

Dexter Chemical
BRONX, NEW YORK

Site Management Plan

NYSDEC VCP Number: V00186-2

Prepared for:
Dexter Chemical, L.L.C
845 Edgewater Road
Bronx, New York 10474

Prepared by:
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Volume 3 of 3
Appendices 7 through 12

MARCH 2015

APPENDIX 7

Health and Safety Plan (HASP)

And

Community Air Monitoring Plan (CAMP)

**HEALTH AND SAFETY PLAN
PROJECT NO. 97-09-10**

*Project Name: Dexter Chemical
 *Project No.: 97-09-10
 *Site Location: Edgewater Road, Bronx, New York
 *Mark Out Reference #
 *Client: Dexter Chemical
 *Contact: Ed Huss (Whitman) *Cell: 908-208-3492
 *Telephone: 732-390-5858
 *Project Manager: ED Huss *Telephone: 732-390-5858
 *Date: 10/29/10 *Fax Number: 732-390-9496

Describe Objectives of Field Project

Operate AS/SVE System
Intrusive drilling/ Construction Work

Tasks: Check all applicable

Task No.

(X) Drilling 1
 (X) Soil Sampling 1
 (X) Well Point Installation 1
 (X) Monitor Well Sampling 3
 () Test Pit Installation _____
 () Drum Sampling and Consolidation _____
 () UST Removal _____
 () Waste Pile Classification _____
 () Remediation O&M of Systems _____
 () Spill Response _____
 (X) Soil Excavation/Removal/other
 construction/system install 2, 4
 (X) Other (System O&M) 5

***Surrounding Area**

(X) Residential (X) Industrial () Vacant Land (X) Commercial () Other:

* This plan is provided to subcontractors for informational purposes only. The information contained herein is the best information available to Whitman Companies' personnel at the time of the project. Notwithstanding anything to the contrary herein, all subcontractors are solely and independently responsible for insuring that their health and safety plans adequately address federal and state requirements.

JOB-SITE HAZARDS

Physical State of Contaminants:

☒ Liquid ☒ Solid ☒ Gas/Vapor ☐ Sludge ☐ Unknown ☐ Other, specify:

Characteristics of Contaminants:

☐ Corrosive ☐ Reactive ☐ Explosive ☐ Flammable ☒ Irritant
☒ Toxic ☐ Unknown ☐ Biological ☐ Radiological ☒ Volatile
☐ Other, specify:

Principal Hazards on Job-Site:

☒ Heat Stress	☒ Cold Stress	☒ Physical Hazards
☒ Noise	☒ Organic Chemicals	☐ Inorganic Chemicals
☐ Explosive/Flammable	☐ Oxygen Deficient	☐ Radiological
☐ Biological	☐ Confined Space*	☒ Electrical/underground
☐ Cutting/Welding	☒ Heavy Equipment	☒ Excavation
☐ Other, specify:		☐ Overhead Hazards

Location of On-site Hazardous Materials:

☐ Underground Storage Tanks	☐ Drums	☐ Pit or Lagoon
☐ Landfill	☐ Lined Sump	☐ Unlined Sump
☐ Above Ground Tanks	☐ Open Dump	☐ Unknown
☐ Other, specify:	☐ Surface Discharge	☒ Subsurface Discharge

*If confined space entry is required, proper permitting and lock-out tag-out procedures must be followed.

TOXIC LIQUID//GAS CONTAMINANT DATA*

Known Contaminant(s)	Highest Site Conc. (ppb) (Year)	PEL ppm, mg/m ³	IDLH ppm, mg/m ³	Ionization Potential (eV)	Instrument Response Factor	Action Concentration (ppm)	Symptoms/ Effects of Acute Exposure
BENZENE	430(1998)	1	500	9.24	1.78	1	See Attachments 4 and 5
ETHYLBENZENE	49,000(1997)	100	800	8.76	1	100	See Attachments 4 and 5
TOLUENE	48,000(1998)	200	500	8.82	1.91	200	See Attachments 4 and 5
TOTAL XYLENES	450,000(1997)	100	900	8.44	1	100	See Attachments 4 and 5
CHLOROBENZENE	260,000(1997)	75	1000	9.07	N/A	75	See Attachments 4 and 5
NAPHTHALENE	160,000(1997)	10	250	8.12	N/A	10	See Attachments 4 and 5
1,2,4 TRICHLOROBENZENE	110,000(1998)	NONE	NONE	N/A	N/A	NONE	See Attachments 4 and 5
1,2 DICHLOROBENZEN	14,000 (1998)	50	200	9.06	N/A	50	See Attachments 4 and 5
1,3 DICHLOROBENZEN	2,300 (1998)	50	200	9.06	N/A	50	See Attachments 4 and 5
1,4 DICHLOROBENZEN	11,000(1998)	75	150	8.98	N/A	75	See Attachments 4 and 5
1,2 DICHLOROPROPANE	19(1997)	75	400	10.87	N/A	75	See Attachments 4 and 5
VINYL CHLORIDE	2.6(1997)	1	NONE	9.99	N/A	1	See Attachments 4 and 5
1,2 DICHLOROTHEANE	38.9(1997)	50	50	11.05	N/A	50	See Attachments 4 and 5
Historic fill	Various	Various	Various	Various	N/A	Various	See Attachments 4 and 5

NA = Not Available NE = None Established U = Unknown

- * - NIOSH and/or ACGIH listings for contaminants are included in Attachment HASP-4.
 - MSDS are in Attachment HASP-5

Toxic Material Concentration/Exposure Potential:

(X) Low () Medium () High () Unknown

Fire/Explosion Potential:

(X) Low () Medium () High () Unknown

Overall Hazard Evaluation:

(X) Low () Medium () High () Unknown

Justification: Low level in ground water and soil.

Required Training for Site Personnel:

- 40-hr OSHA for field technicians & supervisors with 8 hours annual update.

Task Description (Describe Major Tasks from Page One - Attach additional pages if necessary.)

- #1 AS/SVE well point installation/drilling/sampling
- #2 Trenching & horizontal SVE line installation
- #3 Monitoring well sampling
- #4 other subsurface construction/excavation
- #5 System O&M

Personal Protective Equipment Required for Tasks Described Above.

<u>Task</u>	<u>Level (Circle One)</u>			
#1	A	B	C	D
#2	A	B	C	D
#3	A	B	C	D
#4	A	B	C	D
#5	A	B	C	D

Description of PPE included in Attachment 3. Modified PPE is as follows:

None anticipated. Upgrade to levels C or higher as may be dictated by field conditions/monitoring

Field Monitoring Equipment (Check under appropriate column.)

Task #	Not Needed	LEL Meter	10.6 eV PID	11.7 eV PID	FID	Detector Tubes	Other (Describe)
#1			X				
#2			X				
#3			X				
#4			X				
#5			X				

Action Levels for PPE Upgrade (Describe):

PID readings of greater than 25 units above background in the breathing zone require upgrade to Level C.

DECONTAMINATION INFORMATION

Attach Site map indicating exclusion, decontamination, and support zones, as/if required.

Personnel Decontamination (Describe/or attach diagram.)

() Not Needed

See Attachment 2 Wash with soap and water

Sampling Equipment Decontamination (Describe/or attach diagram.)

() Not Needed

See Attachment 2

Heavy Equipment Decontamination (Describe/or attach diagram)

() Not Needed

See Attachment 2

Disposal Method for Liquids and Solids (Describe/or attach diagram)

() Not Needed

- Properly dispose of in accordance with all local, state, NYSDEC and federal requirements

CONTINGENCY INFORMATION

Site Emergency Contact to be Notified:

Location of Nearest Telephone:

Local Emergency Response Contacts:		<u>Name</u>	<u>Phone</u>
Ambulance/EMS:			911 or
Fire Department:			911 or
Sheriff/Police Dept:			911
Whitman Project Manager:	Ed Huss		(732) 390-5858
NY Department of Environmental Commission Hotline			1-800-847-7332
USEPA Environmental Response Team			(202)-321-6660
USEPA RCRA Hotline			(800) 424-9346
CHEMTREC			(800)-424-9300
National Response Center			(800) 424-8802
Substance Identification (CAS)			(800) 848-6538
Nearest Local Hospital:	Albert Einstein-Weiler Hospital		718-904-2000
Hospital Address:	1825 Eastchester Road, Bronx, NY 10461		
Route to Hospital:	See attachment HASP -1 Hospital Route		

PERSONAL HYGIENE

The Whitman Companies or Contractors personnel have the following personal hygiene requirement:

1. No eating, drinking, smoking, gum or tobacco chewing is allowed in the active work zone.
2. Wash hands and face before leaving work area.
3. Contact with contaminated surface or surfaces suspected of being contaminated will be avoided while unprotected.
4. Any person under a physician's care and/or taking medication must inform the site supervisor.
5. Personnel using respirators must be fit tested, clean shaven and trained in respiratory protection.

MEDICAL SURVEILLANCE PROGRAM

See Health and Safety Officer for Standard list of medical surveillance program. Additionally medical surveillance above the Standard will include:

EMERGENCY/PROBLEMS CHAIN-OF-COMMAND

If a release, emergency or other unexpected situation arises onsite, The Whitman Companies should be notified immediately. If The Whitman Companies, Inc. is not on site when the event occurs, please use the following contact list.

<u>Name</u>	<u>Office # and Address</u>	<u>Home #</u>
Richard Britton, Vice President of Geological Services	The Whitman Companies, Inc. 116 Tices Lane, Unit B-1 East Brunswick, NJ 08816 (732) 390-5858	732-940-9225
Todd Gerber, Executive Vice President	The Whitman Companies, Inc. 116 Tices Lane, Unit B-1 East Brunswick, NJ 08816 (732) 390-5858	(908)-281-6551

Active Work Zone Emergencies

Fire/Explosion: A severe emergency such as a fire or explosion could require immediate evacuation of the site. The emergency response notification process should take place as soon as an incident occurs.

In the event of an evacuation of the Active Work Area, affected personnel will leave immediately, go through decontamination if time permits and reassemble at the closest street. The signal for an evacuation is three (3) long bursts of an air or vehicle horn. Contact local emergency services if needed and contact The Whitman Companies.

Emergency Spill Containment/Control Plan

Spill/Release: Upon a detected spill or release of a hazardous substance or waste, there must be notification to the state (NJDEP), Local Authorities, client, and The Whitman Companies. Spills/Releases should be contained where possible by diking or otherwise isolating the spill/release. If necessary, an emergency response contractor will be contacted to provide assistance. If product is encountered during soil investigation activities, there must be notification to The Whitman Companies.

In the event of a spill or leak of a liquid chemical or hazardous waste, personnel in the area of the spill will do the following:

- Inform the Site Supervisor immediately
- Determine if adequate protective equipment is available to enter area of the spill i.e., IDLH conditions
- Get spill kit materials
- Identify source of spill
- Contain, absorb and recover spilled substance in proper containers
- Dispose of spilled materials properly, according to local, state and federal regulations

Spill Prevention

The prevention of spills through good work practice is the most important aspect of the spill containment/control plan. The following standard work practices for material handling will minimize the potential for spills.

- All drums and containers used during the cleanup shall meet the appropriate DOT, OSHA and EPA regulations for the wastes that they will contain.
- Drums and containers shall be inspected and their integrity assured prior to moving them. Drums or containers that cannot be inspected before being moved because of storage conditions shall be positioned in an accessible location and inspected prior to further handling.
- Operations on site will be organized so as to minimize the amount of drum or container movement.
- Where spills, leaks, or ruptures may occur, adequate quantities of spill containment equipment will be stationed in the immediate area. The spill containment program must be sufficient to contain and isolate the entire volume of hazardous substances being transferred.
- Drums or containers that cannot be moved without rupture, leakage, or spills, shall be emptied into a sound container.
- Fire extinguishing equipment meeting 29 CFR 1910 Subpart L shall be on hand ready for use to control fires.

