supplier: EXXON MOBIL CORPORATION
3225 GALLOWS RD.
FAIRFAX, VA. 22037 USA
24 Hour Health Emergency 609-737-4411
Transportation Emergency Phone 800-424-9300
ExxonMobil Transportation No. 281-834-3296
Product Technical Information 800-662-4525, 800-947-9147
MSDS Internet Address <http://www.exxon.com>, <http://www.mobil.com>

SECTION 2 COMPOSITION / INFORMATION ON INGREDIENTS

Reportable Hazardous Substance(s) or Complex Substance(s)

Name	CAS#	Concentration*
OLEFIN SULFIDE	68937-96-2	1 - 5%

* All concentrations are percent by weight unless material is a gas. Gas concentrations are in percent by volume.

SECTION 3 HAZARDS IDENTIFICATION

This material is not considered to be hazardous according to regulatory guidelines (see (M)SDS Section 15).

POTENTIAL HEALTH EFFECTS

Low order of toxicity. Excessive exposure may result in eye, skin, or respiratory irritation. High-pressure injection under skin may cause serious damage.

NFPA Hazard ID: Health: 0 Flammability: 1 Reactivity: 0
HMIS Hazard ID: Health: 0 Flammability: 1 Reactivity: 0

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

SECTION 4 FIRST AID MEASURES

Product Name: MOBILUBE HD PLUS 80W-90

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INHALATION

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

SKIN CONTACT

Wash contact areas with soap and water. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

INGESTION

First aid is normally not required. Seek medical attention if discomfort occurs.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

Appropriate Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO₂) to extinguish flames.

Inappropriate Extinguishing Media: Straight Streams of Water

FIRE FIGHTING

Fire Fighting Instructions: Evacuate area. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Firefighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Hazardous Combustion Products: Sulfur oxides, Aldehydes, Smoke, Fume, Oxides of carbon, Incomplete combustion products

FLAMMABILITY PROPERTIES

Flash Point [Method]: >164C (327F) [ASTM D-92]

Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0

Autoignition Temperature: N/D

SECTION 6 ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. US regulations require reporting releases of this material to the environment which exceed the applicable reportable quantity or oil spills which could reach any waterway including intermittent dry creeks. The



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National Response Center can be reached at (800)424-8802.

SPILL MANAGEMENT

Land Spill: Stop leak if you can do it without risk. Recover by pumping or with suitable absorbent.

Water Spill: Stop leak if you can do it without risk. Confine the spill immediately with booms. Warn other shipping. Remove from the surface by skimming or with suitable absorbents. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

ENVIRONMENTAL PRECAUTIONS

Large Spills: Dike far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

SECTION 7

HANDLING AND STORAGE

HANDLING

Prevent small spills and leakage to avoid slip hazard.

Static Accumulator: This material is a static accumulator.

STORAGE

Do not store in open or unlabelled containers. Keep away from incompatible materials.

SECTION 8

EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure limits/standards for materials that can be formed when handling this product: When mists / aerosols can occur, the following are recommended: 5 mg/m³ - ACGIH TLV, 10 mg/m³ - ACGIH STEL, 5 mg/m³ - OSHA PEL.

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:
No special requirements under ordinary conditions of use and with adequate ventilation.

PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use

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with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:

No special requirements under ordinary conditions of use and with adequate ventilation.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapor warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

No protection is ordinarily required under normal conditions of use.

Eye Protection: If contact is likely, safety glasses with side shields are recommended.

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:

No skin protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid skin contact.

Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

ENVIRONMENTAL CONTROLS

See Sections 6, 7, 12, 13.

SECTION 9

PHYSICAL AND CHEMICAL PROPERTIES

Typical physical and chemical properties are given below. Consult the Supplier in Section 1 for additional data.

GENERAL INFORMATION

Physical State: Liquid
Color: Brown
Odor: Characteristic
Odor Threshold: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 15 C): 0.899
Flash Point [Method]: >164C (327F) [ASTM D-92]
Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0
Autoignition Temperature: N/D
Boiling Point / Range: > 316C (600F)

Product Name: MOBILUBE HD PLUS 80W-90

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Vapor Density (Air = 1): > 2 at 101 kPa
 Vapor Pressure: < 0.013 kPa (0.1 mm Hg) at 20 C
 Evaporation Rate (n-butyl acetate = 1): N/D
 pH: N/A
 Log Pow (n-Octanol/Water Partition Coefficient): > 3.5
 Solubility in Water: Negligible
 Viscosity: 149.7 cSt (149.7 mm²/sec) at 40 C | 15.2 cSt (15.2 mm²/sec) at 100C
 Oxidizing Properties: See Sections 3, 15, 16.

OTHER INFORMATION

Freezing Point: N/D
 Melting Point: N/A
 Pour Point: -30°C (-22°F)
 DMSO Extract (mineral oil only), IP-346: < 3%wt

SECTION 10 STABILITY AND REACTIVITY

STABILITY: Material is stable under normal conditions.
CONDITIONS TO AVOID: Excessive heat. High energy sources of ignition.
MATERIALS TO AVOID: Strong oxidizers
HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures.
HAZARDOUS POLYMERIZATION: Will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

ACUTE TOXICITY

Route of Exposure	Conclusion / Remarks
Inhalation	
Toxicity (Rat): LC50 > 5000 mg/m ³	Minimally Toxic. Based on test data for structurally similar materials.
Irritation: No end point data.	Negligible hazard at ambient/normal handling temperatures. Based on assessment of the components.
Ingestion	
Toxicity (Rat): LD50 > 5000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials.
Skin	
Toxicity (Rabbit): LD50 > 5000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials.
Irritation (Rabbit): Data available.	Negligible irritation to skin at ambient temperatures. Based on test data for structurally similar materials.
Eye	
Irritation (Rabbit): Data available.	May cause mild, short-lasting discomfort to eyes. Based on test data for structurally similar materials.

CHRONIC/OTHER EFFECTS
 For the product itself:



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Repeated and/or prolonged exposure may cause irritation to the skin, eyes, or respiratory tract. Component concentrations in this formulation would not be expected to cause skin sensitization, based on tests of the components or similar formulations.

Contains:

Base oil severely refined: Not carcinogenic in animal studies. Representative material passes IP-346, Modified Ames test, and/or other screening tests. Dermal and inhalation studies showed minimal effects; lung non-specific infiltration of immune cells, oil deposition and minimal granuloma formation. Not sensitizing in test animals.

Additional information is available by request.

The following ingredients are cited on the lists below: None.

--REGULATORY LISTS SEARCHED--

1 = NTP CARC
2 = NTP SUS

3 = IARC 1
4 = IARC 2A

5 = IARC 2B
6 = OSHA CARC

SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data available for the material, the components of the material, and similar materials.

ECOTOXICITY

Material -- Not expected to be harmful to aquatic organisms.

MOBILITY

Base oil component -- Low solubility and floats and is expected to migrate from water to the land. Expected to partition to sediment and wastewater solids.

PERSISTENCE AND DEGRADABILITY

Biodegradation:

Base oil component -- Expected to be inherently biodegradable

BIOACCUMULATION POTENTIAL

Base oil component -- Has the potential to bioaccumulate, however metabolism or physical properties may reduce the bioconcentration or limit bioavailability.

SECTION 13 DISPOSAL CONSIDERATIONS

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

DISPOSAL RECOMMENDATIONS

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products.

REGULATORY DISPOSAL INFORMATION



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RCRA Information: The unused product, in our opinion, is not specifically listed by the EPA as a hazardous waste (40 CFR, Part 261D), nor is it formulated to contain materials which are listed as hazardous wastes. It does not exhibit the hazardous characteristics of ignitability, corrosivity or reactivity and is not formulated with contaminants as determined by the Toxicity Characteristic Leaching Procedure (TCLP). However, used product may be regulated.

Empty Container Warning Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

SECTION 14	TRANSPORT INFORMATION
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LAND (DOT) : Not Regulated for Land Transport

LAND (TDG) : Not Regulated for Land Transport

SEA (IMDG) : Not Regulated for Sea Transport according to IMDG-Code

AIR (IATA) : Not Regulated for Air Transport

SECTION 15	REGULATORY INFORMATION
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OSHA HAZARD COMMUNICATION STANDARD: When used for its intended purposes, this material is not classified as hazardous in accordance with OSHA 29 CFR 1910.1200.

NATIONAL CHEMICAL INVENTORY LISTING: AICS, PICCS, KECI, ENCS, EINECS, TSCA, DSL, IECSC

EPCRA: This material contains no extremely hazardous substances.

SARA (311/312) REPORTABLE HAZARD CATEGORIES: None.

SARA (313) TOXIC RELEASE INVENTORY: This material contains no chemicals subject to the supplier notification requirements of the SARA 313 Toxic Release Program.

The Following Ingredients are Cited on the Lists Below: None.

--REGULATORY LISTS SEARCHED--

1 = ACGIH ALL	6 = TSCA 5a2	11 = CA P65 REPRO	16 = MN RTK
2 = ACGIH A1	7 = TSCA 5e	12 = CA RTK	17 = NJ RTK
3 = ACGIH A2	8 = TSCA 6	13 = IL RTK	18 = PA RTK
4 = OSHA Z	9 = TSCA 12b	14 = LA RTK	19 = RI RTK
5 = TSCA 4	10 = CA P65 CARC	15 = MI 293	



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Code key: CARC=Carcinogen; REPRO=Reproductive

SECTION 16	OTHER INFORMATION
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N/D = Not determined, N/A = Not applicable

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:

Revision Changes:

Section 06: Notification Procedures - Header was modified.
Section 13: Empty Container Warning was modified.
Section 09: Boiling Point C(F) was modified.
Section 09: Pour Point C(F) was modified.
Section 08: Hand Protection was modified.
Section 09: Vapor Pressure was modified.
Section 07: Handling and Storage - Storage Phrases was modified.
Section 11: Dermal Lethality Test Data was modified.
Section 11: Oral Lethality Test Data was modified.
Section 11: Inhalation Lethality Test Data was modified.
Section 11: Inhalation Irritation Test Data was modified.
Section 05: Hazardous Combustion Products was modified.
Section 06: Accidental Release - Spill Management - Water was modified.
Section 09: Relative Density - Header was modified.
Section 09: Flash Point C(F) was modified.
Section 09: Viscosity was modified.
Section 09: Viscosity was modified.
Composition: Component table was modified.
Section 15: List Citation Table - Header was modified.
Section 11: Skin Irritation Conclusion was modified.
Section 15: National Chemical Inventory Listing was modified.
Section 06: Accidental Release Measures - Environmental Precautions was modified.
Section 16: Code to MHCs was modified.
Section 09: Relative Density was modified.
Section 16: MSN, MAT ID was modified.
Section 06: Notification Procedures was modified.
Section 11: Chronic Tox - Component was modified.
Section 11: Other Health Effects was modified.
Section 01: Company Contact Methods Sorted by Priority was modified.
Section 16: Global Disclaimer was added.
Section 15: Chemical Name - Header was deleted.
Section 15: CAS Number - Header was deleted.
Section 15: List Citations - Header was deleted.
Section 15: List Citations Table was deleted.
Section 16: Disclaimer was deleted.
Section 15: TSCA Class 2 Statement was deleted.

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included with and/or on the container. Appropriate warnings and safe-handling procedures should be provided to handlers and users. Alteration of this document is strictly prohibited. Except to the extent required by law, re-publication or retransmission of this document, in whole or in part, is not permitted. The term, "ExxonMobil" is used for convenience, and may include any one or more of ExxonMobil Chemical Company, Exxon Mobil Corporation, or any affiliates in which they directly or indirectly hold any interest.

Internal Use Only

MHC: 0B, 0B, 0, 0, 0, 0

PPEC: A

DGN: 2026271XUS (1008755)

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MATERIAL SAFETY DATA SHEET

1/28/2011

Tower Products, Inc., 2703 Freemansburg Ave., Easton, PA 18045
Information Telephone Number: 1-800-527-8626 or 610-253-6206
For Chemical Spill Emergency - Call 1-800-424-9300

Ultra Cleaner

SECTION 1: PRODUCT INFORMATION

Product Name: CALIFORNIA UV WASH (Roller and Blanket Wash for UV and EB Inks)
D.O.T. Designation: Cleaning Liquid (Non-Regulated Combustible) (1)
U.N. Designation: Flammable Liquids, N.O.S. (Contains N-Propyl Alcohol, Dipropylene Glycol Monomethyl Ether),3, UN1993, PGIII

(1) Contact manufacturer for designation for bulk domestic ground shipments.

SECTION 2: HAZARDOUS COMPONENTS/IDENTITY INFORMATION

HAZARDOUS COMPONENT	CAS No.	%WT.	OSHA PEL	ACGIH TLV-TWA	OTHER RATINGS	OSHA STEL
N-Propyl Alcohol	71-23-8	10-20	200ppm	200ppm		250ppm
Dipropylene Glycol Monomethyl Ether	34590-94-8	80-90	100ppm	100ppm		150ppm

SECTION 3: PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point: Initial BP 207 degrees F.
Specific Gravity: (Water=1) 0.93
Vapor Pressure: (mmHG, calculated) Less than 5 @ 68 degrees F.
Melting Point: N/A
Vapor Density: (Air=1) Less than 5
Solubility in Water: Complete
Appearance & Odor: Light colored liquid, ether solvent odor
Maximum VOC Content: 7.66 lbs. per gallon (919 grams per liter)
Maximum VOC% : 99%

SECTION 4: FIRE AND EXPLOSION DATA

Flash Point (Tag Closed Cup Method): 106 degrees F.
Flammable Limits (Calculated): LEL: 1.1% UEL: 14%
Extinguishing Media: Use dry chemical or carbon dioxide.
Special Fire-fighting Procedures: Use self-contained breathing apparatus.
Unusual Fire and Explosion Hazards: Combustible liquid. Upon combustion, the product may form carbon monoxide and other organic compounds. Product containers may rupture from vapor pressure when exposed to heat from fire.

SECTION 5: REACTIVITY DATA

WARNING: Spontaneous combustion may occur when solvent soaked combustible materials (paper, cotton, etc.) are allowed to stand in confined areas.
Stability: Stable
Incompatibility: Avoid strong oxidizing agents.
Hazardous Decomposition or Byproducts: Carbon monoxide during combustion.
Hazardous Polymerization: Will not occur.
Conditions to Avoid: Avoid high heat sources, electrical and welding arcs, open flame and strong oxidizing agents.

SECTION 6: HEALTH HAZARD DATA

Routes of Entry: Inhalation, Ingestion, Skin
Health Hazards (Acute): Overexposure may lead to central nervous system depression, leading to headaches, nausea and unconsciousness.

Health Hazards (Chronic): Overexposure in high concentrations may produce central nervous system depression.

Eye Contact: May lead to irritation.

Skin Contact: May lead to dermatitis.

Ingestion: May lead to vomiting.

Carcinogenicity (NTP, IARC, OSHA): Components of this product have not shown any evidence of Carcinogenicity.

Signs and Symptoms of Exposure: Overexposure may lead to dizziness, headaches, dermatitis and eye irritation.

Medical Conditions Aggravated by Exposure: Health studies have shown that many petroleum hydrocarbons pose potential health risks that vary from person to person. Minimize exposure to liquids, vapors, mists or fumes.

Emergency and First Aid Procedures:

For Skin Contact: Flush with large volume of water for at least 15 minutes.

Get immediate medical attention if necessary.

For Inhalation: Remove to fresh air. Get immediate medical attention.

For Eye Contact: Flush with large volume of water for at least 15 minutes. Get immediate medical attention.

For Ingestion: Get immediate medical attention. Do not induce vomiting.

SECTION 7: PRECAUTIONS FOR SAFE HANDLING AND USE/REGULATORY INFORMATION

Steps to be taken in case material is released or spilled:

(Minor Spills): Absorb material with ground clay, vermiculite, or similar absorbent material, and then place into containers for removal.

(Major Spills): Dike and contain spill. Eliminate potential sources of ignition, and shut off source of spill if possible. Remove liquid by chemical vacuum, absorbent, or other safe and approved method and place into containers for legal disposal. Flush area with water to remove residue, and remove flushed solutions as above.

(Waste Disposal Method): Dispose of all waste in accordance with federal, state and local regulations.

Regulatory Information: This information may be useful in complying with EPA Regulation 40CFR302 (CERCLA) Section 102 and EPA Regulation 40CFR372 (SARA 313): None

Precautions to be Taken in Handling and Storing: Ventilation in work area should be sufficient to maintain atmosphere with vapor level below lowest listed TLV in Section 2. If TLV's are exceeded, use a respirator with appropriate NIOSH approved cartridges or supplied air equipment. Keep containers closed when not in use. Combustible liquid - empty containers can be hazardous and contain explosive vapors.

The components of this product are listed on both the United States TSCA and the Canadian DSL.

HMIS: Health Hazard: 2 Flammability: 2 Reactivity: 0 Personal Protection: B

SECTION 8: CONTROL MEASURES

Respiratory Protection: Needed if TLV's in Section 2 are exceeded. Use supplied air equipment or respirators with proper NIOSH approved cartridges.

Ventilation: Local and mechanical exhaust recommended. Avoid open electrical sources near product vapor areas.

Protective Gloves: Impervious or chemical resistant gloves (consult safety equipment supplier).

Eye Protection: Chemical splash goggles recommended.

Other Protective Clothing and Equipment: Safety shoes and aprons recommended.

Work and Hygiene Practices: Do not take internally. Avoid skin contact, and wash skin after using products. Do not eat, drink or smoke in work area. Keep away from children.

FOR MORE INFORMATION, CONSULT TOWER PRODUCTS, INC.

THE INFORMATION HEREIN IS GIVEN IN GOOD FAITH, BUT NO WARRANTY, EXPRESS OR IMPLIED IS MADE.

Wash

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MATERIAL SAFETY DATA SHEET

Product Code: B01003Z

COLOR WASH STEP-2

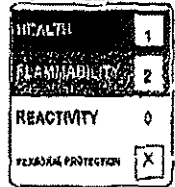
From SAS

SECTION 1: MANUFACTURER IDENTIFICATION

Manufacturer's Name: Day International Chemical Products Div.
Address: 130 West Second Street, Suite 1700
Dayton, Ohio 45402

Emergency Phone: 800-424-9300 CHEMTREC
Name of Preparer: Day Chemical Prod. Div

Information Phone: 800-336-6276
Date Printed: 6/18/2007
Date Revised: 06/18/2007



SECTION 2: HAZARDOUS INGREDIENTS / SARA III INFORMATION

Table with 5 columns: Component, CAS Number, Vapor Pressure mm Hg @ Temp, Weight Percent. Rows include Petroleum Naphtha, Diacetone Alcohol, 1,2,4-Trimethyl Benzene, and p-mentha-1,8-diene.

* Indicates toxic chemical(s) subject to the reporting requirements of Section 313 of SARA Title III and of 40 CFR 372. All ingredients are listed on the EPA TSCA inventory

SECTION 3: PHYSICAL / CHEMICAL CHARACTERISTICS

BOILING RANGE / POINT: 300F-315F
VAPOR DENSITY: Heavier than air.
EVAPORATION RATE: Slower than n-Butyl Acetate.
V.O.C. (EPA METHOD 24) lb/g): 6.8
VAPOR PRESSURE (MM HG @20 C): 2.9
SOLUBILITY IN WATER: Emulsible
APPEARANCE AND ODOR: Clear Liquid - Petroleum Odor
SPECIFIC GRAVITY (H2O=1): 0.86

SECTION 4: FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: 107°F
METHOD USED: TAG CC
FLAMMABLE LIMITS IN AIR BY VOLUME:
LOWER: 1.0%
UPPER: 14.4%

EXTINGUISHING MEDIA:

Foam, CO2, Dry Chemical, Water Fog.

SPECIAL FIREFIGHTING PROCEDURES:

As in any fire, wear self-contained breathing apparatus (MSHA/NIOSH approved) and full protective gear. Water may not be effective to extinguish fire. Use water spray to cool fire-exposed containers and to protect personnel.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

Treat as Petroleum Fire.

SECTION 5: REACTIVITY DATA

STABILITY:

Stable

CONDITIONS TO AVOID:

Avoid heat, sparks, flame and other sources of ignition.

INCOMPATIBILITY (MATERIALS TO AVOID):

Avoid mixing with strong oxidizing agents.

HAZARDOUS DECOMPOSITION OR BYPRODUCTS:

Burning will produce oxides of carbon and dense smoke.

HAZARDOUS POLYMERIZATION:

Will Not Occur.

SECTION 6: HEALTH HAZARD DATA

INHALATION HEALTH RISKS AND SYMPTOMS OF EXPOSURE:

Breathing high concentrations of vapors will cause irritation of the nose and throat. Signs of central nervous system depression such as headache, drowsiness, dizziness and nausea may be experienced with overexposure.

SKIN AND EYE CONTACT HEALTH RISKS AND SYMPTOMS OF EXPOSURE:

Skin and eye contact may cause moderate to severe irritation.

SKIN ABSORPTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE:

Single prolonged exposure is not likely to result in the product being absorbed through the skin in harmful amounts.

INGESTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE:

Ingestion of this product will cause nausea, gastro-intestinal irritation, diarrhea and possible damage to vital organs. Follow first aid procedures.

HEALTH HAZARDS (ACUTE AND CHRONIC):

Repeated or abusive breathing of concentrated vapors may effect pulmonary, cardiovascular, and central nervous systems. Repeated skin contact will dry out and crack skin. Aspiration hazard if swallowed; aspiration of product into the lungs can cause chemical pneumonitis.

CARCINOGENICITY NTP CARCINOGEN: No

IARC CARCINOGEN: No

OSHA CARCINOGEN: No

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:

Skin contact may aggravate pre-existing dermatitis. Inhalation of vapors may aggravate pre-existing asthma like conditions.

EMERGENCY AND FIRST AID PROCEDURES:

INHALATION: Remove victim to fresh air. Give oxygen if breathing is labored. Apply artificial respiration if not breathing. Seek medical help. **SKIN:** Remove all contaminated clothing and shoes. Wash with soap and water. Do not reuse clothing and shoes until cleaned. **EYES:** Flush eyes with plenty of water while removing any contact lenses. Hold eyelids open and continue flushing for at least 15 minutes. **INGESTION: DO NOT INDUCE vomiting.** If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs. Seek medical attention immediately.

SECTION 7: PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Eliminate all ignition sources. Spills should be diked and must be kept from entering the sewer. Soak up with absorbent or transfer liquid into a closed container for later disposal. Use spark-proof tools and explosion proof equipment.

WASTE DISPOSAL METHOD:

If this product as supplied, becomes a waste it is regulated by RCRA as Ignitable Waste, EPA I.D. #D001. Suitable methods of disposal include reclamation and fuel blending. Contact a Licensed Hazardous Waste Hauler for more information.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Containers should be grounded and bonded before transferring product. Store in the original closed container away from sunlight, excess heat, sparks, flames and other sources of ignition. Avoid skin or eye contact. Avoid breathing vapors. When transferring or using this product, wear proper personal protective equipment. Store and handle as a Combustible Liquid.

OTHER PRECAUTIONS / DOT INFORMATION:

DOT Proper Shipping Name: Combustible Liquid n.o.s. (Naphtha), Hazard Class: Combustible Liquid, ID No.: NA1993, Packing Group: III. Non-bulk packagings not regulated as per 49CFR 173.150 (f)(2). Product is classified as an OSHA Class II Combustible Liquid.

SECTION 8: CONTROL MEASURES

RESPIRATORY PROTECTION:

The use of respiratory protection is advised when concentrations exceed the established exposure limits in SECTION 2. Depending on the airborne concentration, use a respirator with appropriate organic vapor cartridge (NIOSH approved).

VENTILATION:

If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits in SECTION 2, additional general ventilation or local exhaust systems may be required.

PROTECTIVE GLOVES:

Avoid prolonged or repeated skin contact. Wear solvent resistant gloves made of nitrile or butyl rubber.

EYE PROTECTION:

Wear safety glasses with side shields.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT:

A personal protective rating of X means you must see your supervisor for guidance. OSHA regulations (29CFR Part 1910, Subpart I) require employers to evaluate Personal Protective Equipment requirements in the workplace.

WORK/HYGIENIC PRACTICES:

Wash with soap and water after product contact with skin.

SECTION 9: DISCLAIMER

The information on this MSDS is believed to be accurate as of the date shown in SECTION 1. Since the use of this product is not under the control of the manufacturer, it is the user's responsibility to determine what constitutes safe usage for a particular product. This form may be reproduced in quantities necessary to meet your requirements.

Product #: 332400 Name: MINERAL SPIRITS EXEMPT Desc:
From: BRENTTAG NORTHEAST INC. To: MAGGIO Friday, April 20, 2012

Mineral Spirits

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ExxonMobil

Product Name: VARSOL 18 FLUID
Revision Date: 24 May 2011
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MSDS # 1960
Brenntag Northeast

MATERIAL SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: VARSOL 18 FLUID
Product Description: Aliphatic Hydrocarbon

Intended Use: Solvent

COMPANY IDENTIFICATION

Supplier: EXXONMOBIL CHEMICAL COMPANY
P.O. BOX 3272
HOUSTON, TX. 77253-3272 USA
24 Hour Health Emergency (800) 726-2015
Transportation Emergency Phone (800) 424-9300 or (703) 527-3887 CHEMTREC
Product Technical Information (281) 870-6000/Health & Medical (281) 870-6884
Supplier General Contact (281) 870-6000

SECTION 2 COMPOSITION / INFORMATION ON INGREDIENTS

Reportable Hazardous Substance(s) or Complex Substance(s)

Name	CAS#	Concentration*
DISTILLATES (PETROLEUM), HYDROTREATED LIGHT	64742-47-8	50 - 80%
STODDARD SOLVENT	8052-41-3	20 - 50%

Hazardous Constituent(s) Contained In Complex Substance(s)

Name	CAS#	Concentration*
NONANE	111-84-2	1 - 5%
PSEUDOCUMENE (1,2,4-TRIMETHYLBENZENE)	95-63-6	< 2%

* All concentrations are percent by weight unless material is a gas. Gas concentrations are in percent by volume.

SECTION 3 HAZARDS IDENTIFICATION

This material is considered to be hazardous according to regulatory guidelines (see (M)SDS Section 15).

POTENTIAL PHYSICAL / CHEMICAL EFFECTS

Combustible. Material can release vapors that readily form flammable mixtures. Vapor accumulation could flash and/or explode if ignited. Material can accumulate static charges which may cause an ignition.

POTENTIAL HEALTH EFFECTS

If swallowed, may be aspirated and cause lung damage. May be irritating to the eyes, nose, throat, and lungs. Repeated exposure may cause skin dryness or cracking. May cause central nervous system depression.

ENVIRONMENTAL HAZARDS

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

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Product Name: VARSOL 18 FLUID
Revision Date: 24 May 2011
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NFPA Hazard ID:	Health: 1	Flammability: 2	Reactivity: 0
HMIS Hazard ID:	Health: 1*	Flammability: 2	Reactivity: 0

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

SECTION 4 FIRST AID MEASURES

INHALATION

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

SKIN CONTACT

Wash contact areas with soap and water. Remove contaminated clothing. Launder contaminated clothing before reuse.

EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

INGESTION

Seek immediate medical attention. Do not induce vomiting.

NOTE TO PHYSICIAN

If ingested, material may be aspirated into the lungs and cause chemical pneumonitis. Treat appropriately.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

Appropriate Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

Inappropriate Extinguishing Media: Straight Streams of Water

FIRE FIGHTING

Fire Fighting Instructions: Flammable. Evacuate area. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Firefighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Unusual Fire Hazards: Vapors are flammable and heavier than air. Vapors may travel across the ground and reach remote ignition sources causing a flashback fire danger. Hazardous material. Firefighters should consider protective equipment indicated in Section 8.

Hazardous Combustion Products: Smoke, Fume, Incomplete combustion products, Oxides of carbon

FLAMMABILITY PROPERTIES

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Product #: 332400 Name: MINERAL SPIRITS EXEMPT Desc:
From: BRENNTAG NORTHEAST INC. To: MAGGIO Friday, April 20, 2012



Product Name: VARSOL 18 FLUID
Revision Date: 24 May 2011
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Flash Point [Method]: 42C (108F) [ASTM D-56]
Flammable Limits (Approximate volume % in air): LEL: 0.8 UEL: 5.6
Autoignition Temperature: 261°C (502°F)

SECTION 6 ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. US regulations require reporting releases of this material to the environment which exceed the applicable reportable quantity or oil spills which could reach any waterway including intermittent dry creeks. The National Response Center can be reached at (800)424-8802.

PROTECTIVE MEASURES

Avoid contact with spilled material. Warn or evacuate occupants in surrounding and downwind areas if required due to toxicity or flammability of the material. See Section 5 for fire fighting information. See the Hazard Identification Section for Significant Hazards. See Section 4 for First Aid Advice. See Section 8 for advice on the minimum requirements for personal protective equipment. Additional protective measures may be necessary, depending on the specific circumstances and/or the expert judgment of the emergency responders. For emergency responders: Respiratory protection: half-face or full-face respirator with filter(s) for organic vapor and, when applicable, H₂S, or Self Contained Breathing Apparatus (SCBA) can be used depending on the size of spill and potential level of exposure. If the exposure cannot be completely characterized or an oxygen deficient atmosphere is possible or anticipated, SCBA is recommended. Work gloves that are resistant to aromatic hydrocarbons are recommended. Note: gloves made of polyvinyl acetate (PVA) are not water-resistant and are not suitable for emergency use. Chemical goggles are recommended if splashes or contact with eyes is possible. Small spills: normal antistatic work clothes are usually adequate. Large spills: full body suit of chemical resistant, antistatic material is recommended.

SPILL MANAGEMENT

Land Spill: Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak if you can do it without risk. All equipment used when handling the product must be grounded. Do not touch or walk through spilled material. Prevent entry into waterways, sewer, basements or confined areas. A vapor suppressing foam may be used to reduce vapors. Use clean non-sparking tools to collect absorbed material. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Large Spills: Water spray may reduce vapor; but may not prevent ignition in closed spaces. Recover by pumping or with suitable absorbent.

Water Spill: Stop leak if you can do it without risk. Eliminate sources of ignition. Warn other shipping. If the Flash Point exceeds the Ambient Temperature by 10 degrees C or more, use containment booms and remove from the surface by skimming or with suitable absorbents when conditions permit. If the Flash Point does not exceed the Ambient Air Temperature by at least 10C, use booms as a barrier to protect shorelines and allow material to evaporate. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

ENVIRONMENTAL PRECAUTIONS

Large Spills: Dike far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

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SECTION 7 HANDLING AND STORAGE

HANDLING

Avoid contact with skin. Potentially toxic/irritating fumes/vapors may be evolved from heated or agitated material. Use only with adequate ventilation. Prevent small spills and leakage to avoid slip hazard. Material can accumulate static charges which may cause an electrical spark (ignition source). Use proper bonding and/or ground procedures. However, bonding and grounds may not eliminate the hazard from static accumulation. Consult local applicable standards for guidance. Additional references include American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practice on Static Electricity) or CENELEC CLC/TR 50404 (Electrostatics - Code of practice for the avoidance of hazards due to static electricity).

Loading/Unloading Temperature: [Ambient]

Transport Temperature: [Ambient]

Transport Pressure: [Ambient]

Static Accumulator: This material is a static accumulator. A liquid is typically considered a nonconductive, static accumulator if its conductivity is below 100 pS/m (100x10E-12 Siemens per meter) and is considered a semiconductive, static accumulator if its conductivity is below 10,000 pS/m. Whether a liquid is nonconductive or semiconductive, the precautions are the same. A number of factors, for example liquid temperature, presence of contaminants, anti-static additives and filtration can greatly influence the conductivity of a liquid.

STORAGE

The container choice, for example storage vessel, may effect static accumulation and dissipation. Keep container closed. Handle containers with care. Open slowly in order to control possible pressure release. Store in a cool, well-ventilated area. Storage containers should be grounded and bonded. Fixed storage containers, transfer containers and associated equipment should be grounded and bonded to prevent accumulation of static charge.

