SOIL, GROUNDWATER AND VAPOR MONITORING – 2009 WORK PLAN
HENKEL CORPORATION – BUFFALO FACILITY

NOVEMBER 2009
25364871

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Table of Contents

APPENDICES

ABBREVIATIONS

bgs	below ground surface
BSA	Buffalo Sewer Authority
CLP	Contract Laboratory Program
FTL	Field Team Leader
HASP	Health and Safety Plan
Henkel	Henkel Corporation
HVE	High Vacuum Extraction
IRM	Interim Remedial Measure
IT	International Technology Corporation
NFA	No Further Action
NYSDEC	New York State Department of Environmental Conservation
OM&M	Operations, Maintenance and Monitoring
PID	Photoionization Detector
PM	Project Manager
PVC	Polyvinyl Chloride
QA	Quality Assurance
QC	Quality Control
RA	Remediation Activities
RACR	Remedial Action Completion Report
RAP	Remedial Action Plan
Site	North Parcel of 710 Ohio Street, Buffalo, New York 14203
SSO	Site Safety Officer
STL	Severn Trent Laboratories
TAL	TestAmerica Laboratories, Incorporated
TCL	Target Compound List

TOC	Total Organic Carbon
TOGS	Technical and Operations Guidance Series
URS	URS Corporation
VOC	Volatile Organic Compounds
Work Plan	Annual Soil and Groundwater Monitoring Work Plan

SIGNATURES OF URS ENVIRONMENTAL PROFESSIONALS INVOLVED IN THE PREPARATION OF THIS REPORT

REPORT TITLE: Soil, Groundwater and Vapor Monitoring – 2009 Work Plan
Henkel Buffalo
710 Ohio Street
Buffalo, New York 14203
November 2009

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Patricia M. Bryan, P.G.
Senior Project Manager

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Kimberly D. P. Rentz, P.E.
Environmental Engineer

1.0 INTRODUCTION

The following Soil, Groundwater and Vapor Monitoring Work Plan (Work Plan) was prepared on behalf of Henkel Corporation (Henkel) for their Buffalo Facility (Site) located at 710 Ohio Street, Buffalo, New York (**Figure 1-1**). The Work Plan describes soil, groundwater and vapor monitoring to be conducted in the support of remediation system closure. The monitoring activities are intended to meet the requirements of the Site's Operations, Maintenance and Monitoring (OM&M) Plan (URS, 2006b).

1.1 Objective

The objective of the annual soil, groundwater and vapor monitoring is to:

- Evaluate the conditions of the soil at Areas "A" and "C";
- Evaluate the conditions of the groundwater across the Site;
- Evaluate the effect of the groundwater collection system on site groundwater conditions;
- Evaluate the effectiveness of the high vacuum extraction (HVE) system on toluene impacts at the Site; and
- Determine if cleanup objectives have been met to warrant Site closure.

1.2 Site Description

The Site occupies the northern parcel of the Henkel plant located at 710 Ohio Street in the City of Buffalo, New York. The Site consists of approximately 6.3 acres and includes an aboveground tank farm. The Site is bound to the south by an east-west line paralleling the northern wall of Building 29, to the north by Rigidized Metals Corp., to the east by railroad tracks, and to the west by Ohio Street (**Figure 1-2**).

The Site is a parcel of land for which Henkel is seeking a No Further Action (NFA) letter from the New York State Department of Environmental Conservation (NYSDEC). The proposed activities described herein are limited to the Site. The legal description of the Site is described in the Remedial Action Plan (RAP) dated May 2002 (URS, 2002a).

1.3 Summary of Remedial Action

The Site contains a tank farm, which was upgraded beginning in May 1999. Construction activities included the excavation of site soils prior to installation of the new aboveground

storage tanks. The NYSDEC approved "Revised Removal Action Work Plan for the Tank Farm Footprint" (IT, 1999b) describes the actions required to remove and dispose of contaminated soils encountered during excavation as part of the Interim Remedial Measure (IRM). These activities were completed during the summer of 1999 as summarized in the April 2000 submittal of the draft Removal Action Implementation Report (IT, 2000c).

A groundwater investigation was conducted across the site in 1999 and 2000. A work plan outlining the procedures and sampling requirements for the installation of groundwater monitoring wells at the Site was submitted to NYSDEC in January 1999 (IT, 1999a). The draft groundwater investigation report was submitted to NYSDEC in October 1999 (IT, 1999c). The groundwater investigation indentified a shallow water table aquifer and a low hydraulic gradient at the site. The investigation indicated the presence of impacts on the Site; however, impacts were likely to remain on-site due to the hydraulic conductivity. A final version of the investigation report was submitted to NSYDEC in March 2000 (IT, 2000a).

In March 2000 a Site Investigation Work Plan (IT, 2000b) was submitted to the NYSDEC. The work plan laid out the strategy for defining the nature and extent of contamination for the portion of the site not included in the Tank Farm Footprint. The site investigation report (IT, 2001a), submitted in January 2001 revealed the presence of three volatile organic compound (VOC) "hot spots." These "hot spots" were identified for future remedial action and are the subject of this report. As requested by NYSDEC a supplemental site investigation was completed. The scope of work for the supplemental investigation was outlined in the May 2001 work plan (IT, 2001b). The results of the supplemental site investigation (IT, 2001c) were reviewed during the preparation of the RAP. The RAP was submitted to NYSDEC by IT in January 2002 (IT, 2002). Final revisions were completed by URS in May 2002 (URS, 2002a).

An off-site investigation was completed in June 2002 in accordance with the RAP to evaluate abutting properties adjacent to areas of elevated organic contamination at the Site (URS, 2002b).

The remediation activities (RA) were divided into underground and aboveground activities. Underground activities began on May 1, 2003 with site mobilization and continued until August 1, 2003. Underground activities included excavation of contaminated soils from Areas B and C, therefore, the installation of an HVE system was unnecessary with the exception of the west wall of Excavation C. **Figure 1-3** shows the locations of the HVE wells. An HVE system was installed as a stand-alone treatment for the impacts in Area A which was not excavated due to the proximity to a nitrogen tank. Based on the pilot test of the HVE system conducted in Area A, HVE wells were installed where necessary.

Groundwater collection systems were installed in Excavation B and C prior to backfilling with clean material.

Aboveground activities began at the completion of the underground activities and continued until July 16, 2004, during which time the HVE treatment system was completed and equipment was housed in a temporary shelter, electrical power was connected to the treatment building and system, and the groundwater collection and HVE systems were connected to the Buffalo Sewer Authority (BSA) sanitary sewer.

1.4 Environmental Effectiveness Monitoring

Environmental effectiveness monitoring was completed in May 2005 to evaluate the effectiveness of the HVE system on VOC impacts at Area "A" and the western edge of Area "C" (URS, 2005). A total of six borings (3 in Area "A" and 3 in Area "C") were advanced to a depth of ten feet below ground surface (bgs) with one sample collected from each boring based on photoionization detector (PID) readings and visual observations. An overview of previous soil sample locations can be found in **Figure 1-4**. Soil boring logs for the previous effectiveness sampling can be found in **Appendix A** of this report.

A summary of the soil analytical results can be found in **Table 1-1**. Remediation was determined complete for Area "A" based on the results of the May 2005 environmental effectiveness monitoring. As outlined in the Remedial Action Completion Report (RACR) (URS, 2006c), the Site is considered remediated when soils meet the total organic carbon (TOC)-adjusted cleanup objectives. Area "A" met this requirement; however, the May 2005 effectiveness soil sampling and analysis in Area "C" indicated the remediation was not completed in Area "C".

In accordance with the Site's OM&M Plan (URS, 2006b), annual remediation effectiveness sampling was conducted in August and September 2006. Remediation effectiveness sampling included the advancement of six soil borings along the western edge of Area "C", the collection of soil samples from these borings, and the collection of groundwater samples from the five existing monitoring wells and two sumps. An overview of soil and groundwater sample locations can be found in **Figure 1-4** and **1-5.** Soil boring logs for the August 2006 environmental effectiveness monitoring can be found in **Appendix A**.

A summary of the soil analytical results can be found in **Table 1-1**. Toluene concentrations remained above the TOC-adjusted cleanup objectives in soil samples SB-C4, SB-C6, and SB-C9. Methylcyclohexane was detected in concentrations above the TOC-adjusted cleanup objectives in soil samples SB-C4 and SB-C6. Cyclohexane was above the TOC-adjusted cleanup objectives in soil sample SB-C4.

A summary of the groundwater analytical results can be found in **Table 1-2**. Benzene, chloroethane and 1,1-dichloroethane exceeded the ambient water quality standards (NYSDEC's Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 groundwater effluent limitations) in one or more groundwater sample. Benzene exceeded the ambient water quality standards in groundwater samples MW-1 and south sump. Chloroethane exceeded the ambient water quality standards in groundwater samples MW-1, south sump and north sump. 1,1-dichloroethane exceeded the ambient water quality standards in groundwater samples MW-2 and south sump.

Environmental effectiveness monitoring was conducted in December 2007. Remediation effectiveness sampling included the advancement of four soil borings along the western edge of Area "C", one soil boring along the eastern edge of Area "C" and three along the center of Area "A"; the collection of soil samples from these borings; the installation of monitoring well MW-3R to replace damaged monitoring well MW-3; the collection of groundwater samples from MW-3R, existing monitoring wells MW-1, MW-2, MW-4 and MW-5 and the two existing sumps; and the collection of a vapor sample from the HVE system. An overview of soil, groundwater and vapor sample locations can be found in **Figures 1-4** and **1-5.** Soil boring logs for the December 2007 environmental effectiveness monitoring can be found in **Appendix A**.

A summary of soil analytical results is provided in **Table 1-1.** Based on the results of the 2007 remediation effectiveness sampling activities, the HVE system has not fully remediated the VOC impacts along the western edge of Area "C" to below the TOC-adjusted RAP cleanup objectives. However, significant decreases in toluene concentrations in soil were observed. The May 2005 results were confirmed for Area "A". All three samples collected from Area A were below the TOC-adjusted RAP cleanup objectives.

A summary of the groundwater analytical results is presented in **Table 1-2**. VOC impacts were present in monitoring well MW-1 and the south sump. VOC impacts were not present in MW-3R indicating the impacts are not migrating off-site.

Based on vapor sampling results, 5.3 pounds of total VOCs were removed from the Site in 2007.

Environmental effectiveness monitoring was conducted in December 2008. Remediation effectiveness sampling included the advancement of four soil borings along the western and southwestern edge of Area "C," one soil boring along the eastern edge of Area "C" and three soil borings along the center of Area "A"; the collection of groundwater samples from monitoring wells MW-1, MW-2, MW-3R, MW-4, MW-5 and the north and south sumps; and

the collection of a vapor sample from the HVE system. An overview of soil, groundwater and vapor sample locations can be found in **Figures 1-4** and **1-5.** Soil boring logs for the December 2008 environmental effectiveness monitoring can be found in **Appendix A**.

A summary of soil analytical results is provided in **Table 1-1**. Based on the results of the 2008 remediation effectiveness sampling activities, the HVE system has not fully remediated the VOC impacts along the western edge of Area "C' to below the TOC-adjusted RAP cleanup objectives. The May, December 2007, and December 2008 results were confirmed for Area "A". All three samples collected from Area "A" were below the TOC-adjusted RAP cleanup objectives.

A summary of groundwater analytical results compared to TOGS 1.1.1 groundwater effluent limitations is presented in **Table 1-2**. Chloroethane exceeded the ambient water quality standards (TOGS 1.1.1) in groundwater monitoring well MW-1, the field duplicate of groundwater monitoring well MW-1 and the north sump.

Based on vapor sampling results, 0.21 pounds of total VOCs were removed from the Site in 2008.

Depth to groundwater readings were collected at the time of sample collection and a groundwater flow map was constructed (**Figure 1-6**). As the figure shows, groundwater flow is to the west.

2.0 2009 FIELD INVESTIGATION

The following section discusses the 2009 field activities to be conducted as part of the ongoing monitoring of the HVE system and soil and groundwater conditions at the site. All field forms required to be filled out by the field team can be found in **Appendix B**.

2.1 HVE Vapor Sample

One vapor sample will be collected from the HVE system and analyzed for VOCs. The sample will be collected prior to treatment after the vapor passes through the reactive and adsorptive silencers. **Figure 2-1** shows the sample port from which the sample will be collected.

In order to get a representative sample, the sample will be collected while the HVE system is running. The HVE system must be operating no less than twenty-four (24) hours prior to sample collection.

The vapor sample will be collected using a summa canister. Procedures for collecting the sample are as follows:

1. Record vapor probe number, location, date, time, and other pertinent information in field notebook and sample collection forms.
2. Inspect summa canister, valves, and fittings for damage or defects. Any sampling equipment determined to be damaged or defective will not be used.
3. Remove cap to summa canister. Connect inline particulate filter to summa canister. This apparatus is then connected to the wellhead using the Teflon tubing.
4. Open valve on the summa canister. There should be an audible rush of air entering the canister. The canister should equilibrate within 1 to 2 minutes.
5. Once sampling is complete, close valve on the summa canister. Replace cap to summa canister. Record end time in the field notebook and on the sample collection forms.
6. Enter sample information on the canister tag and attach to the summa canister.
7. Enter sample information on the laboratory chain of custody.

Vapor samples will be sent to TestAmerica of Burlington, Vermont under proper chain-of-custody procedures.

2.2 Geoprobe Investigation

Geoprobe® soil borings will be completed in Areas "A and"C." Three (3) geoprobe locations are proposed for Area "A" to confirm the results of the 2005, 2007 and 2008 remediation effectiveness sampling. The three borings will be completed near 2008 sample locations SB-1-08, SB-2-08, and SB-3-08.

Five (5) geoprobe locations are proposed for Area "C". Soil borings will be concentrated around previously identified "hot spots" in Area "C", namely around 2008 environmental effectiveness samples SB-4-08, SB-5-08, SB-6-08, SB-7-08, and SB-8-08 that did not meet the TOC-adjusted RAP cleanup objectives.

All eight (8) proposed soil boring locations are depicted on **Figure 2-2**. Sample identification numbers and state plane coordinates for the 2009 sampling event are summarized in the following table.

Sample Identification Number	Longitude	Latitude
SB-1-09	1072498.119	1041780.447
SB-2-09	1072524.747	1041789.098
SB-3-09	1072514.168	1041778.227
SB-4-09	1072650.365	1041810.859
SB-5-09	1072663.653	1041816.740
SB-6-09	1072646.735	1041836.552
SB-7-09	1072697.661	1041862.473
SB-8-09	1072631.941	1041817.835

Note: Latitude and longitude are in New York State Plane west coordinates feet.

Borings will extend vertically to approximately ten (10) feet bgs, but not into the clay unit underlying the Site to prevent potential cross-contamination of water bearing zones underneath the clay. Soil samples will be analyzed for target compound list (TCL) VOCs, TOC, sulfate, and manganese as outlined in the table found below.

Matrix	Parameter	Method	Number of Samples
Soil	TCL VOCs	ASP-2000	10 - 1 sample per boring plus 1 quality control (QC) sample and 1 duplicate
Soil	TOC		8
Soil	Manganese, Sulfate		2

Note: All methods reference NYSDEC ASP / 95 NYSDEC CLP

Continuous soil samples will be collected during geoprobe® borings to obtain a continuous record of geologic conditions.

The URS geologist onsite during all field activities will use a PID with a specified lamp intensity of 10.6 eV to screen the headspace of all soil samples. The PID will be calibrated daily prior to use. Daily records of the calibration will be kept in the field notebook along with the headspace readings of each sample. These readings will be used to determine which samples to select for laboratory analysis. All soil samples collected during the geoprobe® explorations will follow standard sampling procedures and protocols.

All soil boring locations will be surveyed by a survey crew prior to their advancement. Any deviations from the surveyed location will be accurately noted in the field notes. Photos will be taken of all locations and soil samples for photodocumentation.

2.3 Groundwater Investigation

2.3.1 Groundwater Sample Collection

The five groundwater monitoring wells will be inspected prior to the groundwater investigation. Any monitoring well that is damaged will be replaced as soon as possible.

Samples from each of the five existing monitoring wells (MW-1, MW-2, MW-3R, MW-4, and MW-5) and two sumps (North Sump and South Sump) will be analyzed for VOCs and sulfate (see **Figure 2-3**). One duplicate sample will be collected as part of the sampling event. A trip blank will be placed in each cooler containing groundwater samples. Prior to the groundwater sampling, each well will be purged until pH, temperature, and conductivity readings are stabilized. Purge water will be placed in drums for future disposal. Groundwater elevation will be measured from each of the monitoring wells to verify the groundwater flow direction. To ensure accurate and consistent groundwater levels, the groundwater levels will be taken to the top of the north side of the pipe.

3.0 PROJECT TEAM

The project team table provided below shows the roles of each of the team members. The Project Manager (PM) is responsible for managing all aspects of the Henkel Buffalo project and for directing technical aspects. The Task Manager (TM) is responsible for tracking the budget and schedule of this investigation. The URS Field Team Leader (FTL) will have overall responsibility for completing all field activities and ensuring that all data are collected pursuant to the Field Sampling and Quality Assurance (QA) Plan. The Site Safety Officer (SSO) reports to the Regional Health and Safety Specialist.

Role	Team Member	Phone Number
Project Manager	Patricia Bryan, P.G.	312-259-6759
Task Manager	Kimberly Rentz, P.E.	509-205-2757
Field Team Leader	Kyle Jackson	716-923-1334
Site Safety Officer	Buffalo Staff	716-856-5636
Field Team	Buffalo Staff	716-856-5636

3.1 Quality Assurance Document Control

QA/QC will be provided during data and sample collection, if applicable, through laboratory analysis, data validation, and report preparation. The FTL is responsible for QA/QC in the field. Field QA/QC reviews of field documentation will be conducted and reported daily in the Daily Quality Control Reports. Laboratory QA/QC is the responsibility of the project laboratory as identified in its QA plan.

3.2 Field Team Organization, Responsibilities and Qualifications

3.2.1 URS Project Manager

The PM will have responsibility for managing all aspects of the project and is the primary point of contact for formal communications with the owner and the regulatory agencies. The PM for this project is Patricia Bryan.

3.2.2 Task Manager

The TM will have responsibility for managing of all aspects of this investigation and is the primary contact for the FTL. The TM for this project will be Kimberly Rentz.

3.2.3 Field Team Leader

The FTL will be responsible for the mobilization and demobilization of the field team, and will direct the activities of the project subcontractors on-site, if applicable. Any logistical problems hindering field activities, such as weather-dependent working conditions, will be relayed to and resolved by the FTL. The FTL for this project will be Kyle Jackson.