PLAN REVISIONS

The site Health and Safety Plan will be revised whenever the following events occur:

1. The Plan fails in an emergency
2. New physical or chemical hazards are discovered
3. Changes occur in telephone numbers, personnel, etc.

All personnel will be briefed when pertinent changes occur.

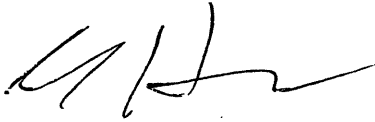
1. H & S BRIEFING

The Whitman Field Supervisor will coordinate a health & safety briefing prior to the beginning of the day's work activities. This briefing must be given to all Whitman personnel and Whitman subcontractors working on-site and will include a summary of all the information contained in this Health & Safety Plan.

2. SIGNOFF SHEETS

All personnel attending the health and safety briefing will sign the Health & Safety Plan Signoff Sheet. Copies of the completed Signoff Sheet must be forwarded to the Whitman Office Safety & Health Coordinator and to the main Whitman file on the project.

Project Manager Approval



Date:

10-29-00

ATTACHMENT HASP-1

ROUTE TO HOSPITAL

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Yahoo! Driving Directions

Starting from: **A** 845 Edgewater Rd, Bronx, NY 10474-4901

Arriving at: **E** 1825 Eastchester Rd, Bronx, NY 10461-2301

Distance: 5.3 miles Approximate Travel Time: 11 mins

Your Directions

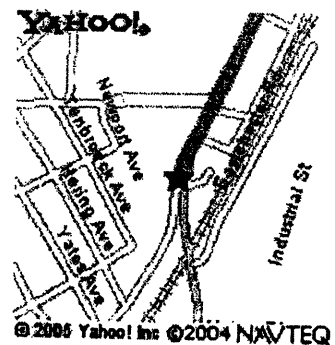
1.	Start at 845 EDGEWATER RD, BRONX going toward SENECA AVE - go 0.3 mi
2.	Turn R on BRUCKNER BLVD - go 0.7 mi
3.	Bear R onto BRONX RIVER PKY NORTH toward WHITE PLAINS - go 2.2 mi
4.	Take exit #7E/PELHAM PKWY onto BRONX AND PELHAM PKY E - go 1.3 mi
5.	Continue on PELHAM PKY S - go 0.3 mi
6.	Turn R on EASTCHESTER RD - go 0.5 mi
7.	Continue on a local road - go < 0.1 mi
8.	Arrive at 1825 EASTCHESTER RD, BRONX

When using any driving directions or map, it's a good idea to do a reality check and make sure the road still exists, watch out for construction, and follow all traffic safety precautions. This is only to be used as an aid in planning.

Your Full Route



Your Destination



Address:
1825 Eastchester Rd
Bronx, NY 10461-2301

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ATTACHMENT HASP-2
DECONTAMINATION PROCEDURES

A. NON-AQUEOUS SAMPLING EQUIPMENT¹

1. Detergent and tap water - scrub to remove visual contamination.
2. Generous tap water rinse.
3. Distilled and deionized water rinse.

B. AQUEOUS SAMPLING EQUIPMENT

1. Detergent and tap water wash.
2. Generous tap water rinse.
3. Distilled and deionized water rinse.
4. 10% nitric acid rinse².
5. Distilled and deionized water rinse¹.
6. Acetone rinse³.
7. Total air dry or nitrogen blow out³.
8. Distilled and deionized water rinse².

¹ - If visual contamination persists or gross contamination is suspected, the full 8 step decontamination procedure in Item B is required.

² - Only if sample is to be analyzed for metals.

³ - Only if sample is to be analyzed for organics.

ATTACHMENT HASP-3

PERSONAL PROTECTIVE EQUIPMENT LEVELS

LEVEL D Includes:

1. Boots/shoes, chemical-resistant steel toe and shank.
2. Boots, outer, chemical-resistant (disposable).*
3. Safety glasses or chemical splash goggles.
4. Coveralls.*
5. Hard hat.
6. Escape mask.*
7. Face Shield.*

LEVEL C Includes:

1. All of Level D equipment.
2. Full-face or half-mask, air purifying respirators (NIOSH approved).
3. Hooded chemical-resistant clothing (coveralls; two-piece chemical-splash suit; disposable chemical-resistant overalls).
4. Gloves, outer, chemical-resistant.
5. Gloves, inner, chemical-resistant.

LEVEL B Includes:

1. Positive pressure, full-facepiece self-contained breathing apparatus (SCBA), or positive pressure supplied air respirator with escape SCBA (NIOSH approved).
2. Hooded chemical-resistant clothing (coveralls and long-sleeved jacket; coveralls; one or two-piece chemical-splash suit; disposable chemical-resistant overalls).
3. Coveralls. *
4. Gloves, outer, chemical-resistant.
5. Gloves, inner, chemical-resistant.
6. Boots, outer, chemical-resistant, steel toe and shank.
7. Boot-covers, outer, chemical resistant (disposable).*
8. Hard hat.
9. Face shield.*

LEVEL A Includes:

1. All of level B equipment.
2. Totally encapsulating chemical-protective suit.
3. Long underwear.*

* optional equipment (Project Managers decision).

ATTACHMENT HASP-4
NIOSH / OSHA STANDARDS AND PPE

NIOSH Pocket Guide to Chemical Hazards

Benzene		CAS 71-43-2	
C₆H₆		RTECS CY1400000	
Synonyms & Trade Names Benzol, Phenyl hydride		DOT ID & Guide 1114 130	
Exposure Limits	NIOSH REL: Ca TWA 0.1 ppm ST 1 ppm See Appendix A		
	OSHA PEL: [1910.1028] TWA 1 ppm ST 5 ppm See Appendix F		
IDLH Ca [500 ppm] See: 71432		Conversion 1 ppm = 3.19 mg/m ³	
Physical Description Colorless to light-yellow liquid with an aromatic odor. [Note: A solid below 42°F.]			
MW: 78.1	BP: 176°F	FRZ: 42°F	Sol: 0.07%
VP: 75 mmHg	IP: 9.24 eV		Sp.Gr: 0.88
FLP: 12°F	UEL: 7.8%	LEL: 1.2%	
Class IB Flammable Liquid: FLP below 73°F and BP at or above 100°F.			
Incompatibilities & Reactivities Strong oxidizers, many fluorides & perchlorates, nitric acid			
Measurement Methods NIOSH 1500, 1501, 3700, 3800; OSHA 12, 1005 See: NMAM or OSHA Methods			
Personal Protection & Sanitation Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet (flammable) Change: No recommendation Provide: Eyewash, Quick drench		First Aid (See procedures) Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately	
Important additional information about respirator selection Respirator Recommendations NIOSH At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus			
Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact			
Symptoms Irritation eyes, skin, nose, respiratory system; dizziness; headache, nausea, staggered gait; anorexia, lassitude (weakness, exhaustion); dermatitis; bone marrow depression; [potential occupational carcinogen]			
Target Organs Eyes, skin, respiratory system, blood, central nervous system, bone marrow			
Cancer Site [leukemia]			
See also: INTRODUCTION See ICSC CARD: 0015 See MEDICAL TESTS: 0022			

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NIOSH Pocket Guide to Chemical Hazards

Chlorobenzene		CAS 108-90-7	
C₆H₅Cl		RTECS CZ0175000	
Synonyms & Trade Names Benzene chloride, Chlorobenzol, MCB, Monochlorobenzene, Phenyl chloride		DOT ID & Guide 1134 130	
Exposure Limits	NIOSH REL: See Appendix D		
	OSHA PEL: TWA 75 ppm (350 mg/m ³)		
IDLH 1000 ppm See: 108907		Conversion 1 ppm = 4.61 mg/m ³	
Physical Description Colorless liquid with an almond-like odor.			
MW: 112.6	BP: 270°F	FRZ: -50°F	Sol: 0.05%
VP: 9 mmHg	IP: 9.07 eV		Sp.Gr: 1.11
Fl.P: 82°F	UEL: 9.6%	LEL: 1.3%	
Class IC Flammable Liquid: Fl.P. at or above 73°F and below 100°F.			
Incompatibilities & Reactivities Strong oxidizers			
Measurement Methods NIOSH 1003; OSHA 7 See: NMAM or OSHA Methods			
Personal Protection & Sanitation Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet (flammable) Change: No recommendation		First Aid (See procedures) Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately	
Important additional information about respirator selection			
Respirator Recommendations OSHA			
Up to 1000 ppm: (APF = 25) Any supplied-air respirator operated in a continuous-flow mode ^E /(APF = 25) Any powered, air-purifying respirator with organic vapor cartridge(s) ^E /(APF = 50) Any chemical cartridge respirator with a full facepiece and organic vapor cartridge(s)/(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/(APF = 50) Any self-contained breathing apparatus with a full facepiece/(APF = 50) Any supplied-air respirator with a full facepiece Emergency or planned entry into unknown concentrations or IDLH conditions: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus			
Exposure Routes inhalation, ingestion, skin and/or eye contact			
Symptoms Irritation eyes, skin, nose; drowsiness, incoordination; central nervous system depression; in animals: liver, lung, kidney injury			
Target Organs Eyes, skin, respiratory system, central nervous system, liver			
See also: INTRODUCTION See ICSC CARD: 0642			

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NIOSH Pocket Guide to Chemical Hazards

p-Dichlorobenzene		CAS 106-46-7	
$C_6H_4Cl_2$		RTECS CZ4550000	
Synonyms & Trade Names p-DCB; 1,4-Dichlorobenzene; para-Dichlorobenzene; Dichlorocide		DOT ID & Guide 1592 152	
Exposure Limits	NIOSH REL: Ca See Appendix A		
	OSHA PEL†: TWA 75 ppm (450 mg/m ³)		
IDLH Ca [150 ppm] See: 106467		Conversion 1 ppm = 6.01 mg/m ³	
Physical Description Colorless or white crystalline solid with a mothball-like odor. [insecticide]			
MW: 147.0	BP: 345°F	MLT: 128°F	Sol: 0.008%
VP: 1.3 mmHg	IP: 8.98 eV		Sp.Gr: 1.25
Fl.P: 150°F	UEL: ?	LEL: 2.5%	
Combustible Solid, but may take some effort to ignite.			
Incompatibilities & Reactivities Strong oxidizers (such as chlorine or permanganate)			
Measurement Methods NIOSH 1003; OSHA 7 See: NMAM or OSHA Methods			
Personal Protection & Sanitation Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated/Daily Remove: When wet or contaminated Change: Daily Provide: Eyewash, Quick drench		First Aid (See procedures) Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately	
Important additional information about respirator selection Respirator Recommendations NIOSH At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus			
Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact			
Symptoms Eye irritation, swelling periorbital (situated around the eye); profuse rhinitis; headache, anorexia, nausea, vomiting; weight loss, jaundice, cirrhosis; in animals: liver, kidney injury; [potential occupational carcinogen]			
Target Organs Liver, respiratory system, eyes, kidneys, skin			
Cancer Site [in animals: liver & kidney cancer]			
See also: INTRODUCTION See ICSC CARD: 0037 See MEDICAL TESTS: 0073			