Storage Temperature: [Ambient]

Storage Pressure: [Ambient]

Suitable Containers/Packing: Tank Cars; Tank Trucks; Barges; Drums

Suitable Materials and Coatings (Chemical Compatibility): Carbon Steel; Stainless Steel; Cast Iron; Copper Bronze; Inorganic Zinc Coatings; Polyamide Epoxy; Polyethylene

Unsuitable Materials and Coatings: Butyl Rubber; Natural Rubber

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMIT VALUES

Exposure limits/standards (Note: Exposure limits are not additive)

Source	Form	Limit / Standard			NOTE	Source
NONANE		TWA	200 ppm		N/A	ACGIH
PSEUDOCUMENE (1,2,4-TRIMETHYLBENZENE)		TWA	25 ppm		N/A	ACGIH
STODDARD SOLVENT		TWA	2900 mg/m3	500 ppm	N/A	OSHA Z1
STODDARD SOLVENT		TWA	100 ppm		N/A	ACGIH
VARSOL 18	Vapor.	RCP -	132 ppm	800	Total	ExxonMobil

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		TWA		mg/m3	Hydrocarbon s	
--	--	-----	--	-------	------------------	--

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions.

Control measures to consider:

Adequate ventilation should be provided so that exposure limits are not exceeded. Use explosion-proof ventilation equipment.

PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:

Half-face filter respirator

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapor warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

If prolonged or repeated contact is likely, chemical resistant gloves are recommended. If contact with forearms is likely, wear gauntlet style gloves.

Eye Protection: If contact is likely, safety glasses with side shields are recommended.

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:

If prolonged or repeated contact is likely, chemical, and oil resistant clothing is recommended.

Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

ENVIRONMENTAL CONTROLS

See Sections 6, 7, 12, 13.

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SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Note: Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

GENERAL INFORMATION

Physical State: Liquid
Form: Clear
Color: Colorless
Odor: Mild Petroleum/Solvent
Odor Threshold: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 15.6 C): 0.779
Density: 779 kg/m³ (6.5 lbs/gal, 0.78 kg/dm³)
Flash Point [Method]: 42C (108F) [ASTM D-56]
Flammable Limits (Approximate volume % in air): LEL: 0.8 UEL: 5.6
Autoignition Temperature: 261°C (502°F)
Boiling Point / Range: 161C (322F) - 198C (388F)
Vapor Density (Air = 1): 4.9 at 101 kPa
Vapor Pressure: 0.27 kPa (2.03 mm Hg) at 20 C
Evaporation Rate (n-butyl acetate = 1): 0.19
pH: N/A
Log Pow (n-Octanol/Water Partition Coefficient): N/D
Solubility in Water: Negligible
Viscosity: 1.08 cSt (1.08 mm²/sec) at 40 C | 1.27 cSt (1.27 mm²/sec) at 25C
Oxidizing Properties: See Hazards Identification Section,

OTHER INFORMATION

Freezing Point: <-77°C (-107°F)
Melting Point: N/A
Pour Point: -59°C (-74°F)
Molecular Weight: 143
Hygroscopic: No
Coefficient of Thermal Expansion: 0.00076 V/V/DEGC

SECTION 10 STABILITY AND REACTIVITY

STABILITY: Material is stable under normal conditions.

CONDITIONS TO AVOID: Avoid heat, sparks, open flames and other ignition sources.

MATERIALS TO AVOID: Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures.

HAZARDOUS POLYMERIZATION: Will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

ACUTE TOXICITY

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Route of Exposure	Conclusion / Remarks
Inhalation	
Toxicity: Data available.	Minimally Toxic. Based on test data for structurally similar materials.
Irritation: Data available.	Negligible hazard at ambient/normal handling temperatures. Based on test data for structurally similar materials.
Ingestion	
Toxicity: LD50 > 5000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials.
Skin	
Toxicity: LD50 > 3160 mg/kg	Minimally Toxic. Based on test data for structurally similar materials.
Irritation: Data available.	Mildly irritating to skin with prolonged exposure. Based on test data for structurally similar materials.
Eye	
Irritation: Data available.	May cause mild, short-lasting discomfort to eyes. Based on test data for structurally similar materials.

CHRONIC/OTHER EFFECTS

For the product itself:

Vapor/aerosol concentrations above recommended exposure levels are irritating to the eyes and respiratory tract, may cause headaches, dizziness, anesthesia, drowsiness, unconsciousness and other central nervous system effects including death.

Prolonged and/or repeated skin contact with low viscosity materials may defat the skin resulting in possible irritation and dermatitis.

Small amounts of liquid aspirated into the lungs during ingestion or from vomiting may cause chemical pneumonitis or pulmonary edema.

Additional information is available by request.

The following ingredients are cited on the lists below: None.

--REGULATORY LISTS SEARCHED--

1 = NTP CARC
 2 = NTP SUS

3 = IARC 1
 4 = IARC 2A

5 = IARC 2B
 6 = OSHA CARC

SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data available for the material, the components of the material, and similar materials.

ECOTOXICITY

Material -- Expected to be toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

MOBILITY

Material -- Highly volatile, will partition rapidly to air. Not expected to partition to sediment and wastewater solids.

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PERSISTENCE AND DEGRADABILITY

Biodegradation:

Material -- Expected to be readily biodegradable.

Hydrolysis:

Material -- Transformation due to hydrolysis not expected to be significant.

Photolysis:

Material -- Transformation due to photolysis not expected to be significant.

Atmospheric Oxidation:

Material -- Expected to degrade rapidly in air

OTHER ECOLOGICAL INFORMATION

VOC (EPA Method 24): 6.501 lbs/gal

SECTION 13 DISPOSAL CONSIDERATIONS

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

DISPOSAL RECOMMENDATIONS

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products.

REGULATORY DISPOSAL INFORMATION

RCRA Information: Disposal of unused product may be subject to RCRA regulations (40 CFR 261). Disposal of the used product may also be regulated due to ignitability, corrosivity, reactivity or toxicity as determined by the Toxicity Characteristic Leaching Procedure (TCLP). Potential RCRA characteristics: IGNITABILITY.

Empty Container Warning Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

SECTION 14 TRANSPORT INFORMATION

LAND (DOT)

Proper Shipping Name: PETROLEUM DISTILLATES, N.O.S.

Hazard Class & Division: COMBUSTIBLE LIQUID

ID Number: 1268

Packing Group: III

Marine Pollutant: Yes

ERG Number: 128

Label(s): NONE

Transport Document Name: UN1268, PETROLEUM DISTILLATES, N.O.S., COMBUSTIBLE LIQUID, PG III, MARINE POLLUTANT (standard solvent)

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Product #: 332400 Name: MINERAL SPIRITS EXEMPT Desc:
From: BRENNTAG NORTHEAST INC. To: MAGGIO Friday, April 20, 2012



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Footnote: The flash point of this material is greater than 100 F. Regulatory classification of this material varies.
DOT: Flammable liquid or combustible liquid. OSHA: Combustible liquid. IATA/IMO: Flammable liquid.

SEA (IMDG)

Proper Shipping Name: PETROLEUM DISTILLATES, N.O.S.
Hazard Class & Division: 3
EMS Number: F-E, S-E
UN Number: 1268
Packing Group: III
Marine Pollutant: Yes
Label(s): 3
Transport Document Name: UN1268, PETROLEUM DISTILLATES, N.O.S., 3, PG III, (42°C c.c.), MARINE POLLUTANT (stoddard solvent)

AIR (IATA)

Proper Shipping Name: PETROLEUM DISTILLATES, N.O.S.
Hazard Class & Division: 3
UN Number: 1268
Packing Group: III
Label(s) / Mark(s): 3
Transport Document Name: UN1268, PETROLEUM DISTILLATES, N.O.S., 3, PG III

SECTION 15 REGULATORY INFORMATION

OSHA HAZARD COMMUNICATION STANDARD: When used for its intended purpose, this material is classified as hazardous in accordance with OSHA 29CFR 1910.1200.

Complies with the following national/regional chemical inventory requirements: IECSC, AICS, KECI, ENCS, DSL, PICCS, TSCA

EPCRA: This material contains no extremely hazardous substances.

CERCLA: This material is not subject to any special reporting under the requirements of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). Contact local authorities to determine if other reporting requirements apply.

CWA / OPA: This product is classified as an oil under Section 311 of the Clean Water Act (40 CFR 110) and the Oil Pollution Act of 1990. Discharge or spills which produce a visible sheen on either surface water, or in waterways/sewers which lead to surface water, must be reported to the National Response Center at 800-424-8802.

SARA (311/312) REPORTABLE HAZARD CATEGORIES: Fire. Delayed Health.

SARA (313) TOXIC RELEASE INVENTORY:

Chemical Name	CAS Number	Typical Value
PSEUDOCUMENE (1,2,4-TRIMETHYLBENZENE)	95-63-6	< 2%

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The following ingredients are cited on the lists below:

Chemical Name	CAS Number	List Citations
DISTILLATES (PETROLEUM), HYDROTREATED LIGHT	64742-47-8	17, 18, 19
NONANE	111-84-2	1, 5, 9, 13, 16, 17, 18, 19
PSEUDOCUMENE (1,2,4- TRIMETHYLBENZENE)	95-63-6	1, 13, 16, 17, 18, 19
STODDARD SOLVENT	8052-41-3	1, 4, 13, 16, 17, 18, 19

--REGULATORY LISTS SEARCHED--

1 = ACGIH ALL	6 = TSCA 5a2	11 = CA P65 REPRO	16 = MN RTK
2 = ACGIH A1	7 = TSCA 5e	12 = CA RTK	17 = NJ RTK
3 = ACGIH A2	8 = TSCA 6	13 = IL RTK	18 = PA RTK
4 = OSHA Z	9 = TSCA 12b	14 = LA RTK	19 = RI RTK
5 = TSCA 4	10 = CA P65 CARC	15 = MI 293	

Code key: CARC=Carcinogen; REPRO=Reproductive

SECTION 16 OTHER INFORMATION

N/D = Not determined, N/A = Not applicable

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:

Revision Changes:

Hazard Identification: Environmental Hazard was modified.
Section 04: First Aid Inhalation - Header was modified.
Section 04: First Aid Ingestion - Header was modified.
Section 06: Protective Measures was modified.
Section 09: Phys/Chem Properties Note was modified.
Section 07: Handling and Storage - Handling was modified.
Section 07: Handling and Storage - Storage Phrases was modified.
Section 07: Static Accumulator was modified.
Section 06: Accidental Release - Spill Management - Water was modified.
Section 09: Flash Point C(F) was modified.
Section 14: Transport Document Name was modified.
Section 14: Transport Document Name was modified.
Composition: Component table was modified.
Section 15: National Chemical Inventory Listing - Header was modified.
Section 15: National Chemical Inventory Listing was modified.
Composition: Component table was modified.
Section 14: DOT Footnote was modified.
Section 16: Water Spill was modified.
Section 16: NA Contains was modified.
Section 14: Marine Pollutant - Header was added.
Section 14: Marine Pollutant was added.
Section 14: Marine Pollutant - Header was added.
Section 14: Marine Pollutant was added.
Section 12: Ecological Information - Acute Aquatic Toxicity was added.
Section 12: Ecological Information - Acute Aquatic Toxicity was added.
Section 12: Ecological Information - Acute Aquatic Toxicity was deleted.

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Section 12: Ecological Information - Acute Aquatic Toxicity was deleted.

PRECAUTIONARY LABEL TEXT:

Contains: STODDARD SOLVENT, DISTILLATES (PETROLEUM), HYDROTREATED LIGHT CAUTION!

HEALTH HAZARDS

If swallowed, may be aspirated and cause lung damage.

PHYSICAL HAZARDS

Combustible. Material can accumulate static charges which may cause an ignition.

PRECAUTIONS

Avoid contact with skin. Potentially toxic/irritating fumes/vapors may be evolved from heated or agitated material. Use adequate respiratory protection. Use proper bonding and/or ground procedures. However, bonding and grounds may not eliminate the hazard from static accumulation.

FIRST AID

Inhalation: Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

Eye: Flush thoroughly with water. If irritation occurs, get medical assistance.

Oral: Seek immediate medical attention. Do not induce vomiting.

Skin: Wash contact areas with soap and water. Remove contaminated clothing. Launder contaminated clothing before reuse.

FIRE FIGHTING MEDIA

Use water fog, foam, dry chemical or carbon dioxide (CO₂) to extinguish flames.

SPILL/LEAK

Land Spill: Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak if you can do it without risk. Prevent entry into waterways, sewer, basements or confined areas. A vapor suppressing foam may be used to reduce vapors. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Recover by pumping or with suitable absorbent.

Water Spill: Stop leak if you can do it without risk. Eliminate sources of ignition. Warn other shipping. Report spills as required to appropriate authorities. If the Flash Point exceeds the Ambient Temperature by 10 degrees C or more, use containment booms and remove from the surface by skimming or with suitable absorbents when conditions permit. If the Flash Point does not exceed the Ambient Air Temperature by at least 10C, use booms as a barrier to protect shorelines and allow material to evaporate. Seek the advice of a specialist before using dispersants.

This warning is given to comply with California Health and Safety Code 25249.6 and does not constitute an admission or a waiver of rights. This product contains a chemical known to the State of California to cause cancer, birth defects, or other reproductive harm.

The information and recommendations contained herein are, to the best of ExxonMobil's knowledge and belief, accurate and reliable as of the date issued. You can contact ExxonMobil to insure that this document is the most current available from ExxonMobil. The information and recommendations are offered for the user's consideration and examination. It is the user's responsibility to satisfy itself that the product is suitable for the intended use. If buyer repackages this product, it is the user's responsibility to insure proper health, safety and other necessary information is

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From: BRENNTAG NORTHEAST INC. To: MAGGIO Friday, April 20, 2012



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included with and/or on the container. Appropriate warnings and safe-handling procedures should be provided to handlers and users. Alteration of this document is strictly prohibited. Except to the extent required by law, republication or retransmission of this document, in whole or in part, is not permitted. The term, "ExxonMobil" is used for convenience, and may include any one or more of ExxonMobil Chemical Company, Exxon Mobil Corporation, or any affiliates in which they directly or indirectly hold any interest.

Internal Use Only
MHC: 1A, 0, 0, 0, 2, 0

DGN: 4400180HUS (1007383)

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Material Safety Data Sheet

Plate Finisher
Kodak

32

Revision Date: 03/31/2011
Z330000008568/Version: 1.3
Print Date: 04/19/2011
Page: 1/7

1. Identification of the substance/mixture and of the company/undertaking

Product name: Kodak Polychrome GRAPHICS Plate Finisher 860S
Product code: 1031889
Supplier: EASTMAN KODAK COMPANY, 343 State Street, Rochester, New York 14650
For Emergency Health, Safety & Environmental Information, call (585) 722-6161 (USA)
For further information about this product, call (800) 242-2424.
Synonyms: PCD F1631
Product Use: plate processing chemical, For industrial use only.

2. Hazards Identification

CONTAINS: Boric acid (10043-35-3), sodium 2-biphenylate (132-27-4)

WARNING!
MAY BE HARMFUL IF ABSORBED THROUGH SKIN OR SWALLOWED
CAUSES SKIN AND EYE IRRITATION

HMIS III Hazard Ratings: Health - 2, Flammability - 1, Reactivity (Stability) - 0

NFPA Hazard Ratings: Health - 2, Flammability - 1, Instability - 0

NOTE: HMIS III and NFPA 704 (2007) hazard indexes involve data review and interpretation that may vary among companies. They are intended only for rapid, general identification of the magnitude of the potential hazards. To adequately address safe handling, ALL information in this MSDS must be considered.

3. Composition/information on ingredients

Weight percent	Components - (CAS-No.)
1 - 5	Boric acid (10043-35-3)
0.1 - < 1	sodium 2-biphenylate (132-27-4)

4. First aid measures

Inhalation: If symptomatic, move to fresh air. Get medical attention if symptoms occur.
Eyes: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. If easy to do, remove contact lens, if worn. Get medical attention.

Material Safety Data Sheet



Revision Date: 03/31/2011
Z33000000556/Version: 1.3
Print Date: 04/19/2011
Page: 2/7

Skin: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention if symptoms occur. Wash contaminated clothing before re-use. Destroy or thoroughly clean contaminated shoes.

Ingestion: Get medical attention if symptoms occur.

5. Fire-fighting measures

Extinguishing Media: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special Fire-Fighting Procedures: Wear self-contained breathing apparatus and protective clothing.

Hazardous Combustion Products: Carbon oxides

Unusual Fire and Explosion Hazards: None.

6. Accidental release measures

Absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Clean surface thoroughly to remove residual contamination.

7. Handling and storage

Personal precautions: Avoid breathing mist or vapour at concentrations greater than the exposure limits. Avoid contact with eyes, skin, and clothing. Use only with adequate ventilation. Wash thoroughly after handling. Do not eat, drink or smoke when using this product.

Prevention of Fire and Explosion: Keep from contact with oxidizing materials.

Storage: Keep container tightly closed. Keep away from incompatible substances (see Incompatibility section.)

8. Exposure controls/personal protection

Occupational exposure controls			
Chemical Name	Regulatory List	Value Type	Value
Boric acid	ACGIH	time weighted average	2 mg/m ³
		Short term exposure limit	6 mg/m ³
			<i>Form of exposure: inhalable fraction</i>
			<i>Form of exposure: inhalable fraction</i>

Ventilation: Good general ventilation should be used. Ventilation should be sufficient so that applicable occupational exposure limits are not exceeded. Ventilation rates should be matched to conditions. Supplementary local exhaust ventilation, closed systems, or respiratory protection may be needed in special circumstances.

Respiratory protection: None should be needed. If engineering controls do not maintain airborne concentrations below recommended exposure limits, an approved respirator must be worn. Respirator

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Kodak

type: N95 Particulate Filter. If respirators are used, a program should be instituted to assure compliance with applicable federal, state, commonwealth, provincial, or local laws and regulations.

Eye protection: Wear safety glasses with side shields (or goggles).

Hand protection: Wear impervious gloves and protective clothing appropriate for the risk of exposure.

9. Physical and chemical properties

Physical form: liquid

Colour: yellow

Odour: odourless

Specific gravity: 1.051

Vapour pressure (at 20.0 °C (68.0 °F)): 24 mbar (18.0 mm Hg)

Vapour density: 0.6

Volatile fraction by weight: 75 - 80 %

Boiling point/boiling range: 100 °C (212.0 °F)

Melting point/range: < 0 °C (< 32.0 °F)

Water solubility: soluble

pH: 2.1

Flash point: does not flash

10. Stability and reactivity

Stability: Stable under normal conditions.

Incompatibility: Strong oxidizing agents.

Hazardous decomposition products: None under normal conditions of use.

Hazardous Polymerization: Hazardous polymerisation does not occur.

11. Toxicological information

Effects of Exposure

General advice:

Contains: Boric acid. Based on repeated-dose ingestion studies in animals, may cause adverse reproductive and developmental effects. However, high doses to humans handling this

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material are not expected since oral consumption is not a likely route of significant exposure.

Inhalation: Mist may be harmful if inhaled.

Eyes: Causes eye irritation.

Skin: Causes skin irritation. May be harmful if absorbed through skin. May be absorbed in toxic amounts through damaged or abraded skin.

Ingestion: May be harmful if swallowed.

Data for Boric acid (CAS 10043-35-3):

Acute Toxicity Data:

- Oral LD50 (rat): > 1,600 mg/kg
- Inhalation LC50 (rat): > 2.03 mg/l / 4 hr
 - Dermal LD50 (rabbit): > 2,000 mg/kg
 - Skin Irritation: moderate
 - Skin Sensitization (guinea pig): none
 - Eye irritation: slight irritation

Mutagenicity/Genotoxicity Data:

- Salmonella/Mammalian-Microsome Reverse Mutation Screening Assay (TA98, TA100, TA1535, TA1537, TA1538): negative (in presence and absence of activation)
- Mouse lymphoma assay: negative (in presence and absence of activation)
 - Sister chromatid exchange (SCE) assay (Chinese Hamster Ovary (CHO)): negative (in presence and absence of activation)
 - Unscheduled DNA synthesis (UDS) assay (rat hepatocytes): negative (in absence of activation)
 - Mouse micronucleus assay: negative

Definitions for the following section(s): LOEL = lowest-observed-effect level, LOAEL = lowest-observed-adverse-effect, NOAEL = no observed-adverse-effect level, NOEL = no-observed-effect level.

Repeated dose toxicity:

- Feeding study (24 months, male and female rat): NOAEL; 100 mg/kg/day
- Feeding study (24 months, male and female rat): Lowest observable effect level; 334 mg/kg/day (target organ effects: testes)

Developmental Toxicity Data:

- Oral (female rat): maternal NOAEL; 78mg/kg/day
- Oral (female rat): NOAEL for developmental toxicity; < 78mg/kg/day

Reproductive Toxicity Data:

Feeding Study (male and female mouse): NOEL for reproductive toxicity; < 152 mg/kg/day

Carcinogenicity:

- Oral study (females mouse, 2 years): NOEL; 1,150 mg/kg/day

Data for sodium 2-biphenylate (CAS 132-27-4):

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Acute Toxicity Data:
Oral LD50 (rat): 656 mg/kg

12. Ecological Information

The following properties are ESTIMATED from the components of the preparations.

Potential Toxicity:

Toxicity to fish (LC50): > 100 mg/l

Toxicity to daphnia (EC50): > 100 mg/l

Persistence and degradability: Not readily biodegradable.

13. Disposal considerations

Discharge, treatment, or disposal may be subject to federal, state, commonwealth, provincial, or local laws. Since emptied containers retain product residue, follow label warnings even after container is emptied.

14. Transport Information

Not regulated for all modes of transportation.


For more transportation information, go to: www.kodak.com/go/ship.

15. Regulatory Information

Notification status

Regulatory List	Notification status
TSCA	Not all listed
DSL	Not all listed
NDSL	None listed
EINECS	Not all listed
ELINCS	None listed
NLP	None listed
AICS	Not all listed
IECS	Not all listed
ENCS	Not all listed
ECI	Not all listed
NZIoC	Not all listed
PICCS	Not all listed

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TSCA 12(b) Listed

"Not all listed" indicates one or more component is either not on the public inventory or is subject to exemption requirements. If additional information is needed contact Kodak.

Other regulations

American Conference of Governmental Industrial Hygienists (ACGIH):	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
International Agency for Research on Cancer (IARC):	Group 2B - Possibly Carcinogenic to Humans: sodium 2-biphenylate
U.S. National Toxicology Program (NTP):	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
U.S. Occupational Safety and Health Administration (OSHA):	OSHA Carcinogen or Potential Carcinogen: sodium 2-biphenylate
California Prop. 65	WARNING! This product contains a chemical known in the State of California to cause cancer.
U.S. - CERCLA/SARA (40 CFR § 302.4 Designation of hazardous substances):	No components of this product are subject to the SARA Section 302 (40 CFR 302.4) reporting requirements.
U.S. - CERCLA/SARA - Section 302 (40 CFR § 355 Appendices A and B - The List of Extremely Hazardous Substances and Their Threshold Planning Quantities):	No components of this product are subject to the SARA Section 302 (40 CFR 355) reporting requirements.
U.S. - CERCLA/SARA - Section 313 (40 CFR § 372.65 Toxic Chemical Release Reporting):	sodium 2-biphenylate
U.S. - California - 8 CCR Section 339 - Director's List of Hazardous Substances:	No components found on the California Director's List of Hazardous Substances.
U.S. - California - 8 CCR Section 5200-5220 - Specifically Regulated Carcinogens:	No components found on the California Specifically Regulated Carcinogens List.
U.S. - California - 8 CCR Section 5203 Carcinogens:	No components found on the California Section 5203 Carcinogens List.
U.S. - California - 8 CCR Section 5209 Carcinogens:	No components found on the California Section 5209 Carcinogens List.
U.S. - Massachusetts - General Law Chapter 111F (MGL c 111F) - Hazardous Substances Disclosure by Employers (a.k.a. Right to Know Law):	No components regulated under the Massachusetts Hazardous Substances Disclosure by

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	Employers Law.
U.S. - Minnesota Employee Right-to-Know (5206.0400, Subpart 5. List of Hazardous Substances):	No components found on the Minnesota Employee Right-to-Know List of Hazardous Substances.
U.S. - New Jersey - Worker and Community Right to Know Act (N.J.S.A. 34:5A-1):	No components regulated under the New Jersey Worker and Community Right-to-Know Act.
U.S. - Pennsylvania - Part XIII. Worker and Community Right-to-Know Act (Chapters 301-323):	Water, Dextrin
U.S. - Rhode Island - Title 28 Labor and Labor Relations (Chapters 28-21 Hazardous Substance Right-to-Know Act):	No components regulated under the Rhode Island Hazardous Substance Right-to-Know Act.

16. Other Information

The data below reflects current legislative requirements whereas the product in your possession may carry a different version of the label depending on the date of manufacture.

US/Canadian Label Statements:

Kodak Polychrome GRAPHICS Plate Finisher 860S

CONTAINS: Boric acid (10043-35-3), sodium 2-biphenylate (132-27-4).

WARNING! MAY BE HARMFUL IF ABSORBED THROUGH SKIN OR SWALLOWED. CAUSES SKIN AND EYE IRRITATION.

Avoid breathing mist or vapour at concentrations greater than the exposure limits. Avoid contact with eyes, skin, and clothing. Use only with adequate ventilation. Wash thoroughly after handling. **FIRST AID:** If symptomatic, move to fresh air. Get medical attention if symptoms occur. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. If easy to do, remove contact lens, if worn. Get medical attention. In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention if symptoms occur. Wash contaminated clothing before re-use. Destroy or thoroughly clean contaminated shoes. Get medical attention if symptoms occur. Keep out of reach of children. Do not handle or use until safety precautions in Material Safety Data Sheet (MSDS) have been read and understood. Since emptied containers retain product residue, follow label warnings even after container is emptied. **IN CASE OF FIRE:** Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. **IN CASE OF SPILL:** Absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Clean surface thoroughly to remove residual contamination. Additional Components include: Water (7732-18-5), Dextrin (9004-53-9).

The information contained herein is furnished without warranty of any kind. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers and the protection of the environment. The information relating to the working solution is for guidance purposes only, and is based on correct mixing and use of the product according to instructions.

R-1, S-2, F-1, C-0

From SAS 5
Film Developer

MATERIAL SAFETY DATA SHEET
Colorlok Universal Rapid Access Developer Replenisher
(Concentrate)

xpedx
Loveland, OH

11/7/2006
EMERGENCY 1.800.424.9300

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

Product name: Colorlok Universal Rapid Access Developer Replenisher (Concentrate)
Catalog/SKU number: 28009-31, 28012-31, 28013-31, 28039-31

Manufacturer's name: Allied Photo Products, Inc.
Manufacturer's address: 6440 Oakbrook Parkway, Norcross GA 30093-2251
Manufacturer's phone - contact: 770-448-0250 (fax: 770-448-0257)
Manufacturer's phone - emergency: 1-800-424-9300 (Chemtrec)

SECTION 2 - COMPOSITION / INFORMATION ON INGREDIENTS

Ingredients	CAS Number	Wt. %	PEL
Potassium Hydroxide	1310-58-3	1-2	2mg/m ³
Potassium Sulfite	10117-38-1	10-15	N/A
Hydroquinone	123-31-9	1-5	2mg/m ³
Potassium Carbonate	584-08-7	65-75	N/A

NE=Not Established STEL=Short Term Exposure Limit C=Celling Limits

SECTION 3 - HAZARDS IDENTIFICATION.

Potential Health Effects:

Skin: Repeated and prolonged contact may cause irritation.
Eyes: Vapor may cause irritation. Contact may cause burns.
Inhalation: Low hazard for ordinary industrial handling.
Ingestion: Do Not take Internally. May be harmful if swallowed.

SECTION 4 - FIRST AID MEASURES

Eye Contact: Flush with large amounts of water for 15 minutes. Seek medical attention.
Skin Contact: Wash with soap and water. If irritation persists seek medical attention.
Ingestion: Drink water to dilute concentration. Induce vomiting only if directed to do so by medical personnel. Seek immediate medical attention giving full details concerning dose and circumstances of ingestion.
Inhalation: Move to fresh air.

SECTION 5 - FIRE FIGHTING MEASURES

Flammable Properties
Flash Point: <> deg F TCC

Colorlok Universal Rapid Access Developer Replenisher (Concentrate)
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MATERIAL SAFETY DATA SHEET
Colorlok Universal Rapid Access Developer Replenisher
(Concentrate)

xpedx
Loveland, OH

11/7/2006
EMERGENCY 1.800.424.9300

Autoignition Temperature: N/L deg F (CC)
Explosion Limits: Lower: N/L vol.%; <>
Upper: N/L vol. %;N/L

Extinguishing Media: Use method appropriate for surrounding fire.

Unsuitable Extinguishing Media: N/L

Fire Fighting Instructions: Use protective clothing to prevent chemical contact with skin and eyes. Use NIOSH/MSHA approved positive pressure self-contained breathing apparatus when material has ignited or becomes involved in a fire. Try to remove material containers from fire area if can be accomplished without risk to personnel. Evacuate area and fight fire from a safe distance. Call your local fire department. Wear positive pressure, breathing apparatus and protect eyes and skin.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Wear protective clothing. Neutralize product with sodium bicarbonate (baking soda). Contain and collect to dispose of as allowed by law.

SECTION 7 - HANDLING / STORAGE

Handling:

Wash thoroughly after handling. Do not eat, drink or smoke while using product.

Storage:

Do not store or consume food, drink or tobacco in surrounding area. Keep containers tightly sealed when not in use. Store above 40° F. Keep out of the reach of children.

SECTION 8 - EXPOSURE CONTROL AND PERSONAL PROTECTION

Ventilation:

Should not be needed under normal use conditions.

Personal Protective Equipment

Respiratory Protection: Should not be needed under normal use conditions.

Skin Protection: Impervious gloves and clothing as needed to prevent skin contact with product.

Eye Protection: Chemical splash goggles.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Pale yellow liquid

Odor: No odor

Change in Physical State:

Boiling Point: > 212 deg F

Colorlok Universal Rapid Access Developer Replenisher (Concentrate)

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MATERIAL SAFETY DATA SHEET
Colorlok Universal Rapid Access Developer Replenisher
(Concentrate)

xpedx
Loveland, OH

11/7/2006
EMERGENCY 1.800.424.9300

Melting Point: N/A
Specific Gravity: 1.24 Water=1
Vapor Pressure: 0.6 mmHg @ 20C
Viscosity: N/L
Solubility in Water: Complete
pH Value: 10.7
VOC (lbs/gal): 0

SECTION 10 - STABILITY AND REACTIVITY

Hazardous Polymerization: Will not occur
Stability: Stable
Hazardous Decomposition Products: When heated to decomposition may emit toxic fumes of SO₂ and CO₂
Materials and Conditions to Avoid: None known

SECTION 11 - TOXICOLOGICAL INFORMATION

Product Information
LD50 (oral, rat): N/L

Acute Overexposure: Yes
Chronic Overexposure: No

SECTION 12 - ECOLOGICAL INFORMATION

Ecotoxicity Data: N/L
Chemical Fate Data: N/L

SECTION 13 - DISPOSAL CONSIDERATIONS

Hazardous Waste Characteristic: Not considered a hazardous waste.
Recommendation:
Consult appropriate federal, state and local regulatory agencies to ascertain proper disposal procedures.

SECTION 14 - TRANSPORTATION INFORMATION

Ground Shipping Information
Proper Shipping Name: NOT DOT REGULATED
Hazard Class: N/A
UN/NA Number: N/A
Packing Group: N/A

SECTION 15 - REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS:

Colorlok Universal Rapid Access Developer Replenisher (Concentrate)
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MATERIAL SAFETY DATA SHEET
Colorlok Universal Rapid Access Developer Replenisher
(Concentrate)

xpedx
Loveland, OH

11/7/2006
EMERGENCY 1.800.424.9300

313 = SARA Title III Section 313 (40 CFR 372 -- Toxic Release Inventory)
355 = SARA Title III Section 302 (40 CFR 355 -- Extremely Hazardous Substance)
302 = SARA Title III Section 304 (40 CFR 302 -- Hazardous Substance List)
CWA = Clean Water Act Priority Pollutants List
CAA = Clean Air Act 1990 Hazardous Air Contaminants
HAP = Clean Air Act - HON Rule - HAPs

Ingredients	CAS No.	313	355	302	CWA	CAA	HAP
Potassium Hydroxide	1310-58-3						
Hydroquinone	1123-31-9						

TOXICITY INFORMATION:

IRC1 = IARC Group 1 Human Carcinogens List
IRC2 = IARC Group 2 Human Carcinogens List (limited human data)
IRC3 = IARC Group 2B Human Carcinogens List (sufficient animal data)
NTP = NTP Known Carcinogens List
OSHA = OSHA Known Carcinogens List

Ingredients	CAS No.	IRC1	IRC2	IRC3	NTP	OSHA
None known						

STATE REGULATIONS:

FL = Florida Hazardous Substance List MA = Massachusetts Right-To-Know List
MI = Michigan Critical Materials List MN = Minnesota Hazardous Substance List
NJ = New Jersey Right-To-Know List PA = Pennsylvania Right-To-Know List

Ingredients	CAS No.	PA	NJ	MN	MI	MAFL
N/L						

SECTION 16 - OTHER INFORMATION

This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.