3.2.4 Site Safety Officer

The SSO will be present on-site during all field operations and will be responsible for all health and safety activities and delegation of duties to the health and safety staff in the field. The SSO will be responsible for implementing the Health and Safety Plan (HASP) (URS, 2006a). The SSO has stop-work authorization that can be executed upon his/her determination of an imminent safety hazard, emergency condition, or other potentially dangerous situations, such as detrimental weather conditions. Authorization to proceed with work will be issued by the Corporate Regional Health and Safety Specialist in conjunction with the PM after such action. The SSO will initiate and execute all contact with support facilities and personnel when this action is appropriate.

3.2.5 Field Team

Field team members will conduct the following field activities:

- collect one vapor sample from the HVE system;
- oversee the installation of approximately eight geoprobe borings;
- collect approximately eight soil samples from the geoprobe locations;
- collect seven groundwater samples from the groundwater monitoring wells and sumps;
- decontaminate equipment in accordance with the Field Sampling and QA Plan; and
- complete and file personal daily time logs and complete field documentation forms.

The matrix below identifies the team members associated with each task.

Task	Team Member	Description
Vapor Sampling	Project Manager Task Manager Field Team Leader Site Safety Officer Field Team	A vapor sample using a summa canister will be collected from the HVE system. The sample will be collected using standard procedures and will be submitted to TestAmeria Laboratories, Incorporated (TAL), previously known as Severn Trent Laboratories (STL), of Burlington, Vermont.
Groundwater Sampling and Analyses	Project Manager Task Manager Field Team Leader Site Safety Officer Field Team	Collect one sample from each monitoring well and sump. Submit groundwater samples to TAL of Buffalo, NY for analysis of VOCs via USEPA Method 624 and pH. Measure depth to groundwater for each monitoring well. Collect groundwater elevations from each monitoring well. Survey the elevation of the groundwater monitoring wells in relation to MW-5. Submit copies of the groundwater sampling logs, chain of custody and field reports to the TM.
Geoprobe® Soil Sampling	Project Manager Task Manager Field Team Leader Site Safety Officer Field Team	Sample soils using a geoprobe® to obtain a continuous record of geological conditions of subsurface fill and native materials. Screen soil using a PID. Submit copies of the boring logs and field reports to the TM.
Soil Sample Analyses	Project Manager Task Manager Field Team Leader Site Safety Officer Field Team	Collect one sample per soil boring based on PID screening values. Submit soil samples to TAL of Buffalo, NY for analysis of VOCs, TOC, Sulfate, Manganese using the methods described in the table presented in **Section 2.2.** Submit copies of Chain of Custody and field reports to the TM.
Reporting	Project Manager Task Manager Field Team Leader Field Team	The information gathered during this investigation will be presented in a Soil, Groundwater and Vapor Sampling Report prepared by URS. This report will include all analytical data and field observations and will be submitted to the client and the DEC.

4.0 REFERENCES

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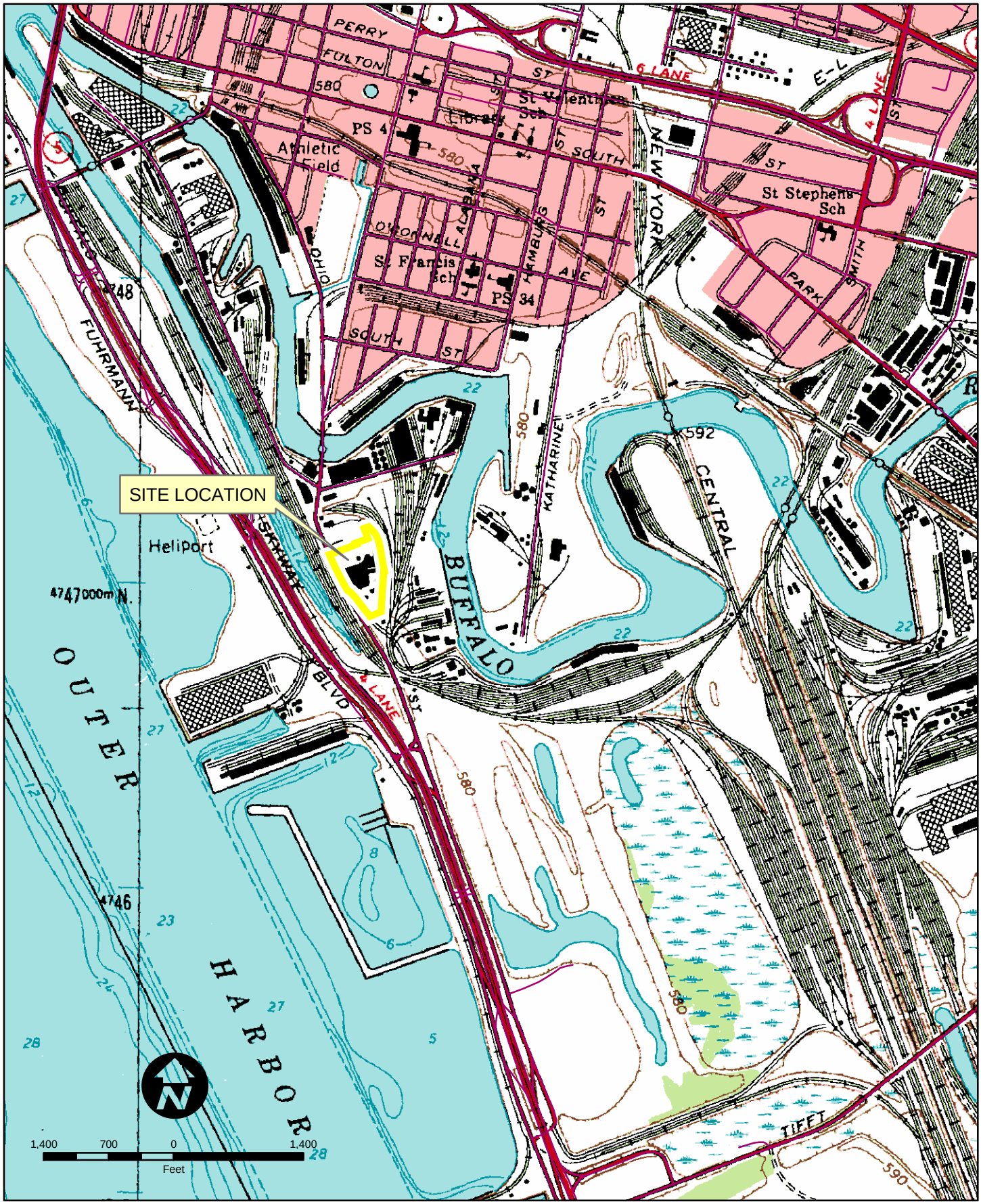
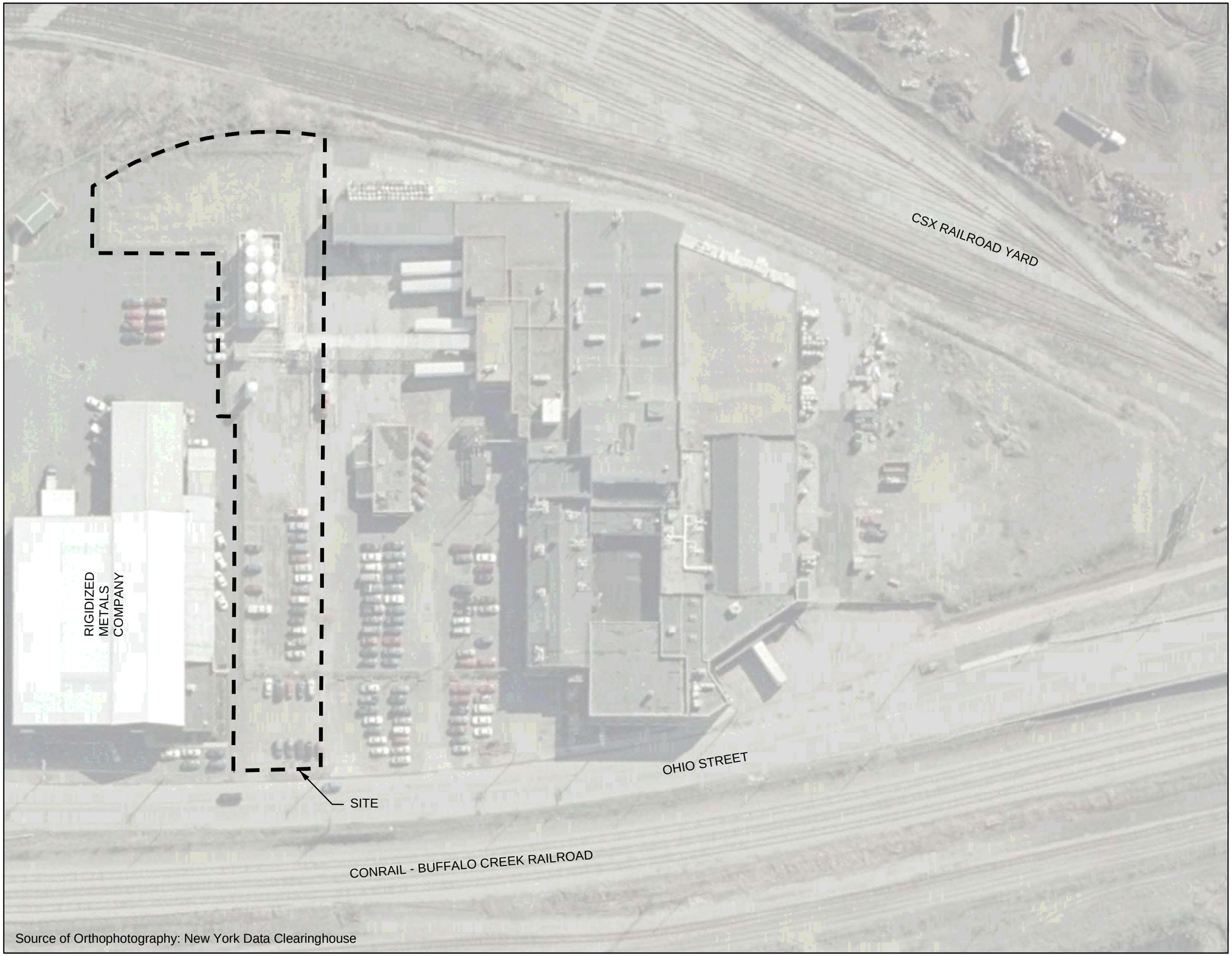
FIGURES



DESIGN: KDPR	CHK'D: PMB	SITE LOCATION HENKEL CORPORATION 710 OHIO STREET BUFFALO, NEW YORK	URS Chicago, Illinois 60606
DRAWN: BKR	DATE: 10/05/06		Project No. 25364871 / Fig No. 1-1

O:__Projects_(apr-mxd)_O-S\Sovereign_Buffalo\Final Deliverables\Sovereign - Buffalo NY - Fig1-1 Site Location.mxd



Source of Orthophotography: New York Data Clearinghouse

80 40 0 80

Feet

1 inch equals 80 feet

Legend

Site Limits

DRAFT

URS
100 South Wacker Drive, Suite 500
Chicago, Illinois 60606

SITE MAP
HENKEL CORPORATION
710 OHIO STREET
BUFFALO, NEW YORK

DESIGN: PMB	CHK'D: KDPR	PROJECT NO. 25364871	FIG NO. 1-2
DRAWN: BKR	DATE: 10/05/06		

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0 20 40
Feet
1 inch = 40 feet

RIGIDIZED
METALS
COMPANY

4" PVC PERFORATED LATERAL (see detail)

B

12" SCH 40 PVC NORTH SUMP

4" PVC PERFORATED PVC PIPE

1" DIA. SCH 40 PVC PIPE

TEMPORARY EQUIPMENT SHELTER

10,000 GALLON LIQUID NITROGEN TANK

12" SCH 40 PVC SOUTH SUMP

4" DIA. PERFORATED PVC PIPE

FRAC TANK

ABOVEGROUND STORAGE TANKS

A

C

PILOT PLANT

SEWER DISCHARGE LOCATION AND SAMPLE POINT

ELECTRIC

BOILER

FILLING RECEIVING

RECEIVING DEPARTMEN

RAW STORAGE & MAINTENANCE DEPARTMEN

Legend

- Sewer Discharge
- Property Boundary
- Fenceline
- Ground Water Collection Piping
- Site Limits

HVE Areas

- HVE1
- HVE2
- HVE3

HVE Pipes

- HVE 1
- HVE 2
- HVE 3
- PVC

DRAFT

URS
100 S. Wacker Drive Suite 500
Chicago, Illinois 60606

REMEDIATION SYSTEM
HENKEL CORPORATION
710 OHIO STREET
BUFFALO, NEW YORK

DESIGN: --	CHK'D: PB	PROJECT NO. 25364871	FIG NO. 1-3
DRAWN: BKR	DATE: 10/05/06		

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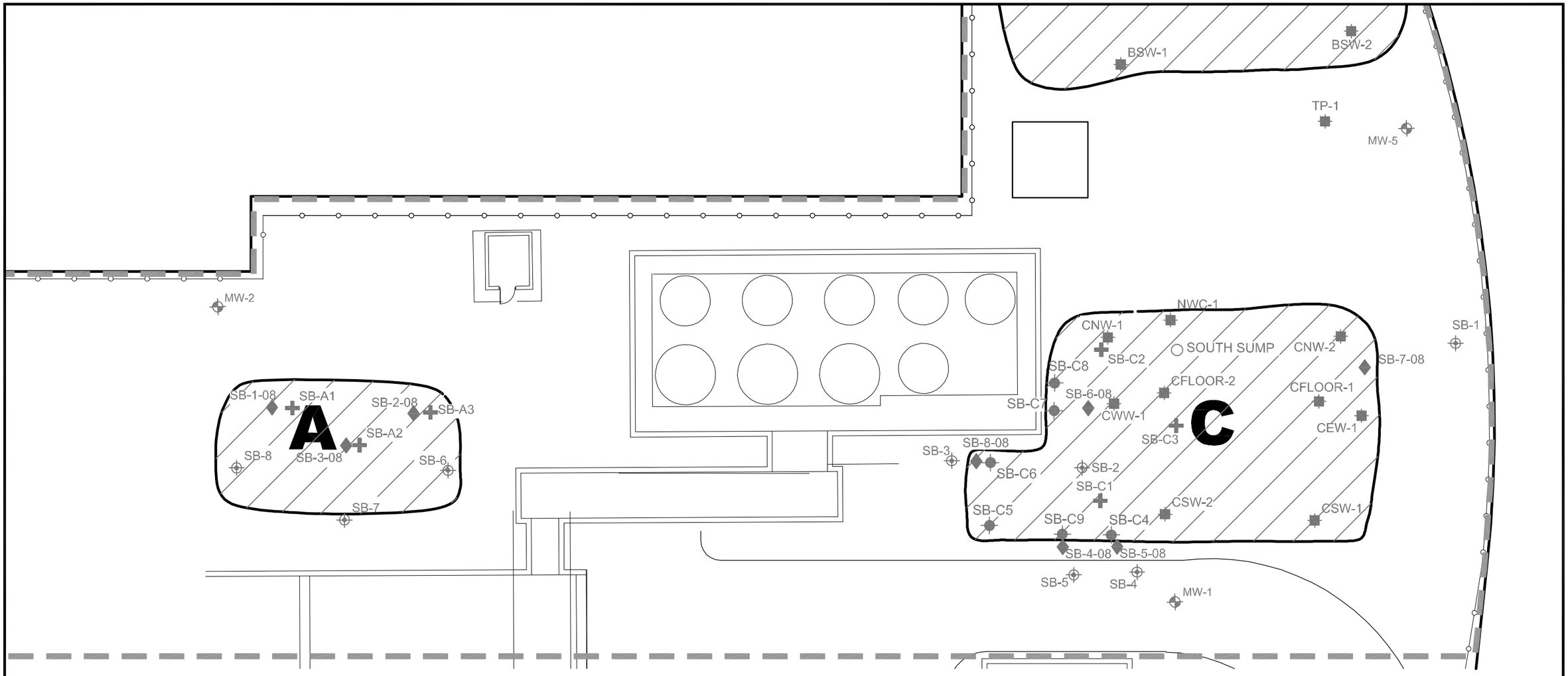

LEGEND:

- SITE LIMITS
- MONITORING WELL LOCATION
- SOIL SAMPLE LOCATIONS MAY/JUNE 2003
- SOIL SAMPLE LOCATIONS MAY 2005
- SOIL SAMPLE LOCATIONS AUGUST 2006
- SOIL SAMPLE LOCATIONS DECEMBER 2007
- SOIL SAMPLE LOCATIONS DECEMBER 2008
- SUMP LOCATION
- AREA OF REMEDIAL ACTION

SCALE
0 20 40

DRAFT

HENKEL CORPORATION
710 OHIO STREET
BUFFALO, NEW YORK

FIGURE 1-4
PREVIOUS SOIL SAMPLE LOCATIONS

DATE: 11/19/09	
JOB NO.: 25364871	
DRAWN BY: LLM	CHK'D BY: JMP
SCALE: AS SHOWN	

URS
100 S. WACKER DRIVE, SUITE 500
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FAX: (312) 939-4198