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NIOSH Pocket Guide to Chemical Hazards

o-Dichlorobenzene		CAS 95-50-1	
$C_6H_4Cl_2$		RTECS CZ4500000	
Synonyms & Trade Names o-DCB; 1,2-Dichlorobenzene; ortho-Dichlorobenzene; o-Dichlorobenzol		DOT ID & Guide 1591 152	
Exposure Limits	NIOSH REL: C 50 ppm (300 mg/m ³)		
	OSHA PEL: C 50 ppm (300 mg/m ³)		
IDLH 200 ppm See: 95501		Conversion 1 ppm = 6.01 mg/m ³	
Physical Description Colorless to pale-yellow liquid with a pleasant, aromatic odor. [herbicide]			
MW: 147.0	BP: 357°F	FRZ: 1°F	Sol: 0.01%
VP: 1 mmHg	IP: 9.06 eV		Sp.Gr: 1.30
Fl.P: 151°F	UEL: 9.2%	LEL: 2.2%	
Class IIIA Combustible Liquid: Fl.P. at or above 140°F and below 200°F.			
Incompatibilities & Reactivities Strong oxidizers, aluminum, chlorides, acids, acid fumes			
Measurement Methods NIOSH 1003; OSHA 7 See: NMAM or OSHA Methods			
Personal Protection & Sanitation Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet or contaminated Change: No recommendation		First Aid (See procedures) Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately	
Important additional information about respirator selection			
Respirator Recommendations NIOSH/OSHA Up to 200 ppm: (APF = 50) Any chemical cartridge respirator with a full facepiece and organic vapor cartridge(s)/(APF = 25) Any powered, air-purifying respirator with organic vapor cartridge(s) ^E /(APF = 50) Any self-contained breathing apparatus with a full facepiece/(APF = 50) Any supplied-air respirator with a full facepiece			
Emergency or planned entry into unknown concentrations or IDLH conditions: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus			
Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus			
Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact			
Symptoms Irritation eyes, nose; liver, kidney damage; skin blisters			
Target Organs Eyes, skin, respiratory system, liver, kidneys			
See also: INTRODUCTION See ICSC CARD: 1066			

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NIOSH Pocket Guide to Chemical Hazards

Ethylene dichloride		CAS 107-06-2	
CICH₂CH₂Cl		RTECS KI0525000	
Synonyms & Trade Names 1,2-Dichloroethane; Ethylene chloride; Glycol dichloride		DOT ID & Guide 1184 129	
Exposure Limits	NIOSH REL: Ca TWA 1 ppm (4 mg/m ³) ST 2 ppm (8 mg/m ³) See Appendix A See Appendix C (Chloroethanes)		
	OSHA PEL†: TWA 50 ppm C 100 ppm 200 ppm [5-minute maximum peak in any 3 hours]		
IDLH Ca [50 ppm] See: 107062		Conversion 1 ppm = 4.05 mg/m ³	
Physical Description Colorless liquid with a pleasant, chloroform-like odor. [Note: Decomposes slowly, becomes acidic & darkens in color.]			
MW: 99.0	BP: 182°F	FRZ: -32°F	Sol: 0.9%
VP: 64 mmHg	IP: 11.05 eV		Sp.Gr: 1.24
F.L.P: 56°F	UEL: 16%	LEL: 6.2%	
Class IB Flammable Liquid: F.L.P. below 73°F and BP at or above 100°F.			
Incompatibilities & Reactivities Strong oxidizers & caustics; chemically-active metals such as magnesium or aluminum powder, sodium & potassium; liquid ammonia [Note: Decomposes to vinyl chloride & HCl above 1112°F.]			
Measurement Methods NIOSH 1003; OSHA 3 See: NMAM or OSHA Methods			
Personal Protection & Sanitation Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet (flammable) Change: No recommendation Provide: Eyewash, Quick drench		First Aid (See procedures) Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately	
Important additional information about respirator selection Respirator Recommendations NIOSH At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus			
Exposure Routes inhalation, ingestion, skin absorption, skin and/or eye contact			
Symptoms Irritation eyes, corneal opacity; central nervous system depression; nausea, vomiting; dermatitis; liver, kidney, cardiovascular system damage; [potential occupational carcinogen]			
Target Organs Eyes, skin, kidneys, liver, central nervous system, cardiovascular system			
Cancer Site [in animals: forestomach, mammary gland & circulatory system cancer]			
See also: INTRODUCTION See ICSC CARD: 0250 See MEDICAL TESTS: 0104			

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NIOSH Pocket Guide to Chemical Hazards

Propylene dichloride		CAS 78-87-5	
<chem>CH3CHClCH2Cl</chem>		RTECS TX9625000	
Synonyms & Trade Names Dichloro-1,2-propane; 1,2-Dichloropropane		DOT ID & Guide 1279 130	
Exposure Limits	NIOSH REL: Ca See Appendix A		
	OSHA PEL†: TWA 75 ppm (350 mg/m³)		
IDLH Ca [400 ppm] See: 78875		Conversion 1 ppm = 4.62 mg/m³	
Physical Description Colorless liquid with a chloroform-like odor. [pesticide]			
MW: 113.0	BP: 206°F	FRZ: -149°F	Sol: 0.3%
VP: 40 mmHg	IP: 10.87 eV		Sp.Gr: 1.16
Fl.P: 60°F	UEL: 14.5%	LEL: 3.4%	
Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.			
Incompatibilities & Reactivities Strong oxidizers, strong acids, active metals			
Measurement Methods NIOSH 1013; OSHA 7 See: NMAM or OSHA Methods			
Personal Protection & Sanitation Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet (flammable) Change: No recommendation Provide: Eyewash, Quick drench		First Aid (See procedures) Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately	
Important additional information about respirator selection Respirator Recommendations NIOSH At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus			
Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact			
Symptoms Irritation eyes, skin, respiratory system; drowsiness, dizziness; liver, kidney damage; in animals: central nervous system depression; [potential occupational carcinogen]			
Target Organs Eyes, skin, respiratory system, liver, kidneys, central nervous system			
Cancer Site [in animals: liver & mammary gland tumors]			
See also: INTRODUCTION See ICSC CARD: 0441			

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Naphthalene		CAS 91-20-3	
C ₁₀ H ₈		RTECS QJ0525000	
Synonyms & Trade Names Naphthalin, Tar camphor, White tar		DOT ID & Guide 1334 133 (crude or refined) 2304 133 (molten)	
Exposure Limits	NIOSH REL: TWA 10 ppm (50 mg/m ³) ST 15 ppm (75 mg/m ³)		
	OSHA PEL†: TWA 10 ppm (50 mg/m ³)		
IDLH 250 ppm See: 91203		Conversion 1 ppm = 5.24 mg/m ³	
Physical Description Colorless to brown solid with an odor of mothballs. [Note: Shipped as a molten solid.]			
MW: 128.2	BP: 424°F	MLT: 176°F	Sol: 0.003%
VP: 0.08 mmHg	IP: 8.12 eV		Sp.Gr: 1.15
Fl.P: 174°F	UEL: 5.9%	LEL: 0.9%	
Combustible Solid, but will take some effort to ignite.			
Incompatibilities & Reactivities Strong oxidizers, chromic anhydride			
Measurement Methods NIOSH 1501; OSHA 35 See: NMAM or OSHA Methods			
Personal Protection & Sanitation Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet or contaminated Change: Daily		First Aid (See procedures) Eye: Irrigate immediately Skin: Molten flush immediately/solid-liquid soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately	
Important additional information about respirator selection Respirator Recommendations NIOSH/OSHA Up to 100 ppm: (APF = 10) Any chemical cartridge respirator with organic vapor cartridge(s) in combination with a dust and mist filter*/(APF = 10) Any supplied-air respirator* Up to 250 ppm: (APF = 25) Any supplied-air respirator operated in a continuous-flow mode*/(APF = 50) Any chemical cartridge respirator with a full facepiece and organic vapor cartridge(s) in combination with a high-efficiency particulate filter/(APF = 25) Any powered, air-purifying respirator with organic vapor cartridge(s) in combination with a dust and mist filter*/(APF = 50) Any self-contained breathing apparatus with a full facepiece/(APF = 50) Any supplied-air respirator with a full facepiece Emergency or planned entry into unknown concentrations or IDLH conditions: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister having a high-efficiency particulate filter/Any appropriate escape-type, self-contained breathing apparatus			
Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact			
Symptoms Irritation eyes; headache, confusion, excitement, malaise (vague feeling of discomfort); nausea, vomiting, abdominal pain; irritation bladder; profuse sweating; jaundice; hematuria (blood in the urine), renal shutdown; dermatitis, optical neuritis, corneal damage			
Target Organs Eyes, skin, blood, liver, kidneys, central nervous system			
See also: INTRODUCTION See ICSC CARD: 0667 See MEDICAL TESTS: 0152			

NIOSH Pocket Guide to Chemical Hazards

Toluene		CAS 108-88-3	
C₆H₅CH₃		RTECS XS5250000	
Synonyms & Trade Names Methyl benzene, Methyl benzol, Phenyl methane, Toluol		DOT ID & Guide 1294 130	
Exposure Limits	NIOSH REL: TWA 100 ppm (375 mg/m ³) ST 150 ppm (560 mg/m ³)		
	OSHA PEL†: TWA 200 ppm C 300 ppm 500 ppm (10-minute maximum peak)		
IDLH 500 ppm See: 108883		Conversion 1 ppm = 3.77 mg/m ³	
Physical Description Colorless liquid with a sweet, pungent, benzene-like odor.			
MW: 92.1	BP: 232°F	FRZ: -139°F	Sol(74°F): 0.07%
VP: 21 mmHg	IP: 8.82 eV		Sp.Gr: 0.87
F.P: 40°F	UEL: 7.1%	LEL: 1.1%	
Class IB Flammable Liquid: F.P. below 73°F and BP at or above 100°F.			
Incompatibilities & Reactivities Strong oxidizers			
Measurement Methods NIOSH 1500, 1501, 3800, 4000; OSHA 111 See: NMAM or OSHA Methods			
Personal Protection & Sanitation Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet (flammable) Change: No recommendation		First Aid (See procedures) Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately	
Important additional information about respirator selection			
Respirator Recommendations NIOSH Up to 500 ppm: (APF = 10) Any chemical cartridge respirator with organic vapor cartridge(s)*/(APF = 25) Any powered, air-purifying respirator with organic vapor cartridge(s)*/(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/(APF = 10) Any supplied-air respirator*/(APF = 50) Any self-contained breathing apparatus with a full facepiece			
Emergency or planned entry into unknown concentrations or IDLH conditions: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus			
Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus			
Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact			
Symptoms Irritation eyes, nose; lassitude (weakness, exhaustion), confusion, euphoria, dizziness, headache; dilated pupils, lacrimation (discharge of tears); anxiety, muscle fatigue, insomnia; paresthesia; dermatitis; liver, kidney damage			
Target Organs Eyes, skin, respiratory system, central nervous system, liver, kidneys			
See also: INTRODUCTION See ICSC CARD: 0078 See MEDICAL TESTS: 0232			

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1,2,4-Trichlorobenzene		CAS 120-82-1	
$C_6H_3Cl_3$		RTECS DC2100000	
Synonyms & Trade Names unsym-Trichlorobenzene; 1,2,4-Trichlorobenzol		DOT ID & Guide 2321 153 (liquid)	
Exposure Limits	NIOSH REL: C 5 ppm (40 mg/m ³)		
	OSHA PEL†: none		
IDLH N.D. See: IDLH INDEX		Conversion 1 ppm = 7.42 mg/m ³	
Physical Description Colorless liquid or crystalline solid (below 63°F) with an aromatic odor.			
MW: 181.4	BP: 416°F	FRZ: 63°F	Sol: 0.003%
VP: 1 mmHg	IP: ?		Sp.Gr: 1.45
FLP: 222°F	UEL(302°F): 6.6%	LEL(302°F): 2.5%	
Class IIIB Combustible Liquid Combustible Solid			
Incompatibilities & Reactivities Acids, acid fumes, oxidizers, steam			
Measurement Methods NIOSH 5517 See: NMAM or OSHA Methods			
Personal Protection & Sanitation Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet or contaminated Change: No recommendation		First Aid (See procedures) Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately	
Important additional information about respirator selection Respirator Recommendations To be added later			
Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact			
Symptoms Irritation eyes, skin, mucous membrane; in animals: liver, kidney damage; possible teratogenic effects			
Target Organs Eyes, skin, respiratory system, liver, reproductive system			
See also: INTRODUCTION See ICSC CARD: 1049			