Abbreviations used:

N/A: Not applicable

N/L: Not listed on manufacturer's original MSDS.



Film Developer

#1 Network, Inc.

FROM SAS

Material Safety Data Sheet

28009-49, 28012-49, 28013-49

SECTION I - General Information

Product Name: #1 Network Rapid Developer Concentrate
Catalog No. 28009-49, 28012-49, 28013-49

Revision Date:
July 1, 1995

Chemical Family:
Photographic Developer

Formula:
Aqueous Mixture

Proper D.O.T. Shipping Name:
Not Regulated

D.O.T. Hazard Classification:
Not Applicable

Manufacturer:
ALLIED Photo Products, Inc.
5440 Oakbrook Parkway
Norcross, GA 30093

Manufacturer's Phone Number:
(770) 448-0250

CHEMTREC Phone Number
(800) 424-9300

SECTION II - Products and Hazardous Ingredients Information:

<u>ITEM #5702</u>	<u>CAS#</u>	<u>PERCENT</u>	<u>PEL (TWA)</u>	<u>SARA</u> <u>RO/TPO</u>	
Water	7732-18-5	40-50	N/A	N/A	N/A
Potassium Sulfite	120117-38-1	25-30	N/A	N/A	N/A
Potassium Carbonate	584-08-7	5-10	N/A	N/A	N/A
Potassium Hydroxide	1310-58-3	1-2	2mg/m3	1000#	N/A
Hydroquinone	123-31-9	1-5	2mg/m3	1#/5000#	

SECTION III - Physical Data

Boiling Point: >212°F (100°C)
Vapor Density (mmHg): 0.6
Specific Gravity: 1.33
Percent Volatile by Weight: Approx. 50%
Appearance and Odor: Pale yellow, odorless

Vapor Pressure (mmHg): 17.0
Solubility in Water: Complete
pH: 10.7
Evaporation Rate: N/A

SECTION IV - Fire and Explosion Hazard Data

Flash Point: None
Flammable Limits: LEL: N/A UEL: N/A
Extinguishing Media: Use method appropriate for surrounding fire.
Special Fire Fighting Procedures: Use protective clothing to prevent contact with skin and eyes.
Unusual Fire and Explosions Hazards: When heated to decomposition, it can emit toxic fumes of SO₂ and CO₂ and possibly CO.

SECTION V - Health Hazard Data

TLV (ACGIH): Hydroquinone (2mg/m³), Potassium Hydroxide (2mg/m³).

Effects of Overexposure:

Inhalation: Low hazard for ordinary industrial handling.
Eyes: Vapor may cause irritation. Contact may cause burns.
Skin: Repeated and prolonged contact may cause irritation.
Ingestion: Do Not take internally. May cause Nausea.



#1 Network, Inc.

Material Safety Data Sheet

28009-49, 28012-49, 28013-49

Evidence of Carcinogen: Hydroquinone

Teratogenicity: N/A
Reproductive Toxicity: N/A
Mutagenicity: N/A
Synergistic Products: N/A

Emergency First Aid Procedures:

Eyes: Flush with large amounts of water for 15 minutes. Seek Medical attention immediately.

Skin: Wash skin with soap and water. If irritation occurs, seek medical attention.

Ingestion: Induce vomiting. Seek medical attention immediately giving full details of amount ingested and toxicity.

Inhalation: Move to fresh air.

SECTION VI - Reactivity Data

Stability: Stable

Incompatibility: Strong acids, strong bases

Hazardous Decomposition Products: When heated to decomposition, it can emit toxic fumes of SO₂ and CO₂.

Hazardous Polymerization: Will not occur.

Conditions to Avoid: None known.

SECTION VII - Spill or Leak Procedures

Steps to be Taken in Case Material is Released or Spilled: Wear protective clothing as specified in Section VIII.

Neutralize with sodium bicarbonate. If Federal, State or local laws permit, flush to sewer with large amounts of water.

Waste Disposal: Neutralize with sodium bicarbonate. If Federal, State or local laws permit, flush to sewer with large amounts of water. Otherwise, dispose of contaminated product and materials used in cleaning up the spill in a manner approved for this material. Consult proper Federal, State and/or local regulatory agencies to ascertain proper disposal procedures.

SECTION VIII - Special Protection Information:

Respiratory Protection (Specify Type): Should not be necessary under normal conditions. If exposed to vapors that exceed TLV or PEL, wear approved vapor respirator.

Protective Equipment:

Gloves: Impervious gloves.

Eyes: Wear protective goggles.

Other: As necessary to prevent skin contact. Eyewash facilities in vicinity of use.

SECTION IX - Special Precautions

Precautions to be Taken in Handling and Storage: Do not store or consume food, drink or tobacco in surrounding area. Keep tightly sealed. Store above 40°F. Avoid unnecessary personal contact. Avoid incompatible substances. Wash thoroughly after handling.

The information contained in this material safety data sheet is furnished without warranty of any kind. The user should consider this data a supplement to other information gathered and must make independent determination of suitability and completeness of information from this and other sources to assure proper use and disposal of the materials and the health and safety of employees and customers. This statement is incorporated as part of this Material Safety Data Sheet.

MATERIAL SAFETY DATA SHEET**SDP ULTIMATE Fountain Solution****SECTION 1: PRODUCT IDENTIFICATION AND USE****Product Name:** SDP ULTIMATE FOUNTAIN SOLUTION**Product Identification Number (PIN):****Formula:** Water base mixture**Manufacturer / Supplier:** Mitsubishi Imaging (MPM), Inc. - 555 Theodore Fremd Avenue - Rye, NY 10580**Emergency Telephone Number:** Chemtrec (800) 424-9300 Outside USA (703) 527-3887**SECTION 2: HAZARDOUS INGREDIENTS**

Principal Components(s)	Cas Reg #	OSHA PEL (mg/m ³)	ACGIH TLV (mg/m ³)	%WT (w/w)
2-Butoxyethanol	111-76-2	25 ppm (skin)	25 ppm (skin)	30-40
Propylene glycol	57-55-6	None	None	5-15
Ammonium nitrate	6484-52-2	Not Estab.	Not Estab.	1-5

SECTION 3: HAZARDOUS IDENTIFICATION**EMERGENCY OVERVIEW**

Clear purple liquid mixture, with glycol ether mixture odor. Caution! Irritant liquid and vapor with a flash point of 65° C. Contact with liquid may cause severe eye irritation. Overexposure may cause nose, throat and respiratory tract irritation. Inhalation and ingestion may cause blood in the urine, blood abnormalities, kidney damage, liver damage and central nervous system depression characterized by headache, nausea, weakness, drowsiness, fatigue, and unconsciousness. Target organs: kidney, spleen, and lung.

POTENTIAL HEALTH EFFECTS**Eye Contact:** May cause eye irritation, stinging, tearing, redness and swelling**Skin Contact:** May cause skin irritation. Prolonged or repeated liquid contact can result in defatting, cracking, burning, and drying of the skin which may result in skin irritation and dermatitis. Skin absorption is possible and skin contact may be harmful.**Ingestion:** Single dose oral toxicity is moderate. Swallowing large amounts may cause gastric irritation and abdominal spasms, and acidosis.**Inhalation:** Short term inhalation toxicity is moderate. Exposure may be harmful. Symptoms are more typically seen at air concentrations exceeding the recommended exposure limits.**Carcinogenicity:** NTP: N/A IARC Monographs: N/A OSHA Regulated: N/A
None of the chemicals used in this product are listed on NTP, IARC or OSHA listings of human carcinogens.**Other Health Hazards:** 2-Butoxyethanol in this product has been shown to cause harm to the fetus in laboratory animal studies. Harm to the fetus occurs only at exposure levels that harm the pregnant animal. The relevance of these findings to humans is uncertain.**SECTION 4: FIRST AID MEASURES****Eye:** Immediately flush eyes with water. After initial flushing, remove contact lenses and continue flushing for at least an additional 5 minutes. If irritation persists, contact physician.**Skin:** Wash the exposed area thoroughly with flowing water. Remove contaminated clothing. Contact physician if irritation develops or persists.**Ingestion:** Give two glasses of water and induce vomiting. Obtain prompt medical attention.**Inhalation:** Remove to fresh air. If breathing is difficult, administer oxygen. If breathing has stopped, give artificial respiration. Get medical attention**SECTION 5: FIRE FIGHTING MEASURES****Flammable Properties:** Flashpoint 65° C (149°F), TCC**Flammable Limit:** LFL: 1.00

UFL: 10.00

Extinguishing Media: Water, carbon dioxide and dry chemical**Special Fire Fighting Procedures:** Evacuate personnel to a safe area. Firefighters should wear self-contained breathing apparatus and full protective clothing.**Unusual Fire Hazards:** Water spray may be useful in minimizing vapors and in cooling containers exposed to heat and flame. Avoid spreading burning liquid with water used for cooling purposes.

MATERIAL SAFETY DATA SHEET**SDP ULTIMATE Fountain Solution****SECTION 6: ACCIDENTAL RELEASE MEASURES**

Steps to be Taken in case Material is Released or Spilled: Use appropriate protective equipment and clothing. Shut off source of leak if it is safe to do so. Dike and contain. Soak up residue with clay, sand or other suitable absorbent material. Place in non-leaking containers and seal tightly for proper disposal. Flush area with water to remove trace residue. Dispose of flush solution in the same manner as leaked liquid.

SECTION 7: HANDLING AND STORAGE

Precautions to be Taken in Handling and Storing: Do not get in eyes or on skin or clothing. Do not ingest. Wash thoroughly after handling. Empty containers retain product residue (liquid and vapor), and can be dangerous. Do not cut, weld, pressurize, braze, solder, grind, drill or expose such containers to heat, sparks or open flames. Prevent build up of vapors to explosive concentration. Keep away from sources of ignition. Keep container closed tightly when not in use. Store in cool, dry, well-ventilated place away from incompatible substances. As with all chemicals, keep out of reach of children.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Ventilation: Local exhaust ventilation may be necessary to keep airborne concentrations below the permissible exposure limits (see section 2).

Respiratory Protection: Avoid prolonged or repeated breathing of vapors. If exposure may or does exceed occupational exposure limits (Section 2) use a NIOSH-approved respirator to prevent overexposure (29 CFR 1910.134). Use either an atmosphere-supplying respirator or an air-purifying respirator for organic vapors.

Eye Protection: Wear safety glasses or goggles

Protective Gloves: Rubber gloves.

Other Clothing and Protective Equipment: Impervious clothing should be worn as needed. Wash station for flushing eyes and skin should be available in the work area.

Work / Hygienic Practices: Practice safe workplace habits. Minimize body contact with this, as well as all chemicals in general.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor: Clear purple liquid. Glycol ether mixture odor

pH: 4.10

Boiling Point: N/D

Melting Point: N/D

Volatile Organic Content: N/D

VOC Composite Partial Pressure (mm Hg at 20°C): <1

Percent Volatility (as water): N/D

Vapor Pressure: N/D

Specific Gravity: 1.028

Solubility in Water: Soluble in water

Viscosity: 8.7 mPAs

Vapor Density: <1

Evaporation Rate: N/D

Photo Chemical Reactivity(SCAQMD Rule 443): None

SECTION 10: STABILITY AND REACTIVITY

Stability: Stable under normal ambient temperature and pressure

Conditions to Avoid: Open flame and excessive heat

Incompatibility: Incompatible materials, organic materials or explosives

Hazardous Decomposition: Carbon dioxide, carbon monoxide, ammonia, nitrogen oxide, nitrous oxide, nitrogen and other materials

Hazardous Polymerization: Has not been reported

SECTION 11: TOXICOLOGICAL INFORMATION

Chemical Name	CAS #	LD50 of Ingredients (Specify species and route)	LC50 of Ingredients (Specify species)
2-Butoxyethanol	111-76-2	1480mg/kg oral-rat	450/4 hr rat
Propylene glycol	57-55-6	20g/kg oral-rat	Not Available
Ammonium nitrate	6484-52-2	5300 mg/kg oral-rat	Not Available

MATERIAL SAFETY DATA SHEET**SDP ULTIMATE Fountain Solution****SECTION 12: ECOLOGICAL INFORMATION**

No data are available on the aquatic toxicity of this mixture.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal Method: Dispose in accordance with Federal, State and Local regulations. Refer to the latest EPA or State Regulations regarding proper disposal.

SECTION 14: TRANSPORTATION INFORMATION

This product is not a hazardous material for (DOT) shipping

D.O.T. Shipping Name: Not Regulated

IMO Shipping Name: Not Regulated

IATA Shipping Name: Not Regulated

SECTION 15: REGULATORY INFORMATION

TSCA (USA - Toxic Substance Control Act):

2-Butoxyethanol

Propylene glycol

Ammonium nitrate

Above hazardous components of this product are listed on the US Toxic Substance Control Act Chemical Inventory.

SARA TITLE III (USA - Superfund Amendments and Reauthorization Act):

Ammonium nitrate

Above component(s) subject to the reporting requirements of Section 313 of Title III of the Emergency Planning and Community Right to Know Act of 1986 (40 CFR 372.65).

CERCLA (USA - Comprehensive Response Compensation and Liability Act):

Ingredients not listed

SECTION 16: OTHER INFORMATION**HMIS Rating:**

Health (Blue)	1
Flammability (Red)	1
Reactivity (Yellow)	0
Protective Equipment	B

HMIS HAZARD INDEX:

0=Minimal 1=Slight 2=Moderate 3=Serious 4=Severe

B=Safety glasses and gloves

Revision Summary:

This MSDS has been revised in the following sections: No revisions available

Prepared by (Group, Department, etc.):

Mitsubishi Imaging (MPM), Inc.

Phone Number:

(914) 925-3200

Date:

September 28, 2007

The information contained herein is furnished without warranty of any kind. Users should consider this data as a supplement to other information gathered by them and must make independent determination of suitability and completeness of information from all sources to assure use and disposal of these materials and the safety and health of employees and customers and the protection of the environment.

APPENDIX B

PROJECT PERSONNEL RESUMES



Ms. Davis has diversified experience in geology and hydrogeology. Her professional technical experience includes groundwater, soil, and soil vapor investigations, design and management of soil and groundwater remediation projects, design and installation of groundwater containment systems, design and evaluation of soil vapor mitigation systems, groundwater flow modeling, aquifer testing and interpretation, evaluation of site compliance with environmental regulations, environmental permitting, and personnel training. Ms. Davis presently manages several large-scale investigation and remedial programs, including program scopes, budgets, staffing, and schedules.

Functional Role	Title	Years of Experience
Senior Hydrogeologist	Department Manager - Hydrogeology	29

Personal Data

Education

M.S./1984/Geology/University of Southern California
B.S./1981/Geology/Bucknell University

Registration and Certifications

Certified Professional Geologist #9487, (AIPG) 1995
California Registered Geologist #5192, 1991
Pennsylvania Registered Geologist #PG-000529-G, 1994
OSHA – Approved 40 hour Health and Safety Training Course (1990)
OSHA - Approved 8 hour Health and Safety Training Refresher Courses (1991-Present)
OSHA-Approved 8-hour Site Safety Supervisor Training Course (2008)
National Ground Water Association
Long Island Association of Professional Geologists
USEPA Triad Training for Practitioners

Employment History

1993-Present FPM Group
1992-1993 Chevron Research and Technology Co.
1990-1992 Chevron Manufacturing Co.
1984-1990 Chevron Exploration, Land, and Production Company

Continuing Education

- Treatment of Contaminated Soil and Rock
- Groundwater Pollution and Hydrology
- Environmental Law and Regulation
- Remedial Engineering
- Soil and Foundation Engineering
- Environmental Geochemistry
- Project Management Professional (PMP) training

Detailed Experience

Site Investigations

- **Program Manager** for ongoing investigation and remedial projects at several New York State Inactive Hazardous Waste Disposal sites, Voluntary Cleanup Program (VCP) sites, and Brownfield Cleanup Program (BCP) sites. Investigations have included site characterization, Remedial Investigations/Feasibility Studies (RI/FS), and Resource Conservation and Recovery Act (RCRA) facility investigations and closures. Remedial services have included contaminated soil removal; ORC and HRC injections; design, installation, and operation of air sparge/soil vapor extraction (AS/SVE) systems and sub-slab depressurization systems (SSDS), capping, and other remedial services.
- **Program Manager, NYS BCP Site, Far Rockaway, NY.** Managed all aspects of pre-application investigation, BCP application, RI Work Plan development, and Citizen Participation Plan (CPP) for a chlorinated solvent site. Responsible for scope development, NYSDEC and NYSDOH coordination, budget, schedule, staffing, and report management.
- **Program Manager, Site Characterization (SC) for NYS Inactive Hazardous Waste Disposal Site, Flushing, NY.** Responsible for SC scope development, budget, schedule, SC Work Plan and report review, staffing, and agency negotiations for a chlorinated solvent site undergoing residential redevelopment.
- **Program Manager** for all Phase I ESA, Phase II investigations, and remediation projects for a major commercial developer on Long Island, New York. Projects have included environmental services associated for the purchase and redevelopment of office buildings, aerospace facilities, former research and development facilities, and large manufacturing plants. Remedial services have included RCRA closures, UIC closures, tank removals, and BCP projects.

- **Program Manager, Remedial Investigation/ Feasibility Study (RI/FS), Levittown, NY.** Managed all aspects of RI/FS for a Class 2 Inactive Hazardous Waste Disposal (Superfund) site involving chlorinated solvents. Responsibilities included RI/FS scope, budget and schedule development, RI/FS work plan, HASP, CAMP, and QAPP, coordination with client, tenants, and regulatory agencies, report review, remedial approach development, and conceptual design.
- **Project Manager, RCRA Facilities Investigation (RFI), Barksdale AFB, LA, AFCEE.** Responsible for all aspects of field program planning, solicitation and selection of subcontractors, mobilization and establishment of a field office, supervising multiple field crews, installation and sampling of monitoring wells, collection and soil samples, data tracking and management and preparation of an RFI report. The scope of work included characterization of the nature and extent of groundwater and soil contamination at thirteen Solid Waste Management Units (SWMUs), performing a base-wide evaluation of background contaminant concentrations, and developing a long-term monitoring (LTM) program for the base.
- **Field Services Manager, UST Investigation, Plattsburgh AFB, NY, AFCEE.** Responsible for field crew training, coordination of sampling crews at multiple sites, sample labeling, handling, tracking, and shipping, field data management and remote field office management. The scope of work included collection of over 450 groundwater samples to characterize groundwater conditions in the vicinity of 150 USTs using a Geoprobe sampling rig, well points, and rapid turnaround-time analysis.
- **Project Manager** for site investigation activities, including soil vapor sampling, soil sampling and analysis, groundwater sampling and analysis, and geotechnical evaluation for numerous sites in Suffolk County, New York. The resulting data were utilized by a major supermarket company in the negotiations for the purchase of the properties and in the property remediation prior to development.
- **Project Manager, Site Investigation, Bronx, NY, NYCT.** Managed field sampling and data analysis activities, including soil vapor analysis, soil sample analysis, and groundwater sampling and analysis at an active commercial bus terminal. Made recommendations for site remediation, including UST removal, soil excavation and disposal, and free-phase product extraction.
- **Project Manager, RCRA Facilities Investigation, City of Richmond, CA.** Prepared RFI work plan, incorporating existing geologic, chemical, and historical data, evaluating newly-acquired site data, and developing recommendations for further investigation and remedial action at a former municipal landfill.
- **Project Manager, Site Investigation, Bay Shore, NY. Manufacturing facility.** Managed onsite and offsite soil and groundwater sampling program. Compiled and evaluated data and prepared a comprehensive report of the investigation results for the Suffolk County Department of Health Services (SCDHS) and NYS Department of Environmental Conservation (NYSDEC). Proposed remediation technologies for onsite soil contamination and onsite and offsite groundwater contamination.
- **Project Manager, Site Investigation, Newark Airport, NJ, FAA.** Managed and conducted a soil and groundwater sampling program adjacent to Runway 29. Analyzed chemical analytical data and developed recommendations.
- **Project Manager, Remedial Investigation, Richmond Refinery, CA.** Supervised and conducted drilling, soil sampling, cone penetrometer testing, and well installation at a refinery process water effluent treatment system and former municipal landfill.
- **Senior Hydrogeologist, multiple sites, NY metro area.** Supervised drilling, installation, development, and sampling of monitoring wells at numerous sites in the greater New York metro area. Utilized resulting stratigraphic, hydrologic, and chemical analytical data to evaluate site conditions.
- **Program Manager, multiple sites, major New York Metro area automobile dealer.** Managed all investigation and remedial activities for a major automobile retailer with multiple facilities. Sites included tanks, petroleum spills, underground injection control (UIC) systems, soil vapor intrusion issues, and hazardous waste management. Responsible for work scope and budget preparation, staffing and oversight, client and regulatory agency interactions, addressing insurance issues, reporting and certification, and project closeouts.
- **Program Manager, SWTP groundwater monitoring program, Town of East Hampton.** Managed groundwater sampling and reporting for the Scavenger Waste Treatment Plant (SWTP). Responsibilities included oversight of well installation, purging and sampling the SWTP groundwater monitoring wells, and providing data to the Town for reporting purposes.

Remediation

- **Program Manager, NYSDEC BCP site, NY City, major real estate developer.** In responsible charge of all investigation and remedial activities at a NYSDEC BCP site in New York City. Prepared the Remedial Investigation and Remedial Work Plan; coordinated with the owner, other contractors, and the NYSDEC; prepared for and conducted citizen participation activities; supervised all waste characterization, profile preparation, and waste management; developed the Final Engineering Report (FER) and Site Management Plan (SMP) for NYSDEC approval; and ensured that all remedial requirements were met such that the Certificate of Completion (COC) was issued. Continuing activities include coordination of the ongoing site management, communications with the NYSDEC and NYSDOH, and preparation of the annual Certification Report.
- **Program Manager, Major Oil Storage Facility (MOSF) closure, Glen Harbor, NY. Real estate developer.** Responsibilities included coordination of the work scope with the NYSDEC and NCDOH, development of work plans for tanks, UIC, and petroleum spill closure, budget and schedule development, staffing and oversight, reporting and certification, and closeout of all environmental issues such that residential redevelopment could proceed.
- **Program Manager, Delineation and Remedial Services, NYS Spill Site, St. James, NY.** Responsible for client and agency coordination, budget, schedule, staffing, remedial design and reporting for a petroleum release at a Service Station property with offsite impacts.
- **Program Manager, RCRA Closure Site, Freeport, NY.** Managed all aspects of RCRA Closure of a former printing facility, including scope, budget and schedule development, Closure Plan, NYSDEC interactions, QAPP, and specifications for contractor services.
- **Program Manager, Sub-slab depressurization system (SSDS), Brooklyn, NY.** Managed all aspects of SSDS implementation, including delineation sampling, remedial design, budget and schedule, construction services testing, reporting, and O&M manual development for a former dry cleaner site in an active shopping center.
- **Program Manager, SSDS, Bronx, NY.** Responsible for all aspects of SSDS implementation for a former dry cleaner site in a mixed-use building, including delineation sampling, SSDS design, construction contractor services, testing, reporting, and O&M manual development.
- **Project Manager, Soil Remediation, Hauppauge, NY. Metal plating facility.** Planned remedial project and managed contractor support for soil remediation. Project was completed and approved by SCDHS.
- **Remedial Design, AS/SVE projects.** Developed pilot test plans, evaluated pilot test results, and prepared conceptual designs for several air sparge/soil vapor extraction (AS/SVE) systems to treat petroleum and/or chlorinated solvent VOCs. These systems were subsequently installed and Ms. Davis provides ongoing review of system operations and remedial monitoring results.
- **Program Manager, Waste soil management, Brooklyn, NY. Travelers Insurance.** In responsible charge of several task orders for waste characterization of a 90,000-cy construction soil stockpile at a municipal sewer facility. Responsibilities included development and implementation of Sampling and Analysis Plans (SAP), coordination of staffing, review of lab data, preparation of Field Sampling Summary Reports (FSSR), coordination with disposal facilities, and preparation of waste profiles.
- **Program Manager, NYS Inactive Hazardous Waste Disposal (Superfund) site, Hicksville, NY. Property owner.** Responsibilities included developing and implementing pre-demolition investigations, developing and implementing remedial actions (source removal) in conjunction with retail redevelopment, conceptual design and installation of sub-slab depressurization systems (SSDSs), maintaining ongoing OM&M programs.
- **Project Manager, Remedial projects, Patchogue, NY. US Tape.** Designed and performed indoor underground storage tank abandonment program, leaching pool remediation plan, and managed contractor support for closure activities at a manufacturing facility. SCDHS provided oversight and approval.
- **Senior Hydrogeologist, Remedial design for a landfill, Richmond, CA.** Contributed to the design of a groundwater containment and remediation system for a former municipal landfill, including subsurface groundwater barrier walls and extraction wells.
- **Project Manager, Soil remediation, Carle Place, NY, Kimco.** Designed remedial plan and supervised soil remediation activities at an active construction site involving excavation and disposal of 5,000 tons of PCB-, metal-, and petroleum-contaminated soil. NYSDEC oversaw and approved the completed remediation.

- **Project Manager, Groundwater containment system, Richmond, CA.** Coordinated technical aspects of groundwater barrier wall construction, including routing, permitting, design, material selection, and field activities.
- **Project Manager, Multiple UIC investigations and closures, Suffolk and Nassau Counties, NY** Responsible for investigation and remediation of contaminated cesspool and stormwater drain pool in systems. Fully conversant with SCDHS SOP 9-95 and USEPA UIC regulations for investigation and cleanup of leaching pool systems, including Action Levels and Cleanup Standards, groundwater monitoring criteria, and remedial requirements.
- **Project Coordinator, UIC Closure, Hempstead, NY.** Coordinated and supervised all aspects of waste management for a UIC closure, including disposal facility review, waste sampling and classification, manifesting, project closeout, and taxation issues.

Hydrogeologic Evaluations

- **Project Manager, well permitting, East Hampton, NY. Private client.** Prepared Engineer's Report for Long Island Well Permit for a 230-gpm irrigation supply well. Responsible for evaluation of well interference, salt water upconing, impacts from contaminants, and other factors affecting the proposed well. Performed well design (gravel pack size, screen size, etc.) for numerous groundwater wells on Long Island. Familiar with sieve analyses, well construction and development methods.
- **Senior Hydrogeologist, groundwater modeling, East Hampton, NY.** Utilized Visual Modflow to evaluate the impact of a contaminant plume on a proposed SCWA wellfield. Model development included evaluation of recharge, aquifer properties, subsurface stratigraphy, boundary conditions, plume source and concentration, and various wellfield locations and pumping rates.
- **Hydrogeologist, aquifer testing, Manhattan, NY. NYCT.** Participated in a multi-day, multi-well aquifer pumping test for NYCT. Responsible for operating and maintaining data logging equipment, coordinating manual water level measurements, and analyzing resulting drawdown data.
- **Hydrogeologist, aquifer evaluation, Brooklyn, NY. NYCT.** Evaluated subsurface geologic conditions for subway site utilizing existing boring logs, topographic, and historic map data.
- **Hydrogeologist, aquifer testing, Queens, NY. NYCT.** Performed slug tests on monitoring wells at an East Side Access site, and evaluated hydrologic properties using the HYDROLOGIC ISOAQX computer program.

- **Hydrogeologist, remedial wells, Deer Park, NY. USEPA.** Supervised drilling, installation and development of groundwater extraction, injection, and monitoring wells at a Superfund site. Interpreted aquifer and well performance from development data and recommended modification of drilling and development procedures.
- **Hydrogeologist, aquifer testing, NYC, NYCT.** Performed aquifer pumping and slug tests and evaluated hydrologic properties using the computer program AQTESOLV.
- **Hydrogeologist, aquifer evaluation, Mattituck Airport, Mattituck, NY.** Performed water level and water quality monitoring at a NYSDEC Superfund site. Constructed groundwater elevation contour maps and utilized chemical analytical data to predict contaminant plume migration.
- **Senior Hydrogeologist, DEIS services, Lazy Point, NY. Town of East Hampton.** Prepared a detailed evaluation of groundwater conditions and potential impacts for a water extension to Lazy Point for a draft Environmental Impact Statement (DEIS). Evaluated current and historic groundwater data and analytical models to determine potential impacts for both Lazy Point and the drinking water source area and prepared associated portions of the DEIS.

Landfills

- **Program Manager, Greenhouse gas monitoring program, Town of Islip, NY.** Responsibilities include scope and budget management, staffing, client and USEPA coordination, reporting review, and troubleshooting.
- **Project Manager, Landfill Closure Investigations, Town of East Hampton, NY.** Prepared Closure Investigation work plans, including Hydrogeologic investigations, methane investigations, surface leachate investigations, and vector investigations. Prepared final Closure Investigation Reports, approved by the NYSDEC.
- **Project Manager, Landfill monitoring networks, Town of East Hampton, NY.** Supervised installation of groundwater and methane monitoring wells at the landfills, including hollow-stern auger and mud-rotary well installations, split-spoon soil sampling and boring log preparation, oversight and interpretation of wireline electric logging, and completion of initial baseline monitoring events.
- **Hydrogeologist, Landfill groundwater monitoring, NJ, private client.** Performed groundwater sampling at a radio tower facility constructed on a landfill. Analyzed results and made recommendations.

- **Hydrogeologist, Landfill gas monitoring, Town of East Hampton, NY.** Conducted methane monitoring at two landfills over a multi-year period.
- **Program Manager, Landfill monitoring programs, Town of East Hampton, NY.** Supervises ongoing groundwater and methane monitoring programs, including field team coordination, communications with the Town, report scheduling, data review, and report review prior to distribution to the client and NYSDEC. Negotiated successfully with NYSDEC for reduced monitoring frequencies based on historic monitoring results.
- **Senior Hydrogeologist, Landfill plume modeling, Town of East Hampton, NY.** Conducted groundwater flow modeling to evaluate the nature and extent of a landfill plume and its fate. Findings were presented at public meetings and were used to determine the configuration of the landfill's groundwater monitoring network.
- **Hydrogeologist, Septage lagoon Superfund site, Town of East Hampton, NY.** Conducted sampling of former septage lagoons at a landfill. Evaluated the resulting data and prepared a delisting petition for this NYSDEC Superfund site.
- **Hydrogeologist, containment system modeling, Richmond, CA.** Used the FLOW PATH modeling program to predict groundwater flow directions and evaluate extraction well locations and pumping rates for a groundwater containment and remediation system at a former municipal landfill.
- **Program Manager, Landfill gas monitoring program, Town of Islip, NY.** Manages monthly methane monitoring for all landfills, including onsite and offsite monitoring wells, methane collection systems, and flare systems. Data is recorded electronically and downloaded to computer for formatting prior to expedited delivery to Town.
- **Program Manager, Landfill monitoring reporting program, Town of Smithtown, NY.** Supervised and reviewed production of quarterly and annual monitoring reports for all monitoring programs at the landfills for Town compliance with NYSDEC requirements, including tabulation and reporting of groundwater and methane monitoring data, solid waste and recycling collection data, yard waste composting operations, and landfill leachate collection and disposal data.
- **Program Manager, Landfill remediation, Town of Huntington, NY.** An historic landfill was removed from parkland under the NYSDEC's ERP. Responsibilities included work scope development, schedule and budget management, staffing, client and regulatory agency coordination and reporting, and report review and certification.