PLOTTED: November 19, 2009 BY: Sadinsky, Brent CTB USED: Color Copier (1-9 Black).ctb PAPER SPACE TAB: Figure 2-2 Previous Soil Sample Loc (3)
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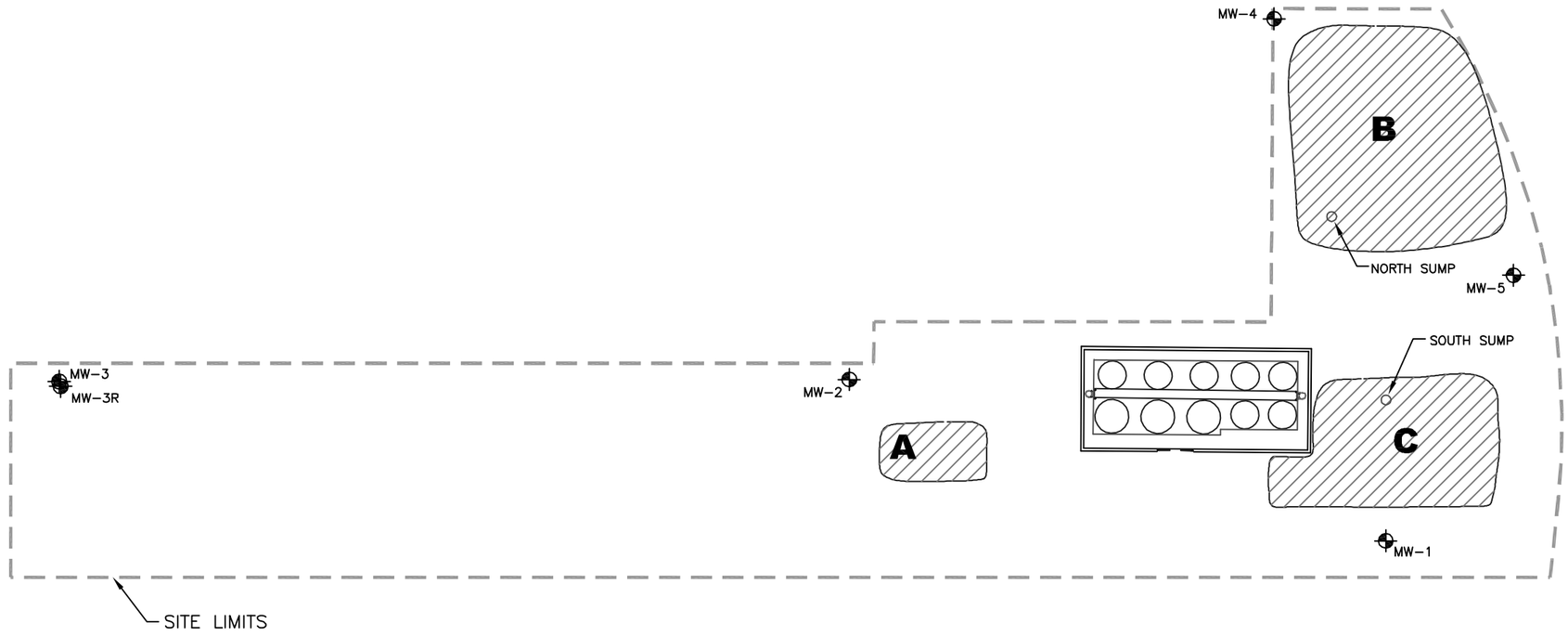

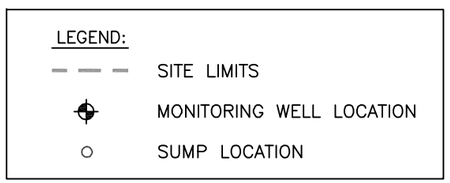

REFERENCE:

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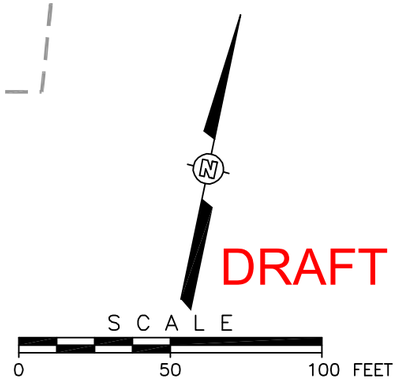
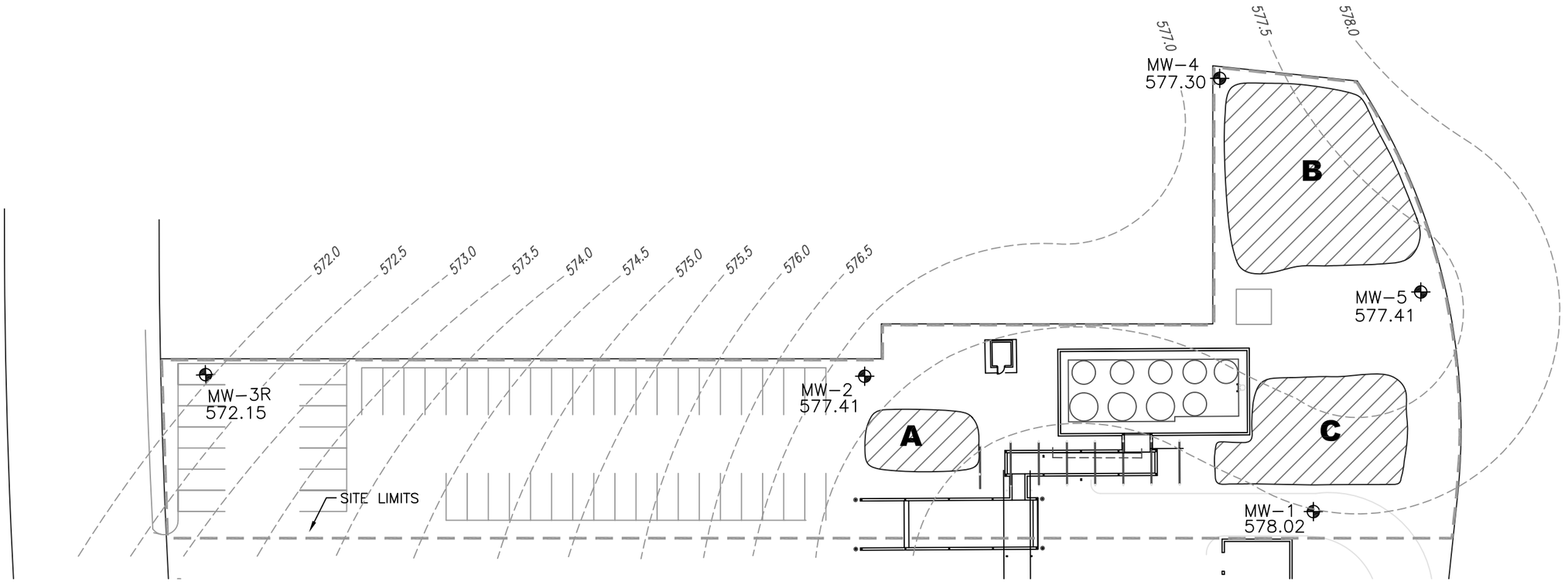


HENKEL CORPORATION
710 OHIO STREET
BUFFALO, NEW YORK

FIGURE 1-5
PREVIOUS GROUNDWATER
SAMPLE LOCATIONS

DATE: 11/19/09	
JOB NO.: 25364871	
DRAWN BY: BKR	CHK'D BY: KDPR
SCALE: 1" = 50'	

URS
100 S. WACKER DRIVE, SUITE 500
CHICAGO, ILLINOIS 60606
PHONE: (312) 939-1000
FAX: (312) 939-4198



LEGEND:

- – – – SITE LIMITS
- 572.15 ⊕ MONITORING WELL LOCATION & GROUNDWATER ELEVATION
- – – – – – GROUNDWATER CONTOUR INTERVAL = 0.5ft

REFERENCE:

DEBORAH A. NAYBOR PLS, PC. DRAWING TITLED: "TOPOGRAPHIC SURVEY", DATED: 8/17/95, SCALE: 1"=20'.

DRAFT

SCALE

0 50 100 FEET

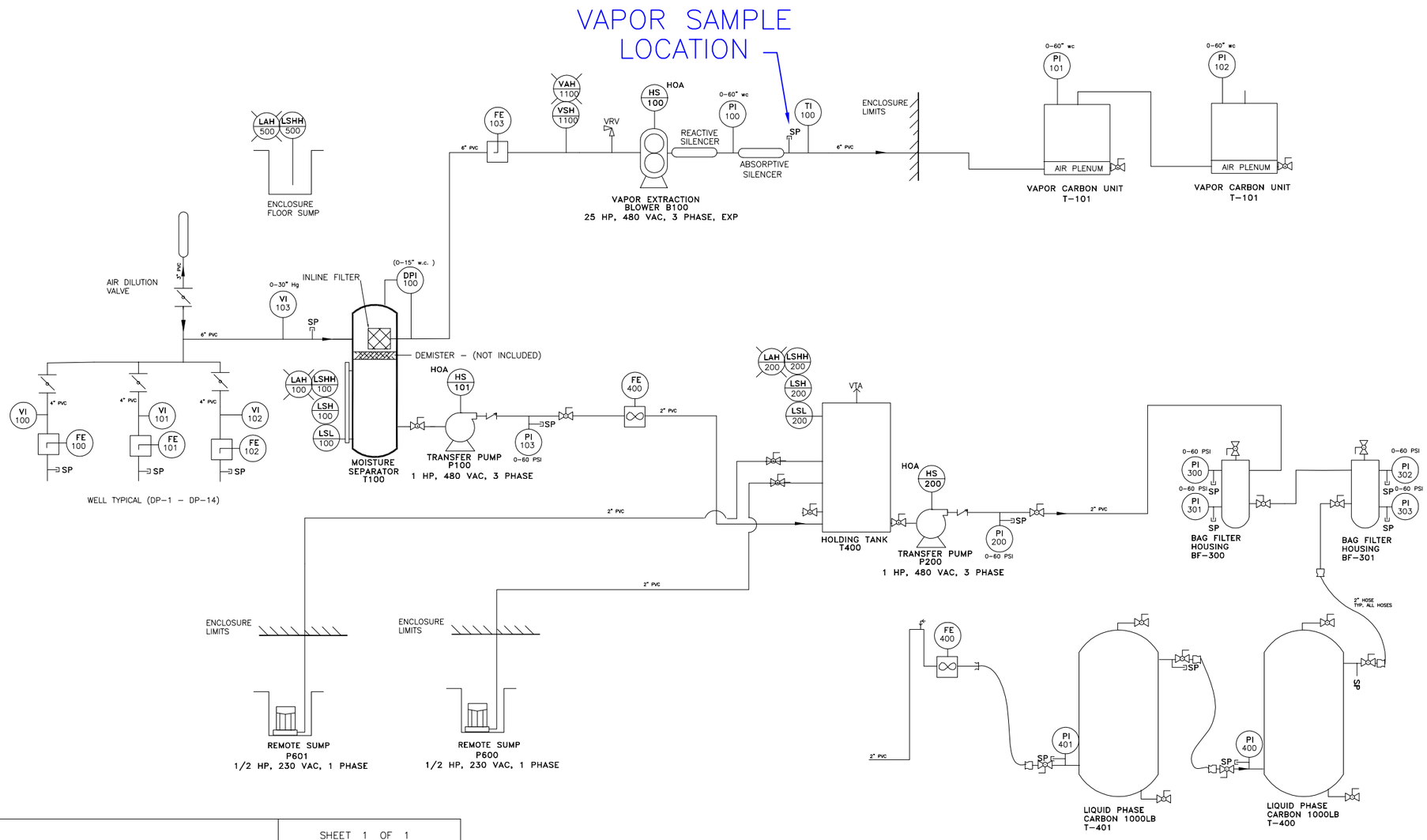
HENKEL CORPORATION
710 OHIO STREET
BUFFALO, NEW YORK

FIGURE 1–6
GROUNDWATER CONTOUR MAP
DECEMBER 2008

DATE: 11/19/09	
JOB NO.: 25364871	
DRAWN BY: BKR	CHK'D BY: KDPR
SCALE: AS SHOWN	

URS
100 S. WACKER DRIVE, SUITE 500
CHICAGO, ILLINOIS 60606
PHONE: (312) 939–1000
FAX: (312) 939–4198

PLOTTED: November 19, 2009 BY: Ramstead, Brian CTB USED: ---- PAPER SPACE TAB: Figure 1–6
DWG PATH: L:\2003_Proja\25364871\5_Data\5130 Maps\Figures\Annual Current Conditions – 2007\2009 Figures\Sovereign – Buffalo NY – Figure 1–6 – GW Contour Map December 2008 (1).dwg



DRAWING TITLE:	SHEET 1 OF 1
GWTS P&ID Drawing	DRAWING NO.: 1288-03

REVISIONS			
REV	DESCRIPTION	DATE	DWN

UNLESS SPECIFIED OTHERWISE
* DIMENSIONS ARE IN INCHES
* DO NOT SCALE DRAWING

DRAWN BY: MK
DESIGNED BY: GH
PROJECT MGR.: MK
DATE: 11/21/03
PROJECT NO.: 1288

H2K Technologies, Inc.
9851 13th Ave N., Plymouth, MN 55441, Tel: 763-746-9900 ©2003

PROJECT TITLE:
MARCOR ENV. - URS - GWTS ENCL.
BUFFALO, NY

HENKEL CORPORATION
710 OHIO STREET
BUFFALO, NEW YORK

FIGURE 2-1
2009 VAPOR SAMPLE LOCATION

DATE:	
5/6/09	
JOB NO.:	
25364871	
DRAWN BY: LLM	CHK'D BY: JMP
SCALE: NOT TO SCALE	

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100 S. WACKER DRIVE, SUITE 500
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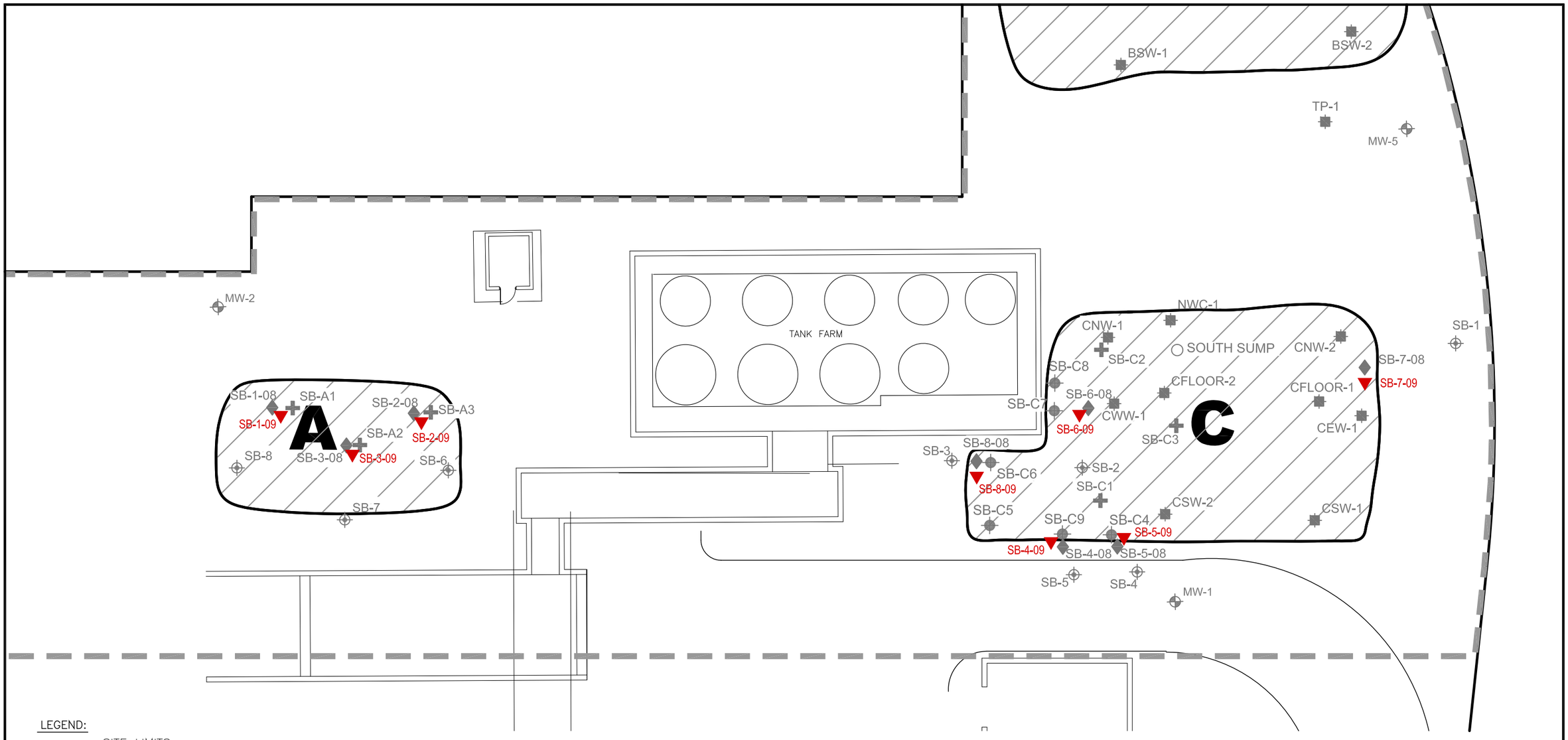
FAX: (312) 939-4198

PLOTTED: October 30, 2009 BY: Morrison, Leslie CTB USED: Color Copier (1-9 Black).ctb PAPER SPACE TAB: Sample Locations
DWG PATH: I:\2009_Proj\25364871\3_Data\3150 Maps&Figures\Annual Current Conditions - 2007\2009 Figures\1288-03_URS - Figure 2-1 - Vapor Sample Location.dwg



LEGEND:

- SITE LIMITS
- MONITORING WELL LOCATION
- SOIL SAMPLE LOCATIONS MAY/JUNE 2003
- SOIL SAMPLE LOCATIONS MAY 2005
- SOIL SAMPLE LOCATIONS AUGUST 2006
- SOIL SAMPLE LOCATIONS DECEMBER 2007
- SOIL SAMPLE LOCATIONS DECEMBER 2008
- 2009 PROPOSED SOIL SAMPLE LOCATIONS
- SUMP LOCATION
- AREA OF REMEDIAL ACTION