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Vinyl chloride		CAS 75-01-4	
CH ₂ =CHCl		RTECS KU9625000	
Synonyms & Trade Names Chloroethene, Chloroethylene, Ethylene monochloride, Monochloroethene, Monochloroethylene, VC, Vinyl chloride monomer (VCM)		DOT ID & Guide 1086 116P	
Exposure Limits	NIOSH REL: Ca See Appendix A		
	OSHA PEL: [1910.1017] TWA 1 ppm C 5 ppm [15-minute]		
IDLH Ca [N.D.] See: IDLH INDEX		Conversion 1 ppm = 2.56 mg/m ³	
Physical Description Colorless gas or liquid (below 7°F) with a pleasant odor at high concentrations. [Note: Shipped as a liquefied compressed gas.]			
MW: 62.5	BP: 7°F	FRZ: -256°F	Sol(77°F): 0.1%
VP: 3.3 atm	IP: 9.99 eV	RGasD: 2.21	
FLP: NA (Gas)	UEL: 33.0%	LEL: 3.6%	
Flammable Gas			
Incompatibilities & Reactivities Copper, oxidizers, aluminum, peroxides, iron, steel [Note: Polymerizes in air, sunlight, or heat unless stabilized by inhibitors such as phenol. Attacks iron & steel in presence of moisture.]			
Measurement Methods NIOSH 1007; OSHA 4, 75 See: NMAM or OSHA Methods			
Personal Protection & Sanitation Skin: Frostbite Eyes: Frostbite Wash skin: No recommendation Remove: When wet (flammable) Change: No recommendation Provide: Frostbite		First Aid (See procedures) Eye: Frostbite Skin: Frostbite Breathing: Respiratory support	
Important additional information about respirator selection Respirator Recommendations NIOSH At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against the compound of concern/Any appropriate escape-type, self-contained breathing apparatus			
Exposure Routes inhalation, skin, and/or eye contact (liquid)			
Symptoms Lassitude (weakness, exhaustion); abdominal pain, gastrointestinal bleeding; enlarged liver; pallor or cyanosis of extremities; liquid: frostbite; [potential occupational carcinogen]			
Target Organs Liver, central nervous system, blood, respiratory system, lymphatic system			
Cancer Site [liver cancer]			
See also: INTRODUCTION See ICSC CARD: 0082 See MEDICAL TESTS: 0241			

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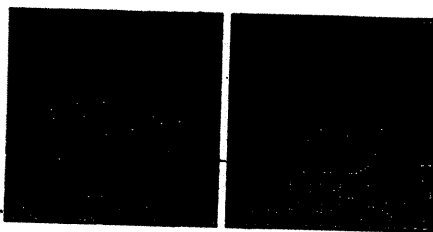
m-Xylene		CAS 108-38-3	
C₆H₄(CH₃)₂		RTECS ZE2275000	
Synonyms & Trade Names 1,3-Dimethylbenzene; meta-Xylene; m-Xylol		DOT ID & Guide 1307 130	
Exposure Limits	NIOSH REL: TWA 100 ppm (435 mg/m ³) ST 150 ppm (655 mg/m ³)		
	OSHA PEL†: TWA 100 ppm (435 mg/m ³)		
IDLH 900 ppm See: 95476		Conversion 1 ppm = 4.34 mg/m ³	
Physical Description Colorless liquid with an aromatic odor.			
MW: 106.2	BP: 282°F	FRZ: -54°F	Sol: Slight
VP: 9 mmHg	IP: 8.56 eV		Sp.Gr: 0.86
FLP: 82°F	UEL: 7.0%	LEL: 1.1%	
Class IC Flammable Liquid: FLP. at or above 73°F and below 100°F.			
Incompatibilities & Reactivities Strong oxidizers, strong acids			
Measurement Methods NIOSH 1501, 3800; OSHA 1002 See: NMAM or OSHA Methods			
Personal Protection & Sanitation Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet (flammable) Change: No recommendation		First Aid (See procedures) Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately	
Important additional information about respirator selection Respirator Recommendations NIOSH/OSHA Up to 900 ppm: (APF = 10) Any chemical cartridge respirator with organic vapor cartridge(s)/(APF = 25) Any powered, air-purifying respirator with organic vapor cartridge(s)/(APF = 10) Any supplied-air respirator/(APF = 50) Any self-contained breathing apparatus with a full facepiece Emergency or planned entry into unknown concentrations or IDLH conditions: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus			
Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact			
Symptoms Irritation eyes, skin, nose, throat; dizziness, excitement, drowsiness, incoordination, staggering gait; corneal vacuolization; anorexia, nausea, vomiting, abdominal pain; dermatitis			
Target Organs Eyes, skin, respiratory system, central nervous system, gastrointestinal tract, blood, liver, kidneys			
See also: INTRODUCTION See ICSC CARD: 0085 See MEDICAL TESTS: 0243			

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ATTACHMENT HASP-5

MSDS SHEETS

Safety (MSDS) data for benzene



[Click here for data on benzene in student-friendly format, from the HSci project](#)

General

Synonyms: benzol, phenyl hydride, coal naphtha

Molecular formula: C_6H_6

CAS No: 71-43-2

EC No: 200-753-7

Physical data

Appearance: colourless liquid

Melting point: 5.5 C

Boiling point: 80 C

Specific gravity: 0.87

Vapour pressure: 74.6 mm Hg at 20 C

Flash point: -11 C

Explosion limits: 1.3 % - 8 %

Autoignition temperature: 561 C

Stability

Stable. Substances to be avoided include strong oxidising agents, sulphuric acid, nitric acid. **Highly flammable.**

Toxicology

This material is a known carcinogen. The risks of using it in the laboratory must be fully assessed before work begins. TLV 10 ppm. Short-term exposure may cause a variety of effects, including nausea, vomiting, dizziness, narcosis, reduction in blood pressure, CNS depression. Skin contact may lead to dermatitis. Long-term exposure may lead to irreversible effects. Severe eye irritant. Skin and respiratory irritant.

Toxicity data

(The meaning of any abbreviations which appear in this section is given here.)

ORL-MAN LDLO 50 mg kg⁻¹

ORL-RAT LD50 930 mg kg⁻¹

IHL-MUS LC50 9980 ppm

ORL-MUS LD50 4700 mg kg⁻¹

Risk phrases

(The meaning of any risk phrases which appear in this section is given here.)

R11 R23 R24 R25 R45 R48.

Personal protection

Safety glasses, gloves, good ventilation. Thought should be given to using an alternative, safer product.

Safety phrases

(The meaning of any safety phrases which appear in this section is given here.)

S45 S53.

Return to [Physical & Theoretical Chemistry Lab. Safety home page](#).

This information was last updated on November 17, 2004. Although we have tried to make it as accurate and useful as possible, we can take no responsibility for its use or misuse. We welcome corrections, updates and suggestions for improvements.

Safety (MSDS) data for ethylbenzene

General

Synonyms: phenylethane, EB, ethylbenzol, ethyl benzene

Molecular formula: C_8H_{10}

CAS No: 100-41-4

EC No: 202-849-4

Physical data

Appearance: colourless liquid

Melting point: -95 C

Boiling point: 136 C

Vapour density: 3.7

Vapour pressure: 10 mm Hg at 20 C

Specific gravity: 0.867

Flash point: 15 C

Explosion limits: 1 % - 6.7 %

Autoignition temperature: 432 C

Stability

Stable. Incompatible with oxidizing agents. Flammable.

Toxicology

May be harmful by inhalation, ingestion or through skin contact. Causes severe eye irritation. Skin and respiratory system irritant. Experimental teratogen. Narcotic in high concentration.

Toxicity data

(The meaning of any abbreviations which appear in this section is given here.)

ORL-RAT LD50 3500 mg kg⁻¹

SKN-RBT LD50 17800 mg kg⁻¹

IHL-GPG LCLO 10000 ppm

Irritation data

(The meaning of any abbreviations which appear in this section is given here.)

SKN-RBT 15 mg/24h open mld.

Risk phrases

(The meaning of any risk phrases which appear in this section is given here.)

R10 R36 R37 R38.

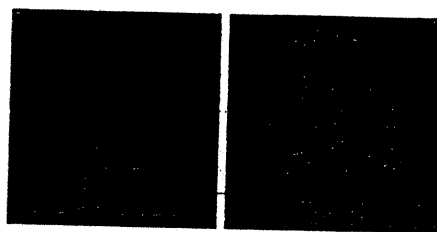
Personal protection

Safety glasses. Good ventilation.

[Return to Physical & Theoretical Chemistry Lab. Safety home page.](#)

This information was last updated on April 14, 2005. We have tried to make it as accurate and useful as possible, but can take no responsibility for its use, misuse, or accuracy. We have not verified this information, and cannot guarantee that it is up-to-date.

Safety (MSDS) data for toluene



[Click here for data on toluene in student-friendly format, from the HSci project](#)

General

Synonyms: methylbenzene, phenylmethane, toluol, antisal 1A, CP 25, methacide, methylbenzol, NCI-C07272, RCRA waste number U220, tolu-sol

Uses: Solvent

Molecular formula: C_7H_8

CAS No: 108-88-3

EC No: 203-625-9

Annex I Index No: 601-021-00-3

Physical data

Appearance: Colourless liquid with a benzene-like odour (odour threshold 0.17 ppm)

Melting point: -93 C

Boiling point: 110.6 C

Specific gravity: 0.865

Vapour pressure: 22 mm Hg at 20 C (vapour density 3.2)

Flash point: 4 C

Explosion limits: 1% - 7%

Autoignition temperature: 536 C

Stability

Stable. Substances to be avoided: oxidising agents, oxygen, moisture. **Highly flammable.**
Hygroscopic.

Toxicology

Toxic by inhalation, ingestion or by absorption through skin. Serious irritant. Experimental teratogen.

Toxicity data

(The meaning of any abbreviations which appear in this section is given [here](#).)

ORL-RAT LD50 636 mg kg⁻¹

IPR-RAT LD50 1332 mg kg⁻¹

ORL-HMN LDLO 50 mg kg⁻¹

IPR-MUS LD50 59 mg kg⁻¹

IHL-MAM LC50 30 g m⁻³

Irritation data

(The meaning of any abbreviations which appear in this section is given here.)

EYE-HMN 300 ppm.

SKN-RBT 435 mg mild.

Risk phrases

(The meaning of any risk phrases which appear in this section is given here.)

R11 R20

Transport information

(The meaning of any UN hazard codes which appear in this section is given here.)
UN Major hazard class 3.0 Packing group II. UN No 1294. IMDG class 3.

Personal protection

Safety glasses. Good ventilation.

Safety phrases

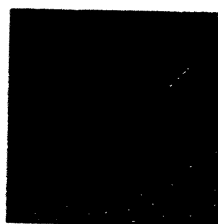
(The meaning of any safety phrases which appear in this section is given here.)

S16 S25 S29 S33.

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This information was last updated on October 26, 2004. Although we have tried to make it as accurate and useful as possible, we can take no responsibility for its use or misuse.

Safety (MSDS) data for o-xylene



General

Synonyms: ortho-xylene, 1,2-dimethylbenzene

Molecular formula: C_8H_{10}

CAS No: 95-47-6

EC No: 202-422-2

Physical data

Appearance: colourless liquid

Melting point: -24 C

Boiling point: 144 C

Vapour density: 3.7

Vapour pressure: 7 mm Hg at 20 C

Specific gravity: 0.87

Flash point: 32 C (closed cup)

Explosion limits: 1.1 % - 7 %

Autoignition temperature: 463 C

Stability

Stable. Incompatible with oxidizing agents. Flammable. Hygroscopic.

Toxicology

Harmful if swallowed, inhaled or absorbed through skin. Narcotic. May cause lung irritation, chest pain or fatal oedema. **May impair fertility.** Typical STEL 150 ppm.

Toxicity data

(The meaning of any abbreviations which appear in this section is given here.)