Environmental Data Analysis

Ms. Davis has participated in multiple sessions of environmental geochemistry training provided by environmental geochemists, including physical chemistry, thermodynamics, ionic interactions, complexation, biologic effects, and other basic principles. Training also included field sampling procedures and effects on chemical data, chemical analytical methods and equipment, and QA/QC procedures and interpretation. Attended periodic environmental chemistry training sessions hosted by environmental laboratories and participated in hands-on training in data and QA/QC evaluation.

- **Data Evaluation, multiple projects.** Reviewed and evaluated numerous soil, groundwater, product, indoor/ambient air, and soil vapor chemical analytical datasets, including evaluation of batch and site-specific QA/QC samples, laboratory narratives, comparison to regulatory agency criteria, historic data, and background data.
- **QAPPs, multiple projects.** Developed and implemented numerous QAPP, including QAPP design, sample delivery group (SDG) evaluations, sampling procedures and sequences, and QA/QC sample preparation/collection.
- **DUSR Preparation, multiple projects.** Prepared Data Usability Summary Reports (DUSRs) for numerous chemical analytical datasets for projects overseen by USEPA, NYSDEC and other regulatory agencies, including soil, groundwater, soil vapor, indoor air, and ambient air datasets.
- **Electronic Data Deliverables, multiple projects.** Implemented protocols and procedures for all FPM sites for which NYSDEC Electronic Data Deliverables (EDDs) are required. Responsibilities included staff training, data package QA/QC, client interactions, budget and schedule impact assessments, and dissemination of EDD training information.
- **Data Evaluation, multiple sites.** Performed forensic assessments of historic environmental chemical analytical data to resolve apparent discrepancies with modern data and other inconsistencies.
- **Leachate test assessments.** Assessed leachate test protocols and results to determine the most applicable methods to evaluate and develop soil cleanup objectives for non-regulated compounds.
- **Organic parameter breakdown assessments.** Interpreted numerous organic parameter datasets to evaluate breakdown sequences, likely original parameters, and rates of degradation.

- **In situ remediation assessments, multiple sites.** Formulated numerous chemical treatment plans for in situ remediation, including assessment of contaminant concentrations and distribution, chemical processes and indicators, natural attenuation indicators, additional stoichiometric demands, and hydrogeologic factors.

Community Impacts

- **Community Monitoring Plans, multiple hazardous waste sites.** Developed Community Air Monitoring Plans (CAMP) for investigation and remediation projects, including monitoring procedures, action levels, and mitigation measures for odors, traffic, noise, dust, and/or vapors with the potential to affect surrounding communities. Each CAMP was reviewed and approved by the NYSDEC and NYSDOH and was implemented under agency oversight. Presented CAMP findings at numerous community meetings. Addressed community and agency questions and issues
- **Vector Assessments, multiple landfill sites, Long Island, NY.** Evaluated and implemented abatement for vectors (rodents, flies, and seagulls) in association with landfill closures, including inspection and reporting of vector populations, development of vector abatement plans, and assisting Town personnel with vector abatement.
- **Odor Abatement, NYSDEC BCP site, NYC, NY. Major real estate developer.** Developed and implemented an odor abatement plan for highly-odorous soil discovered during a remedial project. The site was surrounded by three public schools; complaints following discovery of odorous soil resulted in a job shutdown until the nuisance was abated. The odor abatement plan was prepared and implemented within 24 hours and involved immediate covering of the odorous soil followed by spot excavation and removal during non-school hours (night work) and the use of odor-controlling foam. The removal was completed within one week without further incident. The NYSDEC and NYSDOH approved the completed work, allowing the job to recommence.
- **Vector Assessment, transfer station, Town of East Hampton, NY.** Conducted inspections of intense fly infestations at a Town transfer station building to identify the locations and migration pathways of flies inside the building and to develop an abatement plan. This plan was successfully implemented and abated the nuisance flies.

- **Soil Vapor Intrusion Assessments, multiple sites.** Developed and implemented air and soil vapor investigations of residential and commercial properties, as approved by the NYSDEC/NYSDOH, to evaluate potential air quality impacts and determine if mitigation or monitoring was necessary. Monitoring/mitigation designs were developed for NYSDEC/NYSDOH approval.
- **CAMP Monitoring, multiple sites.** Conducted odor, dust, noise, and organic vapor monitoring in communities surrounding environmental sites. Data were collected and interpreted in accordance with NYSDEC and/or NYSDOH guidance and the results were submitted to these agencies together with recommendations for mitigation, if appropriate.
- **Project Manager, Environmental data assessment, Windmill Village, Town of East Hampton, NY.** Evaluated environmental data obtained during due diligence testing for a proposed housing development. Recommended additional sampling and confirmed the absence of impacts.

Expert Witness/Technical Services

- **Expert Witness/Technical Services, residential project, Glen Harbor, NY. Private client.** Provided expert witness and technical services regarding environmental conditions and remedial procedures for residential redevelopment of a former oil terminal, including preparing and obtaining NYSDEC and NCDOH approval of remedial work plans, preparing remedial cost estimates and schedules, and providing testimony at a public hearing before the Town Board from which a change of zone was requested. The proposed change of zone, although subject to considerable public opposition, was approved, allowing redevelopment and associated remediation of the property to move forward.
- **Expert Witness/Technical Services, petroleum spill site, Westbury, NY. Private client.** Provided expert witness and technical services to a petroleum company defending NYSDEC cost recovery claims for a petroleum spill. The spill site involved two very large petroleum releases at gasoline stations adjoining the defendant's property. Services provided included evaluating tank tests, groundwater, soil and soil vapor chemical analytical data, petroleum fingerprint data, remediation activities and costs. Prepared numerous detailed timelines of activities, large displays of site information and subsurface conditions, and cost allocation calculations. Conducted a detailed subsurface investigation to evaluate stratigraphic conditions.

- **Expert Technical Services, development site, Village of Larchmont, NY.** Assisted the Village in successfully opposing the construction of a very large superstore in the adjoining community, including evaluating previous environmental investigations, developing cost estimates and scopes of work for a full environmental site assessment, preparing scoping cost estimates for likely remediation scenarios, preparing technical documents in support of the Village's position, and making a presentation at a public hearing. The proposed project was subsequently withdrawn.
- **Expert Hydrogeologist Services, development site, Town of Carmel, NY.** Provided technical evaluation of a proposed water district. The proposed water district would impact existing residents due to limited available water supplies and likely impact on existing wells. The work included evaluation of aquifer pumping tests, determining impacts on nearby wells, assessment of likely increased water demand, preparation of supporting documents, and presentations at project hearings. The proposed project was subsequently conditionally approved by the NYSDEC with significant modifications to protect the water rights of existing residents.
- **Expert Witness Affidavits, multiple projects.** Prepared affidavits regarding environmental conditions at client properties in support of pending legal actions, including landfill issues, wetlands and navigable waterway issues, and petroleum spills.
- **Expert Technical Services, road construction projects, Westchester County, NY. Croton Watershed Clean Water Coalition.** Provided technical services to the CWCWC to assess impacts from proposed road construction projects on the Kensico Reservoir and other New York City water supply system facilities. This work included evaluating stormwater pollutant loading calculations, assessing impacts to wetlands, promoting application of more accurate stormwater runoff calculation methods, assessing proposed stormwater management techniques, presenting at public meetings, preparing technical statements for submittal to regulatory agencies, and participating in the NYSDOT SWPPP Guidance committee.
- **Expert Technical Services, solvent plume site, Nassau County, NY. Private client.** Provided technical support to a property owner subject to a USEPA investigation as the potential source of a large chlorinated solvent plume, including evaluation of a plume-wide RI/FS, detailed review of property historic information, multiple meetings with the USEPA, client and counsel, and identification of additional potential source areas.

Health and Safety

- **Health and safety monitoring, multiple sites.** Implemented HASP monitoring at investigation and remediation sites during intrusive activities, including calibration and operation of photoionization detector (PID) and flame ionization detector (FID) for organic vapors and combustible gas indicator (CGI) for methane. Compared results to applicable action levels and implemented protective measures as necessary.
- **CAMP monitoring, multiple sites.** Performed community monitoring, including monitoring for noise, particulates (dust), and organic vapors. Recorded observations and compared to applicable action levels. Calibrated and operated noise meters, particulate monitors, and PID/FID.
- **Radiation screening, multiple sites.** Performed screening for radiation at select sites, including operating Geiger counter in different radiation modes and obtaining background readings.

Miscellaneous Projects

- **Phase I ESAs.** Performed numerous Phase I Site Assessments for residential and industrial sites in the metropolitan New York area.
- **Environmental Trainer.** Conducted aquifer pumping and soil vapor extraction test training. Instructed classes for site investigation methods, aquifer pumping test analysis, and risk assessment.
- **Project Management.** Performs a wide range of project management functions, including development and management of project budgets and schedules, coordination of field and office staffing, document preparation, review, editing, and interaction with clients, regulatory, legal, real estate, consultant, and compliance personnel.
- **Field Mapping Studies.** Organized, supervised, and conducted field mapping studies in Alaska.
- **Downhole Logging.** Directed petroleum well site geophysical logging operations and interpreted geophysical well logs.
- **Geophysical Data Interpretation.** Processed and interpreted seismic reflection data and constructed seismic velocity models.
- **Regulatory Evaluations.** Assisted and reviewed regulator's revision of proposed risk assessment-based UST cleanup guidelines. Reviewed proposed USEPA NPDES permits for remediation system effluent.
- **Geologic Mapping.** Constructed and interpreted structural and stratigraphic cross sections, and structure contour, fault surface, isochore, and isopach maps.

Regulatory Compliance

- **Site Audits.** Has conducted numerous site audits for regulatory compliance, particularly with respect to Resource Conservation and Recovery Act (RCRA), Comprehensive Environmental Responsibility and Liability Act (CERCLA), the Clean Water Act (CWA) and Clean Air Act (CAA).
- **RCRA compliance audits.** Conducted inspections and reporting regarding underground and aboveground storage tanks (USTs and ASTs), hazardous waste storage facilities, waste management and reporting requirements, and hazardous waste storage area closures in compliance with RCRA.
- **CERCLA Compliance.** Oversees and coordinates environmental site assessments (ESAs) for compliance with CERCLA requirements for a wide variety of facilities including operating and historic industrial sites manufacturing plants, abandoned facilities, and multi-property Brownfield sites.
- **Superfund Sites.** Managed multiple investigation and remedial projects at state and federal Superfund sites. Is very familiar with all phases of CERCLA projects including PA/SI, RI, FS, RD and RA. Has overseen activities at many Superfund sites from investigation through closure.
- **CWA Projects.** Conducted investigation and remediation of Class V underground injection control (UIC) Systems, investigation and acquisition of UIC discharge permits, and discharges into surface water bodies.
- **CAA Compliance Projects.** Conducted facility investigations for emissions sources, including paint booths, fume hoods, process discharges and other point sources. Sampled and evaluated remediation system discharges for CAA compliance, recommended emissions treatment when required.

Representative DOD Projects

- **Barksdale RFI, Barksdale AFB, LA, \$520K**-Lead Geologist for RFI for multiple Base-wide sites at Barksdale AFB, including landfills, petroleum spills, fire training areas, sewage treatment plans, and chemical spills. Managed field crews and sampling of soil, groundwater, and waste, performed sample and waste management, and coordinated with Base representatives. Prepared RFI Report, including analytical data reports, CS, and recommendations.
- **Barksdale LTM Program, Barksdale AFB, LA, \$1.7M**-Lead Geologist for LTM Program for Base-wide Barksdale groundwater, including landfills, petroleum spills, fire training areas, sewage treatment plants, and chemical spills. Supervised field crews, managed samples and waste, prepared LTM Reports and made recommendations for LTM optimization.
- **Site Characterization, Plattsburgh AFB, NY, \$720K**-Field Team Leader for SC investigation of fuel oil USTs and petroleum spills at Base housing, officers' quarters, and support building prior to transition of these areas to other uses. Working for AFCEE, developed and conducted an SC for over 200 USTs, including soil and groundwater sampling to identify petroleum contamination. Supervised several field crews in an accelerated sampling program to complete the SC prior to winter conditions. Prepared SC Report submitted to and approved by the NYSDEC.



Mr. Bukoski is an Environmental Scientist with diversified experience in both the Federal and private sector, including groundwater and soil investigations and evaluation, soil remediation projects, soil vapor intrusion evaluation, aquifer testing and interpretation, design and management of soil and groundwater remediation projects, groundwater flow modeling, evaluation of site compliance with environmental regulations, and environmental permitting.

Functional Role	Title	Years of Experience
Environmental Scientist	Project Manager	14

Personal Data

Education

B.S./1998/Environmental Science/SUNY Buffalo

Registration and Certifications

OSHA 40-hr and current 8-hr Health and Safety Training Course (1999-present)

OSHA-Approved 8 hour Health and Safety Training Refresher Courses (2000-Present)

OSHA-Approved 8-hr Site Safety Supervisor Training Course (2008)

OSHA-Approved Permit-Required Confined Space Training

MTA NYC Transit Track Safety Certification

National Groundwater Association

Long Island Association of Professional Geologists

Advanced Technologies for Natural Attenuation Certification

Employment History

1999-present FPM Group

1991-1998 Sutherland's Office Centre

1985-1991 United States Marine Corps

Detailed Experience

Site Investigations

- Performed Phase I Environmental Site Assessments and Phase II Investigations for numerous sites in New York State, including office buildings, aerospace facilities, former research and development facilities, and large manufacturing plants.
- Provided oversight and coordination for ongoing investigation and remedial projects at several New York State Inactive Hazardous Waste Disposal (Superfund) Sites, Voluntary Cleanup Program (VCP) Sites, and Brownfield Cleanup Program (BCP) Sites. Investigations included Site Characterization (SC), Remedial Investigation/ Feasibility Studies (RI/FS), and RCRA Facility Investigations. Remedial services have included contaminated soil removals; UIC closures, ORC and HRC injections; design, installation and operation of air sparge/soil vapor extraction (AS/SVE) systems; sub-slab depressurization systems (SSDS) and, capping.

- Managed site investigation activities, including soil vapor and air sampling, soil sampling and analysis, groundwater sampling and analysis, and geotechnical evaluation for numerous supermarket sites in Suffolk County, New York in support of negotiations for property purchases and redevelopment.
- Investigated several petroleum-contaminated spill sites at Griffiss AFB, Rome, NY. Performed soil and groundwater sampling via Geoprobe, installed groundwater wells for monitoring and assessment of attenuation. Proposed remediation technologies for soil and groundwater contamination. Analyzed chemical data and prepared a Site Investigation (SI) Report.
- Investigated several chlorinated solvent-contaminated sites at Griffiss AFB, Rome, NY. Performed aquifer testing to establish direction of groundwater flow. Collected groundwater samples and analyzed the chemical data to identify the constituents of concern. Proposed remediation technologies for groundwater contamination.
- Supervised drilling installation, development, and sampling of monitoring wells at numerous sites in the greater New York metropolitan area. Utilized resulting stratigraphic, hydrologic, and chemical analytical data to evaluate site conditions. Prepared investigation reports identifying site history, contaminant characteristics, sampling methods, and site-specific lithology.
- Managed landfill monitoring projects at several landfills in Suffolk County. Collected and evaluated methane and groundwater monitoring data. Prepared reports documenting monitoring results and provided recommendations regarding methane collection, stormwater runoff, capping, and other landfill management strategies.
- Performed long-term monitoring projects at several landfills at Griffiss AFB. Collected groundwater, leachate, and surface water samples. Evaluated resulting data and prepared monitoring reports for state and federal agency review.

Remediation

- Performed investigation and remedial activities at a NYSDEC BCP site in New York City. Assisted in preparing the Remedial Investigation and Remedial Work Plan; coordinated with the owner, contractors, and the NYSDEC; conducted citizen participation activities; performed waste characterization, waste profiles, and waste management; assisted in developing the Site Management Plan (SMP) for NYSDEC approval.
- Performed waste characterization of a 90,000-cy construction soil stockpile at a municipal sewer facility. Responsibilities included development and implementation of Sampling and Analysis Plan (SAP), evaluation of lab data, preparation of Field Sampling Summary Reports (FSSR), coordination with disposal facilities, and preparation of waste profiles.
- Developed pilot test plans, evaluated pilot test results, and prepared conceptual designs for several air sparge/soil vapor extraction (AS/SVE) systems to treat petroleum and/or chlorinated solvent VOCs. Provided construction oversight for system installation. Performed routine system operation monitoring and evaluated system performance. Prepared system installation and monitoring reports.
- Assisted in the design of a soil remediation plan and performed construction and soil remediation oversight for a metal parts plating and manufacturing facility in Suffolk County, New York. Remediated numerous leaching pools impacted with petroleum compounds and metals. Prepared a UIC Closure Report for USEPA approval.
- Assisted in the design and oversight of indoor underground storage tank abandonment program, leaching pool remediation plan, and managed contractor support for a tape measure manufacturing facility in Suffolk County, New York. SCDHS provided oversight and approval.

Hydrogeologic Evaluations

- Performed well design (gravel pack size, screen size, etc.) for numerous groundwater wells and variable depths on Long Island. Experience includes sieve analyses, well construction and development methods.
- Performed aquifer pumping and slug tests and evaluated hydrologic properties using the computer program AQTESOLV for several sites in New York City and Long Island.

- Participated in multi-day, multi-well aquifer pumping test for New York City Transit (NYCT). Responsible for operating and maintaining data logging equipment, coordinating manual water level measurements, and analyzing resulting drawdown data.
- Performed water level and water quality monitoring at several sites in Nassau and Suffolk Counties. Constructed groundwater elevation contour maps and utilized chemical analytical data to predict contaminant plume migration.
- Supervised drilling, installation and development of groundwater monitoring wells at three sites within Griffiss AFB, NY and numerous sites in New York City and Long Island. Performed aquifer testing and constructed groundwater elevation contour maps to delineate plumes and predict contaminant plume migration.

Landfills

- Managed ongoing groundwater and methane monitoring programs for Town of East Hampton landfills. Responsibilities included field team coordination, communications with the Town, report scheduling, data package review, and report preparation for distribution to the client and NYSDEC.
- Managed and conducted quarterly methane monitoring at Springs-Fireplace Road and Montauk Landfills for the Town of East Hampton. Tabulated resulting data, evaluated historic methane monitoring results, and recommended appropriate actions including methane monitoring well installations and a methane extraction system. Performed off-site methane monitoring on private property confirm methane containment. Prepared quarterly monitoring reports for submittal to the Town and NYSDEC.
- Performed monthly methane monitoring and prepared monitoring reports for all Town of Islip Landfills. Monitoring program included onsite and offsite methane wells, methane collection systems, and flare systems. Data was recorded electronically and downloaded to computer for formatting prior to delivery to Town. Prepared monthly monitoring reports for submittal to the Town and NYSDEC.
- Produced quarterly and annual monitoring reports for all monitoring programs at Town of Smithtown landfill. Project included tabulation and reporting of groundwater and methane monitoring data, solid waste and recycling collection data, yard waste composting operations, and landfill leachate collection and disposal data.

Water Quality Monitoring

- Conducted groundwater monitoring for the Town of Riverhead, including sampling a multi-depth monitoring well network, analysis and interpretation of analytical and hydrogeologic data, and monitoring reporting in accordance with NYSDEC requirements. Responsibilities including sampling, communications with the Town, laboratory data package review, and report preparation for distribution to the client and NYSDEC.
- Conducted investigation and remedial projects at several New York State BCP Sites. Tasks included contaminated soil removal, groundwater remediation and long-term monitoring, groundwater plume evaluation, and preparation and submittal of annual reports to the NYSDEC.
- Coordinated and performed onsite and offsite groundwater monitoring at various petroleum release sites on Long Island, the New York metropolitan area and in Westchester County in accordance with NYSDEC requirements. Utilized resulting stratigraphic, hydrologic, and chemical analytical data to evaluate site conditions. Prepared work plans identifying site history, contaminant characteristics, sampling methods, and site-specific lithology. Monitoring programs generally included installation and sampling of a multi-depth monitoring well network utilizing standard or low flow sampling techniques, analysis and interpretation of analytical and hydrogeologic data, and reporting.
- Performed water level and water quality monitoring at an industrial site in Mattituck, NY. Constructed groundwater elevation contour maps and utilized chemical analytical data to predict contaminant plume migration. Prepared reports, coordinated with the property owner and NYSDEC, and developed a closure plan.
- Conducted numerous investigations and remediation of contaminated cesspool and stormwater drain pool systems in Suffolk County. Fully conversant with SCDHS, SOP 9-95 for investigation and cleanup of leaching pool systems, including Action Levels and Cleanup Standards, groundwater monitoring criteria, and remedial requirements.

Griffiss Air Force Base

- Conducted several Site Investigations for AFCEE. Performed soil and groundwater sampling, aquifer testing, and recommended cleanup procedures necessary for the closure and conversion of the Base. Responsible for compliance with all applicable laws including CERCLA, SARA, RCRA, and NCP.

Roslyn Air National Guard Station

- Conducted several Site Investigations for Roslyn ANGS. Performed soil and groundwater sampling, aquifer testing, and mold evaluations. Prepared reports documenting recommended cleanup procedures necessary for the closure and conversion of the Base. Responsible for compliance with all applicable laws including CERCLA, SARA, RCRA, and NCP.

Health and Safety

- Performed health and safety monitoring at investigation and remediation sites during intrusive activities. Monitoring included calibration and operation of photoionization detectors (PIDs), flame-ionization detectors (FIDs), dust monitors, and combustible gas indicators (CGI). Compared results to applicable action levels and undertook preventative/protective measures as necessary.
- Performed community monitoring, including monitoring for noise, particulates (dust), and organic vapors at several sites throughout New York State. Recorded observations and compared to applicable action levels. Implemented calibration and operation programs and training for noise meters, particulate monitors, PIDs, and FIDs.
- Performed screening for radiation at several sites. Operated Geiger counters in different radiation modes and compared data to background readings.

Miscellaneous Projects

- Performed unexploded ordnance evaluations and mapping for the United States Marine Corps at several munitions ranges in 29 Palms, California, and Camp Lejeune, North Carolina.
- Conducted land survey and mapping for the United States Marine Corps at several artillery ranges in 29 Palms, California and Camp Lejeune, North Carolina.

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Mr. Baldwin is a hydrogeologist with more than twenty five years of experience in the fields of environmental consulting, hydrogeology and geology with particular experience in conducting and supervising environmental investigations and remedial actions at industrial, private, Federal and publicly-owned facilities and sites. Additionally, Mr. Baldwin has experience in evaluating potential environmental impacts of projects including golf courses, housing developments, senior housing, schools and retail shopping centers. For the last several years, Mr. Baldwin's work has focused primarily on sites and facilities located in the Long Island, New York City and Upstate New York areas. He has extensive knowledge and experience pertaining to Long Island's federally-designated sole-source drinking water aquifer system. Mr. Baldwin has extensive experience in evaluating complex laboratory data packages to ensure that they are precise, accurate, repeatable and comparable.

Education

- *Graduate Course Work, San Jose State University, 1985-1988*
- *BA Geology, San Francisco State University, 1982*

Professional Registrations

- *Professional Geologist, PG-000552-G, Commonwealth of Pennsylvania*
- *Certified Professional Geologist, CPG #9158, Amer.Inst. of Prof. Geologists*
- *OSHA Certification, 40-hour Health and Safety Training at Hazardous Waste Sites*
- *OSHA Certification, 8-hour Refresher Health and Safety Training at Hazardous Waste Sites*
- *OSHA Certification, 8-hour Management Training*
- *OSHA Certification, 8-hour Radiation Safety Training*

Continuing Education

- *Princeton Groundwater Hydrogeology and Pollution course*
- *Environmental Law and Regulations Course, U.C. Berkeley Extension*
- *NGWA MODFLOW and MODPATH Modeling Course*
- *NGWA Visual MODFLOW Modeling Course*

Typical Project Experience

Mr. Baldwin has extensive experience in the selection, design, installation and maintenance of a wide range of soil and groundwater remediation systems. Remedial systems have included both active and passive free-product recovery, traditional groundwater pump and treat, soil-vapor extraction, air sparging, bioventing, bioremediation, excavation impacted-soil management and natural attenuation.

Mr. Baldwin has been the principal-in-charge and directly responsible for hundreds of projects related to the wireless telecommunications field. He has overseen the conduct of hundreds of Phase I Environmental Site Assessments (ESAs) and limited Phase II ESAs. He has developed and implemented Soil and Groundwater Management Work Plan to address environmental impairment issues. He has been instrumental in developing appropriate mitigation measures with various project team members including site acquisition, legal counsel and headquarters level staff.

Mr. Baldwin has evaluated the potential environmental impacts of proposed projects including golf courses, housing developments, senior housing, schools, automobile repair facilities and retail shopping centers. The potential impacts included those to groundwater quality from herbicide/pesticide application, disposal of sanitary waste and school laboratory waste and the impacts to soil quality from handling and disposal of hazardous materials, leaking underground storage tanks, historic disposal of hazardous waste and pesticide/herbicide application. These impacts were evaluated through a variety of means including the collection and analysis of soil and groundwater samples, geo- and organic-chemistry modeling, groundwater fate and transport modeling and basic research of materials, their uses and their potential migration pathways. Mr. Baldwin has provided expert witness services for various venues ranging from NYSDEC spill and hazardous waste sites to potential noise impacts.

Mr. Baldwin has been involved in hundreds of subsurface soil and groundwater investigations ranging from Phase I & II Environmental Site Assessments (ESAs) to Remedial Investigations. Investigation and delineation techniques have included soil borings, groundwater monitoring well networks, hydropunch/GeoProbe sampling, surface and bore-hole geophysical methods, soil-gas surveys, aquifer testing, surface water and sediment sampling, waste characterization (soils piles, drums, USTs, ASTs, landfills, etc), test pits, and computer fate and transport modeling. Materials investigated have included petroleum products (heating/fuel oil and gasoline), PCB oils, coal tar, heavy metals, chlorinated solvents, explosives, pesticides, herbicides and buried medical waste.

Mr. Baldwin has been in the forefront of both evaluating and addressing shallow soils on Long Island which have been impacted by pesticides (particularly arsenic) and herbicides. This important issue is particularly of concern due to the re-development of agricultural lands for residential and educational end uses. Mr. Baldwin has work closely with the SCDHS and Town of Brookhaven to develop effective and easily implementable Soil Management Plans.

Mr. Baldwin works closely with the U.S. Environmental Protection Agency (EPA), New York State Department of Environmental Conservation (NYSDEC) Region 1, Region 2, Region 3 and Central Office, New York State Department of Health (NYSDOH), Suffolk County

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Department of Health Services (SCDHS) and Nassau County Department of Health (NCDOH). Mr. Baldwin also works with local planning and review boards including the Town of East Hampton, Town of Southampton, Town of Babylon, Town of Brookhaven, Village of Patchogue, Village of Great Neck and New York City on issues ranging from groundwater quality to historic resources to noise impacts.

Mr. Baldwin's projects include supervising and performing Remedial Investigations/Feasibility Studies (RI/FSs), Interim Remedial Actions (IRMs), and implementation of selected remedies at NYSDEC Class 2 and 2a Inactive Hazardous Waste Disposal sites. Other work, conducted with the NYSDEC, includes evaluating and implementing large-scale groundwater and soil treatment systems to remediate MTBE.

Environmental Data Analyses

Mr. Baldwin has received multiple sessions of environmental geochemistry training provided by environmental geochemists, including physical chemistry, thermodynamics, ionic interactions, complexation, biologic effects, and other basic principles. Training also included field sampling procedures and effects on chemical data chemical analytical methods and equipment, and QA / QC procedures and interpretation.

Mr. Baldwin has reviewed and evaluated numerous soil, groundwater, product, indoor / ambient air and soil vapor chemical analytical datasets, including evaluation of batch and site-specific QA / QC samples, laboratory narratives, comparison to regulatory agency criteria, historic data, and background data.

Mr. Baldwin has been responsible for the development and implementation of numerous Quality Assurance Project Plans (QAPP), including QAPP design, sample delivery group (SDG) evaluations, sampling procedures and sequences, and QA / QC sample preparation/collection.

Mr. Baldwin has attended periodic environmental chemistry training sessions hosted by environmental laboratories and participated in hands-on training in data and QA / QC evaluation.

Mr. Baldwin has prepared Data Usability Summary Reports (DUSRs) for numerous chemical analytical datasets for projects overseen by the USEPA, NYSDEC and other regulatory agencies. Datasets evaluated have included soil, groundwater, soil vapor, indoor air and ambient air.

Mr. Baldwin has performed forensic assessments of historic environmental chemical analytical data to resolve apparent discrepancies with modern data and other dataset inconsistencies.

Mr. Baldwin has interpreted numerous organic parameter datasets to evaluate breakdown sequences, likely original parameters and rates of degradation.

Mr. Baldwin has formulated numerous chemical treatment plans for insitu remediation of environment contaminants, including assessment of contaminant concentrations and distribution, chemical processes and indicators, natural attenuation indicators, additional stochiometric demands and hydrogeologic factors.

Selected Project Experience

Project Director for Major NY Metro Airport Project

Mr. Baldwin is part of a large project team which has been tasked by a coalition of major airlines to evaluate the efficacy of re-instituting the delivery of jet fuel via a water-borne barge delivery system. As part of the project, Mr. Baldwin evaluated the requirements for permits from various agencies including the NYSDEC, USACE, NYSDOS and New York City. Mr. Baldwin has also been providing ongoing evaluations of potential project design scenarios which required the evaluation of existing data sets (e.g., bathymetric surveys, former permits, etc.), conducting cost-benefit analyses assuming various dredge spoil disposal options, etc. This is a major, on-going project with long-term ramifications at all of the major New York Metropolitan airport facilities.

Project Director for Ferry Terminal Project, Glen Cove, NY

The City of Glen Cove Industrial Development Agency (IDA) has acquired Federal Stimulus Funding to develop a ferry terminal along their waterfront area in order to provide passenger ferry service from the North Shore of Long Island to the New York Metropolitan Area, and potentially to selected Connecticut locations. The selected site is part of the former Li Tungsten and Captains Cove Federal and New York State Department of Environmental Conservation (NYSDEC) Superfund Sites. Both sites were subject to remedial actions and were "closed" by both the United States Environmental Protection Agency (USEPA) and NYSDEC circa 2000. A wide range of contaminant types were potentially associated with both sites including solvents, petroleum, oils, heavy metals and radiation. The

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NYSDEC and IDA required the preparation of a Soil Management Plan (SMP) as potentially-impacted soils and bottom sediments were potentially going to be encountered as part of the project. Mr. Baldwin successfully prepared and executed a Dredging / Excavation (D / E) Work Plan which detailed the requirements to field screen all excavated soils and dredge spoils with a radiation detector, photo-ionization detector (PID) and by visual / olfactory inspection. Based upon the results of the field screening, excavated soils and dredge spoils were to be addressed by one of the following: 1) cleared for use as on-site backfill materials; 2) disposed of as non-hazardous, regulated materials; or, 3) as hazardous waste. Mr. Baldwin was also responsible for designing and implementing a sediment sampling and analyses program to: 1) evaluate ambient creek bottom conditions with respect to a wide-range of contaminant types; and, 2) confirm the chemical conditions of the "new sea floor" prior of dredging and excavation activities. Mr. Baldwin also successfully applied for a received a NYSDEC Case-specific Beneficial Use Determination (BUD) finding as part of a cost-effective materials disposal option, as well as successfully applying for a NYSEC Long Island Well permit required as part of continuing project support activities.

Project Director for Marina Property, Glen Cove, NY

Mr. Baldwin was responsible for conducting turn-key environmental and engineering services for this active marina facility. The services included: 1) conducting a high-resolution bathymetric survey of the marina's basin in order to evaluate effective depths / vessel mooring and access restrictions; 2) successful acquisition of a United States Army Corps of Engineers (USACE) / NYSDEC Joint Application permit to repair a failed bulk head; 3) preparation of a full engineered design package to rebuild a failing dock-side water supply system; 4) conduct of a land-ward and marine geotechnical evaluation to determine the suitability of sub-surface materials for future construction projects; 5) collection and analyses of multiple bottom sediment samples to evaluate same for dredging issues; and, 6) participation in the marina design team. As part of this, Apex participated in multiple site meetings to discuss dock geometry, future infrastructure repair requirements, future regulatory permitting requirements, travel lift slip issues, potential future dredging protocols, etc.