SCALE
0 20 40

DRAFT

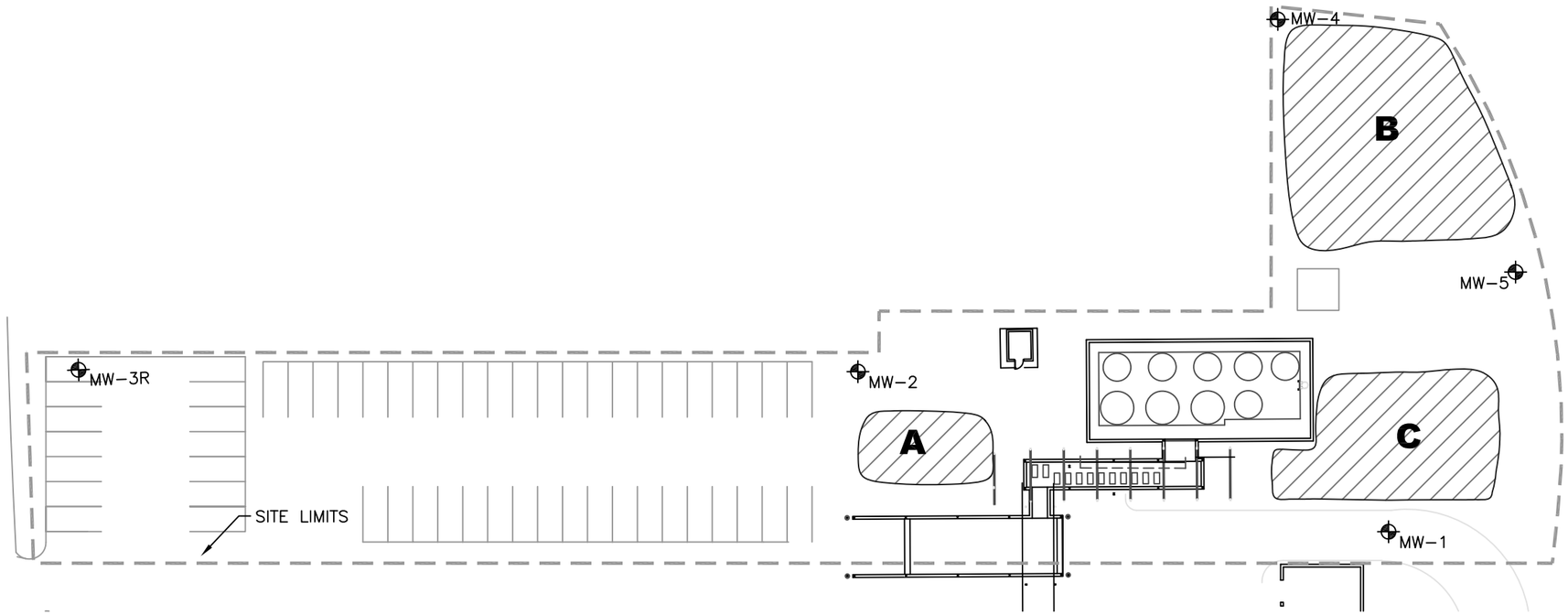
HENKEL CORPORATION
710 OHIO STREET
BUFFALO, NEW YORK

FIGURE 2-2
2009 PROPOSED SOIL SAMPLE LOCATIONS

DATE: 11/19/09	
JOB NO.: 25364871	
DRAWN BY: BKR	CHK'D BY: KDPR
SCALE: AS SHOWN	

URS
100 S. WACKER DRIVE, SUITE 500
CHICAGO, ILLINOIS 60606
PHONE: (312) 939-1000
FAX: (312) 939-4198

PLOTTED: November 19, 2009 BY: Ronstead, Brian CTB USED: Color Copier.ctb PAPER SPACE TAB: Figure 2-2 Proposed Soil Sample Loc (2)
DWG PATH: I:\2003_Proje\25364871\5_Data\5130 Maps&Figures\Annual Current Conditions - 2007\2009 Figures\Sovereign - Buffalo NY - Fig 2-2



LEGEND:

SITE LIMITS

MONITORING WELL LOCATION

REFERENCE:

DEBORAH A. NAYBOR PLS, PC. DRAWING TITLED: "TOPOGRAPHIC SURVEY", DATED: 8/17/95, SCALE: 1"=20'.

DRAFT

SCALE

0 50 100 FEET

HENKEL CORPORATION
710 OHIO STREET
BUFFALO, NEW YORK

FIGURE 2-3
2009 PROPOSED GROUNDWATER SAMPLE LOCATIONS

DATE: 11/19/09	
JOB NO.: 25364871	
DRAWN BY: BKR	CHK'D BY: KDPR
SCALE: AS SHOWN	

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100 S. WACKER DRIVE, SUITE 500
CHICAGO, ILLINOIS 60606
PHONE: (312) 939-1000
FAX: (312) 939-4198

PLOTTED: November 19, 2009 By: Ramstead, Brian CTB USED: ---- PAPER SPACE TAB: Figure 2-3
DWG PATH: L:\2003_Proj\25364871\5_Data\0130 Maps\Figures\Annual Current Conditions - 2007\2009 Figures\Sovereign - Buffalo NY - Groundwater Sample Locations (1).dwg

TABLES

Table 1-1
Summary of Soil TOC-adjusted RAP Cleanup Objectives Exceedances
2003-2008
Henkel Corporation
Buffalo, New York

PARAMETER	Units	TOC-Adjusted RAP Cleanup Objectives[1]	CNW-2 (7-8 ft) (5/13/03)	CEW-1 (5-6 ft) (5/16/03)	CWW-1-RE (6-7 ft) (6/2/03)	SB-C1 (4-5.5 ft) (5/13/05)	SB-Dup (5/13/05)	SB-C4 (2-4 ft) (8/28/06)	SB-C6 (7-8 ft) (8/28/06)	SB-C9 (8-10 ft) (8/28/06)	SB-2 (3-8 ft) (12/17/07)	SB-4-08 (4-8.5 ft) (12/29/08)	SB-5-08 (4-5.5 ft) (12/29/08)	SB-6-08 (8-10 ft) (12/29/08)
1,1,1-Trichloroethane	mg/Kg	**6.7412**	2.00 U	2.50 U	0.50 U	390 U	320 U	1.50 U	0.160 U	0.170 U	0.007 U	**0.032 J**	0.0008 U	0.0005 UJ
1,1,2,2-Tetrachloroethane	mg/Kg	**N.E.**	N.A.	N.A.	N.A.	390 U	320 U	1.50 U	0.160 U	0.170 U	0.007 U	0.002 UJ	0.002 U	0.0009 UJ
1,1,2-Trichloro-1,2,2-trifluoroethane	mg/Kg	**N.E.**	N.A.	N.A.	N.A.	390 U	320 U	1.50 U	0.160 U	0.170 U	0.007 U	0.001 UJ	0.001 U	0.0006 UJ
1,1,2-Trichloroethane	mg/Kg	**N.E.**	N.A.	N.A.	N.A.	390 U	320 U	1.50 U	0.160 U	0.170 U	0.007 U	0.0004 UJ	0.0004 U	0.0002 UJ
1,1-Dichloroethane	mg/Kg	**1.3305**	2.00 U	2.50 U	**1.83**	390 U	320 U	1.50 U	0.160 U	0.170 U	0.007 UJ	**0.016 J**	0.001 U	**0.007 J**
1,1-Dichloroethene	mg/Kg	**N.E.**	N.A.	N.A.	N.A.	390 U	320 U	1.50 U	0.160 U	0.170 U	0.007 U	**0.004 J**	0.001 U	0.0007 UJ
1,2,4-Trichlorobenzene	mg/Kg	**N.E.**	N.A.	N.A.	N.A.	390 U	320 U	1.50 U	0.160 U	0.170 U	0.007 U	0.0007 UJ	0.0006 U	0.0004 UJ
1,2-Dibromo-3-chloropropane	mg/Kg	**N.E.**	N.A.	N.A.	N.A.	390 U	320 U	1.50 U	0.160 U	0.170 U	0.007 U	0.002 UJ	0.002 U	0.001 UJ
1,2-Dibromoethane	mg/Kg	**N.E.**	N.A.	N.A.	N.A.	390 U	320 U	1.50 U	0.160 U	0.170 U	0.007 U	0.0004 UJ	0.0004 U	0.0002 UJ
1,2-Dichlorobenzene	mg/Kg	**N.E.**	N.A.	N.A.	N.A.	390 U	320 U	1.50 U	0.160 U	0.170 U	0.007 U	0.002 UJ	0.002 U	0.0009 UJ
1,2-Dichloroethane	mg/Kg	**N.E.**	N.A.	N.A.	N.A.	390 U	320 U	1.50 U	0.160 U	0.170 U	0.007 U	0.0004 UJ	0.0004 U	**0.003 J**
1,2-Dichloropropane	mg/Kg	**N.E.**	N.A.	N.A.	N.A.	390 U	320 U	1.50 U	0.160 U	0.170 U	0.007 U	0.0004 UJ	0.0004 U	0.0002 UJ
1,3-Dichlorobenzene	mg/Kg	**N.E.**	N.A.	N.A.	N.A.	390 U	320 U	1.50 U	0.160 U	0.170 U	0.007 U	0.002 UJ	0.001 U	0.0008 UJ
1,4-Dichlorobenzene	mg/Kg	**N.E.**	N.A.	N.A.	N.A.	390 U	320 U	1.50 U	0.160 U	0.170 U	0.007 U	0.002 UJ	0.001 U	0.0008 UJ
2-Butanone	mg/Kg	**1.99575**	2.00 U	2.50 U	2.50 U	390 U	320 U	7.50 U	0.820 U	0.830 U	0.027 UJ	0.015 UJ	0.015 U	0.008 UJ
2-Hexanone	mg/Kg	**N.E.**	N.A.	N.A.	N.A.	390 U	320 U	7.50 U	0.820 U	0.830 U	0.033 U	0.013 UJ	0.013 U	0.007 UJ
4-Methyl-2-pentanone	mg/Kg	**N.E.**	N.A.	N.A.	N.A.	390 U	320 U	7.50 U	0.820 U	0.830 U	0.033 U	0.013 UJ	0.013 U	0.007 UJ
Acetone	mg/Kg	**0.9757**	2.00 U	2.50 U	2.50 U	390 U	320 U	7.50 U	0.820 U	0.830 U	**0.150**	**0.023 J**	**0.44**	**0.12 J**
Benzene	mg/Kg	**0.515347**	**0.39 J**	2.50 U	0.50 U	390 U	320 U	1.50 U	0.160 U	0.170 U	**0.002 J**	**0.022 J**	**0.064**	**0.02 J**
Bromodichloromethane	mg/Kg	**N.E.**	N.A.	N.A.	N.A.	390 U	320 U	1.50 U	0.160 U	0.170 U	0.007 U	0.0004 UJ	0.0004 U	0.0002 UJ
Bromoform	mg/Kg	**N.E.**	N.A.	N.A.	N.A.	390 U	320 U	1.50 U	0.160 U	0.170 U	0.007 U	0.001 UJ	0.001 U	0.0006 UJ
Bromomethane	mg/Kg	**N.E.**	N.A.	N.A.	N.A.	390 U	320 U	1.50 U	0.160 U	0.170 U	0.007 U	0.0009 UJ	0.0008 U	0.0005 UJ
Carbon Disulfide	mg/Kg	**N.E.**	N.A.	N.A.	N.A.	390 U	320 U	1.50 U	0.160 U	0.170 U	0.007 U	0.0009 UJ	**0.004 J**	**0.003 J**
Carbon Tetrachloride	mg/Kg	**N.E.**	N.A.	N.A.	N.A.	390 U	320 U	1.50 U	0.160 U	0.170 U	0.007 U	0.002 UJ	0.001 U	0.0008 UJ
Clorobenzene	mg/Kg	**N.E.**	N.A.	N.A.	N.A.	390 U	320 U	1.50 U	0.160 U	0.170 U	0.007 U	**0.002 J**	0.001 U	0.0006 UJ
Chloroethane	mg/Kg	**16.4095**	**1.70 J**	2.50 U	2.50 U	390 U	320 U	1.50 UJ	0.160 UJ	0.170 UJ	0.007 U	0.002 UJ	**0.01 J**	0.0009 UJ
Chloroform	mg/Kg	**N.E.**	N.A.	N.A.	N.A.	390 U	320 U	1.50 U	0.160 U	0.170 U	0.007 U	0.0007 UJ	0.0006 U	0.0004 UJ
Chloromethane	mg/Kg	**N.E.**	N.A.	N.A.	N.A.	390 U	320 U	1.50 U	0.160 U	0.170 U	0.006 U	0.0007 UJ	0.0006 U	0.0004 UJ
cis-1,2-Dichloroethene	mg/Kg	**1**[2]	2.00 U	2.50 U	**1.64**	390 U	320 U	1.50 U	0.160 U	0.170 U	0.007 UJ	**0.068 J**	0.0004 J	**0.022 J**
cis-1,3-Dichloropropene	mg/Kg	**N.E.**	N.A.	N.A.	N.A.	390 U	320 U	1.50 U	0.160 U	0.170 U	0.007 U	0.0007 UJ	0.0006 U	0.0004 UJ
Cyclohexane	mg/Kg	**1**[2]	2.00 U	2.50 U	N.A.	390 U	320 U	**3.60**	**0.610**	**0.280**	**0.033**	**0.34 J**	**0.42**	1.8 U
Dibromochloromethane	mg/Kg	**N.E.**	N.A.	N.A.	N.A.	390 U	320 U	1.50 U	0.160 U	0.170 U	0.007 U	0.0007 UJ	0.0006 U	0.0004 UJ
Dichlorodifluoromethane	mg/Kg	**N.E.**	N.A.	N.A.	N.A.	390 U	320 U	1.50 U	0.160 U	0.170 U	0.007 U	0.0009 UJ	0.0008 U	0.0005 UJ
Ethylbenzene	mg/Kg	**48.785**	2.00 U	2.50 U	**0.994**	390 U	320 U	**0.98 J**	**0.840**	**0.110 J**	0.007 UJ	**0.14 J**	**0.04**	**0.11 J**
Isopropylbenzene	mg/Kg	**N.E.**	N.A.	N.A.	N.A.	390 U	320 U	1.50 U	0.160 U	0.170 U	0.007 U	**0.003 J**	**0.003 J**	**0.005 J**
Methyl Acetate	mg/Kg	**N.E.**	N.A.	N.A.	N.A.	390 U	320 U	1.50 U	0.160 U	0.170 U	0.007 U	0.002 UJ	0.002 U	0.001 UJ
Methyl-t-Butyl Ether (MTBE)	mg/Kg	**N.E.**	N.A.	N.A.	N.A.	390 U	320 U	1.50 U	0.160 U	0.170 U	0.007 U	0.001 UJ	0.001 U	0.0006 UJ
Methylcyclohexane	mg/Kg	**1**[2]	**6.20**	**11**	N.A.	**73 J**	**42 J**	**21.00**	**5.60**	**0.370**	**0.021**	**0.32 J**	**9.3 D**	**56 D**
Methylene Chloride	mg/Kg	**0.93135**	2.00 U	2.50 U	0.50 U	390 U	320 U	1.50 UJ	0.160 UJ	0.170 UJ	**0.016**	0.004 UJ	0.004 U	0.002 UJ
Styrene	mg/Kg	**N.E.**	N.A.	N.A.	N.A.	390 U	320 U	1.50 U	0.160 U	0.170 U	0.007 U	0.0004 UJ	0.0004 U	0.0002 UJ
Tetrachloroethene	mg/Kg	**N.E.**	N.A.	N.A.	N.A.	390 U	320 U	1.50 U	**0.089 J**	0.170 U	0.007 UJ	**0.013 J**	**0.007 J**	**0.014 J**
Toluene	mg/Kg	**13.305**	**0.98 J**	**5.00**	**2080**	**5800**	**4400**	**1100**	**680**	**78**	**85.000 DJ**	**1300 D**	**120 D**	**580 D**
Total Xylenes	mg/Kg	**10.644**	2.00 U	2.50 U	N.A.	390 U	320 U	**2.40 J**	**3.00**	**0.340 J**	0.020 UJ	**0.47 J**	**0.13**	**0.41 J**
trans-1,2-Dichloroethene	mg/Kg	**N.E.**	N.A.	N.A.	N.A.	390 U	320 U	1.50 U	0.160 U	0.170 U	0.007 U	0.001 UJ	0.001 U	**0.002 J**
trans-1,3-Dichloropropene	mg/Kg	**N.E.**	N.A.	N.A.	N.A.	390 U	320 U	1.50 U	0.160 U	0.170 U	0.007 U	0.001 UJ	0.001 U	0.0007 UJ
Trichloroethene	mg/Kg	**5.5881**	2.000 U	2.50 U	0.50 U	390 U	320 U	1.50 U	0.160 U	0.170 U	0.007 U	**0.035 J**	0.0006 U	**0.008 J**
Trichlorofluoromethane	mg/Kg	**N.E.**	N.A.	N.A.	N.A.	390 U	320 U	1.50 U	0.160 U	0.170 U	0.007 U	0.004 UJ	0.004 U	0.002 UJ
Vinyl Chloride	mg/Kg	**1.01118**	2.00 U	2.50 U	2.50 U	390 U	320 U	3.00 U	0.330 U	0.330 U	0.013 U	**0.01 J**	0.0004 U	0.0002 UJ
Total VOCs	mg/Kg	**10**[2]	N.A.	N.A.	N.A.	N.A.	N.A.	**1127.98**	**690.139**	**79.1**	**85.222**	**1301.577**	**130.4184**	**638.524**

Notes:
TOC = Total Organic Compound
RAP = Remedial Action Plan
[1] TOC-adjusted RAP cleanup objective based on a total organic carbon concentration of 88,700 mg/kg (URS, 2006c).
[2] Site-specific cleanup objective specified in the RAP (URS, 2002).
ft = feet
mg/kg = milligram / kilogram
N.A. = Not Analyzed
N.E. = Not Established
D = Compound concentration identified in an analysis at the secondary dilution factor.
J = Indicates the compound concentration is estimated because the result was below the sample reporting limit or quality control criteria were not met.
U = Indicates the compound was not detected above the laboratory detection limit and/or was detected in the laboratory blank.
A highlighted cell indicates the compound was reported above TOC-adjusted RAP cleanup objectives.
A bold cell indicates the compound was detected above laboratory reporting limits.