IPR-MUS LD50 1.5 ml kg^{-1}

Risk phrases

(The meaning of any risk phrases which appear in this section is given here.)

R10 R20 R21 R38.

Personal protection

Safety glasses, adequate ventilation.

Safety phrases

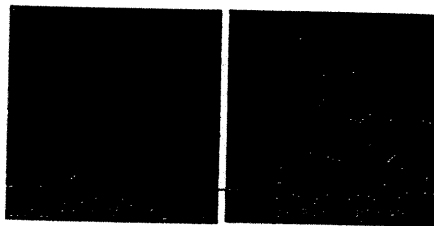
(The meaning of any safety phrases which appear in this section is given here.)

S25.

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This information was last updated on September 5, 2003. We have tried to make it as accurate and useful as possible, but can take no responsibility for its use, misuse, or accuracy. We have not verified this information, and cannot guarantee that it is up-to-date.

Safety (MSDS) data for chlorobenzene



General

Synonyms: benzene chloride, chlorobenzol, phenyl chloride, monochlorobenzene, tetrosin SP

Molecular formula: C_6H_5Cl

CAS No: 108-90-7

EC No: 203-628-5

EC Index No: 602-033-00-1

Physical data

Appearance: colourless liquid

Melting point: -45 C

Boiling point: 132 C

Vapour density: 3.86

Vapour pressure: 12 mm Hg at 25 C

Specific gravity: 1.107

Flash point: 24 C

Explosion limits: 1.3 % - 7.1 %

Autoignition temperature: 636 C

Stability

Stable. Incompatible with oxidizing agents. Flammable.

Toxicology

Possible carcinogen. Harmful if swallowed, inhaled or absorbed through skin. Skin irritant. Typical PEL 75 ppm.

Toxicity data

(The meaning of any abbreviations which appear in this section is given here.)

ORL-RAT LD50 1110 mg kg⁻¹

IHL-RAT LC50 2965 ppm

IPR-RAT LD50 1655 mg kg⁻¹

Safety (MSDS) data for chlorobenzene

Page 2 of 2

ORL-MUS LD50 2300 mg kg⁻¹

ORL-MAM LD50 2300 mg kg⁻¹

Risk phrases

(The meaning of any risk phrases which appear in this section is given here.)

R10 R20 R21 R22 R51 R53.

Environmental information

Harmful in the environment.

Transport information

(The meaning of any UN hazard codes which appear in this section is given here.)

UN No 1134. Packing group III. Major hazard class 3.0. Transport category 3.

Personal protection

Safety glasses and good ventilation.

Safety phrases

(The meaning of any safety phrases which appear in this section is given here.)

S24 S25 S61.

[Return to [Physical & Theoretical Chemistry Lab. Safety home page](#).]

This information was last updated on March 16, 2005. We have tried to make it as accurate and useful as possible, but can take no responsibility for its use, misuse, or accuracy. We have not verified this information, and cannot guarantee that it is up-to-date.

Safety data for naphthalene-d8



General

Synonyms: perdeuteronaphthalene, deuterated naphthalene. [Note: This data sheet is for fully deuterated naphthalene. If you want data on the "normal" non-deuterated material, [click here](#).]

Molecular formula: $C_{10}D_8$

CAS No: 1146-65-2

EINECS No: 214-552-7

Physical data

Appearance: white crystals

Melting point: 81 - 83 C

Boiling point:

Vapour density: 4.4 (air = 1)

Vapour pressure: 0.03 mm Hg at 25 C

Density ($g\ cm^{-3}$):

Flash point: 78 C

Explosion limits: 0.9 - 5.9%

Autoignition temperature:

Water solubility:

Stability

Stable. Incompatible with oxidising agents. Flammable.

Toxicology

Carcinogen. Toxic. Long-term contact with the vapour may cause serious and permanent eye damage. May act as an allergen.

Risk phrases

(The meaning of any risk phrases which appear in this section is given [here](#).)

R20 R21 R22 R36 R37 R38 R43 R45.

Transport information

(The meaning of any UN hazard codes which appear in this section is given here.)
CGD UK Major hazard class: 4.1. Packing group: III

Personal protection

Safety glasses, gloves, good ventilation. Handle as a carcinogen.

Safety phrases

(The meaning of any safety phrases which appear in this section is given here.)
S16 S26 S36 S37 S39 S45.

[Return to [Physical & Theoretical Chemistry Lab. Safety home page](#).]

This information was last updated on October 3, 2003. We have tried to make it as accurate and useful as possible, but can take no responsibility for its use, misuse, or accuracy. We have not verified this information, and cannot guarantee that it is up-to-date.

Safety (MSDS) data for 1,2,4-trichlorobenzene



General

Synonyms: unsym-trichlorobenzene

Use:

Molecular formula: $C_6H_3Cl_3$

CAS No: 120-82-1

EC No:

Physical data

Appearance: colourless liquid

Melting point: 17 C

Boiling point: 213 C

Vapour density: 6.2 (air = 1)

Vapour pressure:

Density ($g\ cm^{-3}$): 1.45

Flash point: 110 C

Explosion limits: 2.5% - 6.6%

Autoignition temperature:

Water solubility: negligible

Stability

Stable. Incompatible with strong oxidizing agents. Combustible.

Toxicology

Skin, eye and respiratory irritant. Typical TLV/TWA 40 mg/m³.

Toxicity data

(The meaning of any abbreviations which appear in this section is given here.)

ORL-RAT LD50 756 mg kg⁻¹

ORL-MUS LD50 300 mg kg⁻¹

Risk phrases

(The meaning of any risk phrases which appear in this section is given here.)

Transport information

(The meaning of any UN hazard codes which appear in this section is given here.)
UN No 2321. Hazard class 6.1.

Personal protection

Safety glasses, adequate ventilation.

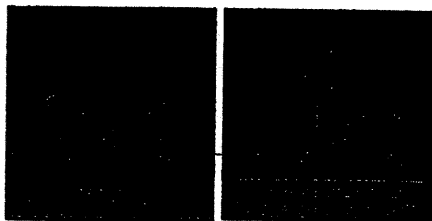
Safety phrases

(The meaning of any safety phrases which appear in this section is given here.)
S26 S36.

[Return to Physical & Theoretical Chemistry Lab. Safety home page.](#)

This information was last updated on September 15, 2003. We have tried to make it as accurate and useful as possible, but can take no responsibility for its use, misuse, or accuracy. We have not verified this information, and cannot guarantee that it is up-to-date.

Safety (MSDS) data for 1,2-dichlorobenzene



General

Synonyms: o-dichlorobenzene

Molecular formula: $C_6H_4Cl_2$

CAS No: 95-50-1

EC No: 202-425-9

Physical data

Appearance: colourless liquid

Melting point: -17 C

Boiling point: 179 C

Vapour density: 5.1

Vapour pressure: 1.2 mm Hg at 20 C

Specific gravity: 1.306

Flash point: 65 C

Explosion limits: 2.2 % - 9.2%

Autoignition temperature: 647 C

Stability

Stable. Incompatible with oxidizing agents, aluminium, aluminium alloys. Light sensitive.

Toxicology

Toxic. Harmful if swallowed, inhaled or absorbed through the skin. Eye, skin and respiratory tract irritant. May cause sensitization. Typical PEL 50 ppm.

Toxicity data

(The meaning of any abbreviations which appear in this section is given here.)

ORL-RAT LD50 500 mg kg⁻¹

Risk phrases

(The meaning of any risk phrases which appear in this section is given here.)

R22 R36 R37 R38 R50 R53.

Environmental information

Extremely harmful to the aquatic environment; may cause long-term damage.

Personal protection

Safety glasses, good ventilation.

Safety phrases

(The meaning of any safety phrases which appear in this section is given here.)

S23 S60 S61.

[Return to [Physical & Theoretical Chemistry Lab. Safety home page](#).]

This information was last updated on March 29, 2005. We have tried to make it as accurate and useful as possible, but can take no responsibility for its use, misuse, or accuracy. We have not verified this information, and cannot guarantee that it is up-to-date.

Safety (MSDS) data for 1,3-dichlorobenzene

General

Synonyms: m-dichlorobenzene, meta-dichlorobenzene

Molecular formula: $C_6H_4Cl_2$

CAS No: 541-73-1

EC No:

Physical data

Appearance: colourless liquid

Melting point: -24.8 C

Boiling point: 173 C

Vapour density:

Vapour pressure: 5 mm Hg at 39 C

Density ($g\ cm^{-3}$): 1.29

Flash point: 63 C

Explosion limits:

Autoignition temperature: 648 C

Water solubility: negligible

Stability

Combustible. Incompatible with strong oxidizing agents, aluminium, aluminium alloys. Moisture-sensitive.

Toxicology

May be harmful if inhaled, swallowed or absorbed through the skin. May act as a mutagen.

Toxicity data

(The meaning of any abbreviations which appear in this section is given here.)

IPR-MUS LD50 1062 mg kg⁻¹

Risk phrases

(The meaning of any risk phrases which appear in this section is given here.)

Transport information

Personal protection

Safety glasses, good ventilation.

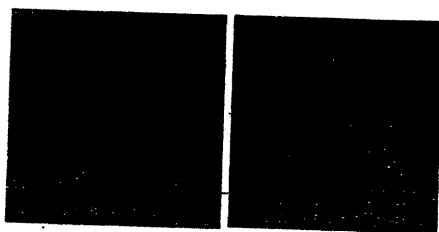
Safety phrases

(The meaning of any safety phrases which appear in this section is given here.)

Return to [Physical & Theoretical Chemistry Lab. Safety home page.](#)

This information was last updated on October 25, 2004. We have tried to make it as accurate and useful as possible, but can take no responsibility for its use, misuse, or accuracy. We have not verified this information, and cannot guarantee that it is up-to-date.

Safety (MSDS) data for 1,4-dichlorobenzene



General

Synonyms: p-dichlorobenzene, para-dichlorobenzene, p-chlorophenyl chloride, p-dichlorobenzol, di-chloricide, evola, globol, NCI-C54955, paracide, para crystals, paradi, paradow, paramoth, paranuggets, parazene, pdcb, persia-perazol, santochlor, various other non-systematic names
Use: Moth repellant and general insecticide, deodorant and disinfectant.

Molecular formula: $C_6H_4Cl_2$

CAS No: 106-46-7

EINECS No:

Physical data

Appearance: colourless or white crystals

Melting point: 53 C

Boiling point: 174 C

Vapour density: 5.1 (air = 1)

Vapour pressure: 0.6 mm Hg at 20 C

Density ($g\ cm^{-3}$): 1.25

Flash point: 65 C (closed cup)

Explosion limits:

Autoignition temperature:

Water solubility: negligible

Stability

Stable. Combustible. Incompatible with strong oxidizing agents, aluminium and its alloys, some plastics.

Toxicology

Harmful if swallowed or inhaled; may be harmful if absorbed through the skin. Experimental mutagen, carcinogen and teratogen. Possible human carcinogen. May act as a systemic poison if swallowed. Typical TLV/TWA 75 ppm. Typical STEL 110 ppm. Typical PEL 75 ppm.

Toxicity data

(The meaning of any abbreviations which appear in this section is given here.)

ORL-HMN TDLO 300 mg kg⁻¹

ORL-MUS LD50 2950 mg kg⁻¹

IPR-MUS LD50 2000 mg kg⁻¹

IPR-RAT LD50 2562 mg kg⁻¹

ORL-RAT LD50 500 mg kg⁻¹

Risk phrases

(The meaning of any risk phrases which appear in this section is given here.)

R20 R22 R36 R50 R53.

Environmental information

Very harmful in the environment. Expected to biodegrade very slowly.

Transport information

(The meaning of any UN hazard codes which appear in this section is given here.)

UN No 1592. Packing group III. Hazard class 6.1.

Personal protection

Safety glasses, gloves, adequate ventilation.