Project Director for Marina Property, Patchogue, NY

Mr. Baldwin was responsible for providing turn-key environmental and engineering services for this active marina facility. These services included: 1) conduct of a high-resolution bathymetric survey of the marina's basin in order to evaluate effective depths / vessel mooring and access restrictions; 2) Preparation and submission of a USACE / NYSDEC Joint Application permit for maintenance dredging /marina infrastructure improvement; 3) preparation of a full engineered design package to rebuild a failing travel lift rail system; 4) contractor oversight; and, 5) Participation in the marina design team. As part of this, Apex has participated in multiple site meetings to discuss dock geometry, future infrastructure repair requirements, future regulatory permitting requirements, travel lift slip issues, potential future dredging protocols, etc.

Project Director for 10-Year Dredging and Beach Nourishment Program, Yarmouth, MA

Mr. Baldwin has been responsible for providing permit application preparation services for the Town of Yarmouth on Cape Cod. There are currently 37 Town-wide sites which are subject to multiple local, State and Federal permits for maintenance dredging and beach nourishment activities. The Town of Yarmouth's wetlands and waterways represent a highly-valuable, yet fragile ecosystem/resource. Current and historic dredging and beach nourishment practices on a site-by-site basis over the past decades have resulted in a confusing and difficult-to-manage situation with respect to this highly-complex system. Apex recommended that a 10-Year Town-wide Dredging and Beach Nourishment Program be approved and implemented wherein all 37 Yarmouth and Dennis dredge and beach nourishment sites are included/managed under one comprehensive management program. This will allow for effective use of Town resources, as well as ensuring that the dredge/nourishment sites are appropriately managed within appropriate regulatory guidelines. Again, the overall goal of this program is to allow the Town of Yarmouth to manage more effectively its waterways and beaches.

New York State Department of Environmental Conservation, Groundwater Evaluation and Treatment, Taconic Developmental Disabilities Services Office, Wassaic, NY

Worked on a public water supply site in New York conducting a full-scale groundwater investigation in the vicinity of the facility's supply wells which have been impacted by MTBE. Multiple well clusters were installed surrounding the high-capacity wells to evaluate subsurface conditions. One impacted well was converted to a remediation well to provide hydraulic capture of the MTBE plume prior to its impacting the remaining downgradient wells. A large-scale granulated-activated carbon (GAC) system was installed to treat the water extracted from the well. A 40,000-pound GAC unit was also installed in standby mode to address the facility's drinking water should the concentrations of MTBE ever warrant treatment. Several rounds of groundwater investigation were also conducted to confirm the MTBE source area as a nearby gasoline service station. Pilot testing was conducted and an on-site groundwater treatment system was being designed to provide source area remediation.

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New York State Department of Environmental Conservation, Potable Water Treatment System, Village of Brewster, NY

Designed and constructed a supplemental water treatment system at a public water supply plant to address MTBE contamination in the system prior to its distribution. The treatment system consisted of a large air stripping tower, installed in line with an existing air stripper to remove the MTBE to non-detectable concentrations. Additionally, a source area investigation was being conducted to determine the potential source(s) of the MTBE contamination.

New York State Department of Environmental Conservation, Potable Water Treatment System, Sullivan Correctional Facility, Fallsburg, NY

Worked with the NYSDEC to evaluate, design and install a supplemental water treatment system to address MTBE present in a New York State Correctional Facility's drinking water. All four of the facility's wells were impacted. Several remedial options including utilizing GAC or air strippers were evaluated. The selected alternative was a 20,000-pound GAC system which was installed inline and in standby mode.

New York State Department of Environmental Conservation, Large Scale Investigation / Remediation Project, Lake Success, New York

Managed large-scale site activities at a major Long Island aerospace facility. Activities included operations of on-going IRMs (soil vapor extraction and groundwater extraction and treatment systems); citizen participation activities; design and implementation of on-site remedies (drywell removal and soil excavation, installation of fencing and an 1,800 gallon per minute groundwater extraction and treatment system); on- and off-site RIs; regulatory compliance activities; client interactions; multi-task, multi-contractor scheduling and management; and general project management. As part of the RI, prepared a large three-dimensional groundwater flow and particle model utilizing Visual MODFLOW and MODPATH. The model was then utilized to design an optimum groundwater treatment system.

Prepared a scoping plan and RI report for an Inactive Hazardous Waste Disposal site in New York under the NYSDEC Superfund program. The work involved evaluating the nature and extent of halogenated solvents in soil and groundwater both on and off of the site. Was responsible for overseeing all phases of the report preparation, including communications with the NYSDEC and for implementing the citizen participation program. Also involved in the preparation of the FS report and selection of the final remedy which included the use of an innovative groundwater treatment technology, in-well air stripping.

Project Director for Marina Property Assessment, Hampton Bays, NY

The owner of this active marina facility was served with a Notice of Violation (NOV) by the NYSDEC for various environmental issues, mostly related to on-site petroleum storage / delivery systems, as well as impacts potentially associated with marine-activity uses such as vessel bottom paint removal and application, use of preserved woods, vessel maintenance activities, housing-keeping issues, etc. Apex was responsible, with input from the NYSDEC, for developing and implementing a Site Investigation Program to investigate potential soil and groundwater impacts associated with the aforementioned on-site practices. Based upon the results of the investigation, Apex was able to conclude that the fuel distribution system was not leaking and that groundwater was not deleteriously impacted. Minor areas of impacted soil, likely from vessel bottom cleaning activities, were identified. Apex prepared and implemented a NYSDEC-approved Remedial Action Plan which included the following: 1) targeted removal of metals-impacted soils; 2) conversion of the existing gasoline / diesel underground storage tank (UST) / sub-grade distribution system to non-regulated biofuel use; 3) confirmation of facility use of aboveground storage tanks (ASTs) equipped with double-walled containment, 4) permitting a vessel-washing rinsate containment/treatment system; and, 5) use of asphaltic/concrete paving as engineering controls to minimize future potential user contact with remaining impacted soils.

Project Manager for Dredge Spoils Quality Investigation, New London, CT.

Mr. Baldwin was retained by a not-for-profit group concerned that the planned disposition of dredge spoils from the Thames River associated with the US Navy nuclear submarine base would negatively impact the lobster fishery of off Fishers Island in the Long Island Sound. Mr. Baldwin directed the field team which collected gravity cores from along the portion of the Thames River slated for dredging. Mr. Baldwin utilized the services of a nationally-recognized laboratory to analyze the bottom sediment samples for a wide-range of contaminants. Other than potentially elevated concentrations of dioxins, the bottom sediments proved to be relatively free of anthropogenic contaminants.

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Project Director for Marina Property Assessment, Center Moriches, NY.

Mr. Baldwin was responsible for conducting an evaluation of environmental conditions at this active marina which was under consideration for re-development with residential housing. Issues evaluated included soil and groundwater conditions associated with on-site vessel repair, bottom paint application/removal, USTs and dredge spoils. Based upon the results of the investigation, impacted soils were excavated, transported to and disposed of at an appropriately-licensed facility. The dredge spoils were not impacted above regulatory criteria and required not special actions. Based upon the results of the investigation and remediation activities, the Suffolk County Department of Health Services approved the site for residential re-development.

Senior Project Manager for Former La Salle Military Academy, Oakdale, NY.

Mr. Baldwin was part of project team that conducted a feasibility study for the redevelopment of a portion of this former educational facility. A major component of the Feasibility Study was the evaluation of an on-site boat basin and associated building infrastructure (e.g., a team house) with respect to potential dredging requirements, permitting issues, bottom sediment conditions and marina design.

Former Hess Terminal, Patchogue River, Patchogue, NY.

Mr. Baldwin conducted a site investigation program at this former major fuel oil terminal site to evaluate the efficacy of same for residential re-development, which would have included a residence-use only marina. The site had been the subject of previous site remediation activities, and the NYSDEC had closed its spill file assuming that the site would only be utilized for commercial or industrial purposes. Soil, groundwater, soil vapor and outdoor ambient air samples were collected and analyzed as part of this evaluation. The results of the investigation indicated that additional soil remediation would have been required to make the property suitable for residential re-development. Additionally, the NYSDEC would have likely required the installation and operation of sub-slab depressurization systems for all on-site residential buildings prior to their approving the plans for the site.

Former Lumber Yard Facility, Arverne, NY.

Mr. Baldwin provided environmental consulting services associated with planned redevelopment of a six-acre parcel of land located on the Barbados Basin. The client proposed to construct and operate a boat marina with associated catering hall/shopping complex on this former lumber yard. An exhaustive site investigation including a geophysical survey, soil and groundwater testing and wetlands/permit evaluation was conducted in accordance with the New York City Environmental Quality Review (CEQR) regulations. Also conducted an exhaustive feasibility study regarding stormwater runoff /sanitary waste disposal options. The results of the investigation indicated that historic fill materials on the subject property contained actionable concentrations of lead. Prepared a site specific Soil Management Plan for submission to the New York City Department of Environmental Protection (NYCDEP). The NYCDEP agreed with the remedial option of capping the lead-impacted fill materials under two feet of clean fill to prevent future site users from coming into contact with same.

Dielectric Fluid Release, Village of Port Washington, NY.

During excavation activities being conducted for installing a team building at a Town-owned marina facility, Town of North Hempstead personnel encountered and broke a major, unmarked buried electric line. This rupture caused the immediate and catastrophic release of an estimated 30,000 gallons of dielectric fluid. Mr. Baldwin was retained by the Town of North Hempstead to oversee the cleanup of surface materials, as well as the evaluation of dielectric fluid floating on top of the water table. Adsorbent booms were placed and maintained along the associated wetlands and all identified areas of impacted soils were remediated. A series of monitoring wells were installed and evaluated to ensure the absence of dielectric fluid floating on the water table which would eventually discharge to the adjacent water way. Based upon the work conducted, the released dielectric fluid did not contain polychlorinated biphenyls (PCBs), and the NYSDEC was satisfied that the released had been adequately remediated.

Brownfield Re-development, Greenport, NY.

Mr. Baldwin managed one of the few active NYSDEC Brownfield sites on Long Island utilizing New York State Environmental Bond Act funding. The work included evaluating a large Village-owned undeveloped water-front property for the presence of undocumented USTs utilizing surface geophysical techniques, removing the USTs and associated impacted soils and preparing Site Investigation and Remedial Action reports. Responsible for all regulatory interactions, subcontractor management and Citizen Participation Plan implementation. The work was conducted concurrently with the redevelopment of the site for use as a public park including a water-front walk way, amphitheater and historic carousel.

Preliminary Site Assessment, Concord Naval Weapons Station, Concord, NY.

Mr. Baldwin was the Project Manager responsible for conducting an environmental investigation in the portion of the Concord Naval Weapons Station known as the Tidal Area. The investigation included collecting and analyzing soil, sediment and groundwater samples from adjacent to and within on-site wetlands. Mr. Baldwin also utilized an aerial

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magnetic survey to identify anomalies on a nearby off-shore island which could potentially represent buried railcars full of munitions which were reportedly buried after a major WW II explosion which killed hundreds of people. Mr. Baldwin conducted the field investigation which evaluated the nine magnetic anomalies which turned out to be ship wrecks, a crane, gas well heads, miscellaneous debris, etc. No anomalies representative of buried rail cars were observed. Mr. Baldwin was responsible for conducting a geotechnical evaluation of the materials making up the island, known as Bay Muds, which due to their very poor shear strength, could not have been excavated sufficiently to allow for burial of the rail cars. Therefore, it was Mr. Baldwin's belief that the reported burial of the rail cars full of munitions was incorrect.

Site Investigation Activities, Saint George Ferry Terminal, Staten Island NY

Mr. Baldwin was responsible for implementing a groundwater evaluation of the major ferry terminal site to evaluate the most efficacious means of removing two, large out-of-service No. 6 fuel oil USTs. The work including setting up and conducting a tidal influence study, major aquifer pumping test and conducting three-dimensional groundwater modeling. Evaluated and recommended the use of sheet piling surrounding the two USTs to isolate same from the surrounding aquifer materials and protect the adjacent buildings. The recommended remedial approach was implemented and the USTs were successfully removed with minimal de-watering required and the adjacent buildings were successfully protected.

Bottom Sediment Evaluation, Lake Success, NY

As part of a major environmental investigation of a nearby New York State Superfund site, Mr. Baldwin was responsible for the collection and analysis of bottom sediment samples from Lake Success and two on-site stormwater recharge basins. The results of the investigation indicated that the bottom sediment conditions in the on-site recharge basins and Lake Success were very similar leading to the conclusion that the observed impacts to the basins were likely non-site related and typical of stormwater runoff. Further, a bathymetric survey and at-depth water quality investigation was conducted for Lake Success.

Stormwater Retention Basin Bottom Sediment Evaluation, Lake Success, NY

As part of a major environmental investigation of a New York State Superfund site, Mr. Baldwin was responsible for evaluating the thickness of potentially impacted bottom sediments in two on-site stormwater recharge basins. The basins had reportedly been subject to discharge on impacted non-contact cooling waters and other site process waters. As a cost-saving measure, and in order to collect as much data as quickly as possible, Apex utilized an innovative investigation approach of transecting the surfaces of both frozen basins with a ground-penetrating radar (GPR) units. The GPR data was then cross-correlated with direct field measurements collected utilizing more standard techniques (e.g., gravity coring, penetration tests, etc.) to confirm the accuracy of the geophysical technique. The final data set was utilized to evaluate potential remedial techniques and costs.

Terrestrial/Martian Analogue Evaluation, Dry Valley Lakes, Antarctica

While at the United States Geological Survey (USGS), Mr. Baldwin participated on a project team which evaluated the physical and biota conditions of ice-covered lakes in the Dry Valley Region of Antarctica. Such conditions (e.g., ice-covered lakes in an otherwise frozen, low-precipitation region) were believed to be a strong terrestrial analogue for potential lakes which may have formed in the distant past in the Valles Marineris Canyon System on Mars. The biota of the Dry Valley ice-covered lakes was dominated by primitive stromatolites mounds, with much of the sedimentary section dominated by sand and gravel which had migrated through the ice cover. The overall purpose of the work was to assist NASA in evaluating future Mars landing sites with the highest potential for providing fossilized evidence for life on Mars.

Riverine Sediment Evaluation, Thames River, New London, CT

Mr. Baldwin was retained by a not-for-profit group concerned that the planned disposition of dredge spoils from the Thames River associated with the US Navy nuclear submarine base would negatively impact the lobster fishery of off Fishers Island in the Long Island Sound. Mr. Baldwin directed the field team which collected gravity cores from along the portion of the Thames River slated for dredging. Mr. Baldwin utilized the services of a nationally-recognized laboratory to analyze the bottom sediment samples for a wide-range of contaminants. Other than potentially elevated concentrations of dioxins.

Additional information upon request

APPENDIX C

**HEALTH AND SAFETY PLAN
INCLUDING
COMMUNITY AIR MONITORING PLAN**

APPENDIX C HEALTH AND SAFETY PLAN

This worker Health and Safety Plan (HASP) has been prepared by FPM Group (FPM) for New York State Department of Environmental Conservation (NYSDEC) Brownfield Program Site #C152238, identified as 1735 Express Drive North located in Hauppauge, New York (Site). This HASP is part of the Remedial Investigation (RI) Work Plan and includes measures for the protection of worker health and safety during RI activities. A Community Air Monitoring Plan (CAMP) is also included to address potential issues that may affect the Site community.

C.1 Worker Health and Safety Plan

C.1.1 Introduction

This HASP has been written for compliance with "OSHA Hazardous Waste Operations Standards (29 CFR 1910.120)", the guidance documents, "Standard Operating Safety Guidelines (Office of Solid Waste and Emergency Response, 1992)" and the "Occupational Safety and Health Guidance Manual for Hazardous Waste Activities" (U.S. Department of Health and Human Services, 1985).

C.1.2 Scope and Applicability of the HASP

This HASP is designed to be applicable to locations where soil borings, soil vapor sampling, and well installation and sampling are performed at the Site by all parties that either perform or witness the activities. This HASP may also be modified or amended to meet specific needs of the proposed work.

This HASP will detail the Site safety procedures, Site background, and safety monitoring. Contractors will be required to adopt this HASP in full or to follow an FPM-approved HASP. The Health and Safety Officer (HSO) will be present at the Site to inspect the implementation of the HASP; however, it is the sole responsibility of the contractor(s) to comply with the HASP.

The HASP has been formulated as a guide to complement professional judgment and experience. The appropriateness of the information presented should always be evaluated with respect to unforeseen Site conditions which may arise.

C.1.3 Site Work Zone and Visitors

The Site work zone (a.k.a. exclusion zone) during the performance of the borings, well installation, and sampling activities will be a 30-foot radius about the work location. This work zone may be extended if, in the judgment of the HSO, Site conditions warrant a larger work zone.

No visitors will be permitted within the work zone without the consent of the HSO. All visitors will be required to be familiar with, and comply with, the HASP. The HSO will deny access to those whose presence within the work zone is unnecessary or those who are deemed by the HSO to be in non-compliance with the HASP.

All Site workers, including the contractors, will be required to have 40-hour hazardous material training (eight-hour refresher courses annually), respirator fit test certification, and current medical surveillance as stated in 29 CFR 1910.120.

The HSO will also give an on-Site health and safety discussion to all Site personnel, including the contractors, prior to initiating the Site work. Workers not in attendance during the health and safety talk will be required to have the discussion with the HSO prior to entering the work zone.

Emergency telephone numbers and directions to the nearest hospital are shown in Table C.1.3.1 and will be kept at the Site in the possession of the HSO and will be available to all Site workers and visitors.

C.1.4 Key Personnel/Alternates

The project coordinator and Quality Assurance Officer (QAO) for this project is Stephanie Davis. The project manager will be John Bukoski. Mr. Bukoski will also act as the HSO. An assistant project manager and assistant health and safety officer may be designated for the field activities.

C.1.5 Site Background

Based on the Site history and previous analyses of samples, the known chemicals present at the Site include volatile organic compounds (VOCs). These chemicals are present in soil, groundwater, and soil vapor at the Site. Subsurface investigation activities will include the collection of soil, groundwater and soil vapor samples.

C.1.6 Task/Operation Health and Safety Analysis

This section presents health and safety analyses for the intrusive installation and sampling tasks. In general, FPM will employ one to two persons at the Site. No soil borings, well installation, or other Site operations will be conducted by contractors without the presence of an FPM representative on Site. In the event that the HSO is not present on the Site, the Assistant HSO will implement the HASP. Levels of personal protection mentioned in this section are defined in Section C.1.9.

Soil Boring/Well Installation/Soil Vapor Implant Installation Safety Analysis

Soil borings and well and soil vapor implant installation will be performed by a drilling/direct-push company or FPM personnel. FPM personnel will be present to observe the soil boring, soil vapor implant, and well installation activities, to conduct appropriate monitoring, and to coordinate installation activities with ongoing onsite activities and personnel.

Investigation activities will be undertaken during normal operations at the Site and precautions will be taken to protect Site employees from installation equipment use and Site contamination. In the case of the soil borings to be performed within the building, these borings will generally be performed at night or on weekends when Site activities and the number of onsite employees are minimal. Soil vapor implant installation will be conducted by FPM personnel using hand-operated equipment; this work will be conducted during normal business hours as the impacts from this operation are minimal. No employees will be allowed within the investigation work zones and intrusive work will be scheduled within each area of the building in a manner so as to reduce or eliminate the potential for employees to be present in that area. Exhaust from powered equipment will be ducted to the outside of the building and additional ventilation (fans) will be used if necessary to further reduce exhaust or vapors. Monitoring will be conducted, as described below, and steps will be taken to ensure that any emissions are reduced to acceptable levels. Intrusive investigation areas within the building will be covered with plastic during intrusive activities so as to contain soil cuttings and keep the work areas clean. All soil cuttings will be contained and managed as described in the RI Work Plan.

**TABLE C.1.3.1
EMERGENCY TELEPHONE NUMBERS AND
DIRECTIONS TO ST CATHERINE OF SIENA HOSPITAL**

Police	911
Ambulance	911
Poison Control Center	800-222-1222
St Catherine of Siena Hospital (Emergency Room)	631-862-3000

FPM Contact Personnel (631-737-6200)

Dr. Kevin J. Phillips, P.E.	Cell # 631-374-6066
Stephanie Davis, Project Manager.....	Cell # 516-381-3400
John Bukoski	Cell # 516-381-3535

Directions to St Catherine of Siena Hospital

**50 Route 25A
Smithtown, NY 11787
Tel: 631-862-3000**

Exit the Site and turn right onto Express Drive North. Turn right onto Caleb's Path. Turn right onto Old Willets Path and continue for 2.7 miles. Turn right onto Route 25 Jericho Turnpike and continue for 1.4 miles. Turn left on Route 25A St Johnland Road and continue for approximately one mile. The Hospital is on the left; follow the signs to the Emergency Room.



Direct push or hollow-stem auger tooling will be advanced into unconsolidated glacial deposits consisting primarily of sand; groundwater is anticipated to be encountered at a depth of approximately 82 feet below grade at the Site. To minimize the potential for dust inhalation during soil boring/well/soil vapor implant installation, interior locations will be covered with plastic. For exterior locations, the HSO will assess wind, vegetation, and soil moisture conditions and, if it is deemed necessary by the HSO, the affected area will be wetted with potable water. If this measure is determined to be ineffective in exterior locations, the HSO may decide to upgrade personal protection to Level C respiratory protection to include respirators with dust cartridges. If extremely windy and dusty conditions exist that cannot be successfully controlled by dust suppression with potable water, then the HSO may choose to postpone the well installation until such time as conditions improve.

Organic vapor concentrations will be monitored in the work zone by utilizing a Photovac MicroTIP PID. The PID will be "zeroed" by exposing the PID to ambient air prior to drilling and the upper range of calibration will be established by calibrating at 98 to 100 parts per million (ppm) of isobutylene. Background organic vapor concentrations will then be established in the work zone prior to well installation and recorded in the HSO field book. Upon commencement of well installation, PID readings will be obtained in the workers' breathing zone. Readings will be obtained following the initial auger/rod advance into the ground and every five feet thereafter. At the discretion of the HSO, PID readings may be obtained more frequently. All readings and observations will be recorded in the HSO field book. PID air monitoring will be conducted by FPM personnel. Steady-state PID readings greater than five ppm in the worker's breathing zone will require upgrading to Level C personal protective equipment. Steady-state readings, for this purpose, will be defined as readings exceeding five ppm above background for a minimum of ten seconds at points approximately one foot above and then around the borehole opening. These points will define the worker's breathing zone. Level C personal protection will be implemented including full-face air-purifying respirators with dust and organic vapor cartridges (personal protective equipment will be described in greater detail in Section C.1.9). All FPM personnel and contractors must be properly trained and fit tested prior to donning respirators.

If PID readings exceed steady-state levels greater than 50 ppm above background or any conditions exist for which the HSO determines require Level B personal protective equipment, all work at the Site will cease immediately and all personnel will evacuate the work zone. Evacuation will occur in the upwind direction if discernable. Specific evacuation routes will be discussed prior to commencement of work at each location based on work location and wind direction and an evacuation meeting place will be determined. Wind-direction telltales will be placed in the work zone to monitor wind direction. Level B conditions are not anticipated to be encountered; however, if level B conditions arise, no Site work will be performed by FPM or contractors and a complete evaluation of the operation will be performed and this HASP will be modified.

All personnel will be required to wear chemical-resistant nitrile gloves when the potential for dermal contact with the soil or groundwater is possible. This will include handling rods or augers retrieved from the borehole. Dermal contact with soil and groundwater and equipment that has been in contact with soil and groundwater will be avoided.

Soil and Soil Vapor Sampling Safety Analysis

Intrusive sampling activities, including soil sampling and obtaining soil vapor samples, will be performed by a well drilling/direct-push contractor or by FPM personnel. FPM personnel will be present to coordinate/oversee sampling activities conducted by contractor personnel.

As noted above, intrusive sampling activities will be undertaken during normal operations at the Site and precautions will be taken to protect Site employees from sampling equipment use and Site contamination. In the case of the soil sampling to be performed within the building, the soil borings will generally be performed at night or on weekends when Site activities and the number of onsite employees are minimal. Soil vapor sampling will be conducted by FPM personnel during normal business hours; the impacts from this operation are minimal. No employees will be allowed within the investigation work zones and soil sampling work will be scheduled within each area of the building in a manner so as to reduce or eliminate the potential for employees to be present in that area. Exhaust from powered equipment will be ducted to the outside of the building and additional ventilation (fans) will be used if necessary to further reduce exhaust or vapors. Monitoring will be conducted, as described below, and steps will be taken to ensure that any emissions are reduced to acceptable levels. Soil sampling areas within the building will be covered with plastic during intrusive activities so as to contain soil cuttings and keep the work areas clean. All soil cuttings will be contained and managed as described in the RI Work Plan.

Standard work gloves will be used by sampling personnel during handling of all sampling equipment. The HSO will monitor the work zone and ensure proper glove protection is in place.

To minimize the potential for dust inhalation during soil sampling activities, the HSO will assess wind, vegetation, and soil moisture conditions and, if it is deemed necessary by the HSO, the affected area will be wetted with potable water. If this measure is determined to be ineffective, the HSO may decide to upgrade personal protection to Level C respiratory protection to include respirators with dust cartridges. If extremely windy and dusty conditions exist that cannot be successfully controlled by dust suppression with potable water, then the HSO may choose to postpone the subsurface investigation activities until such time as conditions improve.

During intrusive sampling activities organic vapor concentrations will be monitored in the work zone by utilizing a Photovac MicroTIP (or equivalent) PID. The PID will be "zeroed" by exposing the PID to ambient air prior to sampling and the upper range of calibration will be established by calibrating at 98 to 100 parts per million (ppm) of isobutylene. Background organic vapor concentrations will then be established in the work zone prior to intrusive activities and recorded in the HSO's field book. Upon commencement of subsurface sampling activities, PID readings will be obtained in the workers' breathing zone. Readings will be obtained following the initial auger/rod advance into the ground and every five feet thereafter. At the discretion of the HSO, PID readings may be obtained more frequently. All readings and observations will be recorded in the HSO field book. PID air monitoring will be conducted by FPM personnel. Steady-state PID readings greater than five ppm in the worker's breathing zone will require upgrading to Level C personal protective equipment. Steady-state readings, for this purpose, will be defined as readings exceeding five ppm above background for a minimum of ten seconds at points approximately one foot above and then around the borehole opening. These points will define the worker's breathing zone. Level C personal protection will be implemented including full-face air-purifying respirators with dust and organic vapor cartridges (personal protective equipment will be described in greater detail in Section C.1.9). All FPM personnel and contractors must be properly trained and fit tested prior to donning respirators.

If PID readings exceed steady-state levels greater than 50 ppm above background or any conditions exist for which the HSO determines require Level B personal protective equipment, all work at the Site will cease immediately and all personnel will evacuate the work zone. Evacuation will occur in the upwind direction if discernible. Specific evacuation routes will be discussed prior to commencement of work at each location based on work location and wind direction and an evacuation meeting place will be determined. Level B conditions are not anticipated to be encountered; however, if level B conditions arise, no Site work will be performed by FPM or contractors and a complete evaluation of the operation will be performed and this HASP will be modified.

Water Level Measurement and Sampling Safety Analysis

Water level measurements and groundwater sampling activities will be performed by FPM personnel. In general, FPM will employ one to two persons at the Site. No water level measurements or sampling activities are anticipated to be performed by contractors. All groundwater sampling activities will be conducted at exterior locations and no onsite employees will be permitted in the work areas.

Organic vapor concentrations will be monitored in the work zone during groundwater sampling by utilizing a PID. The PID will be "zeroed" by exposing the PID to ambient air prior to sampling and the upper range will be calibrated using 98 to 100 ppm isobutylene. Background concentrations will then be established in the work zone prior to initiating work and recorded in the HSO field book. Upon initiating work, PID readings will be obtained from the vicinity of the sampling areas. At the discretion of the HSO, PID readings may be obtained more frequently. All readings and observations will be recorded in the HSO field book. PID air monitoring will be conducted by FPM personnel.

Steady-state PID readings greater than five ppm in the worker's breathing zone will require upgrading to Level C personal protective equipment, as described above. Upon encountering PID levels greater than 50 ppm above background in the worker's breathing zone, all personnel will be evacuated from the work zone in the upwind direction. Specific evacuation routes will be discussed prior to commencement of work at each location based on work location and wind direction, as discussed above. Level B conditions are not anticipated to be encountered; however, if Level B conditions arise, no Site work will be performed by FPM or contractors and a complete evaluation of the operation will be performed and this HASP will be modified.

All personnel will be required to wear chemical-resistant gloves (such as butyl or nitrile) when the potential for dermal contact with groundwater is possible. This will include cleaning and handling of retrieved sampling equipment, water level indicators, bailers, and/or rope from the boreholes or wells. Dermal contact with groundwater and equipment that has been in contact with groundwater will be avoided. For handling sample containers, thin nitrile gloves may be used if dexterity is required and if there is no need for "hot work". In addition, eye protection will be worn by samplers during periods when the potential for splashing of groundwater is present (such as during well purging).

Other Safety Considerations

- Noise

During operations that may generate potentially harmful levels of noise, the HSO will monitor noise levels with a Realistic[™] hand-held sound level meter. Noise levels will be monitored in decibels (dBs) in the A-weighted, slow-response mode. Noise level readings which exceed the 29 CFR 1910.95 permissible noise exposure limits will require hearing protection (see Table C.1.6.1 for Permissible Noise Exposures).

**TABLE C.1.6.1
PERMISSIBLE NOISE EXPOSURES***

<u>Duration Per Day Hours</u>	<u>Sound Level dBA Slow Response</u>
8	90
6	92
4	95
3	97
2	100
1.5	102
1	105
½	110

Notes:

When the daily noise exposure is composed of two or more periods of noise exposure of different levels, their combined effect should be considered, rather than the individual effect of each. If the sum of the following fractions: $C_1/T_1 + C_2/T_2 + \dots + C_n/T_n$ exceeds unity, then, the mixed exposure should be considered to exceed the limit value. C_n indicates the total time of exposure at a specified noise level, and T_n indicates the total time of exposure permitted at that level.

Exposure to impulsive or impact noise should not exceed 140 dB peak sound pressure level.

*Standards derived from 29 CFR 1910.95

Hearing protection will be available to all Site workers and will be required for exceedance of noise exposure limits. The hearing protection will consist of foam, expansion-fit earplugs (or other approved hearing protection) with a noise reduction rating of at least 29 dB. Hearing protection must alleviate worker exposure to noise to an eight-hour time-weighted average of 85 dB or below. In the event that the hearing protection is inadequate, work will cease until a higher level of hearing protection can be incorporated.

- Slip/Trip/Fall Preventative Measures

To reduce the potential for slipping, tripping, or falling, the work zone will be kept clear of unnecessary equipment. In addition, all Site workers will be required to wear work boots with adequate tread to reduce the potential for slipping (work boots must be leather or chemical-resistant and contain steel toes and steel shanks).

- Insects

Potential insect problems include, but are not limited to stinging insects such as bees, wasps, and hornets. Prior to commencement of work, each work area will be surveyed for nests and hives to reduce the possibility of disturbing stinging insects. In addition, each Site worker will be asked to

disclose any allergies related to insect stings or bites. The worker will be requested to keep his or her anti-allergy medicine on Site.

- Potential Electrical and Other Utility Hazards

Potential electric hazards consist mainly of overhead and underground power lines. Other site utilities that may present hazards include telephone lines, gas lines, sewer lines, water lines, and other overhead or underground utilities. Prior to commencement of work at the Site, all soil borings and well installation locations will be inspected with respect to overhead lines. Soil borings and well installation work involving heavy equipment will not be performed when the horizontal distance between the equipment and overhead wires is less than 30 feet.

Underground potential utility hazards will be minimized by contacting the One-Call service to provide markouts of the utilities beneath adjoining public streets.

- Heat/Cold Stress

Heat stress may become a concern especially if protective clothing is donned that will decrease natural ventilation. To assist in reducing heat stress, an adequate supply of water or other liquids will be staged on the Site and personnel will be encouraged to rehydrate at least every two hours even if not thirsty. In addition, a shady rest area will be designated to provide shelter during sunny or warm days and Site workers will break for at least 10 minutes every two hours in the rest area, and, in very hot weather, workers wearing protective clothing may be rotated.