Table 1-2
Summary of Groundwater TOGS 1.1.1 Exceedances
2006-2008
Henkel Corporation
Buffalo, New York

PARAMETER	Units	T.O.G.S. 1.1.1	MW-1					MW-2
			8/29/2006	12/19/2007	12/19/2007 - FD	12/29/2008	12/29/2008 - FD	8/29/2006
Chloromethane	ug/L	N.E.	1 U	1 U	1 U	0.3 U	0.3 U	1 U
Bromomethane	ug/L	5	1 UJ	1 U	1 U	0.3 U	0.3 U	1 UJ
Vinyl Chloride	ug/L	2	**0.9 J**	1 U	1 U	0.2 U	0.2 U	1 U
Chloroethane	ug/L	5	**84 J**	**32**	**35**	**18**	**17**	1 UJ
Methylene Chloride	ug/L	5	0.7 UJ	1 U	1 U	0.4 UJ	0.4 UJ	1 UJ
Acetone	ug/L	50	**4 J**	**6**	**5**	1 U	1 U	**3 J**
Carbon Disulfide	ug/L	N.E.	1 U	1 U	1 U	0.2 U	0.2 U	1 U
1,1-Dichloroethene	ug/L	5	1 U	1 U	1 U	0.3 U	0.3 U	1 U
1,1-Dichloroethane	ug/L	5	**5**	**1**	**1**	0.8 U	0.8 U	**6**
Chloroform	ug/L	7	1 U	1 U	1 U	0.3 U	0.3 U	1 U
1,2-Dichloroethane	ug/L	0.6	1 U	1 U	1 U	0.2 U	0.2 U	1 U
2-Butanone	ug/L	N.E.	5 U	**7**	**5**	1 U	1 U	5 U
1,1,1-Trichloroethane	ug/L	5	1 U	1 U	1 U	0.3 U	0.3 U	**4**
Carbon Tetrachloride	ug/L	5	1 U	1 U	1 U	0.3 U	0.3 U	1 U
Bromodichloromethane	ug/L	50	1 U	1 U	1 U	0.4 U	0.4 U	1 U
1,2-Dichloropropane	ug/L	1	1 U	1 U	1 U	0.1 U	0.1 U	1 U
cis-1,3-Dichloropropene	ug/L	N.E.	1 U	1 U	1 U	0.4 U	0.4 U	1 U
Trichloroethene	ug/L	5	1 U	1 U	1 U	0.2 U	0.2 U	1 U
Dibromochloromethane	ug/L	50	1 U	1 U	1 U	0.3 U	0.3 U	1 U
1,1,2-Trichloroethane	ug/L	1	1 U	1 U	1 U	0.2 U	0.2 U	1 U
Benzene	ug/L	1	**12**	**3**	**3**	**0.7**	**0.7**	1 U
trans-1,3-Dichloropropene[b]	ug/L	0.4	**1 U**	1 U	1 U	0.4 U	0.4 U	**1 U**
Bromoform	ug/L	50	1 UJ	1 U	1 U	0.2 U	0.2 U	1 UJ
4-Methyl-2-pentanone	ug/L	N.E.	5 U	5 U	5 U	0.9 U	0.9 U	5 U
2-Hexanone	ug/L	50	5 U	5 U	5 U	1 U	1 U	5 U
Tetrachloroethene	ug/L	5	1 U	1 U	1 U	0.4 U	0.4 U	1 U
Toluene	ug/L	5	**2**	1 U	1 U	0.5 U	0.5 U	1 U
1,1,2,2-Tetrachloroethane	ug/L	5	1 U	1 U	1 U	0.2 U	0.2 U	1 U
Clorobenzene	ug/L	5	1 U	1 U	1 U	0.2 U	0.2 U	1 U
Ethylbenzene	ug/L	5	**0.6 J**	1 U	1 U	0.2 U	0.2 U	1 U
Styrene	ug/L	5	1 U	1 U	1 U	0.2 U	0.2 U	1 U
Total Xylenes[a]	ug/L	5	**2 J**	3 U	3 U	0.9 U	0.9 U	3 U
Dichlorodifluoromethane	ug/L	5	1 U	1 U	1 U	0.3 U	0.3 U	1 U
Trichlorofluoromethane	ug/L	5	1 UJ	1 U	1 U	0.2 U	0.2 U	1 UJ
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	5	1 UJ	1 U	1 U	0.3 U	0.3 U	1 UJ
trans-1,2-Dichloroethene	ug/L	5	**2**	1 U	1 U	0.1 U	0.1 U	1 U
Methyl-t-Butyl Ether (MTBE)	ug/L	N.E.	1 U	1 U	1 U	0.2 U	0.2 U	1 U
cis-1,2-Dichloroethene	ug/L	5	**3**	**0.5 J**	1 U	0.2 U	0.2 U	1 U
Cyclohexane	ug/L	N.E.	**17**	**10**	**9**	0.2 U	0.2 U	1 U
Methylcyclohexane	ug/L	N.E.	**25**	**16**	**15**	0.2 U	0.2 U	1 U
1,2-Dibromoethane	ug/L	N.E.	1 U	1 U	1 U	0.2 U	0.2 U	1 U
Isopropylbenzene	ug/L	5	1 U	1 U	1 U	0.2 U	0.2 U	1 U
1,3-Dichlorobenzene	ug/L	3	1 U	1 U	1 U	0.2 U	0.2 U	1 U
1,4-Dichlorobenzene	ug/L	3	1 U	1 U	1 U	0.2 U	0.2 U	1 U
1,2-Dichlorobenzene	ug/L	3	1 U	1 U	1 U	0.2 U	0.2 U	1 U
1,2-Dibromo-3-chloropropane	ug/L	0.04	1 UJ	1 U	1 U	1 U	1 U	1 UJ
1,2,4-Trichlorobenzene	ug/L	5	1 U	1 U	1 U	0.4 U	0.4 U	1 U
Methyl Acetate	ug/L	N.E.	1 UJ	1 U	1 U	0.2 UJ	0.2 UJ	1 UJ

Notes:

T.O.G.S. = Technical and Operations Guidance Series

[a] Remediation objective for 1,2-Xylene; 1,3-Xylene; and 1,4-Xylene is used.

[b] Remediation objective for 1,3-Dichloropropene is used.

FD = Field Duplicate

N.E. = Not Established

ug/L = microgram per liter

J = Indicates the compound concentration was estimated the result was below the sample reporting limit or quality control criteria were not met.

U = Indicates the compound was not detected above the laboratory detection limit and/or was detected in the blank.

A highlighted cell indicates the compound was reported above T.O.G.S. 1.1.1 Ambient Water Quality Standards and Guidance Values.

A bold cell indicates the compound was detected above the laboratory reporting limit.

Table 1-2
Summary of Groundwater TOGS 1.1.1 Exceedances
2006-2008
Henkel Corporation
Buffalo, New York

PARAMETER	Units	T.O.G.S. 1.1.1	North Sump		South Sump	
			8/29/2006	12/29/2008	8/29/2006	12/19/2007
Chloromethane	ug/L	**N.E.**	5 U	0.3 U	1 U	1 U
Bromomethane	ug/L	**5**	5 UJ	0.3 U	1 UJ	1 U
Vinyl Chloride	ug/L	**2**	5 U	0.2 U	**0.6 J**	1 U
Chloroethane	ug/L	**5**	**8 J**	**7**	**61 J**	**9**
Methylene Chloride	ug/L	**5**	4 UJ	0.4 UJ	1 UJ	1 U
Acetone	ug/L	**50**	25 UJ	1 U	**2 J**	**7**
Carbon Disulfide	ug/L	**N.E.**	5 U	0.2 U	1 U	1 U
1,1-Dichloroethene	ug/L	**5**	5 U	0.3 U	1 U	1 U
1,1-Dichloroethane	ug/L	**5**	5 U	0.8 U	**9**	**0.6 J**
Chloroform	ug/L	**7**	5 U	0.3 U	1 U	1 U
1,2-Dichloroethane	ug/L	**0.6**	5 U	0.2 U	1 U	1 U
2-Butanone	ug/L	**N.E.**	25 U	1 U	5 U	5 U
1,1,1-Trichloroethane	ug/L	**5**	5 U	0.3 U	1 U	1 U
Carbon Tetrachloride	ug/L	**5**	5 U	0.3 U	1 U	1 U
Bromodichloromethane	ug/L	**50**	5 U	0.4 U	1 U	1 U
1,2-Dichloropropane	ug/L	**1**	5 U	0.1 U	1 U	1 U
cis-1,3-Dichloropropene	ug/L	**N.E.**	5 U	0.4 U	1 U	1 U
Trichloroethene	ug/L	**5**	5 U	0.2 U	1 U	1 U
Dibromochloromethane	ug/L	**50**	5 U	0.3 U	1 U	1 U
1,1,2-Trichloroethane	ug/L	**1**	5 U	0.2 U	1 U	1 U
Benzene	ug/L	**1**	5 U	0.2 U	**2**	1 U
trans-1,3-Dichloropropene[b]	ug/L	**0.4**	**5 U**	0.4 U	**1 U**	1 U
Bromoform	ug/L	**50**	5 UJ	0.2 U	1 UJ	1 U
4-Methyl-2-pentanone	ug/L	**N.E.**	25 U	0.9 U	5 U	5 U
2-Hexanone	ug/L	**50**	25 U	1 U	5 U	5 U
Tetrachloroethene	ug/L	**5**	5 U	0.4 U	1 U	1 U
Toluene	ug/L	**5**	5 U	0.5 U	1 U	1 U
1,1,2,2-Tetrachloroethane	ug/L	**5**	5 U	0.2 U	1 U	1 U
Clorobenzene	ug/L	**5**	5 U	0.2 U	1 U	1 U
Ethylbenzene	ug/L	**5**	5 U	0.2 U	1 U	1 U
Styrene	ug/L	**5**	5 U	0.2 U	1 U	1 U
Total Xylenes[a]	ug/L	**5**	**15 U**	0.9 U	3 U	3 U
Dichlorodifluoromethane	ug/L	**5**	5 U	0.3 U	1 U	1 U
Trichlorofluoromethane	ug/L	**5**	5 UJ	0.2 U	1 UJ	1 U
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	**5**	5 UJ	0.3 U	1 UJ	1 U
trans-1,2-Dichloroethene	ug/L	**5**	5 U	0.1 U	**0.7 J**	1 U
Methyl-t-Butyl Ether (MTBE)	ug/L	**N.E.**	5 U	0.2 U	1 U	1 U
cis-1,2-Dichloroethene	ug/L	**5**	5 U	0.2 U	**1**	1 U
Cyclohexane	ug/L	**N.E.**	5 U	0.2 U	1 U	1 U
Methylcyclohexane	ug/L	**N.E.**	5 U	0.2 U	1 U	**3**
1,2-Dibromoethane	ug/L	**N.E.**	5 U	0.2 U	1 U	1 U
Isopropylbenzene	ug/L	**5**	5 U	0.2 U	1 U	1 U
1,3-Dichlorobenzene	ug/L	**3**	5 U	0.2 U	1 U	1 U
1,4-Dichlorobenzene	ug/L	**3**	5 U	0.2 U	1 U	1 U
1,2-Dichlorobenzene	ug/L	**3**	5 U	0.2 U	1 U	1 U
1,2-Dibromo-3-chloropropane	ug/L	**0.04**	5 UJ	1 U	1 UJ	1 U
1,2,4-Trichlorobenzene	ug/L	**5**	5 U	0.4 U	1 U	1 U
Methyl Acetate	ug/L	**N.E.**	5 UJ	0.2 UJ	1 UJ	1 U

Notes:

T.O.G.S. = Technical and Operations Guidance Series

[a] Remediation objective for 1,2-Xylene; 1,3-Xylene; and 1,4-Xylene is used.

[b] Remediation objective for 1,3-Dichloropropene is used.

FD = Field Duplicate

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ug/L = microgram per liter

J = Indicates the compound concentration was estimated the result was below the sample reporting limit or quality control criteria were not met.

U = Indicates the compound was not detected above the laboratory detection limit and/or was detected in the blank.

A highlighted cell indicates the compound was reported above T.O.G.S. 1.1.1 Ambient Water Quality Standards and Guidance Values.

A bold cell indicates the compound was detected above the laboratory reporting limit.

APPENDIX A

Soil Boring Logs from Previous Environmental Effectiveness Sampling

URS Corporation

GEOPROBE LOG

BORING NO:	SB-A1
PROJECT: Sovereign Chemical Site, Post Design Investigation	**SHEET:** 1 of 1
CLIENT: Sovereign Chemicals	**JOB NO.:** 25364871.00002
BORING CONTRACTOR: SJB Services, Inc.	**BORING LOCATION:** See Map
GROUNDWATER:	**GROUND ELEVATION:** See Map
	DATE STARTED: 05/13/05
	DATE FINISHED: 05/13/05
	DRILLER: Randy Steiner
	GEOLOGIST: Kevin J. McGovern
	REVIEWED BY:

DATE	TIME	LEVEL	TYPE	TYPE	CAS.	SAMPLER	CORE	TUBE
				DIA.		2-inch		
				WT.		---		
				FALL		---		
				*Photoionization Detector (PPM)				

DEPTH FEET	STRATA	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6"	REC% RQD%	COLOR	CONSIST HARD	MATERIAL	USCS	PID*	REMARKS
2		1	2" Macrocore 0'-4'		15%	Black / Dark Stained	Medium Dense	0'-8': FILL- Asphalt @ 0'-0.5' / 0.5'-7.5': Medium to coarse Sand and medium to fine Gravel, with C&D debris		0.6	Moist / No Odor
4											
6		2**	2" Macrocore 4'-8'		20%					0.8	
8						Dk. Gray		7.5'-8': Silt w/ wood chips			Wet @ 6.8' / Slight odor @ 7.5' / No Odor
10		3	2" Macrocore 8'-10'		20%	Light Gray w/ Rust Mottling	Dense	8'-10': Clayey SILT	ML	0.4	
12								End of Boring @ 10' BGS			
14											
16											
18											

COMMENTS: Boring advanced with Simco 2400SK using 2" Macrocore
Sampling with 2-inch diameter Macrocore samplers
** Sample taken for laboratory analyses: SB-A1-7-8 @ 7'-8' BGS

PROJECT NO. 25364871.00002
BORING NO. SB-A1

URS Corporation

GEOPROBE LOG

BORING NO:	SB-A2
PROJECT: Sovereign Chemical Site, Post Design Investigation	**SHEET:** 1 of 1
CLIENT: Sovereign Chemicals	**JOB NO.:** 25364871.00002
BORING CONTRACTOR: SJB Services, Inc.	**BORING LOCATION:** See Map
GROUNDWATER:	**GROUND ELEVATION:** See Map
DATE STARTED:	05/13/05
DATE FINISHED:	05/13/05
DRILLER:	Randy Steiner
GEOLOGIST:	Kevin J. McGovern
REVIEWED BY:	

DATE	TIME	LEVEL	TYPE		CAS.	SAMPLER	CORE	TUBE
				TYPE		macrocore		
				DIA.		2-inch		
				WT.		---		
				FALL		---		
				*Photoionization Detector (PPM)				

DEPTH FEET	SAMPLE STRATA	NO.	TYPE	BLOWS PER 6"	REC% RQD%	DESCRIPTION COLOR	CONSIST HARD	MATERIAL	USCS	PID*	REMARKS
2		1	2" Macrocore 0'-4'		50%	Black / Dark Brown	Medium Dense	0'-7.1': FILL- Asphalt @ 0'-0.5' 0.5'-7.1': Coarse Sand and fine Gravel, grading to Silt and coarse sand, with C&D debris		0.7 0.7 0.1	Moist No Odor
4											
6		2**	2" Macrocore 4'-8'		55%	Dark Stained				0.4 0.9	
8		3	2" Macrocore 8'-10'		75%	Dark Gray	Dense	7.1'-10': Clayey SILT	ML	0.3 0.0	Wet @ 6.8'
10											
12								End of Boring @ 10' BGS			
14											
16											
18											

COMMENTS: Boring advanced with Simco 2400SK using 2" Macrocore
Sampling with 2-inch diameter Macrocore samplers
** Sample taken for laboratory analyses: SB-A2-6-7 @ 6'-7' BGS

PROJECT NO.	25364871.00002
BORING NO.	SB-A2

URS Corporation

GEOPROBE LOG

BORING NO:	SB-A3
PROJECT: Sovereign Chemical Site, Post Design Investigation	**SHEET:** 1 of 1
CLIENT: Sovereign Chemicals	**JOB NO.:** 25364871.00002
BORING CONTRACTOR: SJB Services, Inc.	**BORING LOCATION:** See Map
GROUNDWATER:	**GROUND ELEVATION:** See Map
	DATE STARTED: 05/13/05
	DATE FINISHED: 05/13/05
	DRILLER: Randy Steiner
	GEOLOGIST: Kevin J. McGovern
	REVIEWED BY:

DATE	TIME	LEVEL	TYPE		CAS.	SAMPLER	CORE	TUBE
				TYPE		macrocore		
				DIA.		2-inch		
				WT.		---		
				FALL		---		
				*Photoionization Detector (PPM)				

DEPTH FEET	SAMPLE STRATA	NO.	TYPE	BLOWS PER 6"	REC% RQD%	DESCRIPTION COLOR	CONSIST HARD	MATERIAL	USCS	REMARKS PID*	
2		1	2" Macrocore 0'-4'		60%	Gray / Dark Stained	Medium Dense	0'-7.5': FILL- Gravel Sub base @ 0'-0.5' 0.5'-7.5': Coarse Sand and fine Gravel, some Silt and C&D debris		0.1 0.0 0.0	Moist No Odor
4											
6		2**	2" Macrocore 4'-8'		75%					0.0 0.2	
8										0.0	Wet @ 7.0'
10		3	2" Macrocore 8'-10'		0%	Dark Gray	Dense	7.5'-10': Clayey SILT 8'-10': No Recovery	ML	No Rec	
12								End of Boring @ 10' BGS			
14											
16											
18											

COMMENTS: Boring advanced with Simco 2400SK using 2" Macrocore
Sampling with 2-inch diameter Macrocore samplers
** Sample taken for laboratory analyses: SB-A3-6-7 @ 6'-7' BGS

PROJECT NO. 25364871.00002
BORING NO. SB-A3

URS Corporation									GEOPROBE LOG			
									BORING NO:	SB-C1		
PROJECT:	Sovereign Chemical Site, Post Design Investigation								SHEET:	1 of 1		
CLIENT:	Sovereign Chemicals								JOB NO.:	25364871.00002		
BORING CONTRACTOR:	SJB Services, Inc.								BORING LOCATION:	See Map		
GROUNDWATER:					CAS.	SAMPLER	CORE	TUBE	GROUND ELEVATION:	See Map		
DATE	TIME	LEVEL	TYPE	TYPE		macrocore			DATE STARTED:	05/13/05		
				DIA.		2-inch			DATE FINISHED:	05/13/05		
				WT.		---			DRILLER:	Randy Steiner		
				FALL		---			GEOLOGIST:	Kevin J. McGovern		
				*Photoionization Detector (PPM)					REVIEWED BY:			

DEPTH FEET	SAMPLE STRATA	NO.	TYPE	BLOWS PER 6"	REC% RQD%	DESCRIPTION COLOR	CONSIST HARD	MATERIAL	USCS	REMARKS PID*	
0		1	2" Macrocore 0'-4'		70%	Gray	Medium Dense	0'-6.5': FILL- Gravel Sub base @ 0'-0.5'		0.0	Dry No Odor
2						Reddish Brown		0.5'-3.2': Reworked Silt and medium to coarse sand		0.0	
4						Dk. Gray		3.2'-4': Reworked Clay and Silt		110.0	
6		2**	2" Macrocore 4'-8'		83%	Dark Stained		4'-6.5': Reworked coarse Sand and fine Gravel		>9999	Strong Odor @ 4.0'
7						Dark Gray	Dense	6.5'-10': SILT, some clay grading to Silty CLAY	ML/CL	203.0	Wet @ 6.0' Slight Odor @ 6.5'
8										100.0	
10		3	2" Macrocore 8'-10'		0%			8'-10': No Recovery		No Rec	
12								End of Boring @ 10' BGS			
14											
16											
18											