Safety phrases

(The meaning of any safety phrases which appear in this section is given here.)

S24 S25 S46 S60 S61.

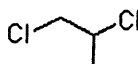
[Return to [Physical & Theoretical Chemistry Lab. Safety home page](#).]

This information was last updated on March 30, 2005. We have tried to make it as accurate and useful as possible, but can take no responsibility for its use, misuse, or accuracy. We have not verified this information, and cannot guarantee that it is up-to-date.

visit our [website](#) to find more information like MSDS, infra-red (IR), molfile, sdf file, structure, price, a catalog of over 130000 chemicals and over 150 chemical suppliers. You may also [add your own catalog](#) of chemicals for free.

1,2-Dichloropropane

Synonyms: Propylene dichloride; Dichloropropane; 98%; Aluminium Diethyl Monochloride
Molecular Formula: $C_3H_6Cl_2$
Formula Weight: 112.98
Registry number: 78-87-5



Registry number (RN, CAS): 78-87-5
Density: 1.15
Melting point (Mp): -100-100 °C
Boiling point: 95-96 °C
nD20: 1.438-1.44
Flash point: 15 °C

Hazard Symbol

F Highly flammable

Xn Harmful

Risk Description

R11 Highly flammable.
R20/22 Harmful by inhalation and if swallowed.

Safety Description

S16 Keep away from sources of ignition - No smoking.
S24 Avoid contact with skin.

Supplier	Products commercially available Name and purity	Qtt	Reference
ABCR	1,2-Dichloropropane; 98%	200.00 g	TCD0398 Get offer
Acros	1,2-Dichloropropane 98%	5 ML	113670050 Get offer
	98%	50 ML	113670500 Get offer
chemos	Propylene dichloride	on request	D0398 Get offer
cnpc	1,2-Dichloropropane	on request	Get offer
dayangchem	1,2-Dichloropropane	on request	DY5158 Get offer
dsi	1,2-Dichloropropane	on request	C012469 Get offer
	1,2-Dichloropropane 98	25g	X03083G0025
lancaster		100g	X03083G0100
	98		
MatrixSwitzerland	1,2-Dichloropropane	semi bulk	Get offer
yick-vic	Aluminium Diethyl Monochloride	bulk	Get offer
		>1000 kg	SPI-0545 Get offer

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Answers to all of your questions

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Safety Data Sheets

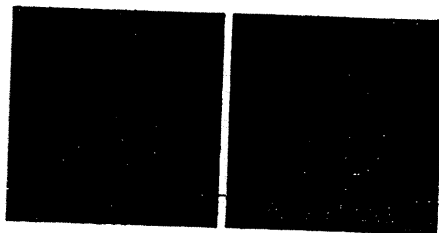
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CHEMEXPER

Safety (MSDS) data for vinyl chloride



General

Synonyms: vinyl chloride monomer, monochloroethylene, ethylene monochloride, monochloroethene, VC, VCM, chloroethene, chloroethylene

Molecular formula: C_2H_3Cl

CAS No: 75-01-4

EINECS No: 200-831-0

Annex I Index No: 602-023-00-7

Physical data

Appearance: colourless gas

Melting point: -153.7 C

Boiling point: -13.9 C

Vapour density: 2.2 (air = 1)

Vapour pressure: 2580 mm Hg at 20 C

Density (g cm^{-3}): 0.9106

Flash point: -61 C (closed cup)

Explosion limits:

Autoignition temperature:

Water solubility: $0.11\text{ g } 100\text{ cm}^{-3}$ at 25 C

Critical temperature: 156.5 C

Stability

Stable, but may be light sensitive. May undergo autopolymerization. Incompatible with strong oxidizing agents, chemically active metals, copper. **Highly flammable**. Severe explosion risk at concentrations of around 3%. It is reported that "large fires of this material are practically inextinguishable".

Toxicology

This material is a known human carcinogen. Harmful if inhaled or absorbed through the skin. May be a reproductive hazard. Typical TWA 1 ppm.

Toxicity data

(The meaning of any abbreviations which appear in this section is given here.)

IHL-MAN TCLO 500 ppm/4y-i

ORL-RAT LD50 500 mg kg⁻¹

Risk phrases

(The meaning of any risk phrases which appear in this section is given here.)

R13 R45.

Transport information

(The meaning of any UN hazard codes which appear in this section is given here.)

UN No 1086. Major hazard class 2. Subsidiary hazard class 3. Not permitted as cargo on passenger planes.

Personal protection

Safety glasses, good ventilation. Handle as a carcinogen.

Safety phrases

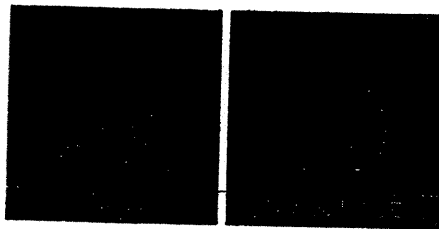
(The meaning of any safety phrases which appear in this section is given here.)

S9 S16 S44 S53.

[Return to Physical & Theoretical Chemistry Lab. Safety home page.](#)

This information was last updated on May 12, 2005. We have tried to make it as accurate and useful as possible, but can take no responsibility for its use, misuse, or accuracy. We have not verified this information, and cannot guarantee that it is up-to-date.

Safety (MSDS) data for 1,2-dichloroethane



General

Synonyms: 1,2-bichloroethane, dichloroethylene, ethylene chloride, ethane dichloride, ethylene dichloride, 1,2-ethylene dichloride, glycol dichloride, EDC, NCI-C00511, sym-dichloroethane, alpha, beta-dichloroethane, borer sol, brocide, destruxol, dichloremlulsion, dutch oil, di-chlor-mulsion, dutch liquid, freon 150, NU-G00511

Molecular formula: $C_2H_4Cl_2$

CAS No: 107-06-2

EC No: 203-458-1

EC Index No 602-012-00-7

Physical data

Appearance: colourless liquid

Melting point: -35 C

Boiling point: 83 C

Specific gravity: 1.256

Vapour pressure: 387 mm Hg at 25 C

Vapour density: 3.4 (air = 1)

Flash point: 15 C

Explosion limits: 6.2% - 15.6%

Autoignition temperature: 775 F

Water solubility: slight

Stability

Stable. Substances to be avoided include oxidising agents, strong alkalies, strong caustics, magnesium, sodium, potassium, active amines, ammonia, iron, zinc, nitric acid and aluminium. Air and light sensitive. **Highly flammable.**

Toxicology

Probable human carcinogen. Causes liver damage. Mutagen, toxic. Experimental transplacental carcinogen. May cause systemic effects. Narcotic. Regarded as a priority pollutant in many countries. Skin irritant. A long-term MEL of 20 mg per cubic metre (8-hour

TWA reference period) applies to this chemical in the UK.

Toxicity data

(The meaning of any abbreviations which appear in this section is given here.)

ORL-RAT LD50 670 mg kg⁻¹

SKN-RBT LD50 2800 mg kg⁻¹

IHL-RAT LD50 1000 ppm/7h

ORL-HMN LDLO 286 mg kg⁻¹

ORL-MAN LDLO 714 mg kg⁻¹

ORL-DOG LD50 5700 mg kg⁻¹

Risk phrases

(The meaning of any risk phrases which appear in this section is given here.)

R11 R22 R36 R37 R38 R45.

Transport information

(The meaning of any UN hazard codes which appear in this section is given here.)

UN No 1184. Packing group II. Major hazard class 3.0. Subsidiary hazard class 6.1.

Personal protection

Safety glasses. Good ventilation. Use precautions appropriate to a carcinogen.

Safety phrases

(The meaning of any safety phrases which appear in this section is given here.)

S45 S53.

[Return to [Physical & Theoretical Chemistry Lab. Safety home page](#).]

This information was last updated on September 4, 2003. Although we have tried to make it as accurate and useful as possible, we can take no responsibility for its use or misuse.

HEALTH AND SAFETY PLAN SIGN-OFF SHEET

SITE NAME/PROJECT NUMBER: _____

LOCATION: _____

WHITMAN FIELD SUPERVISOR: _____

I have read, understood, and agreed to comply with the provisions of the above referenced job site Health and Safety Plan for work activities on this site.

Name (Print)

Signature

Date

This HASP was prepared by: _____

**COMMUNITY AIR MONITORING PLAN (CAMP)
PROJECT NO. 97-09-10**

*Project Name:	Dexter Chemical		
*Project No.:	97-09-10		
*Site Location:	Edgewater Road, Bronx, New York		
*Mark Out Reference #			
*Client:	Dexter Chemical		
*Contact:	Ed Huss	*Cell	908-208-3492
		Telephone:	
*Project Manager:	Ed Huss	Pager #:	
		Office	732-390-5858
		Telephone:	
*Date:	10/29/10	Fax Number:	732-390-9496

SITE-WIDE SVE/AS SYSTEM MONITORING, INTRUSIVE CONSTRUCTION WORK (WORK PENETRATING THE COMPOSITE COVER SYSTEM AND/OR DISTURBING, CONTACTING OR REMOVING RESIDUAL CONTAMINATION) MUST BE CONDUCTED IN ACCORDANCE WITH THE PROCEDURES PRESENTED BELOW.

Real-time air monitoring for volatile organic compounds (VOCs) and/or particulate levels at the perimeter of the exclusion zone or work or monitoring area will be necessary for site-wide SVE/AS monitoring and intrusive work performed at the site. Continuous monitoring will be required for all ground intrusive activities. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, any construction/redevelopment/utility repair work and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well, monitoring during well bailing/purging, and taking a reading prior to leaving a sample location.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. For SVE/AS system fugitive vapor monitoring, specific monitoring locations (at a minimum) are shown on **Figure 14**, depending on which area (or both) is being treated. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.
- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels

in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

All 15-minute readings must be recorded and be available for State (DEC and DOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m³) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m³ above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m³ above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m³ of the upwind level and in preventing visible dust migration. All readings must be recorded and be available for State (DEC and DOH) personnel to review.

Reporting

Exceedances observed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers.

Map of Air Monitoring Locations

Known air monitoring locations can be found on Figure 14, included in the SMP. Fixed air monitoring locations include locations monitored in conjunction with SVE/AS system operation. Periodic monitoring points would include air monitoring conducted during collection of samples from existing ground water monitoring wells.

Real-time air monitoring for volatile organic compounds (VOCs) and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary for intrusive construction work performed at the site. Continuous monitoring will be required for all ground intrusive activities. The location of the appropriate points of monitoring will be determined at the initiation of such work and during the duration of the intrusive activities as described within this CAMP.

ATTACHMENT 1

CONTINGENCY INFORMATION

Site Emergency Contact to be Notified:

Location of Nearest Telephone:

Local Emergency Response Contacts:		<u>Name</u>	<u>Phone</u>
Ambulance/EMS:			911 or
Fire Department:			911 or
Sheriff/Police Dept:			911
Whitman Project Manager:	Ed Huss		Cell phone: 908-208-3492 Office phone: 732-390-5858
NY Department of Environmental Commission Hotline			1-800-847-7332
USEPA Environmental Response Team			(202)-321-6660
USEPA RCRA Hotline			(800) 424-9346
CHEMTREC			(800)-424-9300
National Response Center			(800) 424-8802
Substance Identification (CAS)			(800) 848-6538
Nearest Local Hospital:	Albert Einstein-Weiler Hospital	718-904-2000	
Hospital Address:	1825 Eastchester Road, Bronx, NY 10461		
Route to Hospital:	Hospital Route – see HASP		

EMERGENCY/PROBLEMS CHAIN-OF-COMMAND

If a release, emergency or other unexpected situation arises onsite, The Whitman Companies should be notified immediately. If The Whitman Companies, Inc. is not on site when the event occurs, please use the following contact list.