Indications of heat stress range from mild (fatigue, irritability, anxiety, decreased concentration, dexterity or movement) to fatal. Medical help will be obtained for serious conditions.

Heat-related problems are:

- Heat rash: caused by continuous exposure to heat and humid air and aggravated by chafing clothes. Decreases ability to tolerate heat.
- Heat cramps: caused by profuse perspiration with inadequate fluid intake and chemical replacement (especially salts). Signs: muscle spasm and pain in the extremities and abdomen.
- Heat exhaustion: caused by increased stress on various organs to meet increased demands to cool the body. Signs: shallow breathing; pale, cool, moist skin; profuse sweating; dizziness and lassitude.
- Heat stroke: the most severe form of heat stress. Can be fatal. Medical help must be obtained immediately. Body must be cooled immediately to prevent severe injury and/or death. Signs: red, hot, dry skin; no perspiration; nausea; dizziness and confusion; strong, rapid pulse; coma.

Cold exposure is a concern if work is conducted during cold weather, marginally cold weather during precipitation periods, or moderate to high wind periods. To assist in reducing cold exposure the following measures will be taken when cold exposure concerns are present:

- All personnel will be required to wear adequate and appropriate clothing. This will include head gear to prevent the high percentage loss of heat that occurs in this area (thermal liners for hard hats if hard hats are required).

- A readily-available warm shelter will be identified near the work zone.
- Work and rest periods will be scheduled to account for the current temperature and wind velocity conditions.
- Work patterns and the physical condition of workers will be monitored and personnel will be rotated, as necessary.
- Indications of cold exposure include shivering, dizziness, numbness, confusion, weakness, impaired judgment, impaired vision, and drowsiness. Medical help will be obtained for serious conditions if they occur.

Cold exposure-related problems are:

- Frost bite: Ice crystal formation in body tissues. The restricted blood flow to the injured part results in local tissue destruction.
- Hypothermia: Severe exposure to cold temperature resulting in the body losing heat at a rate faster than the body can generate heat. The stages of hypothermia are shivering, apathy, loss of consciousness, decreasing pulse and breathing rate, and death.

The Buddy System

All activities in contaminated or potentially contaminated areas will be conducted by pairing off the Site workers in groups of two (or three if necessary). Each person (buddy) will be able to provide his or her partner with assistance, observe his or her partner for signs of chemical, cold, or heat exposure, periodically check the integrity of his or her partner's protective clothing, and notify the HSO or others if emergency help is needed. The buddy system will be instituted at the beginning of each work day. If new workers arrive on Site, a buddy will be chosen prior to the new worker entering the work zone.

Site Communications

Two sets of communication systems will be established at the Site: internal communication among personnel on-Site, and external communication between on-Site and off-Site personnel. Internal communication will be used to alert team members to emergencies, pass along safety information such as heat stress check, protective clothing check, etc, communicate changes in the work to be accomplished, and maintain Site control. Due to ambient noise, verbal communications may be difficult at times. The HSO will carry a whistle (and compressed air horn if respirators are donned) to signal Site workers. A single whistle blast will be the signal to immediately evacuate the work zone through the access control point. This signal will be discussed with all Site workers prior to commencement of work.

An external communication system between on-Site and off-Site personnel will be established to coordinate emergency response, report to the Project Manager, and maintain contact with essential off-Site personnel. A field telephone will be available at all times in the HSO's vehicle. In addition, a backup telephone will be identified prior to the commencement of Site operations and this location will be relayed to all Site workers.

General Safe Work Practices

Standing orders applicable during Site operations are as follows:

- No smoking, eating, drinking, or application of cosmetics in the work zone.
- No matches or lighters in the work zone.
- All Site workers will enter/exit work zone through the Site access point.
- Any signs of contamination, radioactivity, explosivity, or unusual conditions will require evacuating the Site immediately and reporting the information to the HSO.
- Loose-fitting clothing and loose long hair will be prohibited in the work zone during heavy equipment operations.
- A signal person will direct the backing of work vehicles.
- Equipment operators will be instructed to check equipment for abnormalities such as oozing liquids, frayed cables, unusual odors, etc.

C.1.7 Personnel Training Requirements

All FPM personnel and contractor personnel will receive adequate training prior to entering the Site. FPM and contractor personnel will, at a minimum, have completed OSHA-approved, 40-hour hazardous materials Site safety training and OSHA-approved, eight-hour safety refresher course within one year prior to commencing field work. In addition, each worker must have a minimum of three days field experience under the direct supervision of a trained, experienced supervisor.

Prior to Site field work, the HSO will conduct an in-house review of the project with respect to health and safety with all FPM personnel who will be involved with field work at the Site. The review will include discussions of signs and symptoms of chemical exposure and heat/cold stress that indicate potential medical emergencies. In addition, review of PPE will be conducted to include the proper use of air-purifying respirators.

C.1.8 Medical Surveillance Program

All workers at the Site must participate in a medical surveillance program in accordance with 29 CFR 1910.120. A medical examination and consultation must have been performed within the last twelve months to be eligible for field work.

The content of the examination and consultation will include a medical and work history with special emphasis on symptoms related to the handling of hazardous substances, health hazards, and fitness for duty including the ability to wear required personal protective equipment under conditions (i.e., temperature extremes) that may be expected at the work Site.

All medical examinations and procedures shall be performed by, or under the supervision of, a licensed physician. The Physician shall furnish a written opinion containing:

- The results of the medical examination and tests;

- The physician's opinion as to whether the employee has any detected medical conditions which would place the worker at increased risk of material impairment of the employee's health from work in hazardous waste operations;
- The physician's recommended limitations upon the worker assigned to the work; and
- A statement that the worker has been informed by the physician of the results of the medical examination and any further examination or treatment.
- An accurate record of the medical surveillance will be retained. The record will consist of at least the following information:
 - The name and social security number of the employee;
 - The physician's written opinions, recommended limitations, and results of examinations and tests; and
 - Any worker medical complaints related to exposure to hazardous substances.

C.1.9 Personal Protective Equipment

General Considerations

The two basic objectives of the personal protective equipment (PPE) are to protect the wearer from safety and health hazards, and to prevent the wearer from incorrect use and/or malfunction of the PPE.

Potential Site hazards have been discussed previously in Section C.1.6. The duration of Site activities is estimated to be periods of several weeks. All work is expected to be performed during daylight hours and workdays, in general, are expected to be eight to ten hours in duration. Any work performed beyond daylight hours will require the permission of the HSO. This decision will be based on the adequacy of artificial illumination and the type and necessity of the task being performed.

Personal protection levels for the Site activities, based on past investigations, are anticipated to be Level D with the possibility of upgrading to Level C. The equipment included for each level of protection is provided as follows:

Level C Protection

Level C personnel protective equipment includes:

- Air-purifying respirator, full-face
- Chemical-resistant clothing includes: Tyvek[™] (spunbonded olefin fibers) for particulate and limited splash protection or Saranex[™] (plastic film-laminated Tyvek) for permeation resistance to solvents.
- Coveralls*, or
- Long cotton underwear*
- Gloves (outer), chemical-resistant

- Gloves (inner), chemical-resistant
- Boots (outer), leather or chemical-resistant, steel toe and shank.
- Boot covers (outer), chemical-resistant (disposable)*
- Hard hat (face shield)*
- Escape mask*
- 2-way radio communications (inherently safe)*

(*) optional

Meeting all of these criteria permits use of Level C protection:

- Oxygen concentrations are not less than 19.5% by volume.
- Measured air concentrations of identified substances will be reduced by the respirator below the substance's threshold limit value (TLV).
- Atmospheric contaminants, liquid splashes, or other direct contact will not adversely affect any body area left unprotected by chemical-resistant clothing.
- Job functions do not require self-contained breathing apparatus.
- Direct readings are below 50 ppm on the PID.

Level D Protection

Personnel protective equipment:

- Coveralls
- Gloves*
- Boots/shoes, leather or chemical-resistant, steel toe and shank
- Safety glasses or chemical splash goggles*
- Hard hat (face shield*)
- Escape mask*

(*) optional

Meeting any of these criteria allows use of Level D protection:

- No contaminant levels above 5 ppm organic vapors or dusty conditions are present.
- Work functions preclude splashes, immersion, or the reasonable potential for unexpected inhalation of any chemicals above the TLV.

Additional Considerations for Selecting Levels of Protection

Another factor that will be considered in selecting the appropriate level of protection is heat and physical stress. The use of protective clothing and respirators increases physical stress, in particular, heat stress on the wearer. Chemical protective clothing greatly reduces natural ventilation and diminishes the body's ability to regulate its temperature. Even in moderate ambient temperatures, the diminished capacity of the body to dissipate heat can result in one or more heat-related problems.

All chemical protective garments can be a contributing factor to heat stress. Greater susceptibility to heat stress occurs when protective clothing requires the use of a tightly-fitted hood against the respirator face piece, or when gloves or boots are taped to the suit. As more body area is covered, less cooling takes place, increasing the probability of heat stress.

Wearing protective equipment also increases the risk of accidents. It is heavy, cumbersome, decreases dexterity, agility, interferes with vision, and is fatiguing to wear. These factors all increase physical stress and the potential for accidents. In particular, the necessity of selecting a level of protection will be balanced against the increased probability of heat stress and accidents.

Donning and Doffing Ensembles

- Donning an Ensemble

A routine will be established and practiced periodically for donning a Level C ensemble. Assistance may be provided for donning and doffing since these operations are difficult to perform alone. Table C.1.9.1 lists sample procedures for donning a Level C ensemble. These procedures should be modified depending on the particular type of suit and/or when extra gloves and/or boots are used.

- Doffing an Ensemble

Exact procedures for removing Level C ensembles must be established and followed to prevent contaminant migration from the work area and transfer of contaminants to the wearer's body, the doffing assistant, and others. Doffing procedures are provided in Table C.1.9.2. These procedures should be performed only after decontamination of the suited worker. They require a suitably attired assistant. Throughout the procedures, both worker and assistant should avoid any direct contact with the outside surface of the suit.

Respirator Fit Testing

The fit or integrity of the facepiece-to-face seal of a respirator affects its performance. Most facepieces fit only a certain percentage of the population; thus each facepiece must be tested on the potential wearer in order to ensure a tight seal. Facial features such as scars, hollow temples, very prominent cheekbones, deep skin creases, dentures or missing teeth, and the chewing of gum and tobacco may interfere with the respirator-to-face seal. A respirator shall not be worn when such conditions prevent a

**TABLE C.1.9.1
SAMPLE LEVEL C DONNING PROCEDURES**

1. Inspect the clothing and respiratory equipment before donning (see Inspection in subsection C.1.7).
2. Adjust hard hat or headpiece if worn, to fit user's head.
3. Standing or sitting, step into the legs of the suit; ensure proper placement of the feet within the suit; then gather the suit around the waist.
4. Put on chemical-resistant safety boots over the feet of the suit. Tape the leg cuff over the tops of the boots.
5. Don the respirator and adjust it to be secure, but comfortable.
6. Perform negative and positive respirator facepiece seal test procedures.
 - To conduct a negative-pressure test, close the inlet part with the palm of the hand or squeeze the breathing tube so it does not pass air, and gently inhale for about 10 seconds. Any inward rushing of air indicates a poor fit. Note that a leaking facepiece may be drawn tightly to the face to form a good seal, giving a false indication of adequate fit.
 - To conduct a positive-pressure test, gently exhale while covering the exhalation valve to ensure that a positive pressure can be built up. Failure to build a positive pressure indicates a poor fit.
7. Depending on type of suit:
 - Put on inner gloves (surgical gloves).
 - Additional overgloves, worn over attached suit gloves, may be donned later.
8. Put on hard hat
9. Have assistant observe the wearer for a period of time to ensure that the wearer is comfortable, psychologically stable, and that the equipment is functioning properly.

good seal. The worker's diligence in observing these factors shall be evaluated by periodic checks. Fit testing will comply with 29 CFR 1910.1025 regulations.

Inspection

The PPE inspection program will entail five different inspections:

- Inspection and operational testing of equipment received from the factory or distributor;

**TABLE C.1.9.2
DOFFING PROCEDURES**

1. Remove any extraneous or disposable clothing, boot covers, outer gloves, and tape.
2. Remove respirator by loosening straps and pulling straps over the top of the head and move mask away from head. Do not pull mask over the top of the head.
3. Remove arms, one at a time, from suit, avoiding any contact between the outside surface of the suit and wearer's body and lay the suit out flat behind the wearer. Leave internal gloves on, if any.
4. Sitting, if possible, remove both legs from the suit.
5. After suit is removed, remove internal gloves by rolling them off the hand, inside out.

- Inspection of equipment as it is issued to workers;
- Inspection after use;
- Periodic inspection of stored equipment; and
- Periodic inspection when a question arises concerning the appropriateness of the selected equipment, or when problems with similar equipment arise.

The inspection checklist is provided in Table C.1.9.3. Records will be kept of all inspection procedures. Individual identification numbers will be assigned to all reusable pieces of equipment and records should be maintained by that number. At a minimum, each inspection should record the ID number, date, inspector, and any unusual conditions or findings. Periodic review of these records may indicate an item or type of item with excessive maintenance costs or a particularly high level of down-time.

Storage

Clothing and respirators will be stored properly to prevent damage or malfunction due to exposure to dust, moisture, sunlight, damaging chemicals, extreme temperatures, and impact. Storage procedures are as follows:

- Clothing: Potentially-contaminated clothing will be stored in a well-ventilated area separate from street clothing, with good air flow around each item, if possible. Different types and materials of clothing and gloves will be stored separately to prevent issuing the wrong materials by mistake, and protective clothing will be folded or hung in accordance with manufacturer's recommendations.
- Respirators: After each use air-purifying respirators will be dismantled, washed, and placed in sealed plastic bags.

**TABLE C.1.9.3
PPE INSPECTION CHECKLIST**

CLOTHING

Before use:

- Determine that the clothing material is correct for the specified task at hand.
- Visually inspect for imperfect seams, non-uniform coatings, tears, and/or malfunctioning closures.
- Hold up to light and check for pinholes.
- Flex product and observe for cracks or other signs of deterioration.
- If the product has been used previously, inspect inside and out for signs of chemical attack, including discoloration, swelling, and/or stiffness.

During the work task, periodically inspect for:

- Evidence of chemical attack such as discoloration, swelling, stiffening, and softening. Keep in mind, however, that chemical permeation can occur without any visible effects.
- Indication of physical damage, including closure failure, tears, punctures, and/or seam discontinuities.

GLOVES

Before use:

- Pressurize glove to check for pinholes. Either blow into glove, then roll gauntlet toward fingers or inflate glove and hold under water. In either case, no air should escape.

AIR-PURIFYING RESPIRATORS

- Inspect air-purifying respirators before each use to be sure they have been adequately cleaned.
- Check material conditions for signs of pliability, deterioration, and/or distortion.
- Examine cartridges to ensure that they are the proper type for the intended use, the expiration date has not been passed, and they have not been opened or used previously.
- Check faceshields and lenses for cracks, crazing, and/or fogginess.
- Air-purifying respirators will be stored individually in resealable plastic bags.

PPE Maintenance

Specialized PPE maintenance will be performed only by the factory or an authorized repair person. Routine maintenance, such as cleaning, will be performed by the personnel to whom the equipment is assigned. Respirators will be cleaned at the end of each day with alcohol pads or, preferably, by washing with warm soapy water.

Decontamination Methods

All personnel, clothing, equipment, and samples leaving the work zone area of the Site must be decontaminated to remove any harmful chemicals that may have adhered to them. Decontamination methods either (1) physically remove contaminants (2) inactivate contaminants by chemical detoxification or disinfection/sterilization, or (3) remove contaminants by a combination of both physical and chemical means. In many cases, gross contamination can be removed by physical means involving dislodging/displacement, rinsing, wiping off, and evaporation. Contaminants that can be removed by physical means include dust, vapors, and volatile liquids. All reusable equipment will be decontaminated by rinsing in a bath of detergent and water (respirators, gloves to be reused). Monitoring equipment will be decontaminated by wiping with paper towels and water. All used PPE to be discarded will be disposed offsite as solid waste.

The effectiveness of the decontamination will be evaluated near the beginning of Site activities and will be modified if determined to be ineffective. Visual observation will be used for this purpose. The HSO will inspect decontaminated materials for discoloration, stains, corrosive effects, visible dirt, or other signs of possible residual contamination.

C.2 Community Air Monitoring Plan

This Community Air Monitoring Plan (CAMP) will be implemented at the Site by FPM during the intrusive investigation activities, including soil borings, well installation, and sampling. Due to the nature of the contaminants at the Site, there is a potential for organic vapor emissions as these activities occur. In addition, there is the potential for dust to be associated with the soil borings and well installation activities. To address these concerns, organic vapor monitoring and dust monitoring will be performed.

Any CAMP monitoring results that exceed the action levels described below will be reported (or notice provided by another arrangement acceptable to the NYSDEC) when identified if a NYSDEC representative is present at the Site or within two hours by phone call or email to the NYSDEC Project manager when no NYSDEC representative is onsite. Exceedances of the CAMP action levels will also be summarized in the monthly progress reports, including the duration of the exceedance(s) and any response actions taken.

C.2.1 Organic Vapor Monitoring

Under the CAMP, organic vapor concentrations will be monitored at the boundaries of the work zone. It will be the responsibility of the HSO to implement the plan and to ensure that proper action is taken in the event that any of the established action levels are exceeded.

To monitor organic vapors, a PID capable of calculating 15-minute running average concentrations will be used and maintained in good operating condition. Calibration of the PID will be performed according to manufacturer's instructions. Background levels of organic vapors will be measured at the work zone boundary prior to beginning work and upwind of the work area periodically using a PID. Monitoring may

be performed more frequently at the discretion of the HSO. Organic vapors will be monitored continuously at the downwind perimeter of the work area during ground intrusive activities.

PID readings will be recorded in the field logbook for both background and work area perimeter. Logbook recordings will include the time, location, and PID readings observed. Downwind perimeter levels will be recorded in the log whenever the level reaches 5 ppm above the background along with the action(s) taken to mitigate the level. If the level of organic vapors exceeds 5 ppm above the background at the downwind perimeter of the work area, work activities will be halted and monitoring continued. The vapor emission response plan will then be implemented.

C.2.1.1 Vapor Emission Response Plan

The vapor emission response plan includes the following trigger levels and responses:

- Greater than 5 ppm at perimeter:

In the event the level of organic vapors exceeds 5 ppm above the background at the downwind perimeter of the work area, activities will be halted and monitoring continued. If the organic vapor level then decreases to below 5 ppm above background, work activities can resume but organic vapor readings will be obtained more frequently as directed by the HSO.

- 5 ppm to 25 ppm at perimeter and less than 5 ppm at the work zone boundary:

If the level of organic vapors is greater than 5 ppm but less than 25 ppm over background at the downwind perimeter of the work area, activities will be halted, the source of the vapors will be identified and corrective actions will be taken. Monitoring will be continued and activities will resume if the organic vapor concentration at half the distance to the nearest residential or commercial structure, whichever is less, is below 5 ppm over background. More frequent intervals of monitoring will be performed as directed by the HSO.

- Above 25 ppm at perimeter:

If the level of organic vapors is above 25 ppm at the perimeter of the work area, activities will be shut down. Should such a shutdown be necessary, downwind air monitoring will continue as directed by the HSO to confirm that organic vapor concentrations decrease. Actions will be taken to abate the source of vapor emissions and activities will not resume until the source is controlled.

C.2.1.2 Major Vapor Emission Response Plan

The Major Vapor Emission Response Plan shall automatically be placed into effect if:

- Efforts to abate the emission source are unsuccessful and levels above 5 ppm persist for more than 30 minutes in the 20-foot zone; or
- The vapor levels are greater than 10 ppm above background in the 20-foot zone.

Upon activation of the Major Vapor Emission Response Plan, the following activities will be undertaken:

- All emergency response contacts as listed in the HASP will be notified;

- 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 will be halted or modified as directed by the HSO; or
- If air monitoring readings remain above action levels, work will be halted and further measures taken to reduce organic vapors.

If a Major Vapor Emission Response Plan is implemented, the NYSDEC and NYSODH will be contacted within 24 hours.

C.2.2 Dust Monitoring

Dust (particulate) monitoring will be performed during soil boring and well installation intrusive activities with the potential to create dust by using a Miniram personal monitor calibrated according to the manufacturer's instructions. The Miniram will be capable of calculating 15-minute running average concentrations and operated continuously at the downwind perimeter of the work zone during ground intrusive activities. To ensure the validity of the fugitive dust measurements, appropriate QA/QC measures will be employed, including periodic instrument calibration, operator training, daily instrument performance (span) checks, and record-keeping on daily log sheets. If measurable dust levels are noted, then readings will also be obtained upwind of the work zone. If the downwind particulate level exceeds the upwind level by more than 100 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$), then dust suppression techniques will be employed or work will be halted or controlled such that dust levels are reduced at the downwind perimeter to within $150 \mu\text{g}/\text{m}^3$ of the upwind level.

If dust is generated during boring or well installation activities, then dust suppression will be performed, as discussed in Section C.1.6 of this HASP. Corrective measures may include increasing the level of PPE for onsite personnel and implementing additional dust suppression techniques. Should the action level of $150 \mu\text{g}/\text{m}^3$ continue to be exceeded, work will stop and the NYSDEC will be notified as described in Section C.2 above. The notification will include a description of the control measures implemented to prevent further exceedances.

Reasonable fugitive dust suppression techniques will be employed during all intrusive Site activities that may generate fugitive dust. Particulate (fugitive dust) monitoring will be employed during the handling of contaminated soil or when onsite activities may generate fugitive dust from exposed contaminated soil.

Fugitive dust from contaminated soil that migrates offsite has the potential for transporting contaminants offsite. Although there may be situations when the monitoring equipment does not measure dust at or above the action level, visual observation may indicate that dust is leaving the Site. If dust is observed leaving the working area, additional dust suppression techniques will be employed.

The following techniques have been shown to be effective for controlling the generation and migration of dust during intrusive investigation activities and will be used as needed during investigation activities at the Site:

- Wetting equipment and exposed soil;
- Restricting vehicle speeds to 10 mph;
- Covering areas of exposed soil after investigation activity ceases; and
- Reducing the size and/or number of areas of exposed soil.

When techniques involving water application are used, care will be taken not to use excess water, which can result in unacceptably wet conditions. Using atomizing sprays will be considered to prevent overly wet conditions, conserve water, and provide an effective means of suppressing fugitive dust.

Evaluation of weather conditions is also necessary for proper fugitive dust control. When extreme wind conditions may make dust control ineffective, investigation actions may be suspended until wind speeds are reduced.

C.2.3 Noise Monitoring

Due to the use of heavy equipment, there is a potential for noise to impact the surrounding community. Work will be performed only during normal working hours when ambient noise levels are elevated due to ongoing activities in the surrounding community, which is primarily urban and commercial. Therefore, the potential for noise impacts on the surrounding community is low.

However, if pedestrians are present in the Site vicinity, it is possible for noise impacts to occur. To address these concerns and other safety concerns, pedestrians will be barred from entering the work zone. In addition, the HSO will periodically monitor noise levels at the work zone boundary and the closest property boundary with a Realistic™ hand-held sound level meter. Noise levels will be monitored in dBs in the A-weighted, slow-response mode. If noise level readings exceed an eight-hour time-weighted average of 85 dB at the work zone boundary or at the closest property boundary, the HSO will take appropriate measures to reduce noise exposure beyond these boundaries. These measures may include extension of the work zone boundary, issuing appropriate hearing protection devices as discussed in Section C.1.6 of this work plan, or other measures, as appropriate. In the event that the noise exposure measures are inadequate, work will cease until noise levels can be reduced to below 85 dB at the work zone boundary and/or at the closest property boundary.

APPENDIX D

CITIZEN PARTICIPATION PLAN



New York State Department of Environmental Conservation

Brownfield Cleanup Program

Citizen Participation Plan for **1735 Express Drive North**

1735 Express Drive North
Hauppauge, Suffolk County, New York 11788

December 2013

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Note: The information presented in this Citizen Participation Plan was current as of the date of its approval by the New York State Department of Environmental Conservation. Portions of this Citizen Participation Plan may be revised during the Site’s investigation and cleanup process.

Applicant: **Maggio Data Forms Printing, Ltd. (“Applicant”)**
Site Name: **1735 Express Drive North (“Site”)**
Site Address: **1735 Express Drive North, Hauppauge**
Site County: **Suffolk County**
Site Number: **C152238**

1. What is New York’s Brownfield Cleanup Program?

New York’s Brownfield Cleanup Program (BCP) works with private developers to encourage the voluntary cleanup of contaminated properties known as “brownfields” so that they can be reused and developed. These uses include recreation, housing, and business.

A *brownfield* is any real property that is difficult to reuse or redevelop because of the presence or potential presence of contamination. A brownfield typically is a former industrial or commercial property where operations may have resulted in environmental contamination. A brownfield can pose environmental, legal, and financial burdens on a community. If a brownfield is not addressed, it can reduce property values in the area and affect economic development of nearby properties.

The BCP is administered by New York State Department of Environmental Conservation (NYSDEC) which oversees Applicants that conduct brownfield site investigation and cleanup activities. An Applicant is a person who has requested to participate in the BCP and has been accepted by NYSDEC. The BCP contains investigation and cleanup requirements, ensuring that cleanups protect public health and the environment. When the NYSDEC certifies that these requirements have been met, the property can be reused or redeveloped for the intended use.

For more information about the BCP, go online at: <http://www.dec.ny.gov/chemical/8450.html>.

2. Citizen Participation Activities

Why NYSDEC Involves the Public and Why It Is Important

The NYSDEC involves the public to improve the process of investigating and cleaning up contaminated sites, and to enable citizens to participate more fully in decisions that affect their health, environment, and social well being. The NYSDEC provides opportunities for citizen involvement and encourages early two-way communication with citizens before decision makers form or adopt final positions.

Involving citizens affected and interest in site investigation and cleanup programs is important for many reasons. These include:

- Promoting the development of timely, effective site investigation and cleanup programs that protect public health and the environment;

- Improving public access to, and understanding of, issues and information related to a particular site and that site's investigation and cleanup process;
- Providing citizens with early and continuing opportunities to participate in NYSDEC's site investigation and cleanup process;
- Ensuring that NYSDEC makes site investigation and cleanup decisions that benefit from input that reflects the interests and perspectives found within the affected community; and
- Encouraging dialogue to promote the exchange of information among the affected/interested public, State agencies, and other interested parties that strengthens trust among the parties, increases understanding of site and community issues and concerns, and improves decision making.

This Citizen Participation (CP) Plan provides information about how NYSDEC will inform and involve the public during the investigation and cleanup of the Site identified above. The public information and involvement program will be carried out with assistance, as appropriate, from the Applicant.

Project Contacts

Appendix A identifies NYSDEC project contact(s) to whom the public should address questions or request information about the Site's investigation and cleanup program. The public's suggestions about this Site are always welcome. Interested people are encouraged to share their ideas and suggestions with the project contacts at any time.

Locations of Reports and Information

The locations of the reports and information related to the Site's investigation and cleanup program also are identified in Appendix A. These locations provide convenient access to important project documents for public review and comment. Some documents may be placed on NYSDEC website. If this occurs, NYSDEC will inform the public in fact sheets distributed about the Site and by other means, as appropriate.

Site Contact List

Appendix B contains the Site contact list. This list has been developed to keep the community informed about, and involved in, the Site's investigation and cleanup process. The initial notification was issued via standard mail and email via Suffolk County listserv. All future notifications will be issued via email unless a request is made to NYSDEC to receive paper notices. To receive future notices via email please go to www.dec.ny.gov/chemical/61092.html. The listserv will be used periodically to distribute fact sheets that provide updates about the status of the project. These will include notifications of upcoming activities at the Site (such as

fieldwork), as well as availability of project documents and announcements about public comment periods. Standard notifications are presented in the table below.

The Site contact list includes, at a minimum:

- The chief executive officer and planning board chairperson of each county, city, town and village in which the Site is located;
- Residents, owners, and occupants of the Site and properties adjacent to the Site;
- The public water supplier which services the area in which the Site is located;
- Any person who has requested to be placed on the Site contact list;
- The administrator of any school or day care facility located on or near the Site for purposes of posting and/or dissemination of information at the facility;
- Location(s) of reports and information.

The Site contact list will be reviewed periodically and updated as appropriate. Individuals and organizations will be added to the Site contact list upon request. Such requests should be submitted to the NYSDEC project contact(s) identified in Appendix A. Other additions to the Site contact list may be made at the discretion of the NYSDEC project manager, in consultation with other NYSDEC staff as appropriate.

CP Activities

The table at the end of this section identifies the CP activities, at a minimum, that have been and will be conducted during the site's investigation and cleanup program. The flowchart in Appendix D shows how these CP activities integrate with the site investigation and cleanup process. The public is informed about these CP activities through fact sheets and notices distributed at significant points during the program. Elements of the investigation and cleanup process that match up with the CP activities are explained briefly in Section 5.

- **Notices and fact sheets** help the interested and affected public to understand contamination issues related to a site, and the nature and progress of efforts to investigate and clean up a site.
- **Public forums, comment periods and contact with project managers** provide opportunities for the public to contribute information, opinions, and perspectives that have potential to influence decisions about a site's investigation and cleanup.

The public is encouraged to contact project staff at any time during the site's investigation and cleanup process with questions, comments, or requests for information.

This CP Plan may be revised due to changes in major issues of public concern identified in Section 3 or in the nature and scope of investigation and cleanup activities. Modifications may include additions to the Site contact list and changes in planned citizen participation activities.

Technical Assistance Grant

NYSDEC must determine if the Site poses a significant threat to public health or the environment. This determination generally is made using information developed during the investigation of the Site, as described in Section 5.

If the Site is determined to be a significant threat, a qualifying community group may apply for a Technical Assistance Grant (TAG). The purpose of a TAG is to provide funds to the qualifying group to obtain independent technical assistance. This assistance helps the TAG recipient to interpret and understand existing environmental information about the nature and extent of contamination related to the Site and the development/implementation of a remedy.

An eligible community group must certify that its membership represents the interests of the community affected by the Site, and that its members' health, economic well-being, or enjoyment of the environment may be affected by a release or threatened release of contamination at the Site.

For more information about TAGs, go online at <http://www.dec.ny.gov/regulations/2590.html>.

Note: The table identifying the citizen participation activities related to the site's investigation and cleanup program follows on the next page:

Citizen Participation Requirements (Activities)	Timing of CP Activity(ies)
Application Process:	
<ul style="list-style-type: none"> • Prepare Site contact list • Establish document repositories 	At time of preparation of application to participate in the BCP.
<ul style="list-style-type: none"> • Publish notice in Environmental Notice Bulletin (ENB) announcing receipt of application and 30-day public comment period • Publish above ENB content in local newspaper • Mail above ENB content to site contact list • Conduct 30-day public comment period 	When NYSDEC determines that BCP application is complete. The 30-day public comment period begins on date of publication of notice in ENB. End date of public comment period is as stated in ENB notice. Therefore, ENB notice, newspaper notice, and notice to the Site contact list should be provided to the public at the same time.
After Execution of Brownfield Site Cleanup Agreement:	
<ul style="list-style-type: none"> • Prepare Citizen Participation (CP) Plan 	Before start of Remedial Investigation
Before NYSDEC Approves Remedial Investigation (RI) Work Plan:	
<ul style="list-style-type: none"> • Distribute fact sheet to Site contact list about proposed RI activities and announcing 30-day public comment period about draft RI Work Plan • Conduct 30-day public comment period 	Before NYSDEC approves RI Work Plan. If RI Work Plan is submitted with application, public comment periods will be combined and public notice will include fact sheet. Thirty-day public comment period begins/ends as per dates in fact sheet.
After Applicant Completes Remedial Investigation:	
<ul style="list-style-type: none"> • Distribute fact sheet that describes RI results to Site contact list 	Before NYSDEC approves RI Report
Before NYSDEC Approves Remedial Work Plan (RWP):	
<ul style="list-style-type: none"> • Distribute fact sheet to Site contact list about proposed RWP and announcing 45-day public comment period • Public meeting by NYSDEC about proposed RWP (if requested by affected community or at discretion of NYSDEC project manager) • Conduct 45-day public comment period 	Before NYSDEC approves RWP. Forty-five day public comment period begins/ends as per dates identified in fact sheet. Public meeting would be held within the 45-day public comment period.
Before Applicant Starts Cleanup Action:	
<ul style="list-style-type: none"> • Distribute fact sheet to Site contact list that describes upcoming cleanup action 	Before the start of cleanup action.
After Applicant Completes Cleanup Action:	
<ul style="list-style-type: none"> • Distribute fact sheet to Site contact list that announces that cleanup action has been completed and that summarizes the Final Engineering Report • Distribute fact sheet to Site contact list announcing issuance of Certificate of Completion (COC) 	At the time NYSDEC approves Final Engineering Report. These two fact sheets are combined if possible if there is not a delay in issuing the COC.