COMMENTS: Boring advanced with Simco 2400SK using 2" Macrocore
Sampling with 2-inch diameter Macrocore samplers
** Sample taken for laboratory analyses: SB-C1-4-5.5 @ 4'-5.5' BGS

PROJECT NO.	25364871.00002
BORING NO.	SB-C1

URS Corporation									GEOPROBE LOG	
									BORING NO:	SB-C2
PROJECT:	Sovereign Chemical Site, Post Design Investigation								SHEET:	1 of 1
CLIENT:	Sovereign Chemicals								JOB NO.:	25364871.00002
BORING CONTRACTOR:	SJB Services, Inc.								BORING LOCATION:	See Map
GROUNDWATER:					CAS.	SAMPLER	CORE	TUBE	GROUND ELEVATION:	See Map
DATE	TIME	LEVEL	TYPE	TYPE		macrocore			DATE STARTED:	05/13/05
				DIA.		2-inch			DATE FINISHED:	05/13/05
				WT.		---			DRILLER:	Randy Steiner
				FALL		---			GEOLOGIST:	Kevin J. McGovern
				*Photoionization Detector (PPM)					REVIEWED BY:	

DEPTH FEET	SAMPLE STRATA	NO.	TYPE	BLOWS PER 6"	REC% RQD%	DESCRIPTION COLOR	CONSIST HARD	MATERIAL	USCS	REMARKS PID*	
		1	2" Macrocore 0'-4'		88%	Gray / Reddish Brown	Medium Dense	0'-9.5': FILL- Gravel Sub base @ 0'-0.5'		0.0	Moist
2								0.5'-4': Reworked Till - Clayey Silt, trace coarse sand and fine gravel		0.0	No Odor
4										0.0	
		2	2" Macrocore 4'-8'		58%	Medium Brown		4'-9.5': Silt and gravel mix		0.0	
6										0.0	Wet @ 6.0'
8						Dark Gray				0.0	
9		3**	2" Macrocore 8'-10'		95%					1.1	Odor @ 9.3'
						Dk. Stained		9.3'-9.5': Coarse sand and fine Gravel		24.4	
10						Olive Gray	Dense	9.5'-10': Clayey SILT	ML		
								End of Boring @ 10' BGS			
12											
14											
16											
18											

COMMENTS: Boring advanced with Simco 2400SK using 2" Macrocore	**PROJECT NO.**	25364871.00002
Sampling with 2-inch diameter Macrocore samplers	**BORING NO.**	SB-C2
** Sample taken for laboratory analyses: SB-C2-9-10 @ 9'-10' BGS		

URS Corporation									GEOPROBE LOG				
									BORING NO:	SB-C3			
PROJECT:	Sovereign Chemical Site, Post Design Investigation								SHEET:	1 of 1			
CLIENT:	Sovereign Chemicals								JOB NO.:	25364871.00002			
BORING CONTRACTOR:	SJB Services, Inc.								BORING LOCATION:	See Map			
GROUNDWATER:					CAS.	SAMPLER	CORE	TUBE	GROUND ELEVATION:	See Map			
DATE	TIME	LEVEL	TYPE	TYPE		macrocore			DATE STARTED:	05/13/05			
				DIA.		2-inch			DATE FINISHED:	05/13/05			
				WT.		---			DRILLER:	Randy Steiner			
				FALL		---			GEOLOGIST:	Kevin J. McGovern			
				*Photoionization Detector (PPM)					REVIEWED BY:				

DEPTH FEET	SAMPLE STRATA	NO.	TYPE	BLOWS PER 6"	REC% RQD%	DESCRIPTION COLOR	CONSIST HARD	MATERIAL	USCS	REMARKS PID*	
		1	2" Macrocore 0'-4'		88%	Gray / Reddish Brown	Medium Dense	0'-10': FILL- Gravel Sub base @ 0'-0.5'		0.0	Moist
								0.5'-4': Reworked Till - Clayey Silt, trace coarse sand and fine gravel		0.0	No Odor
2										0.0	
4								4'-6': Reworked Till - Silty Clay		0.0	
		2**	2" Macrocore 4'-8'		58%	Medium Gray		6'-7': Medium to coarse Sand and fine Gravel		0.0	Wet @ 6.0'
6								7'-9.5': Reworked Till - Silty Clay		0.0	
8										0.0	
		3	2" Macrocore 8'-10'		100%			9.5'-9.6': Geotextile Cloth		0.0	
10							Dense	9.6'-10': Coarse to fine Sand and Gravel			
								End of Boring @ 10' BGS			
12											
14											
16											
18											

COMMENTS: Boring advanced with Simco 2400SK using 2" Macrocore	**PROJECT NO.**	25364871.00002
Sampling with 2-inch diameter Macrocore samplers	**BORING NO.**	SB-C3
** Sample taken for laboratory analyses: SB-C3-5-6 @ 5'-6' BGS		

Log of Boring: SB-C4 **Project:** Remediation Effectiveness **Project No:** 25364871

Client: Henkel Corporation **Reviewed By:**

Location: Buffalo, New York **Completion Depth (ft):** 10

Logged By: K. D. P. Rentz **Surface Elevation (ft):** n.a.

Date Started: 8-28-06 **Boring Diameter (in):** 2

Date Finished: 8-28-06 **Groundwater Depth (ft):** n.a.

Subsurface Profile			Sample Information				
Depth	Graphic Log	Description	Sample Number	Sample Type	Recovery (inches)	Sample PID (PPM)	Remarks
0		Ground Surface					
1		**GRAVEL** Dry, white, GRAVEL of various size from 2 inch to fine, asphalt	1	AS	36	9 3040	Soil sample collected from 2-4 ft for VOC, TOC, Mn and Sulfate analysis PID readings peaked at 3040, but settled at 1506
2		**SAND** Dry, brown, SAND with gravel					
3		**SAND** Moist, dark brown, medium to coarse, SAND with some fines and fill material, pockets of black cinders, turns to orange color at bottom of sleeve					
4							
5							
6		**SAND** Wet, olive gray, medium to coarse, SAND, with some fill material	2	AS	24	3030 354	PID readings peaked at 3030, but settled at 630
7		**CLAY** Wet, black, CLAY with some sand					
8							
9			3	AS	1	203	
10		**CLAY** 1 inch plug of soil at bottom of acetate sleeve					
11		End of Borehole					
12							
13							
14							
15							

URS
100 S. Wacker Dr.
Suite 500
Chicago, IL 60606

Drilling Company: Nothnagle Drilling
Driller: Jay
Drilling Equipment: Geoprobe
Drilling Method: Direct Push

Drill Bit Size/Type:
Borehole Backfill: Bentonite
Type of sampler: Acetate Sleeve
Hammer weight/drop:

Log of Boring: SB-C5 ***Project:*** Remediation Effectiveness ***Project No:*** 25364871

Client: Henkel Corporation ***Reviewed By:***

Location: Buffalo, New York ***Completion Depth (ft):*** 12

Logged By: K. D. P. Rentz ***Surface Elevation (ft):*** n.a.

Date Started: 8-28-06 ***Boring Diameter (in):*** 2

Date Finished: 8-28-06 ***Groundwater Depth (ft):*** n.a.

Subsurface Profile			Sample Information				
Depth	Graphic Log	Description	Sample Number	Sample Type	Recovery (inches)	Sample PID (PPM)	Remarks
		Ground Surface					
0		***CLAY***					
		Dry, roots and topsoil with CLAY					
1		***GRAVEL***					
		Dry, orange and yellow, cinder material with GRAVEL (0.5 inch in diameter or smaller)	1	AS	36	0.2 10.4	Soil sample collected from 2-4 ft for VOC, TOC, Mn and Sulfate analysis. Duplicate sample collected for VOCs.
2							
3							
4							
5							
6			2	AS	24	2.4 0.3	
7		***SAND***					
		Wet, olive gray, fine to medium, SAND with gravel					
8		***SAND***					
		Wet, black, coarse, SAND, with trace cinder and brick debris					
9		***NO RECOVERY***					
10			3	AS	0	n.a.	
11							
12							
		End of Borehole					
13							
14							
15							

URS
100 S. Wacker Dr.
Suite 500
Chicago, IL 60606

Drilling Company: Nothnagle Drilling
Driller: Jay
Drilling Equipment: Geoprobe
Drilling Method: Direct Push

Drill Bit Size/Type:
Borehole Backfill: Bentonite
Type of sampler: Acetate Sleeve
Hammer weight/drop:

Log of Boring: SB-C6 ***Project:*** Remediation Effectiveness ***Project No:*** 25364871

Client: Henkel Corporation ***Reviewed By:***

Location: Buffalo, New York ***Completion Depth (ft):*** 12

Logged By: K. D. P. Rentz ***Surface Elevation (ft):*** n.a.

Date Started: 8-28-06 ***Boring Diameter (in):*** 2

Date Finished: 8-28-06 ***Groundwater Depth (ft):*** n.a.

Subsurface Profile			Sample Information				
Depth	Graphic Log	Description	Sample Number	Sample Type	Recovery (inches)	Sample PID (PPM)	Remarks
		Ground Surface					
0							
1							
2		***GRAVEL*** Dry, olive gray, GRAVEL with trace fines	1	AS	24	3.1 1.1	
3		***SAND*** Dry, brown, SAND, with areas of black cinder and areas of orange					
4							
5							
6			2	AS	12	4.2 4140	
7		***SAND*** Wet, gray, SAND, trace pebble (0.5 inch)					Soil sample collected from 7-8 ft for VOC and TOC analysis.
8		***SAND*** Wet, black, coarse, SAND					
9		***SAND*** Wet, black, fine to coarse, SAND					
10		***CLAY*** Wet, olive gray, CLAY	3	AS	48	20.9 4.5	
11							
12		End of Borehole					
13							
14							
15							

URS
100 S. Wacker Dr.
Suite 500
Chicago, IL 60606

Drilling Company: Nothnagle Drilling
Driller: Jay
Drilling Equipment: Geoprobe
Drilling Method: Direct Push

Drill Bit Size/Type:
Borehole Backfill: Bentonite
Type of sampler: Acetate Sleeve
Hammer weight/drop:

Log of Boring: SB-C7 ***Project:*** Remediation Effectiveness ***Project No:*** 25364871

Client: Henkel Corporation ***Reviewed By:***

Location: Buffalo, New York ***Completion Depth (ft):*** 8

Logged By: K. D. P. Rentz ***Surface Elevation (ft):*** n.a.

Date Started: 8-28-06 ***Boring Diameter (in):*** 2

Date Finished: 8-28-06 ***Groundwater Depth (ft):*** n.a.

Subsurface Profile			Sample Information				
Depth	Graphic Log	Description	Sample Number	Sample Type	Recovery (inches)	Sample PID (PPM)	Remarks
		Ground Surface					
0		***TOPSOIL*** Topsoil mixed with grass/weeds					
2		***GRAVEL*** Dry, olive-gray, fine to coarse, GRAVEL	1	AS	24	0.2 0.3	
6			2	AS	24	0.2 2.2	Soil sample collected at 14:00 from 6-8 feet for VOC and TOC analysis.
7		***GRAVEL*** Wet, black, uniform pea size GRAVEL					Hit a piece of cloth (possible geotextile layer)
8		***CLAY*** Wet, black, CLAY					
9		End of Borehole					

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Drilling Company: Nothnagle Drilling
Driller: Jay
Drilling Equipment: Geoprobe
Drilling Method: Direct Push

Drill Bit Size/Type:
Borehole Backfill: Bentonite
Type of sampler: Acetate Sleeve
Hammer weight/drop:

Log of Boring: SB-C8 **Project:** Remediation Effectiveness **Project No:** 25364871

Client: Henkel Corporation **Reviewed By:**

Location: Buffalo, New York **Completion Depth (ft):** 8

Logged By: K. D. P. Rentz **Surface Elevation (ft):** n.a.

Date Started: 8-28-06 **Boring Diameter (in):** 2

Date Finished: 8-28-06 **Groundwater Depth (ft):** n.a.

Subsurface Profile			Sample Information				
Depth	Graphic Log	Description	Sample Number	Sample Type	Recovery (inches)	Sample PID (PPM)	Remarks
		Ground Surface					
0		***SAND*** Dry, olive-gray, SAND with rocks (size 2 inch and smaller), fill material	1	AS	24	92 4.1	Soil sample collected at 13:50 from 0-2 feet for VOC and TOC analysis
5		***GRAVEL*** Wet, brown, uniform pea size GRAVEL with trace fines	2	AS	30	9.7 0.6	
7		***WOOD PIECES*** Wet, black, WOOD PIECES with trace fines					
8		***CLAY*** Wet, black, CLAY					
		End of Borehole					

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Chicago, IL 60606

Drilling Company: Nothnagle Drilling
Driller: Jay
Drilling Equipment: Geoprobe
Drilling Method: Direct Push

Drill Bit Size/Type:
Borehole Backfill: Bentonite
Type of sampler: Acetate Sleeve
Hammer weight/drop:

Log of Boring: SB-C9 **Project:** Remediation Effectiveness **Project No:** 25364871

Client: Henkel Corporation **Reviewed By:**

Location: Buffalo, New York **Completion Depth (ft):** 12

Logged By: K. D. P. Rentz **Surface Elevation (ft):** n.a.

Date Started: 8-28-06 **Boring Diameter (in):** 2

Date Finished: 8-28-06 **Groundwater Depth (ft):** n.a.

Subsurface Profile			Sample Information				
Depth	Graphic Log	Description	Sample Number	Sample Type	Recovery (inches)	Sample PID (PPM)	Remarks
		Ground Surface					
0		**GRAVEL**					
		Dry, GRAVEL (size range 2 inch to fine)					
1		**SAND**					
		Dry, black and brown, fine to medium, SAND with gravel	1	AS	36	0.5 36.5	
2							
3							
4		**GRAVEL**					
		Wet, black, cinders, wood and GRAVEL	2	AS	24	16.4 16.1	
5							
6							
7							
8							Soil sample collected at 15:40 from 8-10 feet for VOC and TOC analysis
		CLAY					
9		Wet, olive-gray with yellow and olive-blue streaks, CLAY					
			3	AS	48	402 0.9	
10							
11							
12		End of Borehole					
13							
14							
15							

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Drilling Company: Nothnagle Drilling
Driller: Jay
Drilling Equipment: Geoprobe
Drilling Method: Direct Push

Drill Bit Size/Type:
Borehole Backfill: Bentonite
Type of sampler: Acetate Sleeve
Hammer weight/drop:

Log of Boring: MW-3R **Project:** Henkel - Buffalo **Project No:** 25364871

Client: Henkel Corporation **Reviewed By:** R. Piurek

Location: 710 Ohio Street, Buffalo, NY **Completion Depth (ft):** 20

Logged by: R. Piurek **Surface Elevation (ft):** n.a.

Date Started: 12-18-07 **Boring Diameter (in):** 2

Date Finished: 12-18-07 **Groundwater Depth (ft):** n.a.

Easting: n.a. **Northing:** n.a. **Sheet:** 1 of 2

Subsurface Profile				Sample Information					
Elevation	Depth	Graphic	Description	Sample No.	Sample Type	Recovery (inches)	Sample PID	Well Construction	Remarks
0.00	0		Ground Surface						
	0		***Gravel*** Light gray, asphalt and GRAVEL						
-1.00	1		***Silty Sand*** Moist, black - dark brown, very fine, SILTY SAND, trace coal and cinder fragments	1	SS	33.6	0		
	2								
	3								
	4								
-5.20	5		***Sandy Silt*** Moist to very moist, dark gray, fine, SANDY SILT	2	SS	26.4	0		
	6								
	7								
	8								
-9.50	9		***Clayey Silt*** Very moist to saturated, light gray, CLAYEY SILT, some orange mottles	3	SS	48	0		
	10								
	11								
-12.00	12		***No Recovery*** End of tube saturated	4	SS	0	0		PID reading from 12-16 feet bgs collected from empty tube.
	13								
	14								
	15								

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100 S. Wacker Drive
Suite 500
Chicago, IL 60606

Drilling Company: Nothnagle Drilling
Driller: Jeff
Drilling Equipment: 6610 DT Track Mounted Geoprobe
Drilling Method: Hollow Stem Auger w/ Macrocore Sampler

Drill Bit Size/Type: 4.25"
Borehole Backfill: MW-3R
Type of sampler: 2" Macrocore
Hammer weight/drop: Percussion

Log of Boring: MW-3R **Project:** Henkel - Buffalo **Project No:** 25364871 **Sheet** 2 of 2

Elevation	Depth	Graphic	Description	Sample No.	Sample Type	Recovery (inches)	Sample PID (ppm)	Well Construction	Remarks
-16	16								
-17			***Sandy Silt*** Saturated, dark gray - black, very fine, SANDY SILT	5	SS	48	0		
	17		***Clayey Silt*** Saturated, light brown, CLAYEY SILT						
-19	18								
	19		***Sandy Silt*** Saturated, dark gray, very fine, SANDY SILT, trace wood fragments at 19.4 feet						
-20	20		End of Borehole						
	21								
	22								
	23								
	24								
	25								
	26								
	27								
	28								
	29								
	30								

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Drilling Company: Nothnagle Drilling
Driller: Jeff
Drilling Equipment: 6610 DT Track Mounted Geoprobe
Drilling Method: Hollow Stem Auger w/ Macrocore Sampler
Drill Bit Size/Type: 4.25"
Borehole Backfill: MW-3R
Type of sampler: 2" Macrocore
Hammer weight/drop: Percussion

Log of Boring: SB-1 **Project:** Henkel - Buffalo **Project No:** 25364871

Client: Henkel Corporation **Reviewed By:** R. Piurek

Location: 710 Ohio Street, Buffalo, NY **Completion Depth (ft):** 10

Logged By: R. Piurek **Surface Elevation (ft):** n.a.

Date Started: 12-17-07 **Boring Diameter (in):** 2

Date Finished: 12-17-07 **Groundwater Depth (ft):** n.a.