<u>Name</u>	<u>Office # and Address</u>	<u>Home #</u>
Richard Britton, Vice President of Geological Services	The Whitman Companies, Inc. 116 Tices Lane, Unit B-1 East Brunswick, NJ 08816 (732) 390-5858	732-940-9225
Todd Gerber, Executive Vice President	The Whitman Companies, Inc. 116 Tices Lane, Unit B-1 East Brunswick, NJ 08816 (732) 390-5858	(908)-281-6551

Active Work Zone Emergencies

Fire/Explosion: A severe emergency such as a fire or explosion could require immediate evacuation of the site. The emergency response notification process should take place as soon as an incident occurs.

In the event of an evacuation of the Active Work Area, affected personnel will leave immediately, go through decontamination if time permits and reassemble at the closest street. The signal for an evacuation is three (3) long bursts of an air or vehicle horn. Contact local emergency services if needed and contact The Whitman Companies.

ATTACHMENT 2

PLAN REVISIONS

The site Community Air Monitoring Plan will be revised whenever the following events occur:

1. New physical or chemical hazards are discovered
2. Changes occur in telephone numbers, personnel, etc.

All personnel will be briefed when pertinent changes occur.

Project Manager Approval



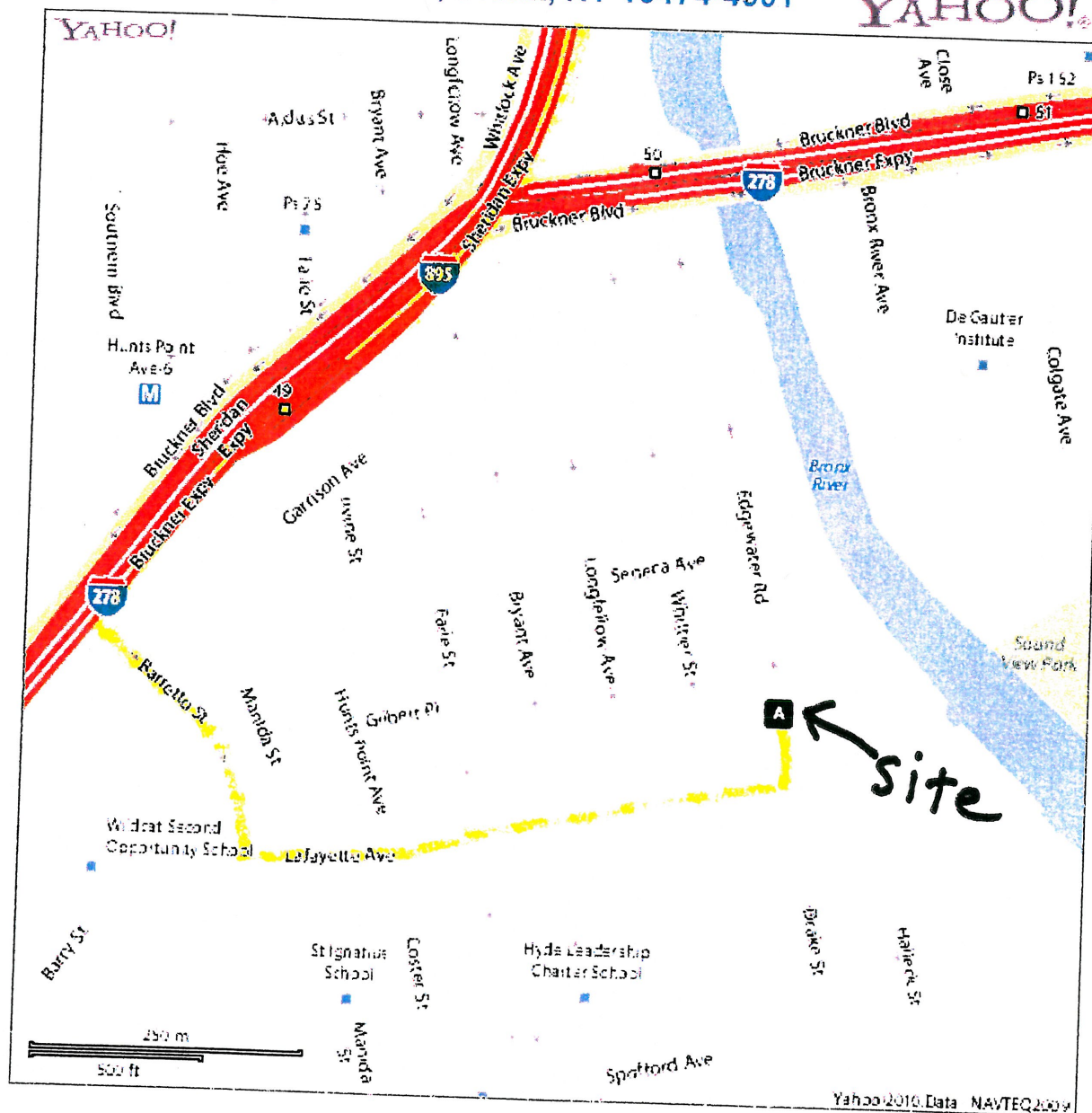
Date:

10-24-16

APPENDIX 8
NYSDEC Acceptable Electronic Database
And
Truck Routes With Maps

Map of 819 Edgewater Rd, Bronx, NY 10474-4901

YAHOO!

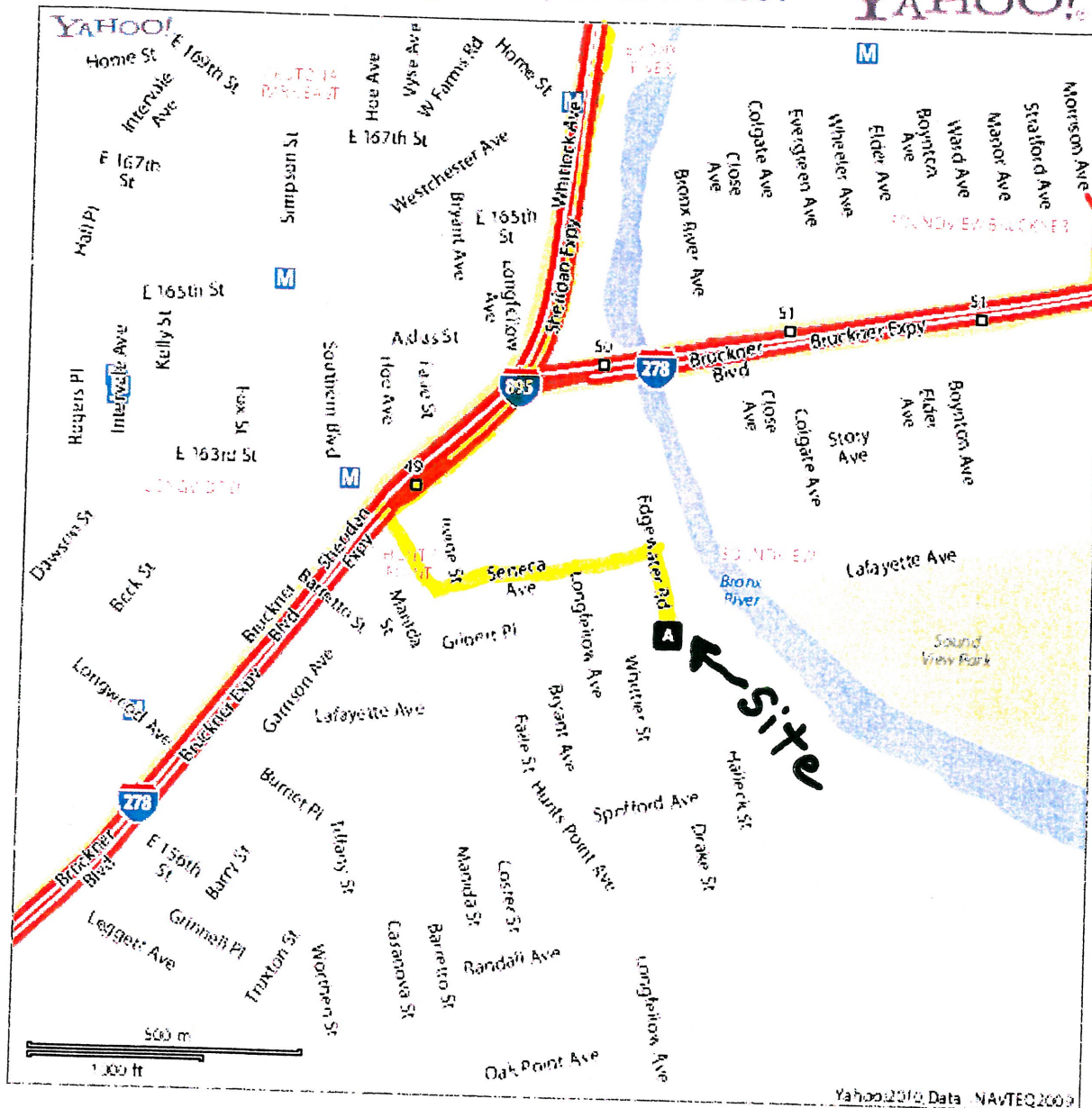


When using any driving directions or map, it's a good idea to do a reality check and make sure the road still exists, watch out for construction, and follow all traffic safety precautions. This is only to be used as an aid in planning.

Truck Route Coming
To Site

Map of 819 Edgewater Rd, Bronx, NY 10474-4901

YAHOO!



When using any driving directions or map, it's a good idea to do a reality check and make sure the road still exists, watch out for construction, and follow all traffic safety precautions. This is only to be used as an aid in planning.

Truck Route leaving Site

APPENDIX 9
Inspection Forms and Checklists

**ANNUAL MONITORING REPORT FORM FOR INSTITUTIONAL &
ENGINEERING CONTROLS**

I. Background Site Information

A. Facility Name and Location:

Business Name as it appears on the Declaration of Covenants and Restrictions
(DCR):

Name of the current operator at the site (if different than above): _____

Property Street Address(es):

Municipality (-ies): _____ County (-ies): _____

Blocks: _____

Lots: _____

Year of Tax map from which this information is obtained: _____

B. Person responsible for submitting the annual monitoring report:

Person's Name: _____
Person's Title: _____
Business Name: _____

Relationship to the Site (check as appropriate): Owner _____ Operator _____
Lessee _____ Person Who Conducted the Cleanup _____
Other (describe) _____

Street Address: _____
City: _____ State: _____
Telephone Number: (____) ____-____
FAX Number: (____) ____-____
E-mail Address: _____

C. All Current Owner, Lessee(s) and Operator(s)

Name of Person: _____
Business Name: _____
Relationship to the Site: Owner _____ Operator _____ Lessee _____
Street Address: _____
City: _____ State: _____
Telephone Number: (____) ____-____
FAX Number: (____) ____-____
E-mail Address: _____

D. Case Specific Information (Complete all that apply)

- VCA Site Name _____
- VCA Site # _____
- Index # _____
- Date of VCA _____
- Name and Bureau of assigned Case Manager at the time the VCA/DCR was issued.

E. Existing Site Conditions

- Describe the physical characteristics of the Site.
- Describe the current site operations.
- Describe each engineering control that applies to the Restricted Areas.

II. Protectiveness Evaluation

A. Deed Notice & Engineering Control Information

- Provide the following information for the recorded DCR:

Book Number: _____

Page Number: _____

Date the Deed Notice/DER was filed in the office of the county recording officer: _____

- Have any amendments and/or additional filings been recorded that may modify or supersede the DCR and Exhibits?

Yes ____ No ____

If you answered "Yes", provide an explanation. Also provide the Book and Page Number of the amendment and/or additional filing and the date it was filed in the office of the county recording officer. Attach a copy of the amendment and/or additional filing in Attachment 2: DCR Amendment.