3. Major Issues of Public Concern

This section of the CP Plan identifies major issues of public concern that relate to the Site. Additional major issues of public concern may be identified during the course of the Site's investigation and cleanup process.

The potential issues of public concern include issues involving the potential for soil vapor intrusion at the Site and/or at adjoining properties. The primary contaminants at the Site include several solvents, primarily tetrachloroethene (PCE) and 1,1,1-trichloroethylene (1,1,1-TCA), which were released at the Site during the operations of a former Site owner. These contaminants were released to the ground beneath the Site and are present in the vapors in soil beneath the Site. Soil vapor investigations were conducted for the Site and the adjoining property to the west and included soil vapor sampling. Additional sampling to assess the potential for soil vapor intrusion will be conducted.

Groundwater beneath the Site has been found to be impacted with solvents at levels that exceed NYSDEC's applicable groundwater standards. Groundwater is estimated to be migrating generally to the northeast, resulting in the potential for offsite migration of solvents in groundwater. However, groundwater is present only at depth (approximately 80 feet below ground) and is, therefore, not reasonably accessible to the public. Public water in the Site vicinity is provided by the Suffolk County Water Authority (SCWA). SCWA public water supply wells are not located within the area where groundwater impacted by Site-related contaminants has been identified. Therefore, there is no reasonable potential for public exposure or concern relative to groundwater.

Soil contaminated with solvents was identified at several onsite underground structures where waste discharges occurred in the past. Contaminated soil has been removed under the oversight of the Suffolk County Department of Health Services (SCDHS). The remaining minimal areas of contaminated soil have been isolated at depth by closing the remaining affected structures. Soil sampling has not shown any solvent contamination to be present in soils near the Site surface. Therefore, there is no reasonable potential for public exposure or concern relative to contaminated soil.

The Site is presently developed with an approximately 30,000-square-foot, one-story commercial building with associated parking that occupies the majority of the property. Residential properties adjoin the Site to the west. Express Drive North adjoins the Site to the south, and buildings utilized for commercial purposes adjoin the Site to the north and east. The cleanup activities are anticipated to result in Site conditions that are conducive to continued use and/or redevelopment of the Site with commercial or industrial uses.

Significant adverse impacts to traffic, noise, and/or air quality are not anticipated to result from the investigation or cleanup activities. These activities will be performed under work plans approved by NYSDEC that contain provisions for traffic management as needed and noise and

air quality monitoring and mitigation measures such that adverse impacts are avoided. There should be no impact to the community during site investigation and clean up.

Public concern for potential impacts to environmentally sensitive areas is not anticipated for the cleanup activities as there are no environmentally sensitive areas in proximity to the Site. There are no wetland areas within one-half mile of the Site. No surface water is located on or adjacent to the Site. No parks, recreational, or natural areas are located within proximity to the Site.

4. Site Information

Appendix C contains a map identifying the location of the Site.

Site Description

Location: 1735 Express Drive North, Hauppauge, Suffolk County

Setting: Suburban

Site size: 68,824 square feet

Adjacent properties: Express Drive North adjoins the Site to the south, commercial properties adjoin the Site to the east and north, and two residential properties and one vacant property adjoin the Site to the west.

History of Site Use, Investigation, and Cleanup

The Site includes a 68,824-square-foot property with a 30,000-square-foot concrete block building on a slab foundation and associated paved parking and landscaped areas. The property was initially developed with a smaller building in 1960 and an addition was made to the north side of the building in 1979. The property was formerly operated by Afta Chemical Corp. (Afta) until 1980 for manufacturing and distribution of chemicals, including solvents, shampoos, and cleaning fluids. Afta's operations included discharges of industrial waste to onsite subsurface structures without a permit. Maggio Data Forms Printing, Ltd. (Maggio) purchased the property in 1981 and has subsequently used the property as a commercial printing facility.

Several investigations of Afta's operations were conducted by the SCDHS in the 1970s and identified contamination in several subsurface structures and other potential environmental concerns. Remedial activities, including cleanout of subsurface structures, sealing of drains, and disconnection of piping, were conducted to address these concerns. Additional remedial activities, including cleanout of subsurface structures and closure of tanks, were undertaken by Maggio in the 1980s to address contamination that was not documented to have been cleaned out following Afta's operations and which likely resulted from Afta's operations.

An Environmental Assessment was performed at the Site in 2006 to identify issues of potential environmental concern. This investigation identified potential concerns associated with Afta's former operations, as well as potential concerns associated with an environmental site located to

the north of the property (Glaro Inc. at 735 Old Willets Path). Groundwater and soil sampling were performed in 2006 to evaluate these concerns; two contaminants were identified in groundwater above the NYSDEC standards.

Additional environmental assessments and cleanup activities were undertaken at the Site between 2006 and 2008 under SCDHS oversight. Soil impacted with solvents was found in several subsurface structures and cleanup of these structures was conducted. Two subsurface structures that could not be fully cleaned out and which exhibited minimal levels of remaining contamination were sealed to prevent potential contact with the remaining soil. The cleanup work was approved by the SCDHS.

Groundwater sampling has been conducted on the Site under the oversight of the SCDHS. Solvents were found in onsite groundwater and the levels were noted to decrease following the completion of cleanup activities.

Groundwater sampling has been conducted to the northeast of the Site by the SCDHS. Solvents were found in groundwater to the northeast of the Site. Some of these solvents may be associated with the Glaro Inc. environmental site, which is located to the north of the Site. Further evaluation of solvents in groundwater to the northeast of the Site, including an assessment of potential contributions from the Glaro site, will be conducted.

Soil vapor sampling was conducted in 2009 at the Site and at one residential property adjoining the Site to the west. Solvents were detected in soil vapor at the Site. Solvents were detected at only very low concentrations in the sample from the property to the west; the SCDHS did not require any action for the property to the west.

5. Investigation and Cleanup Process

Application

The Applicant has applied for and been accepted into New York's Brownfield Cleanup Program. The Applicant applied as a Volunteer, which means that the Applicant was not responsible for the disposal or discharge of the contaminants. As Maggio's ownership and operation of the Site took place after the discharge or disposal of contaminants by Afta, the Applicant understood itself to be a Volunteer. However, the Applicant was accepted by the NYSDEC into the Brownfield Program as a Participant. This means that the NYSDEC has determined that the Applicant was the owner of the Site at the time of the disposal or discharge of contaminants or was otherwise liable for the disposal or discharge of the contaminants. The Participant must fully characterize the nature and extent of contamination onsite, as well as the nature and extent of contamination that has migrated from the Site. The Participant must also conduct a qualitative exposure assessment, a process that characterizes the actual or potential exposures of people, fish, and wildlife to contaminants on the Site and to contamination that has migrated from the Site.

The Applicant in its application proposes that the Site will be used for restricted purposes.

To achieve this goal, the Applicant will conduct investigative and cleanup activities (if required) at the Site with oversight provided by the NYSDEC. The Brownfield Cleanup Agreement executed by the NYSDEC and the Applicant sets forth the responsibilities of each party in conducting these activities at the Site.

Investigation

Although the Applicant has completed a partial site investigation before it entered into the BCP, the Applicant will conduct an additional investigation of the site officially called a “remedial investigation” (RI). This investigation will be performed with NYSDEC oversight.

The Applicant must develop a remedial investigation work plan, which is subject to public comment. The existing site investigation data will be used during the development of the remedial investigation work plan and NYSDEC will determine if these data are usable.

The remedial investigation has several goals:

- 1) define the nature and extent of contamination in soil, surface water, groundwater and any other parts of the environment that may be affected;
- 2) identify the source(s) of the contamination;
- 3) assess the impact of the contamination on public health and the environment; and
- 4) provide information to support the development of a proposed remedy to address the contamination or the determination that cleanup is not necessary.

When the remedial investigation is complete, the Applicant will prepare and submit a report that summarizes the results. This report also will recommend whether cleanup action is needed to address site-related contamination. The investigation report is subject to review and approval by NYSDEC.

NYSDEC will use the information in the remedial investigation report to determine if the Site poses a significant threat to public health or the environment. If the Site is a significant threat, it must be cleaned up using a remedy selected by NYSDEC from an analysis of alternatives prepared by the Applicant and approved by NYSDEC. If the Site does not pose a significant threat, the Applicant may select the remedy from the approved analysis of alternatives.

Remedy Selection

When the investigation of the Site has been determined to be complete, the project likely would proceed in one of two directions:

1. The Applicant may recommend in its investigation report that no action is necessary at the Site. In this case, NYSDEC would make the investigation report available for public

comment for 45 days. NYSDEC then would complete its review, make any necessary revisions, and, if appropriate, approve the investigation report. NYSDEC would then issue a Certificate of Completion (described below) to the Applicant.

or

2. The Applicant may recommend in its investigation report that action needs to be taken to address Site contamination. After NYSDEC approves the investigation report, the Applicant may then develop a cleanup plan, officially called a “Remedial Work Plan”. The Remedial Work Plan describes the Applicant’s proposed remedy for addressing contamination related to the Site.

When the Applicant submits a proposed Remedial Work Plan for approval, NYSDEC will announce the availability of the proposed plan for public review during a 45-day public comment period.

Cleanup Action

NYSDEC will consider public comments, and revise the draft cleanup plan if necessary, before approving the proposed remedy. NYSDOH must concur with the proposed remedy. After approval, the proposed remedy becomes the selected remedy.

The Applicant may then design and perform the cleanup action to address the Site’s contamination. NYSDEC and NYSDOH oversee the activities. When the Applicant completes cleanup activities, it will prepare a Final Engineering Report (FER) that certifies that cleanup requirements have been achieved or will be achieved within a specific time frame. NYSDEC will review the report to be certain that the cleanup is protective of public health and the environment for the intended use of the site.

Certificate of Completion

When NYSDEC is satisfied that cleanup requirements have been achieved or will be achieved for the Site, it will approve the FER. NYSDEC then will issue a Certificate of Completion (COC) to the Applicant. The COC states that cleanup goals have been achieved, and relieves the Applicant from future liability for Site-related contamination, subject to certain conditions. The Applicant would be eligible to redevelop the Site after it receives a COC.

Site Management

Site management is the last phase of the Site’s cleanup program. This phase begins when the COC is issued. Site management may be conducted by the Applicant under NYSDEC oversight, if contamination will remain in place. Site management incorporates any institutional and engineering controls required to ensure that the remedy implemented for the Site remains protective of public health and the environment. All significant activities are detailed in a Site Management Plan.

Appendix A

Project Contacts and Locations of Reports and Information

Project Contacts

For information about the Site's investigation and cleanup program, the public may contact any of the following project staff:

New York State Department of Environmental Conservation (NYSDEC):

Brian Jankauskas
Project Manager
NYSDEC
Division of Environmental Remediation
625 Broadway, 12th Floor
Albany, NY 12223-7016
(518) 402-9626
bfjankau@gw.dec.state.ny.us

Aphrodite Montalvo
Citizen Participation Specialist
NYSDEC Region 1
50 Circle Road
Stony Brook, NY 11790
(631) 444-0350
axmontal@gw.dec.state.ny.us

New York State Department of Health (NYSDOH):

Fay Navratil
BEEI
NYSDOH
Empire State Plaza
Corning Tower, Room 1787
Albany, NY 12237
(518) 402-7860

Locations of Reports and Information

The facility identified below is being used to provide the public with convenient access to important project documents:

Hauppauge Public Library
601 Veterans Highway
Hauppauge, NY 11788
(631) 979-1600

Appendix B Site Contact List

Community Officials

Suffolk County Executive:
Steven Bellone
H. Lee Dennison Building
100 Veterans Memorial Highway
Hauppauge, NY 11788-0099
(631) 853-5040

Town of Islip Supervisor:
Tom Croci
Town Hall
655 Main St
Islip, New York 11751
(631) 224-5500

Town of Islip Engineer:
Dave Janover, P.E.
Town Hall
1 Manitton Court
Islip, New York 11751
(631) 224-5360

Judith A. Pascale, Suffolk County Clerk
310 Center Drive
Riverhead, NY 11901
(631) 852-2000

Sarah Lansdale, Director
Suffolk County Planning Commission
H. Lee Dennison Bldg-4th Floor
100 Veterans Memorial Highway
P.O. Box 6100
Hauppauge, NY 11788
(631) 853-5191

James Meyers, PE, Principal Public Health Engineer
Suffolk County Office of Pollution Control
15 Horseblock Place
Farmingville, NY 11738
(631) 854-2501

Hon. Stephen J. Flotteron
Hon. Trish Bergin Weichbrodt
Hon. John Cochrane Jr.
Hon. Anthony Senft Jr.
Town of Islip Town Council
410 Atlantic Avenue
Brooklyn, NY 11217

Hon. Michael Fitzpatrick
NYS Assembly District #8
50 Route 11 Suite 202
Smithtown, NY 11787

Hon. Lee M. Zeldin
NYS Senator District #3
4155 Veterans Highway Suite 5
Ronkonkoma, NY 11779

Hon. Charles Schumer
U.S. Senator
780 Third Avenue
New York, NY 10017

Hon. Kirsten Gillibrand
U.S. Senator
780 Third Avenue, Suite 2601
New York, NY 10017

Hon. Timothy H. Bishop
U.S. House of Representatives
31 Oak Street, Suite 20
Patchogue, NY 11772

The public water supplier that services the area where the Site is located:

James F. Gaughran, Chairman
Suffolk County Water Authority
4060 Sunrise Highway
Oakdale, NY 11769

Local news media from which the community typically obtains information:

Newsday
235 Pinelawn Drive
Melville, NY 11747-4226
631-843-2700 – Telephone, 631-454-6892 – Fax

News 12 Long Island
1 Media Crossways
Woodbury, NY 11797
516-393-1200

Hauppauge Patch
christines@patch.com

Civic, Community, Religious, Educational and Other Institutions:

Islip Chamber of Commerce
P.O. Box 112
Islip, NY 11751

Citizens Campaign for the Environment
225-A Main Street
Farmingdale, NY 11735

Adelphi University – Hauppauge Center
55 Kennedy Drive
Hauppauge, NY 11788

Any person who is adjacent or has requested to be placed on the site contact list:

Adjoining Properties

Mr. Stanley Allen Chase
271 Caleb's Path
Hauppauge, NY 11788

Savoy Medical Supply
273 Caleb's Path
Hauppauge, NY 11788

Mr. Ken Kaminski
273 Caleb's Path
Hauppauge, NY 11788

Tuttner USA
25 Power Drive
Hauppauge, NY 11788

Residence
279 Caleb's Path
Hauppauge, NY 11788

Matt Guilano's Play Like A Pro
1745 Expressway Drive North
Hauppauge, NY 11788

No person has yet requested to be placed on the Site contact list.

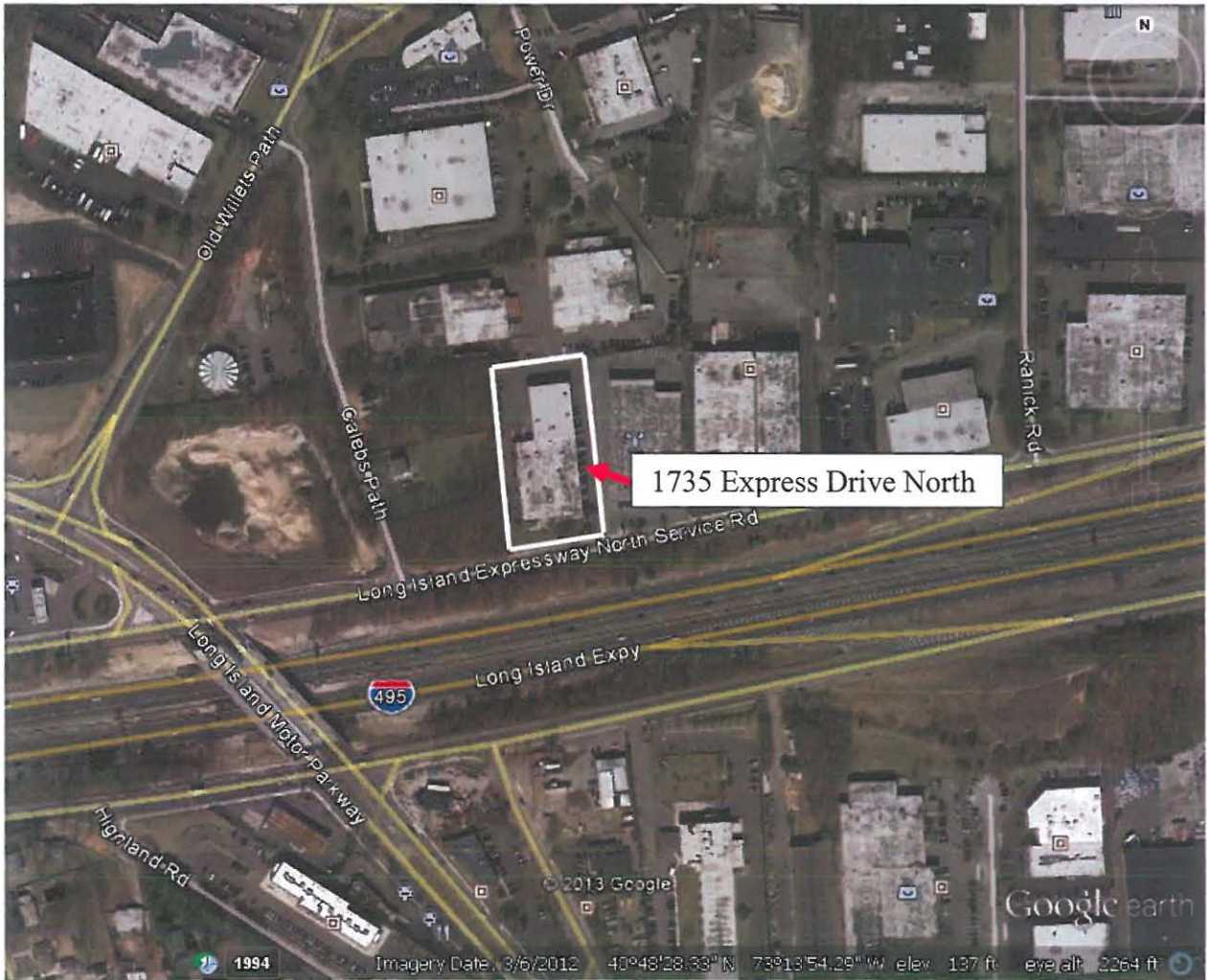
The administrator of any school or day care facility located on or near the Site:

The Site is located in an industrial zone. No schools or day care centers are located on or in the vicinity of the Site.

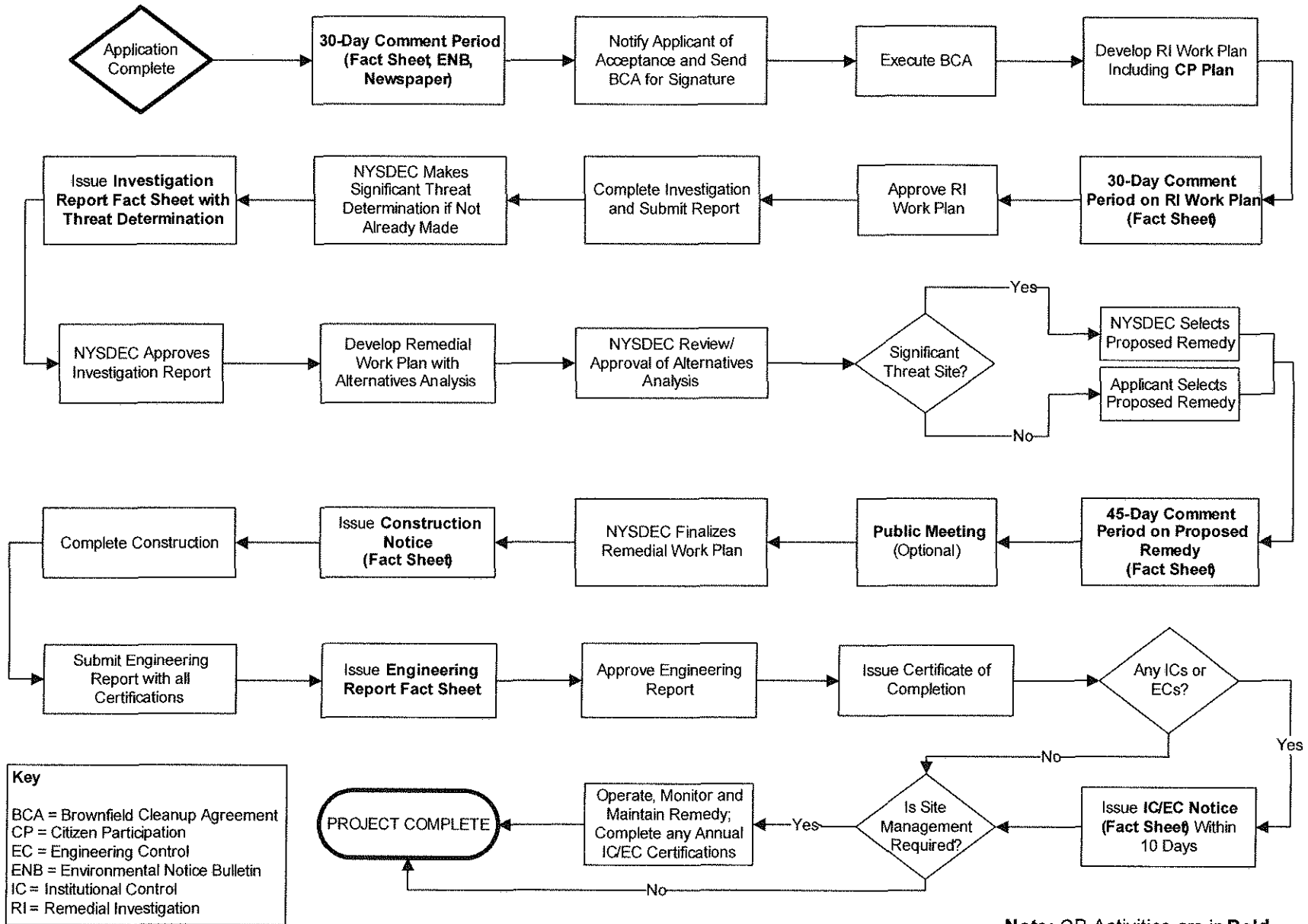
The location of the local document repositories for the project:

Hauppauge Public Library
601 Veterans Highway
Hauppauge, NY 11788
(631) 979-1600

Appendix C Site Location Map



Appendix D– Brownfield Cleanup Program Process



APPENDIX E

LABORATORY REPORTING LIMITS

Analysis Group	Method Description	Method Code
Groundwater	Volatile Organic Compounds by GC/MS	8260C

Analyte Description	CAS Number	RL	- Limit	RL	- Units	MDL	Limit	MDL	Units
1,1,1-Trichloroethane	71-55-6	1.00		ug/L		0.0600		ug/L	
1,1,2,2-Tetrachloroethane	79-34-5	1.00		ug/L		0.160		ug/L	
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	1.00		ug/L		0.0800		ug/L	
1,1,2-Trichloroethane	79-00-5	1.00		ug/L		0.190		ug/L	
1,1-Dichloroethane	75-34-3	1.00		ug/L		0.130		ug/L	
1,1-Dichloroethene	75-35-4	1.00		ug/L		0.0900		ug/L	
1,2,3-Trichlorobenzene	87-61-6	1.00		ug/L		0.510		ug/L	
1,2,4-Trichlorobenzene	120-82-1	1.00		ug/L		0.340		ug/L	
1,2-Dichloroethane-d4 (Surr)	17060-07-0			ug/L				ug/L	
1,2-Dichloropropane	78-87-5	1.00		ug/L		0.0900		ug/L	
1,3-Dichlorobenzene	541-73-1	1.00		ug/L		0.140		ug/L	
1,4-Dichlorobenzene	106-46-7	1.00		ug/L		0.230		ug/L	
1,4-Dioxane	123-91-1	50.0		ug/L		36.0		ug/L	
2-Butanone (MEK)	78-93-3	5.00		ug/L		2.31		ug/L	
2-Hexanone	591-78-6	5.00		ug/L		0.500		ug/L	
4-Bromofluorobenzene	460-00-4			ug/L				ug/L	
4-Methyl-2-pentanone (MIBK)	108-10-1	5.00		ug/L		0.990		ug/L	
Acetone	67-64-1	5.00		ug/L		2.68		ug/L	
Benzene	71-43-2	1.00		ug/L		0.0800		ug/L	
Bromoform	75-25-2	1.00		ug/L		0.190		ug/L	
Bromomethane	74-83-9	1.00		ug/L		0.180		ug/L	
Carbon disulfide	75-15-0	1.00		ug/L		0.130		ug/L	
Carbon tetrachloride	56-23-5	1.00		ug/L		0.0600		ug/L	
Chlorobenzene	108-90-7	1.00		ug/L		0.110		ug/L	
Chlorobromomethane	74-97-5	1.00		ug/L		0.270		ug/L	
Chlorodibromomethane	124-48-1	1.00		ug/L		0.200		ug/L	
Chloroethane	75-00-3	1.00		ug/L		0.170		ug/L	
Chloroform	67-66-3	1.00		ug/L		0.0800		ug/L	
Chloromethane	74-87-3	1.00		ug/L		0.100		ug/L	
cis-1,2-Dichloroethene	156-59-2	1.00		ug/L		0.180		ug/L	
cis-1,3-Dichloropropene	10061-01-5	1.00		ug/L		0.180		ug/L	
Cyclohexane	110-82-7	1.00		ug/L		0.160		ug/L	
Dibromofluoromethane (Surr)	1868-53-7			ug/L		0.100		ug/L	
Dichlorobromomethane	75-27-4	1.00		ug/L		0.120		ug/L	
Dichlorodifluoromethane	75-71-8	1.00		ug/L		0.220		ug/L	
Ethylbenzene	100-41-4	1.00		ug/L		0.100		ug/L	
Ethylene Dibromide	106-93-4	1.00		ug/L		0.280		ug/L	
Isopropylbenzene	98-82-8	1.00		ug/L		0.0800		ug/L	
Methyl acetate	79-20-9	5.00		ug/L		0.340		ug/L	

Methyl tert-butyl ether	1634-04-4	1.00	ug/L	0.140	ug/L
Methylcyclohexane	108-87-2	1.00	ug/L	0.140	ug/L
Methylene Chloride	75-09-2	1.00	ug/L	0.180	ug/L
m-Xylene & p-Xylene	179601-23-1	2.00	ug/L	0.250	ug/L
o-Xylene	95-47-6	1.00	ug/L	0.130	ug/L
Styrene	100-42-5	1.00	ug/L	0.120	ug/L
Tetrachloroethene	127-18-4	1.00	ug/L	0.100	ug/L
Toluene	108-88-3	1.00	ug/L	0.150	ug/L
Toluene-d8 (Surr)	2037-26-5		ug/L		ug/L
trans-1,2-Dichloroethene	156-60-5	1.00	ug/L	0.130	ug/L
trans-1,3-Dichloropropene	10061-02-6	1.00	ug/L	0.240	ug/L
Trichloroethene	79-01-6	1.00	ug/L	0.0900	ug/L
Trichlorofluoromethane	75-69-4	1.00	ug/L	0.150	ug/L
Vinyl chloride	75-01-4	1.00	ug/L	0.140	ug/L
1,2-Dichloroethane	107-06-2	1.00	ug/L	0.190	ug/L
1,2-Dichlorobenzene	95-50-1	1.00	ug/L	0.210	ug/L
1,2-Dibromo-3-Chloropropane	96-12-8	1.00	ug/L	0.400	ug/L

Groundwater	Semivolatile Organic Compounds (GC/MS)	8270D
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Analyte Description	CAS Number	RL - Limit	RL - Units	MDL - Limit	MDL - Units
1,1'-Biphenyl	92-52-4	10.0	ug/L	1.80	ug/L
1,2,4,5-Tetrachlorobenzene	95-94-3	10.0	ug/L	1.80	ug/L
2,2'-oxybis[1-chloropropane]	108-60-1	10.0	ug/L	1.30	ug/L
2,3,4,6-Tetrachlorophenol	58-90-2	10.0	ug/L	0.890	ug/L
2,4,5-Trichlorophenol	95-95-4	10.0	ug/L	2.20	ug/L
2,4,6-Tribromophenol (Surr)	118-79-6		ug/L		ug/L
2,4,6-Trichlorophenol	88-06-2	10.0	ug/L	1.40	ug/L
2,4-Dichlorophenol	120-83-2	10.0	ug/L	1.10	ug/L
2,4-Dimethylphenol	105-67-9	10.0	ug/L	1.20	ug/L
2,4-Dinitrophenol	51-28-5	30.0	ug/L	2.00	ug/L
2,4-Dinitrotoluene	121-14-2	2.00	ug/L	0.280	ug/L
2,6-Dinitrotoluene	606-20-2	2.00	ug/L	0.270	ug/L
2-Chloronaphthalene	91-58-7	10.0	ug/L	1.30	ug/L
2-Chlorophenol	95-57-8	10.0	ug/L	0.930	ug/L
2-Fluorobiphenyl	321-60-8		ug/L		ug/L
2-Fluorophenol (Surr)	367-12-4		ug/L		ug/L
2-Methylnaphthalene	91-57-6	10.0	ug/L	1.50	ug/L
2-Methylphenol	95-48-7	10.0	ug/L	1.40	ug/L
2-Nitroaniline	88-74-4	20.0	ug/L	2.00	ug/L
2-Nitrophenol	88-75-5	10.0	ug/L	0.680	ug/L
3,3'-Dichlorobenzidine	91-94-1	20.0	ug/L	3.20	ug/L
3-Nitroaniline	99-09-2	20.0	ug/L	2.90	ug/L