Subsurface Profile				Sample Information				
Elevation	Depth	Graphic Log	Description	Sample Number	Sample Type	Recovery (inches)	Sample PID (PPM)	Remarks
0.00	0		Ground Surface					
			Gravel Asphalt and gray gravel					
-0.80	1		***Sand*** Dark brown to light brown, fine to coarse, SAND, coal fragments and cinders					
-2.00	2		***Sand & Silt*** Light gray, coarse to fine, SAND and SILT, coal fragments, trace fine, gravel, no odor	1	AS	30	0	Soil sample SB-1 collected from 2-10 feet bgs at 10:00 for VOC, TOC, manganese and sulfate analysis.
-4.00	3							
	4		***No Recovery*** Driller reports soils as wet and soft					PID reading from 4-8 feet bgs collected from empty tube.
	5							
	6			2	AS	0	0	
	7							
-8.00	8		***Sandy Silt*** Light gray, very fine, SANDY SILT, trace clay, trace medium, sand, no odor					
	9			3	AS	9.6	0	
-10.00	10							
	11		End of Borehole					
	12							
	13							
	14							
	15							

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Suite 500
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Drilling Company: Nothnagle Drilling
Driller: Jeff
Drilling Equipment: 6610 DT Track Mounted Geoprobe
Drilling Method: Direct Push

Drill Bit Size/Type: n.a.
Borehole Backfill: Bentonite Chips
Type of sampler: Acetate Sleeve
Hammer weight/drop: Percussion

Log of Boring: SB-2 ***Project:*** Henkel - Buffalo ***Project No:*** 25364871

Client: Henkel Corporation ***Reviewed By:*** R. Piurek

Location: 710 Ohio Street, Buffalo, NY ***Completion Depth (ft):*** 10

Logged By: R. Piurek ***Surface Elevation (ft):*** n.a.

Date Started: 12-17-07 ***Boring Diameter (in):*** 2

Date Finished: 12-17-07 ***Groundwater Depth (ft):*** n.a.

Subsurface Profile				Sample Information				
Elevation	Depth	Graphic Log	Description	Sample Number	Sample Type	Recovery (inches)	Sample PID (PPM)	Remarks
0.00	0		Ground Surface					
			Gravel Light gray, asphalt and GRAVEL					
-0.90	1		***Clayey Silt*** Tan, very fine, CLAYEY SILT					
-1.50			***Sand*** Brown, medium to fine, SAND, trace fine gravel and silt	1	AS	32.4	0	
-2.40	2							
	3		***Sand*** Black, coarse to fine, SAND, coal fragments, trace fine gravel and cinders					Soil sample SB-2 and FD 121707 collected from 3-8 feet bgs at 11:55 for VOC and TOC analysis.
-4.00	4		***Sandy Silt*** Dark brown - black, very fine, SANDY SILT, trace clay, trace medium to fine sand, trace cinder, strong odor (paint thinner)					
	5							
	6			2	AS	21.6	34.9	
	7							
-8.00	8		***No Recovery***					
	9			3	AS	0	108	PID reading from 8- 10 feet bgs collected from empty tube.
-10.00	10		End of Borehole					
	11							
	12							
	13							
	14							
	15							

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Drilling Company: Nothnagle Drilling
Driller: Jeff
Drilling Equipment: 6610 DT Track Mounted Geoprobe
Drilling Method: Direct Push

Drill Bit Size/Type: n.a.
Borehole Backfill: Bentonite Chips
Type of sampler: Acetate Sleeve
Hammer weight/drop: Percussion

Log of Boring: SB-3 ***Project:*** Henkel - Buffalo ***Project No:*** 25364871

Client: Henkel Corporation ***Reviewed By:*** R. Piurek

Location: 710 Ohio Street, Buffalo, NY ***Completion Depth (ft):*** 10

Logged By: R. Piurek ***Surface Elevation (ft):*** n.a.

Date Started: 12-17-07 ***Boring Diameter (in):*** 2

Date Finished: 12-17-07 ***Groundwater Depth (ft):*** n.a.

Subsurface Profile				Sample Information				
Elevation	Depth	Graphic Log	Description	Sample Number	Sample Type	Recovery (inches)	Sample PID (PPM)	Remarks
0.00	0		Ground Surface					
			Gravel Light gray, asphalt and GRAVEL					
-0.90	1		***Sand and Silt*** Dark gray, dark brown, medium to fine SAND and SILT, coal and cinder fragments, trace fine gravel	1	AS	20.4	0	Soil sample SB-3 collected from 3-8 feet bgs at 11:55 for VOC and TOC analysis.
	2							
	3							
-4.00	4		***Sandy Silt*** Dark gray - olive, fine, SANDY SILT, trace cinders and coal fragments, no odor					
	5			2	AS	12	0	
	6							
	7							
-8.00	8		***No Recovery***					PID reading from 8-10 feet bgs collected from empty tube.
	9			3	AS	0	0.7	
-10.00	10		End of Borehole					
	11							
	12							
	13							
	14							
	15							

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Drilling Company: Nothnagle Drilling
Driller: Jeff
Drilling Equipment: 6610 DT Track Mounted Geoprobe
Drilling Method: Direct Push

Drill Bit Size/Type: n.a.
Borehole Backfill: Bentonite Chips
Type of sampler: Acetate Sleeve
Hammer weight/drop: Percussion

Log of Boring: SB-4 ***Project:*** Henkel - Buffalo ***Project No:*** 25364871

Client: Henkel Corporation ***Reviewed By:*** R. Piurek

Location: 710 Ohio Street, Buffalo, NY ***Completion Depth (ft):*** 10

Logged By: R. Piurek ***Surface Elevation (ft):*** n.a.

Date Started: 12-17-07 ***Boring Diameter (in):*** 2

Date Finished: 12-17-07 ***Groundwater Depth (ft):*** n.a.

Sheet: 1 of 1

Subsurface Profile				Sample Information				
Elevation	Depth	Graphic Log	Description	Sample Number	Sample Type	Recovery (inches)	Sample PID (PPM)	Remarks
0.00	0		Ground Surface					
-0.90	1		***Gravel*** Light gray, asphalt and GRAVEL					
	2		***Sand*** Moist, light brown, fine to coarse, SAND, cinder, fine gravel, coal fragments, trace silt and clay	1	AS	34.8	0	
-4.00	4		***Sand*** Very moist, dark gray - dark brown, coarse to fine SAND and fine gravel, trace coal and cinder fragments	2	AS	7.2	0	Soil samples SB-4, SB-4 MS, SB-4 MSD collected from 4-10 feet bgs at 12:45 for VOC and TOC analysis.
-8.00	8		***Sandy Silt*** Very moist, olive-gray, very fine, SANDY SILT, trace orange mottles	3	AS	38.4	0	
-10.00	10		End of Borehole					
	15							

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Drilling Company: Nothnagle Drilling
Driller: Jeff
Drilling Equipment: 6610 DT Track Mounted Geoprobe
Drilling Method: Direct Push

Drill Bit Size/Type: n.a.
Borehole Backfill: Bentonite Chips
Type of sampler: Acetate Sleeve
Hammer weight/drop: Percussion

Log of Boring: SB-5 ***Project:*** Henkel - Buffalo ***Project No:*** 25364871

Client: Henkel Corporation ***Reviewed By:*** R. Piurek

Location: 710 Ohio Street, Buffalo, NY ***Completion Depth (ft):*** 10

Logged By: R. Piurek ***Surface Elevation (ft):*** n.a.

Date Started: 12-17-07 ***Boring Diameter (in):*** 2

Date Finished: 12-17-07 ***Groundwater Depth (ft):*** n.a.

Subsurface Profile				Sample Information				
Elevation	Depth	Graphic Log	Description	Sample Number	Sample Type	Recovery (inches)	Sample PID (PPM)	Remarks
0.00	0		Ground Surface					
	1 2 3		***Sand*** Dark brown - dark gray, fine to coarse, SAND, fine gravel, cinder and coal fragments, trace silt	1	AS	48	0	
-4.00	4		***Sand and Silt*** Dark brown - black, fine, SAND and SILT, trace coal fragments, trace fine gravel	2	AS	12	0	Soil sample SB-5 collected from 4-10 feet bgs at 13:15 for VOC, TOC, manganese and sulfate.
-8.00	5 6 7 8		***Clayey Silt*** Very moist, olive-gray, very fine, CLAYEY SILT, trace orange mottles	3	AS	26.4	0	
-10.00	9 10		End of Borehole					
	11 12 13 14 15							

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Drilling Company: Nothnagle Drilling
Driller: Jeff
Drilling Equipment: 6610 DT Track Mounted Geoprobe
Drilling Method: Direct Push

Drill Bit Size/Type: n.a.
Borehole Backfill: Bentonite Chips
Type of sampler: Acetate Sleeve
Hammer weight/drop: Percussion

Log of Boring: SB-6 ***Project:*** Henkel - Buffalo ***Project No:*** 25364871

Client: Henkel Corporation ***Reviewed By:*** R. Piurek

Location: 710 Ohio Street, Buffalo, NY ***Completion Depth (ft):*** 10

Logged By: R. Piurek ***Surface Elevation (ft):*** n.a.

Date Started: 12-17-07 ***Boring Diameter (in):*** 2

Date Finished: 12-17-07 ***Groundwater Depth (ft):*** n.a.

Subsurface Profile				Sample Information				
Elevation	Depth	Graphic Log	Description	Sample Number	Sample Type	Recovery (inches)	Sample PID (PPM)	Remarks
0.00	0		Ground Surface					
	1		***Sand*** Slightly moist, dark brown, coarse to fine, SAND, trace fine gravel, cinder, coal fragments	1	AS	12	0	Soil sample SB-6 collected from 4-10 feet bgs at 13:40 for VOC and TOC analysis.
	2							
	3							
-4.00	4							
	5		***Sand*** Moist, brown - black, coarse to fine SAND, trace fine gravel, trace cinder	2	AS	6	0	
	6							
	7							
-8.00	8							
	9		***Sand*** Saturated, black, coarse to fine, SAND and fine gravel, trace coal fragments	3	AS	3.6	0	
-10.00	10							
	11		End of Borehole					
	12							
	13							
	14							
	15							

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Drilling Company: Nothnagle Drilling
Driller: Jeff
Drilling Equipment: 6610 DT Track Mounted Geoprobe
Drilling Method: Direct Push

Drill Bit Size/Type: n.a.
Borehole Backfill: Bentonite Chips
Type of sampler: Acetate Sleeve
Hammer weight/drop: Percussion

Log of Boring: SB-7 ***Project:*** Henkel - Buffalo ***Project No:*** 25364871

Client: Henkel Corporation ***Reviewed By:*** R. Piurek

Location: 710 Ohio Street, Buffalo, NY ***Completion Depth (ft):*** 10

Logged By: R. Piurek ***Surface Elevation (ft):*** n.a.

Date Started: 12-17-07 ***Boring Diameter (in):*** 2

Date Finished: 12-17-07 ***Groundwater Depth (ft):*** n.a.

Subsurface Profile				Sample Information				
Elevation	Depth	Graphic Log	Description	Sample Number	Sample Type	Recovery (inches)	Sample PID (PPM)	Remarks
0.00	0		Ground Surface					
	1		***Sand*** Moist, light brown to dark brown, coarse to fine, SAND, cinder, some coal fragments and fine gravel	1	AS	27.6	0	Soil sample SB-7 collected from 4-8 feet bgs at 13:50 for VOC and TOC analysis.
	2							
	3							
-4.00	4							
	5		***Sand*** Moist, light brown to dark brown, coarse to fine, SAND, cinder, some coal fragments and fine gravel, trace ash	2	AS	24	0	
-5.50	6		***Clayey Silt*** Moist, light gray - olive, CLAYEY SILT, trace light brown mottles					
	7							
-8.00	8							
	9		***Sand*** Saturated, coarse to fine, SAND, cinder, fine gravel	3	AS	4.8	0	
-10.00	10		End of Borehole					
	11							
	12							
	13							
	14							
	15							

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Drilling Company: Nothnagle Drilling
Driller: Jeff
Drilling Equipment: 6610 DT Track Mounted Geoprobe
Drilling Method: Direct Push

Drill Bit Size/Type: n.a.
Borehole Backfill: Bentonite Chips
Type of sampler: Acetate Sleeve
Hammer weight/drop: Percussion

Log of Boring: SB-8 ***Project:*** Henkel - Buffalo ***Project No:*** 25364871

Client: Henkel Corporation ***Reviewed By:*** R. Piurek

Location: 710 Ohio Street, Buffalo, NY ***Completion Depth (ft):*** 10

Logged By: R. Piurek ***Surface Elevation (ft):*** n.a.

Date Started: 12-17-07 ***Boring Diameter (in):*** 2

Date Finished: 12-17-07 ***Groundwater Depth (ft):*** n.a.

Sheet: 1 of 1

Subsurface Profile				Sample Information				
Elevation	Depth	Graphic Log	Description	Sample Number	Sample Type	Recovery (inches)	Sample PID (PPM)	Remarks
0.00	0		Ground Surface					
	1		***Gravel*** Light gray, asphalt and GRAVEL					
-1.50	2		***Sand*** Moist, dark brown, coarse to fine, SAND, coal fragments, cinder, trace fine gravel	1	AS	22.8	0	
-4.00	4		***Sandy Silt*** Moist, light brown - gray, very fine, SANDY SILT, trace clay, trace fine gravel	2	AS	24	0	Soil sample SB-8 collected from 4-8 feet bgs at 14:10 for VOC analysis.
-8.00	8		***No Recovery*** Saturated	3	AS	0	0	PID readings from 8-10 feet bgs collected from empty tube.
-10.00	10		End of Borehole					

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Drilling Company: Nothnagle Drilling
Driller: Jeff
Drilling Equipment: 6610 DT Track Mounted Geoprobe
Drilling Method: Direct Push

Drill Bit Size/Type: n.a.
Borehole Backfill: Bentonite Chips
Type of sampler: Acetate Sleeve
Hammer weight/drop: Percussion

Log of Boring: SB-1-08 ***Project:*** Henkel-Buffalo ***Project No:*** 25364871

Client: Henkel Corporation ***Reviewed By:***

Location: 710 Ohio Street, Buffalo, NY ***Completion Depth (ft):*** 12

Logged By: R. Piurek ***Surface Elevation (ft):*** n.a.

Date Started: 12-29-08 ***Boring Diameter (in):*** 2

Date Finished: 12-29-08 ***Groundwater Depth (ft):*** n.a.

Subsurface Profile			Sample Information				
Depth	Graphic Log	Description	Sample Number	Sample Type	Recovery (inches)	Sample PID (PPM)	Remarks
		Ground Surface					
0		***FILL*** Slightly moist, dark brown to black, fine to coarse, GRAVEL and SAND, trace coal fragments and foam insulation material	1	2" MC	14.88	0.0	Soil sample collected from 5-8.5 feet for VOC, TOC, sulfate and manganese analysis.
4		***SAND*** Very moist, dark brown, fine to coarse, SAND, some fine gravel	2	2" MC	18.24	0.0	
8		***SILTY CLAY*** Slightly moist, light gray, SILTY CLAY, trace brown/orange mottles	3	2" MC	48	0.0	
12		End of Borehole					
15							

URS

100 S. Wacker Dr.
Suite 500
Chicago, IL 60606

Drilling Company: Nothnagle Drilling
Driller: Jeff Schwatzer
Drilling Equipment: 6610 DT Track Mounted Geoprobe
Drilling Method: Direct Push

Drill Bit Size/Type: n.a.
Borehole Backfill: Bentonite Chips
Type of sampler: 2" Macrocore
Hammer weight/drop: Percussion

Log of Boring: SB-2-08 ***Project:*** Henkel-Buffalo ***Project No:*** 25364871

Client: Henkel Corporation ***Reviewed By:***

Location: 710 Ohio Street, Buffalo, NY ***Completion Depth (ft):*** 10

Logged By: R. Piurek ***Surface Elevation (ft):*** n.a.

Date Started: 12-29-08 ***Boring Diameter (in):*** 2

Date Finished: 12-29-08 ***Groundwater Depth (ft):*** n.a.

Subsurface Profile			Sample Information				Remarks
Depth	Graphic Log	Description	Sample Number	Sample Type	Recovery (inches)	Sample PID (PPM)	
		Ground Surface					
0		***FILL*** Slightly moist, black to dark brown, fine to coarse, GRAVEL and SAND, trace coal fragments and foam insulation material	1	2" MC	18.24	0.0	Soil sample collected from 4.5-6 feet for VOC, TOC, sulfate and manganese analysis.
5		***SAND*** Very moist, dark brown, fine to coarse, SAND, some fine subround gravel	2	2" MC	26.4	0.0	
6		***SILTY CLAY*** Very moist, light gray, SILTY CLAY, trace orange mottles and plant material					
9			3	2" MC	24	0.0	
10		End of Borehole					
15							

URS
100 S. Wacker Dr.
Suite 500
Chicago, IL 60606

Drilling Company: Nothnagle Drilling
Driller: Jeff Schwatzer
Drilling Equipment: 6610 DT Track Mounted Geoprobe
Drilling Method: Direct Push

Drill Bit Size/Type: n.a.
Borehole Backfill: Bentonite Chips
Type of sampler: 2" Macrocore
Hammer weight/drop: Percussion

Log of Boring: SB-3-08 ***Project:*** Henkel-Buffalo ***Project No:*** 25364871

Client: Henkel Corporation ***Reviewed By:***

Location: 710 Ohio Street, Buffalo, NY ***Completion Depth (ft):*** 10

Logged By: R. Piurek ***Surface Elevation (ft):*** n.a.

Date Started: 12-29-08 ***Boring Diameter (in):*** 2

Date Finished: 12-29-08 ***Groundwater Depth (ft):*** n.a.

Subsurface Profile			Sample Information				
Depth	Graphic Log	Description	Sample Number	Sample Type	Recovery (inches)	Sample PID (PPM)	Remarks
		Ground Surface					
0		***FILL*** Slightly moist to dry, brown to light gray, fine to coarse, SAND, some ash-like material, trace coal and brick fragments	1	2" MC	24	0.0	
5		***SAND*** Very moist to wet, dark gray to black, fine to coarse, SAND, some to few fine subangular gravel	2	2" MC	19.2	0.0	Soil sample collected from 5-10 feet for VOC, TOC, sulfate and manganese anaylsis.
			3	2" MC	10.8	0.0	
10		End of Borehole					

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100 S. Wacker Dr.
Suite 500
Chicago, IL 60606

Drilling Company: Nothnagle Drilling
Driller: Jeff Schwatzer
Drilling Equipment: 6610 DT Track Mounted Geoprobe
Drilling Method: Direct Push

Drill Bit Size/Type: n.a.
Borehole Backfill: Bentonite Chips
Type of sampler: 2" Macrocore
Hammer weight/drop: Percussion

Log of Boring: SB-4-08 ***Project:*** Henkel-Buffalo ***Project No:*** 25364871

Client: Henkel Corporation ***Reviewed By:***

Location: 710 Ohio Street, Buffalo, NY ***Completion Depth (ft):*** 10

Logged By: R. Piurek ***Surface Elevation (ft):*** n.a.

Date Started: 12-29-08 ***Boring Diameter (in):*** 2

Date Finished: 12-29-08 ***Groundwater Depth (ft):*** n.a.

Subsurface Profile			Sample Information				
Depth	Graphic Log	Description	Sample Number	Sample Type	Recovery (inches)	Sample PID (PPM)	Remarks
		Ground Surface					
0		***FILL*** Moist, dark brown to brown, fine to coarse, SAND, trace fine gravel and silt, trace ash-like material and wood fragments	1	2" MC	28.8	0.0	Soil sample collected from 4-8.8 feet for VOC, TOC, sulfate and manganese anaylsis.
4		***SAND*** Wet, brown, fine to coarse, SAND, some silt, trace fine gravel	2	2" MC	23.04	0.0	
8		***CLAYEY SILT*** Wet, light brown, CLAYEY SILT	3	2" MC	24	0.0	
10		End of Borehole					

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Chicago, IL 60606

Drilling Company: Nothnagle Drilling
Driller: Jeff Schwatzer
Drilling Equipment: 6610 DT Track Mounted Geoprobe
Drilling Method: Direct Push

Drill Bit Size/Type: n.a.
Borehole Backfill: Bentonite Chips
Type of sampler: 2" Macrocore
Hammer weight/drop: Percussion

Log of Boring: SB-5-08 **Project:** Henkel-Buffalo **Project No:** 25364871

Client: Henkel Corporation **Reviewed By:**

Location: 710 Ohio Street, Buffalo, NY **Completion Depth (ft):** 10

Logged By: R. Piurek **Surface Elevation (ft):** n.a.

Date Started: 12-29-08 **Boring Diameter (in):** 2

Date Finished: 12-29-08 **Groundwater Depth (ft):** n.a.

Subsurface Profile			Sample Information				
Depth	Graphic Log	Description	Sample Number	Sample Type	Recovery (inches)	Sample PID (PPM)	Remarks
		Ground Surface					
0		**FILL** Dry to slightly moist, light gray to brown, fine to coarse, SAND and GRAVEL, trace coal fragments, trace ash-like material, some silt from 1.5-4 feet	1	2" MC	24	0.0	Soil sample collected from 4-5.5 feet for VOC, TOC, sulfate, and manganese analysis.
4		**FILL** Wet, dark brown, fine, SAND and SILT, trace wood fragments and clay	2	2" MC	33.6	0.0	
6		**CLAYEY SILT** Slightly moist, brown, CLAYEY SILT, trace orange mottles					
8		**SAND and SILT** Wet, light brown, fine to coarse, SAND and SILT, trace coarse gravel, wood and coal fragments	3	2" MC	13.2	0.0	
10		End of Borehole					
15							

URS
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Chicago, IL 60606

Drilling Company: Nothnagle Drilling
Driller: Jeff Schwatzer
Drilling Equipment: 6610 DT Track Mounted Geoprobe
Drilling Method: Direct Push

Drill Bit Size/Type: n.a.
Borehole Backfill: Bentonite Chips
Type of sampler: 2" Macrocore
Hammer weight/drop: Percussion

Log of Boring: SB-6-08 ***Project:*** Henkel-Buffalo ***Project No:*** 25364871

Client: Henkel Corporation ***Reviewed By:***

Location: 710 Ohio Street, Buffalo, NY ***Completion Depth (ft):*** 10

Logged By: R. Piurek ***Surface Elevation (ft):*** n.a.

Date Started: 12-29-08 ***Boring Diameter (in):*** 2

Date Finished: 12-29-08 ***Groundwater Depth (ft):*** n.a.

Subsurface Profile			Sample Information				
Depth	Graphic Log	Description	Sample Number	Sample Type	Recovery (inches)	Sample PID (PPM)	Remarks
		Ground Surface					
0		***FILL*** Moist, gray, fine, GRAVEL and, fine to coarse, SAND					
1							
2		***CLAYEY SILT*** Moist, brown, CLAYEY SILT	1	2" MC	24	0.0	
3		***SAND*** Moist, brown, fine, SAND, trace silt					
4							
5							
6		***CLAYEY SILT*** Wet to slightly moist, light brown, CLAYEY SILT	2	2" MC	39.84	0.0	
7							
8		***SAND and SILT*** Very moist, brown, fine to coarse, SAND and SILT, trace coarse gravel, wood and coal fragments	3	2" MC	43.2	0.0	Soil sample collected from 8-10 feet for VOC, TOC, sulfate and manganese analysis.
9							
10		End of Borehole					
11							
12							
13							
14							
15							

URS
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Suite 500
Chicago, IL 60606

Drilling Company: Nothnagle Drilling
Driller: Jeff Schwatzer
Drilling Equipment: 6610 DT Track Mounted Geoprobe
Drilling Method: Direct Push

Drill Bit Size/Type: n.a.
Borehole Backfill: Bentonite Chips
Type of sampler: 2" Macrocore
Hammer weight/drop: Percussion

Log of Boring: SB-7-08 ***Project:*** Henkel-Buffalo ***Project No:*** 25364871

Client: Henkel Corporation ***Reviewed By:***

Location: 710 Ohio Street, Buffalo, NY ***Completion Depth (ft):*** 10

Logged By: R. Piurek ***Surface Elevation (ft):*** n.a.

Date Started: 12-29-08 ***Boring Diameter (in):*** 2

Date Finished: 12-29-08 ***Groundwater Depth (ft):*** n.a.

Subsurface Profile			Sample Information				
Depth	Graphic Log	Description	Sample Number	Sample Type	Recovery (inches)	Sample PID (PPM)	Remarks
		Ground Surface					
0		***FILL*** Moist, gray to light brown, fine to coarse, SAND and GRAVEL, some silt					
1							
2		***SANDY SILT*** Moist to very moist, gray to light brown, fine, SANDY SILT, trace clay, trace gray mottles	1	2" MC	39.84	0.0	
3							
4							
5							
6		***SILTY CLAY*** Very moist, light gray, SILTY CLAY, trace fine sand	2	2" MC	44.64	0.0	
7							
8		***SILTY SAND*** Moist, light brown, very fine, SILTY SAND.					Soil sample collected from 8-10 feet for VOC, TOC, sulfate and manganese analysis.
9		***GRAVEL*** Moist, light brown, fine to coarse, GRAVEL	3	2" MC	45.6	0.0	
10		***SILTY CLAY*** Moist, light brown, SILTY CLAY					
		End of Borehole					
11							
12							
13							
14							
15							

URS

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Chicago, IL 60606

Drilling Company: Nothnagle Drilling
Driller: Jeff Schwatzer
Drilling Equipment: 6610 DT Track Mounted Geoprobe
Drilling Method: Direct Push

Drill Bit Size/Type: n.a.
Borehole Backfill: Bentonite Chips
Type of sampler: 2" Macrocore
Hammer weight/drop: Percussion

Log of Boring: SB-8-08 ***Project:*** Henkel-Buffalo ***Project No:*** 25364871

Client: Henkel Corporation ***Reviewed By:***

Location: 710 Ohio Street, Buffalo, NY ***Completion Depth (ft):*** 10

Logged By: R. Piurek ***Surface Elevation (ft):*** n.a.

Date Started: 12-29-08 ***Boring Diameter (in):*** 2

Date Finished: 12-29-08 ***Groundwater Depth (ft):*** n.a.

Subsurface Profile			Sample Information				
Depth	Graphic Log	Description	Sample Number	Sample Type	Recovery (inches)	Sample PID (PPM)	Remarks
		Ground Surface					
0		***FILL*** Slightly moist to dry, light brown to gray, fine to coarse, SAND, and medium fine GRAVEL	1	2" MC	7.2	0.0	Soil sample collected from 4-8 feet for VOC, TOC, sulfate and manganese analysis.
4		***SAND*** Wet, brown to black, medium to fine, SAND, trace coarse gravel, some silt	2	2" MC	15.84	0.0	
8		***SANDY SILT*** Wet, brown, fine, SANDY SILT, trace to few coarse sand and fine gravel	3	2" MC	7.2	0.0	
10		End of Borehole					
15							

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Drilling Company: Nothnagle Drilling
Driller: Jeff Schwatzer
Drilling Equipment: 6610 DT Track Mounted Geoprobe
Drilling Method: Direct Push

Drill Bit Size/Type: n.a.
Borehole Backfill: Bentonite Chips
Type of sampler: 2" Macrocore
Hammer weight/drop: Percussion

APPENDIX B

Field Forms

DAILY REPORT FORM

URS

Daily Field Report

Owner _____ **Report No.** _____

Project _____ **Page** 1 of

Project No. _____ **Day** _____

Contractor(s) _____ **Date** _____

Contractor Super(s) _____ **Weather: A.M. / P.M.** _____

Project Manager _____ **Temp (F): High / Low** _____

H&S Officer _____ **Rain /Snow** _____ **Winds** _____

Number and Function of Contractors' Personnel, Hours Worked (Identify Subcontractors Separately)

Contractor	Function	Hours

Major Constr. Equip. Description	Size/Capacity	No.	Location

Visitors **Representing**

_____ _____

_____ _____

Daily Notes:

Copies to:

Signature: _____

URS

Daily Field Report

Report No. _____

Page _____

Day _____

Date _____

Signature: _____

SOIL BORING LOGS

URS

CONSULTING ENGINEERS, GEOLOGISTS AND ENVIRONMENTAL SCIENTISTS

LOG OF BORING _____

SHEET ___ OF _____

Project			Project No.			
Location			Elev and Datum			
Drilling Agency			Date Started	Date Finished		
Drilling Equipment			Completion Depth	Rock Depth		
Size and Type of Bit			No Samples	Dist	Undist	Core
Casing			Water Level	First	Compl	24hr
Casing hammer	Weight	Drop	Foreman			
Sampler			Inspector			
Sampler hammer	Weight	Drop				

Casing Blows	ELEV, FT	DESCRIPTION	DEPTH FT	SAMPLES: No Loc	Type	Rec ft	Pen Rs bl/6 in	PP/TV t/ft2	REMARKS (Drilling fluid, fluid loss, Hole caving, ETC.)

URS

CONSULTING ENGINEERS, GEOLOGISTS AND ENVIRONMENTAL SCIENTISTS

LOG OF BORING _____

SHEET ___ OF _____

Casing Blows	ELEV, FT	DESCRIPTION	DEPTH FT	SAMPLES					REMARKS (Drilling fluid, fluid loss, Hole caving, ETC.)
				No Loc	Type	Rec ft	Pen Rs bl/6 in	PP/TV t/ft2	

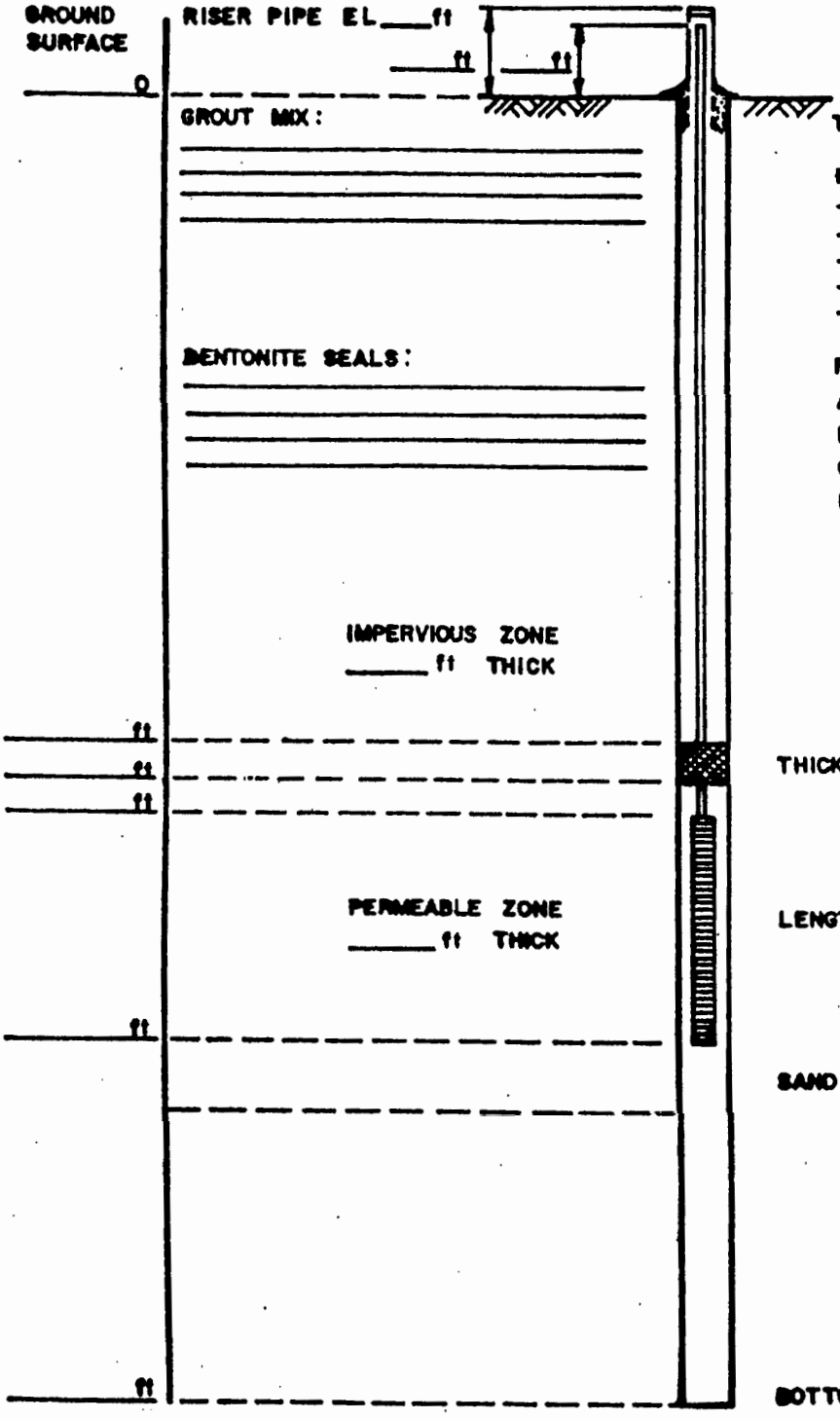
MONITORING WELL INSTALLATION FORM

URS

MONITORING WELL
INSTALLATION DATA SHEET

PIEZOMETER NO _____
BORING NO _____
JOB NO _____
PREPARED BY _____
CHECKED BY _____

DEPTH BELOW GROUND SURFACE



TOP OF GROUND SURFACE EL _____ ft

PROTECTIVE METAL CASING

RISER PIPE: SCHEDULE _____
ASTM DESIGNATION _____
I.D. _____ O.D. _____
COUPLINGS _____
PIPE IN _____ ft LENGTHS

PIPE _____ ft
PIPE _____ ft
SCREEN _____ ft
TOTAL _____ ft

THICKNESS OF UPPER SEAL _____ ft

LENGTH OF SCREEN _____ ft

SAND _____ ft

BOTTOM OF BORING

REMARKS: All measurements to the nearest 0.1 ft

MONITORING WELL DEVELOPMENT FORM

URS

WELL DEVELOPMENT FORM

Project No.: _____ **Well No.** _____ _____

Site: _____

Purging Method: ☐ Pumped ☐ Bailed ☐ Other: _____

Pump Type: _____ **Bailer Type:** _____

Weather Conditions: _____

Volume Calculations: _____

(D.T.B. - D.T.W. x vol./ft. = Gals./well vol.)

(Gals./well vol. X 5 = Total Volume to be removed) **Gals./well vol.:** _____

Time	Depth to Water (D.T.W.)	Depth to Bottom (D.T.B.)	Volume Removed (gal.)	pH	Conduct. MMHOS/CM	Temp. (°C)	Colo.	Odor (Y/N)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	ORP (mV)
		Sample Readings									

Comments: _____

_____

_____

Inside Diameter	vol./ft.
1"	0.04
1.25"	0.06
2"	0.16
4"	0.65

Field Blank Taken G Time: _____

Well Duplicate G No.: _____

Signature: _____

Date: ____ / ____ / ____

Hnu/PPM	LEL/%	0_2/%	H_2S/PPM	CO/PPM	hkjh

GROUNDWATER SAMPLING FORM

URS

GROUNDWATER PURGE AND SAMPLING FORM

WELL IDENTIFIER: _____ CHAIN OF CUSTODY NO. _____

SURVEYED COORDINATES X: _____ Y: _____ Z: _____

PROJECT NAME: _____ PROJECT NUMBER: _____

COLLECTOR(S): _____ DATE SAMPLED: _____

INITIAL WATER LEVEL (WL):_____ft. TIME (INIT. WL): _____

TOTAL WELL DEPTH (T.D.): _____ft. DEPTH OF PRODUCT: _____ft.

CASING VOLUME: _____ gal. CASING DIAMETER (D): _____inches

TIME	( )	( )	( )	( )	( )	( )	( )	( )	COMMENTS

COLUMN HEADINGS: (CHOOSE ONE OF THE FOLLOWING OR ENTER YOUR OWN)
(ENTER DESIRED UNITS IN ( ) IN COLUMN HEADINGS ABOVE)

TEMPERATURE – TEMP (°C)
ELECTRIC CONDUCTIVITY – EC (mmhos/cm)
pH:
TURBIDITY – TURB (ntu)
OXIDATION/REDUCTION POTENTIAL – ORP (mV)
DISSOLVED OXYGEN – DO (mg/L)
COLOR:
ODOR:
WATER LEVEL – WL (ft):
PUMP RATE – PR (gpm):
VOLUME REMOVED – VR (gal)

PURGE METHOD: BAILER PUMP OTHER

START PURGE TIME: _____ END PURGE TIME: _____

FINAL WATER LEVEL: _____ft TIME (FINAL WL): _____

TOTAL VOLUME PURGED: _____gal PUMP RATE: _____gpm

CASING VOLUMES PURGED: _____ PURGED DRY? YES NO

SAMPLE IDENTIFIER	SAMPLE ANALYSES	CONTAINER NO./SIZE/TYPE	PRESS	TIME	FIELD FILTER (Y/N)	REMARKS

NOTES: 1ft. length of 4" = 0.087ft³ or 0.65 gal 1 ft. length of 2" = 0.022ft³ or 0.16 gal.
Turbidity choices: clear, turbid, opaque