4,6-Dinitro-2-methylphenol	534-52-1	30.0	ug/L	3.00	ug/L
4-Bromophenyl phenyl ether	101-55-3	10.0	ug/L	1.10	ug/L
4-Chloro-3-methylphenol	59-50-7	10.0	ug/L	1.10	ug/L
4-Chloroaniline	106-47-8	1.00	ug/L	0.320	ug/L
4-Chlorophenyl phenyl ether	7005-72-3	10.0	ug/L	1.50	ug/L
4-Methylphenol	106-44-5	10.0	ug/L	1.00	ug/L
4-Nitroaniline	100-01-6	20.0	ug/L	2.90	ug/L
4-Nitrophenol	100-02-7	30.0	ug/L	2.00	ug/L
Acenaphthene	83-32-9	10.0	ug/L	1.10	ug/L
Acenaphthylene	208-96-8	10.0	ug/L	1.80	ug/L
Acetophenone	98-86-2	10.0	ug/L	0.890	ug/L
Anthracene	120-12-7	10.0	ug/L	0.850	ug/L
Atrazine	1912-24-9	10.0	ug/L	1.00	ug/L
Benzaldehyde	100-52-7	10.0	ug/L	2.10	ug/L
Benzo[a]anthracene	56-55-3	1.00	ug/L	0.180	ug/L
Benzo[a]pyrene	50-32-8	1.00	ug/L	0.140	ug/L
Benzo[b]fluoranthene	205-99-2	1.00	ug/L	0.210	ug/L
Benzo[g,h,i]perylene	191-24-2	10.0	ug/L	0.930	ug/L
Benzo[k]fluoranthene	207-08-9	1.00	ug/L	0.140	ug/L
Bis(2-chloroethoxy)methane	111-91-1	10.0	ug/L	1.00	ug/L
Bis(2-chloroethyl)ether	111-44-4	1.00	ug/L	0.300	ug/L
Bis(2-ethylhexyl) phthalate	117-81-7	10.0	ug/L	0.810	ug/L
Butyl benzyl phthalate	85-68-7	10.0	ug/L	1.40	ug/L
Caprolactam	105-60-2	10.0	ug/L	0.910	ug/L
Carbazole	86-74-8	10.0	ug/L	1.20	ug/L
Chrysene	218-01-9	10.0	ug/L	1.40	ug/L
Dibenz(a,h)anthracene	53-70-3	1.00	ug/L	0.160	ug/L
Dibenzofuran	132-64-9	10.0	ug/L	1.50	ug/L
Diethyl phthalate	84-66-2	10.0	ug/L	1.40	ug/L
Dimethyl phthalate	131-11-3	10.0	ug/L	1.10	ug/L
Di-n-butyl phthalate	84-74-2	10.0	ug/L	1.00	ug/L
Di-n-octyl phthalate	117-84-0	10.0	ug/L	0.880	ug/L
Fluoranthene	206-44-0	10.0	ug/L	1.10	ug/L
Fluorene	86-73-7	10.0	ug/L	1.70	ug/L
Hexachlorobenzene	118-74-1	1.00	ug/L	0.200	ug/L
Hexachlorobutadiene	87-68-3	2.00	ug/L	0.680	ug/L
Hexachlorocyclopentadiene	77-47-4	10.0	ug/L	1.50	ug/L
Hexachloroethane	67-72-1	1.00	ug/L	0.150	ug/L
Indeno[1,2,3-cd]pyrene	193-39-5	1.00	ug/L	0.110	ug/L
Isophorone	78-59-1	10.0	ug/L	1.30	ug/L
Naphthalene	91-20-3	10.0	ug/L	2.00	ug/L
Nitrobenzene	98-95-3	1.00	ug/L	0.340	ug/L

Nitrobenzene-d5 (Surr)	4165-60-0		ug/L		ug/L
N-Nitrosodi-n-propylamine	621-64-7	1.00	ug/L	0.270	ug/L
N-Nitrosodiphenylamine	86-30-6	10.0	ug/L	1.00	ug/L
Pentachlorophenol	87-86-5	30.0	ug/L	2.70	ug/L
Phenanthrene	85-01-8	10.0	ug/L	1.20	ug/L
Phenol	108-95-2	10.0	ug/L	0.600	ug/L
Phenol-d5 (Surr)	4165-62-2		ug/L		ug/L
Pyrene	129-00-0	10.0	ug/L	1.10	ug/L
Terphenyl-d14 (Surr)	1718-51-0		ug/L		ug/L

Groundwater	Metals (ICP)	6010C
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Analyte Description	CAS Number	RL - Limit	RL - Units	MDL - Limit	MDL - Units
Silver	7440-22-4	10.0	ug/L	1.33	ug/L
Arsenic	7440-38-2	15.0	ug/L	5.32	ug/L
Barium	7440-39-3	200	ug/L	16.6	ug/L
Cadmium	7440-43-9	4.00	ug/L	0.610	ug/L
Chromium	7440-47-3	10.0	ug/L	3.76	ug/L
Lead	7439-92-1	10.0	ug/L	4.29	ug/L
Selenium	7782-49-2	20.0	ug/L	5.07	ug/L
Analyte Description	CAS Number	RL - Limit	RL - Units	MDL - Limit	MDL - Units
Prep Analyte	STL00048				

Groundwater	Mercury (CVAA)	7470A
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Analyte Description	CAS Number	RL - Limit	RL - Units	MDL - Limit	MDL - Units
Mercury	7439-97-6	0.200	ug/L	0.160	ug/L

Analyte Description	CAS Number	RL - Limit	RL - Units	MDL - Limit	MDL - Units
Prep Analyte	STL00048				

Groundwater	Organochlorine Pesticides (GC)	8081B
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Analyte Description	CAS Number	RL - Limit	RL - Units	MDL - Limit	MDL - Units
4,4'-DDD	72-54-8	0.0500	ug/L	0.0360	ug/L
4,4'-DDE	72-55-9	0.0500	ug/L	0.0350	ug/L
4,4'-DDT	50-29-3	0.0500	ug/L	0.0360	ug/L
Aldrin	309-00-2	0.0500	ug/L	0.0380	ug/L
alpha-BHC	319-84-6	0.0500	ug/L	0.0360	ug/L
beta-BHC	319-85-7	0.0500	ug/L	0.0370	ug/L
Chlordane (technical)	57-74-9	0.500	ug/L	0.210	ug/L
DCB Decachlorobiphenyl	2051-24-3		ug/L		ug/L
delta-BHC	319-86-8	0.0500	ug/L	0.0330	ug/L
Dieldrin	60-57-1	0.0500	ug/L	0.0330	ug/L
Endosulfan I	959-98-8	0.0500	ug/L	0.0340	ug/L

Endosulfan II	33213-65-9	0.0500	ug/L	0.0350	ug/L
Endosulfan sulfate	1031-07-8	0.0500	ug/L	0.0370	ug/L
Endrin	72-20-8	0.0500	ug/L	0.0340	ug/L
Endrin aldehyde	7421-93-4	0.0500	ug/L	0.0350	ug/L
Endrin ketone	53494-70-5	0.0500	ug/L	0.0370	ug/L
gamma-BHC (Lindane)	58-89-9	0.0500	ug/L	0.0350	ug/L
Heptachlor	76-44-8	0.0500	ug/L	0.0370	ug/L
Heptachlor epoxide	1024-57-3	0.0500	ug/L	0.0350	ug/L
Methoxychlor	72-43-5	0.0500	ug/L	0.0450	ug/L
Tetrachloro-m-xylene	877-09-8		ug/L		ug/L
Toxaphene	8001-35-2	0.500	ug/L	0.340	ug/L

Groundwater	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	8082A
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Analyte Description	CAS Number	RL - Limit	RL - Units	MDL - Limit	MDL - Units
Aroclor 1016	12674-11-2	0.400	ug/L	0.270	ug/L
Aroclor 1221	11104-28-2	0.400	ug/L	0.270	ug/L
Aroclor 1232	11141-16-5	0.400	ug/L	0.270	ug/L
Aroclor 1242	53469-21-9	0.400	ug/L	0.270	ug/L
Aroclor 1248	12672-29-6	0.400	ug/L	0.270	ug/L
Aroclor 1254	11097-69-1	0.400	ug/L	0.210	ug/L
Aroclor 1260	11096-82-5	0.400	ug/L	0.210	ug/L
Aroclor-1262	37324-23-5	0.400	ug/L	0.210	ug/L
Aroclor 1268	11100-14-4	0.400	ug/L	0.210	ug/L
DCB Decachlorobiphenyl	2051-24-3		ug/L		ug/L
Polychlorinated biphenyls, Total	1336-36-3	0.400	ug/L	0.270	ug/L

Air Samples	Volatile Organic Compounds in Ambient Air	TO15
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Analyte Description	CAS Number	RL - Limit	RL - Units	MDL - Limit	MDL - Units
Dichlorodifluoromethane	75-71-8	0.500	ppb v/v	0.0800	ppb v/v
Freon 22	75-45-6	0.500	ppb v/v	0.0800	ppb v/v
1,2-Dichlorotetrafluoroethane	76-14-2	0.200	ppb v/v	0.0800	ppb v/v
Chloromethane	74-87-3	0.500	ppb v/v	0.0800	ppb v/v
n-Butane	106-97-8	0.500	ppb v/v	0.0800	ppb v/v
Vinyl chloride	75-01-4	0.200	ppb v/v	0.0280	ppb v/v
1,3-Butadiene	106-99-0	0.200	ppb v/v	0.0800	ppb v/v
Bromomethane	74-83-9	0.200	ppb v/v	0.0800	ppb v/v
Chloroethane	75-00-3	0.500	ppb v/v	0.0800	ppb v/v
Bromoethene(Vinyl Bromide)	593-60-2	0.200	ppb v/v	0.0400	ppb v/v
Trichlorofluoromethane	75-69-4	0.200	ppb v/v	0.0800	ppb v/v
Freon TF	76-13-1	0.200	ppb v/v	0.0800	ppb v/v
1,1-Dichloroethene	75-35-4	0.200	ppb v/v	0.200	ppb v/v

Acetone	67-64-1	5.00	ppb v/v	0.500	ppb v/v
Isopropyl alcohol	67-63-0	5.00	ppb v/v	0.200	ppb v/v
Carbon disulfide	75-15-0	0.500	ppb v/v	0.0800	ppb v/v
3-Chloropropene	107-05-1	0.500	ppb v/v	0.0800	ppb v/v
Methylene Chloride	75-09-2	0.500	ppb v/v	0.0800	ppb v/v
tert-Butyl alcohol	75-65-0	5.00	ppb v/v	0.0800	ppb v/v
Methyl tert-butyl ether	1634-04-4	0.200	ppb v/v	0.0400	ppb v/v
trans-1,2-Dichloroethene	156-60-5	0.200	ppb v/v	0.0800	ppb v/v
n-Hexane	110-54-3	0.200	ppb v/v	0.0800	ppb v/v
1,1-Dichloroethane	75-34-3	0.200	ppb v/v	0.0800	ppb v/v
Methyl Ethyl Ketone	78-93-3	0.500	ppb v/v	0.0800	ppb v/v
cis-1,2-Dichloroethene	156-59-2	0.200	ppb v/v	0.200	ppb v/v
1,2-Dichloroethene, Total	540-59-0	0.200	ppb v/v	0.0800	ppb v/v
Bromochloromethane	74-97-5		ppb v/v		ppb v/v
Chloroform	67-66-3	0.200	ppb v/v	0.0800	ppb v/v
Tetrahydrofuran	109-99-9	5.00	ppb v/v	0.0800	ppb v/v
1,1,1-Trichloroethane	71-55-6	0.200	ppb v/v	0.0800	ppb v/v
Cyclohexane	110-82-7	0.200	ppb v/v	0.0400	ppb v/v
Carbon tetrachloride	56-23-5	0.200	ppb v/v	0.0400	ppb v/v
2,2,4-Trimethylpentane	540-84-1	0.200	ppb v/v	0.0400	ppb v/v
Benzene	71-43-2	0.200	ppb v/v	0.0400	ppb v/v
1,2-Dichloroethane	107-06-2	0.200	ppb v/v	0.0400	ppb v/v
n-Heptane	142-82-5	0.200	ppb v/v	0.0400	ppb v/v
1,4-Difluorobenzene	540-36-3		ppb v/v		ppb v/v
Trichloroethene	79-01-6	0.200	ppb v/v	0.0280	ppb v/v
Methyl methacrylate	80-62-6	0.500	ppb v/v	0.0400	ppb v/v
1,2-Dichloropropane	78-87-5	0.200	ppb v/v	0.0800	ppb v/v
1,4-Dioxane	123-91-1	5.00	ppb v/v	0.200	ppb v/v
Bromodichloromethane	75-27-4	0.200	ppb v/v	0.0400	ppb v/v
Dibromomethane	74-95-3	0.200	ppb v/v	0.0400	ppb v/v
cis-1,3-Dichloropropene	10061-01-5	0.200	ppb v/v	0.0400	ppb v/v
Methyl isobutyl ketone	108-10-1	0.500	ppb v/v	0.0800	ppb v/v
Toluene	108-88-3	0.200	ppb v/v	0.0400	ppb v/v
trans-1,3-Dichloropropene	10061-02-6	0.200	ppb v/v	0.0400	ppb v/v
1,1,2-Trichloroethane	79-00-5	0.200	ppb v/v	0.0400	ppb v/v
Tetrachloroethene	127-18-4	0.200	ppb v/v	0.0400	ppb v/v
Methyl Butyl Ketone (2-Hexanone)	591-78-6	0.500	ppb v/v	0.0800	ppb v/v
Dibromochloromethane	124-48-1	0.200	ppb v/v	0.0400	ppb v/v
1,2-Dibromoethane	106-93-4	0.200	ppb v/v	0.0400	ppb v/v
Chlorobenzene-d5	3114-55-4		ppb v/v		ppb v/v
Chlorobenzene	108-90-7	0.200	ppb v/v	0.0400	ppb v/v
Ethylbenzene	100-41-4	0.200	ppb v/v	0.0400	ppb v/v

m,p-Xylene	179601-23-1	0.500	ppb v/v	0.0400	ppb v/v
Xylene, o-	95-47-6	0.200	ppb v/v	0.0400	ppb v/v
Xylene (total)	1330-20-7	0.200	ppb v/v	0.0400	ppb v/v
Styrene	100-42-5	0.200	ppb v/v	0.0400	ppb v/v
Bromoform	75-25-2	0.200	ppb v/v	0.0280	ppb v/v
Cumene	98-82-8	0.200	ppb v/v	0.0400	ppb v/v
1,1,2,2-Tetrachloroethane	79-34-5	0.200	ppb v/v	0.0400	ppb v/v
n-Propylbenzene	103-65-1	0.200	ppb v/v	0.0400	ppb v/v
4-Ethyltoluene	622-96-8	0.200	ppb v/v	0.0400	ppb v/v
1,3,5-Trimethylbenzene	108-67-8	0.200	ppb v/v	0.0400	ppb v/v
2-Chlorotoluene	95-49-8	0.200	ppb v/v	0.0400	ppb v/v
tert-Butylbenzene	98-06-6	0.200	ppb v/v	0.0400	ppb v/v
1,2,4-Trimethylbenzene	95-63-6	0.200	ppb v/v	0.0800	ppb v/v
sec-Butylbenzene	135-98-8	0.200	ppb v/v	0.0400	ppb v/v
4-Isopropyltoluene	99-87-6	0.200	ppb v/v	0.0800	ppb v/v
1,3-Dichlorobenzene	541-73-1	0.200	ppb v/v	0.0400	ppb v/v
1,4-Dichlorobenzene	106-46-7	0.200	ppb v/v	0.0400	ppb v/v
Benzyl chloride	100-44-7	0.200	ppb v/v	0.0800	ppb v/v
n-Butylbenzene	104-51-8	0.200	ppb v/v	0.0800	ppb v/v
1,2-Dichlorobenzene	95-50-1	0.200	ppb v/v	0.0800	ppb v/v
1,2,4-Trichlorobenzene	120-82-1	0.500	ppb v/v	0.0800	ppb v/v
Hexachlorobutadiene	87-68-3	0.200	ppb v/v	0.0800	ppb v/v
Naphthalene	91-20-3	0.500	ppb v/v	0.0800	ppb v/v
Isopentane	78-78-4	0.200	ppb v/v	0.200	ppb v/v
BFB	460-00-4	0.200	ppb v/v		ppb v/v
Freon 115 TIC	76-15-3	0.200	ppb v/v	0.000100	ppb v/v
Freon 123 TIC	306-83-2	0.200	ppb v/v	0.000100	ppb v/v
CTFE TIC	79-38-9	0.200	ppb v/v	0.000100	ppb v/v
Propane, 1,2-dibromo-3-chloro- TIC	96-12-8	0.200	ppb v/v	0.000100	ppb v/v
Methyl cyclohexane TIC	108-87-2	0.200	ppb v/v	0.000100	ppb v/v
Acrylonitrile	107-13-1	0.500	ppb v/v	0.0800	ppb v/v
Alpha Methyl Styrene	98-83-9	0.200	ppb v/v	0.0400	ppb v/v
n-Butanol	71-36-3	5.00	ppb v/v	0.200	ppb v/v

Soil Samples	Volatile Organic Compounds by GC/MS	8260C
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Analyte Description	CAS Number	RL - Limit	RL - Units	MDL - Limit	MDL - Units
1,1,1-Trichloroethane	71-55-6	1.00	ug/Kg	0.130	ug/Kg
1,1,2,2-Tetrachloroethane	79-34-5	1.00	ug/Kg	0.0900	ug/Kg
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	1.00	ug/Kg	0.110	ug/Kg
1,1,2-Trichloroethane	79-00-5	1.00	ug/Kg	0.140	ug/Kg
1,1-Dichloroethane	75-34-3	1.00	ug/Kg	0.110	ug/Kg
1,1-Dichloroethene	75-35-4	1.00	ug/Kg	0.190	ug/Kg

1,2,3-Trichlorobenzene	87-61-6	1.00	ug/Kg	0.160	ug/Kg
1,2,4-Trichlorobenzene	120-82-1	1.00	ug/Kg	0.190	ug/Kg
1,2-Dichloroethane-d4 (Surr)	17060-07-0		ug/Kg		ug/Kg
1,2-Dichloropropane	78-87-5	1.00	ug/Kg	0.150	ug/Kg
1,3-Dichlorobenzene	541-73-1	1.00	ug/Kg	0.160	ug/Kg
1,4-Dichlorobenzene	106-46-7	1.00	ug/Kg	0.110	ug/Kg
1,4-Dioxane	123-91-1	20.0	ug/Kg	12.7	ug/Kg
2-Butanone (MEK)	78-93-3	5.00	ug/Kg	0.630	ug/Kg
2-Hexanone	591-78-6	5.00	ug/Kg	0.130	ug/Kg
4-Bromofluorobenzene	460-00-4		ug/Kg		ug/Kg
4-Methyl-2-pentanone (MIBK)	108-10-1	5.00	ug/Kg	0.200	ug/Kg
Acetone	67-64-1	5.00	ug/Kg	1.69	ug/Kg
Benzene	71-43-2	1.00	ug/Kg	0.150	ug/Kg
Bromoform	75-25-2	1.00	ug/Kg	0.170	ug/Kg
Bromomethane	74-83-9	1.00	ug/Kg	0.430	ug/Kg
Carbon disulfide	75-15-0	1.00	ug/Kg	0.150	ug/Kg
Carbon tetrachloride	56-23-5	1.00	ug/Kg	0.150	ug/Kg
Chlorobenzene	108-90-7	1.00	ug/Kg	0.180	ug/Kg
Chlorobromomethane	74-97-5	1.00	ug/Kg	0.110	ug/Kg
Chlorodibromomethane	124-48-1	1.00	ug/Kg	0.100	ug/Kg
Chloroethane	75-00-3	1.00	ug/Kg	0.330	ug/Kg
Chloroform	67-66-3	1.00	ug/Kg	0.240	ug/Kg
Chloromethane	74-87-3	1.00	ug/Kg	0.160	ug/Kg
cis-1,2-Dichloroethene	156-59-2	1.00	ug/Kg	0.110	ug/Kg
cis-1,3-Dichloropropene	10061-01-5	1.00	ug/Kg	0.140	ug/Kg
Cyclohexane	110-82-7	1.00	ug/Kg	0.130	ug/Kg
Dibromofluoromethane (Surr)	1868-53-7		ug/Kg		ug/Kg
Dichlorobromomethane	75-27-4	1.00	ug/Kg	0.320	ug/Kg
Dichlorodifluoromethane	75-71-8	1.00	ug/Kg	0.220	ug/Kg
Ethylbenzene	100-41-4	1.00	ug/Kg	0.170	ug/Kg
Ethylene Dibromide	106-93-4	1.00	ug/Kg	0.150	ug/Kg
Isopropylbenzene	98-82-8	1.00	ug/Kg	0.110	ug/Kg
Methyl acetate	79-20-9	1.00	ug/Kg	0.320	ug/Kg
Methyl tert-butyl ether	1634-04-4	1.00	ug/Kg	0.110	ug/Kg
Methylcyclohexane	108-87-2	1.00	ug/Kg	0.100	ug/Kg
Methylene Chloride	75-09-2	1.00	ug/Kg	0.150	ug/Kg
m-Xylene & p-Xylene	179601-23-1	2.00	ug/Kg	0.590	ug/Kg
o-Xylene	95-47-6	1.00	ug/Kg	0.190	ug/Kg
Styrene	100-42-5	1.00	ug/Kg	0.280	ug/Kg
Tetrachloroethene	127-18-4	1.00	ug/Kg	0.120	ug/Kg
Toluene	108-88-3	1.00	ug/Kg	0.140	ug/Kg
Toluene-d8 (Surr)	2037-26-5		ug/Kg		ug/Kg

trans-1,2-Dichloroethene	156-60-5	1.00	ug/Kg	0.130	ug/Kg
trans-1,3-Dichloropropene	10061-02-6	1.00	ug/Kg	0.100	ug/Kg
Trichloroethene	79-01-6	1.00	ug/Kg	0.120	ug/Kg
Trichlorofluoromethane	75-69-4	1.00	ug/Kg	0.160	ug/Kg
Vinyl chloride	75-01-4	1.00	ug/Kg	0.340	ug/Kg
1,2-Dichloroethane	107-06-2	1.00	ug/Kg	0.180	ug/Kg
1,2-Dichlorobenzene	95-50-1	1.00	ug/Kg	0.100	ug/Kg
1,2-Dibromo-3-Chloropropane	96-12-8	1.00	ug/Kg	0.440	ug/Kg

Soil Samples	Semivolatile Organic Compounds (GC/MS)	8270D
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Analyte Description	CAS Number	RL - Limit	RL - Units	MDL - Limit	MDL - Units
1,1'-Biphenyl	92-52-4	330	ug/Kg	44.3	ug/Kg
1,2,4,5-Tetrachlorobenzene	95-94-3	330	ug/Kg	44.5	ug/Kg
2,2'-oxybis[1-chloropropane]	108-60-1	330	ug/Kg	36.6	ug/Kg
2,3,4,6-Tetrachlorophenol	58-90-2	330	ug/Kg	43.0	ug/Kg
2,4,5-Trichlorophenol	95-95-4	330	ug/Kg	42.7	ug/Kg
2,4,6-Tribromophenol (Surr)	118-79-6		ug/Kg		ug/Kg
2,4,6-Trichlorophenol	88-06-2	330	ug/Kg	38.7	ug/Kg
2,4-Dichlorophenol	120-83-2	330	ug/Kg	48.4	ug/Kg
2,4-Dimethylphenol	105-67-9	330	ug/Kg	81.6	ug/Kg
2,4-Dinitrophenol	51-28-5	1000	ug/Kg	188	ug/Kg
2,4-Dinitrotoluene	121-14-2	67.0	ug/Kg	10.9	ug/Kg
2,6-Dinitrotoluene	606-20-2	67.0	ug/Kg	9.97	ug/Kg
2-Chloronaphthalene	91-58-7	330	ug/Kg	36.9	ug/Kg
2-Chlorophenol	95-57-8	330	ug/Kg	43.5	ug/Kg
2-Fluorobiphenyl	321-60-8		ug/Kg		ug/Kg
2-Fluorophenol (Surr)	367-12-4		ug/Kg		ug/Kg
2-Methylnaphthalene	91-57-6	330	ug/Kg	42.5	ug/Kg
2-Methylphenol	95-48-7	330	ug/Kg	56.4	ug/Kg
2-Nitroaniline	88-74-4	670	ug/Kg	138	ug/Kg
2-Nitrophenol	88-75-5	330	ug/Kg	36.9	ug/Kg
3,3'-Dichlorobenzidine	91-94-1	670	ug/Kg	116	ug/Kg
3-Nitroaniline	99-09-2	670	ug/Kg	117	ug/Kg
4,6-Dinitro-2-methylphenol	534-52-1	1000	ug/Kg	90.1	ug/Kg
4-Bromophenyl phenyl ether	101-55-3	330	ug/Kg	32.8	ug/Kg
4-Chloro-3-methylphenol	59-50-7	330	ug/Kg	49.9	ug/Kg
4-Chloroaniline	106-47-8	330	ug/Kg	87.6	ug/Kg
4-Chlorophenyl phenyl ether	7005-72-3	330	ug/Kg	38.8	ug/Kg
4-Methylphenol	106-44-5	330	ug/Kg	65.1	ug/Kg
4-Nitroaniline	100-01-6	670	ug/Kg	103	ug/Kg
4-Nitrophenol	100-02-7	1000	ug/Kg	213	ug/Kg
Acenaphthene	83-32-9	330	ug/Kg	48.2	ug/Kg

Acenaphthylene	208-96-8	330	ug/Kg	39.1	ug/Kg
Acetophenone	98-86-2	330	ug/Kg	50.8	ug/Kg
Anthracene	120-12-7	330	ug/Kg	40.2	ug/Kg
Atrazine	1912-24-9	330	ug/Kg	51.1	ug/Kg
Benzaldehyde	100-52-7	330	ug/Kg	38.9	ug/Kg
Benzo[a]anthracene	56-55-3	33.0	ug/Kg	2.31	ug/Kg
Benzo[a]pyrene	50-32-8	33.0	ug/Kg	2.34	ug/Kg
Benzo[b]fluoranthene	205-99-2	33.0	ug/Kg	2.09	ug/Kg
Benzo[g,h,i]perylene	191-24-2	330	ug/Kg	24.5	ug/Kg
Benzo[k]fluoranthene	207-08-9	33.0	ug/Kg	2.51	ug/Kg
Bis(2-chloroethoxy)methane	111-91-1	330	ug/Kg	42.7	ug/Kg
Bis(2-chloroethyl)ether	111-44-4	33.0	ug/Kg	4.51	ug/Kg
Bis(2-ethylhexyl) phthalate	117-81-7	330	ug/Kg	110	ug/Kg
Butyl benzyl phthalate	85-68-7	330	ug/Kg	30.3	ug/Kg
Caprolactam	105-60-2	330	ug/Kg	76.2	ug/Kg
Carbazole	86-74-8	330	ug/Kg	39.1	ug/Kg
Chrysene	218-01-9	330	ug/Kg	38.6	ug/Kg
Dibenz(a,h)anthracene	53-70-3	33.0	ug/Kg	4.17	ug/Kg
Dibenzofuran	132-64-9	330	ug/Kg	38.8	ug/Kg
Diethyl phthalate	84-66-2	330	ug/Kg	39.4	ug/Kg
Dimethyl phthalate	131-11-3	330	ug/Kg	39.2	ug/Kg
Di-n-butyl phthalate	84-74-2	330	ug/Kg	40.8	ug/Kg
Di-n-octyl phthalate	117-84-0	330	ug/Kg	21.1	ug/Kg
Fluoranthene	206-44-0	330	ug/Kg	44.1	ug/Kg
Fluorene	86-73-7	330	ug/Kg	42.3	ug/Kg
Hexachlorobenzene	118-74-1	33.0	ug/Kg	4.52	ug/Kg
Hexachlorobutadiene	87-68-3	67.0	ug/Kg	8.07	ug/Kg
Hexachlorocyclopentadiene	77-47-4	330	ug/Kg	38.9	ug/Kg
Hexachloroethane	67-72-1	33.0	ug/Kg	3.68	ug/Kg
Indeno[1,2,3-cd]pyrene	193-39-5	33.0	ug/Kg	6.15	ug/Kg
Isophorone	78-59-1	330	ug/Kg	40.1	ug/Kg
Naphthalene	91-20-3	330	ug/Kg	38.3	ug/Kg
Nitrobenzene	98-95-3	33.0	ug/Kg	4.70	ug/Kg
Nitrobenzene-d5 (Surr)	4165-60-0		ug/Kg		ug/Kg
N-Nitrosodi-n-propylamine	621-64-7	33.0	ug/Kg	5.52	ug/Kg
N-Nitrosodiphenylamine	86-30-6	330	ug/Kg	32.6	ug/Kg
Pentachlorophenol	87-86-5	1000	ug/Kg	98.7	ug/Kg
Phenanthrene	85-01-8	330	ug/Kg	42.1	ug/Kg
Phenol	108-95-2	330	ug/Kg	44.4	ug/Kg
Phenol-d5 (Surr)	4165-62-2		ug/Kg		ug/Kg
Pyrene	129-00-0	330	ug/Kg	27.7	ug/Kg
Terphenyl-d14 (Surr)	1718-51-0		ug/Kg		ug/Kg

Soil Samples	Metals (ICP)	6010C
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Analyte Description	CAS Number	RL - Limit	RL - Units	MDL - Limit	MDL - Units
Silver	7440-22-4	0.500	mg/Kg	0.0490	mg/Kg
Arsenic	7440-38-2	0.750	mg/Kg	0.147	mg/Kg
Barium	7440-39-3	10.0	mg/Kg	0.814	mg/Kg
Cadmium	7440-43-9	0.200	mg/Kg	0.0310	mg/Kg
Chromium	7440-47-3	0.500	mg/Kg	0.189	mg/Kg
Lead	7439-92-1	0.500	mg/Kg	0.203	mg/Kg
Selenium	7782-49-2	1.00	mg/Kg	0.229	mg/Kg

Analyte Description	CAS Number	RL - Limit	RL - Units	MDL - Limit	MDL - Units
Prep Analyte	STL00048				

Soil Samples	Mercury in Solid or Semisolid Waste (Manual)	7471B
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Analyte Description	CAS Number	RL - Limit	RL - Units	MDL - Limit	MDL - Units
Mercury	7439-97-6	0.0170	mg/Kg	0.0120	mg/Kg

Soil Samples	Organochlorine Pesticides (GC)	8081B
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Analyte Description	CAS Number	RL - Limit	RL - Units	MDL - Limit	MDL - Units
4,4'-DDD	72-54-8	6.70	ug/Kg	1.30	ug/Kg
4,4'-DDE	72-55-9	6.70	ug/Kg	1.30	ug/Kg
4,4'-DDT	50-29-3	6.70	ug/Kg	1.60	ug/Kg
Aldrin	309-00-2	6.70	ug/Kg	1.40	ug/Kg
alpha-BHC	319-84-6	6.70	ug/Kg	1.50	ug/Kg
beta-BHC	319-85-7	6.70	ug/Kg	1.60	ug/Kg
Chlordane (technical)	57-74-9	67.0	ug/Kg	19.0	ug/Kg
DCB Decachlorobiphenyl	2051-24-3		ug/Kg		ug/Kg
delta-BHC	319-86-8	6.70	ug/Kg	1.20	ug/Kg
Dieldrin	60-57-1	6.70	ug/Kg	1.20	ug/Kg
Endosulfan I	959-98-8	6.70	ug/Kg	1.50	ug/Kg
Endosulfan II	33213-65-9	6.70	ug/Kg	1.30	ug/Kg
Endosulfan sulfate	1031-07-8	6.70	ug/Kg	1.30	ug/Kg
Endrin	72-20-8	6.70	ug/Kg	1.60	ug/Kg
Endrin aldehyde	7421-93-4	6.70	ug/Kg	1.00	ug/Kg
Endrin ketone	53494-70-5	6.70	ug/Kg	1.30	ug/Kg
gamma-BHC (Lindane)	58-89-9	6.70	ug/Kg	1.20	ug/Kg
Heptachlor	76-44-8	6.70	ug/Kg	1.60	ug/Kg
Heptachlor epoxide	1024-57-3	6.70	ug/Kg	1.50	ug/Kg
Methoxychlor	72-43-5	6.70	ug/Kg	1.60	ug/Kg
Tetrachloro-m-xylene	877-09-8		ug/Kg		ug/Kg
Toxaphene	8001-35-2	67.0	ug/Kg	18.0	ug/Kg

Soil Samples	Polychlorinated Biphenyls (PCBs) by Gas C	8082A
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Analyte Description	GAS Number	RL - Limit	RL - Units	MDL - Limit	MDL - Units
Aroclor 1016	12674-11-2	67.0	ug/Kg	15.0	ug/Kg
Aroclor 1221	11104-28-2	67.0	ug/Kg	15.0	ug/Kg
Aroclor 1232	11141-16-5	67.0	ug/Kg	15.0	ug/Kg
Aroclor 1242	53469-21-9	67.0	ug/Kg	15.0	ug/Kg
Aroclor 1248	12672-29-6	67.0	ug/Kg	15.0	ug/Kg
Aroclor 1254	11097-69-1	67.0	ug/Kg	19.0	ug/Kg
Aroclor 1260	11096-82-5	67.0	ug/Kg	19.0	ug/Kg
Aroclor-1262	37324-23-5	67.0	ug/Kg	19.0	ug/Kg
Aroclor 1268	11100-14-4	67.0	ug/Kg	19.0	ug/Kg
DCB Decachlorobiphenyl	2051-24-3		ug/Kg		ug/Kg
Polychlorinated biphenyls, Total	1336-36-3	67.0	ug/Kg	19.0	ug/Kg