B. Evaluation of Institutional and Engineering Controls

1. Zoning or Land Use Changes

- a. Land use at the time the DCR was filed (check all that apply):

Non-Residential ____ Residential ____ Agricultural ____ Other ____

- b. Current land use (check all that apply):

Non-Residential ____ Residential ____ Agricultural ____ Other ____

If the current land use is different than the land use at the time the DCR was filed, explain how the remedial action, which included the DCR, remains protective of public health and safety. Include the Case Manager's name and Bureau that approved this change, if applicable.

- c. Has there been an actual or pending zoning or land-use change for the Restricted Area on which the DCR is filed?

Yes ____ No ____ (If No, proceed to #2, below)

There is an actual or pending zoning or land-use change on the Restricted Area which is consistent with the use restrictions. That change will not undermine the protectiveness of the remedial action that includes a DCR in a manner such that could prevent the remedial action from meeting the applicable health risk standard, and protection of public health, safety, and of the environment.

The result of the evaluation was either (1) the control remains protective, (2) an actual change occurred, the control was no longer protective and a description of what was done to make the control protective, or (3) a pending change will occur which will result in the control no longer being protective and a description of what was/will be done to make the control protective.

The details of the actual or pending zoning or land-use changes and any potential impact are provided below:

2. Inspections

Have periodic inspections of the site identified any excavation or other disturbance activities that have taken place within the restricted areas?

Yes ____ No ____ (If No, proceed to "3")

An excavation or other disturbance activity has taken place within the restricted areas and any disturbances of the soil at the site have not resulted in unacceptable exposure to the soil contamination. A full description of the disturbance and the method to restore all controls, compliance with all guidelines of the SoMP, applicable health and safety laws and regulations and methods to ensure that exposure to contamination in excess of the applicable remediation standard did not occur are provided below. If the disturbance resulted in an unacceptable exposure to the soil contamination explain how this was remedied.

Date(s) of Disturbance: _____

Duration of Disturbance: Years _____ Months _____ Days _____

Date the NYSDEC was notified: _____

Description of the disturbance and methods to address the disturbance:

Name of Contact Person Relative to the Disturbance:

Title: _____

Street Address: _____

City: _____ State: _____ Zip Code: _____

Telephone Number: _____

Email Address: _____

Was all soil excavated and returned to the Restricted Area?

Yes _____ No _____ (If No, provide an explanation)

Quantity of soil generated for disposal (if applicable): _____ tons
Provide the destination of all materials removed from the Site during work performed.

Attach Transportation/disposal/approvals for receipt documentation.

Provide an explanation of how the engineering control was replaced following the disturbance?

Provide an explanation of how the engineering control was replaced following the disturbance?

3. Changes to Laws and Regulations

- a. Are there any subsequently promulgated or modified environmental laws or regulations, which apply to the site?

Yes ____ No ____ (If No, proceed to #4 below)

- b. If Yes, has the evaluation also determined that the each DCR and engineering control, as applicable, meets the requirements of the new laws and regulations?

Yes ____ No ____ (If Yes, proceed to #4 below)

- c. Each DCR and engineering control, as applicable that did not meet the requirements of the new laws and regulations has been addressed in the following manner to bring them into compliance:

4. SVE/AS System

Has a failure of the SVE/AS system occurred since the last Annual Site Inspection?

Yes(____) No(____)

A description of the system failure and the methods/repairs conducted to restore all controls and compliance with all guidelines of the SMP are provided below.

Date(s) of System Failure:

Duration of Failure: Months ____ Days ____ Hours ____
Description of the system failure and methods to address the
system failure:

Name of Contact Person Relative to the System Failure:

Title: _____
Street Address: _____
City: _____ State: _____ Zip Code: _____
Telephone Number: _____
Email Address: _____

Are operation and maintenance logs for the Soil Vapor Extraction and Air
Sparge system as provided in the SMP complete and available for review?

Yes ____ No ____ (If No, provide an explanation)

DEXTER SVE/AS TREATMENT SYSTEM O&M MONTHLY, QUARTERLY and
ANNUAL CHECKLISTS, Page 1 of 2

MONTHLY (at a minimum) TASK to BE COMPLETED BY TECHNICIAN & RECORDED IN SYSTEM LOG BOOK	CHECK BOX (X) if TASK COMPLETED
1. Upon arrival the technician will document time, temperature, and weather conditions in log book.	
2. Check gate to ensure site is secure and that emergency contact information is visible.	
3. Document in log book if system is running, if not trouble shoot and document why the system shut down.	
4. Record SVE vacuum, monitoring point vacuum/pressure and influent/effluent temperatures, and system influent vacuum and carbon vessel psi readings (Carbon Treatment).	
5. Collect system effluent cfm reading (Kurz or rotometer).	
6. Air sparging and extraction flow rates.	
7. Sparging pressure and vacuum reading from venting monitoring points and manifold.	
8. Bail water traps.	
9. Field monitoring of vapor concentrations in SVE venting monitoring points and SVE System influent, midpoint and effluent discharge using a Photo Ionization Detector (PID) or a Flame Ionization Detector (FID).	
10. Make adjustments to manifold to maximize system mass removal rates.	
11. Check AS hose integrity.	
12. Shut down compressor and remove condensate from collection jars.	
13. Restart compressor and ensure all points are functioning (compressor is not dead heading at any point).	

**DEXTER SVE/AS TREATMENT SYSTEM O&M MONTHLY, QUARTERLY and
ANNUAL CHECKLISTS, Page 2 of 2**

MONTHLY (at a minimum) TASK to BE COMPLETED BY TECHNICIAN & RECORDED IN SYSTEM LOG BOOK	CHECK BOX (X) if TASK COMPLETED
14. Check system for leaks.	
15. Ensure all floats and emergency shut offs are properly working.	
16. Check discharge outfall for water clarity and any obstructions.	
17. Collect psi readings from prior to carbon unit one, after carbon unit 1, and after carbon unit 2. If psi readings are greater than 10 between units backwash the vessels.	
18. Document system flow rate and total flow, and make adjustments if necessary.	
ADDITIONAL QUARTERLY (at a minimum) TASKS to BE COMPLETED BY TECHNICIAN & RECORDED IN SYSTEM LOG BOOK	CHECK BOX (X) if TASK COMPLETED
1. Service blowers and pumps as per manufacture's specifications	
2. Use amperage meter to test draw on blowers and pumps and adjust system vacuum/pressure if necessary	
3. Test all system starter motors in panel by pushing the test button to ensure they will trip in the event of an overload	
4. Check integrity and tightness of all electrical wiring	
ADDITIONAL ANNUAL (at a minimum) TASK to BE COMPLETED BY TECHNICIAN & RECORDED IN SYSTEM LOG BOOK	CHECK BOX (X) if TASK COMPLETED
In addition the technician will review all records from that year to ensure that all records are complete and accurate. After review the technician will add any necessary activities to the monthly, quarterly, and annual check lists.	

APPENDIX 10
Well Construction Logs

CLIENT: DEXTER CHEMICAL

WELL LOG

WELL No. MW-1

PROJECT NO. 970910 SITE LOCATION: BRONX, NY

THE WHITMAN COMPANIES, INC.

SHEET 1 OF 1

DRILLING Co. MILLER ENVIRONMENTAL DRILLER: MARK MULLER

DATE STARTED: 3/11/98 DATE COMPLETED: 3/11/98

TYPE OF RIG: HOLLOW STEM AUGER HOLE DIA.: 8"

GEOLOGIST: GARY WEISSBERGER

SAMPLER TYPE: SPLIT SPOON DIA.: 2 IN.

TOTAL DEPTH 16.5'

HAMMER WT.: 140 LBS. FALL: 30 IN.

WATER LEVEL STABILIZED AT 11.59 BELOW TOC ON 3/26/98

SURVEYED ELEVATION OF T.O.C. 100.00 ▼ DEPTH TO GW 11.59'

TOC = TOP OF CASING

WELL COMPLETION DIAGRAM	DEPTH (FEET)	GRAPHIC LOG	MAXIMUM PID READING	SOIL DESCRIPTION	REMARKS
	0		0.0	0-1' CONCRETE	FLUSHMOUNT MANHOLE
	1			1-4' SILT, BROWN	MASTER LOCK: : #0505
	2		0.0		PVC LOCKING CAP
	3				CEMENT : 0'-2'
	4			4'-6' SAND BROWN WITH GRAVEL AND COAL FRAGMENTS	BENTONITE : 2-6'
	5				GRAVELPACK : 6-16.5'
	6		0.0		: #2 SAND
	7		0.0	6-7' WEATHERED SCHIST FRAGMENTS	RISER (7 FEET) : 0'-7'
	8		20.3	7-11.5' CINDERS, SHELLS, COAL FRAGMENTS	: 4 INCH ID : PVC : SCHEDULE 40
	9				SCREEN (9.5 FEET) : 7-16.5'
	10				: 4 INCH ID : PVC : SCHEDULE 40 : 0.020" SLOT
	11				BOTTOM CAP
	12		0.0	11.5-12' SCHIST FRAGMENTS	
	13		0.0	12-12.5' SAND, BLACK	
	14		0.0	12.5-16.5' MEADOW MAT, PEAT GRADING TO BLACK GREY ORGANIC CLAY	

CLIENT: DEXTER CHEMICAL

WELL LOG

WELL No. MW-2

PROJECT NO. 970910 SITE LOCATION: BRONX, NY

THE WHITMAN COMPANIES, INC.

SHEET 1 OF 1

DRILLING Co. MILLER ENVIRONMENTAL DRILLER: MARK MULLER

DATE STARTED: 3/11/98 DATE COMPLETED: 3/11/98

TYPE OF RIG: HOLLOW STEM AUGER HOLE DIA.: 8"

GEOLOGIST: GARY WEISSBERGER

SAMPLER TYPE: SPLIT SPOON DIA.: 2 IN.

TOTAL DEPTH 16.5'

HAMMER WT.: 140 LBS.

FALL: 30 IN.

WATER LEVEL STABILIZED AT 10.67 BELOW TOC ON 3/26/98

SURVEYED ELEVATION OF T.O.C. 98.56

▼ DEPTH TO GW 10.67'

TOC = TOP OF CASING

WELL COMPLETION DIAGRAM	DEPTH (FEET)	GRAPHIC LOG	MAXIMUM PID READING	SOIL DESCRIPTION	REMARKS
	0		0.0	0-1' CONCRETE	FLUSHMOUNT MANHOLE MASTER LOCK: : #0505 PVC LOCKING CAP CEMENT : 0'-3' BENTONITE : 3-4' GRAVELPACK : 4-16.5' : #2 SAND RISER (6.5 FEET) : 0'-6.5' : 4 INCH ID : PVC : SCHEDULE 40 SCREEN (10 FEET) : 6.5-16.5' : 4 INCH ID : PVC : SCHEDULE 40 : 0.020" SLOT BOTTOM CAP
	1			1-4' SILT, BROWN	
	2		0.0		
	3				
	4			4-5' BLACK CINDERS	
	5		0.0		
	6			5-11' CINDERS, COAL AND SHELL FRAGMENTS	
	7				
	8		0.0		
	9				
	10				
	11			11-13' CLAY, BLACK ORGANIC WITH SCHIST FRAGMENTS	
	12		0.0		
	13		0.0	13-16.5' MEADOW MAT, PEAT GRADING TO GREY ORGANIC CLAY	
	14				
	15				
	16				

CLIENT: DEXTER CHEMICAL

WELL LOG

WELL No. MW-3

PROJECT NO. 970910 SITE LOCATION: BRONX, NY

THE WHITMAN COMPANIES, INC.

SHEET 1 OF 1

DRILLING Co. MILLER ENVIRONMENTAL DRILLER: MARK MULLER

DATE STARTED: 3/12/98 DATE COMPLETED: 3/12/98

TYPE OF RIG: AIR ROTARY HOLE DIA.: 8"

GEOLOGIST: GARY WEISSBERGER

SAMPLER TYPE: SPLIT SPOON DIA.: 2 IN.

TOTAL DEPTH 14'

HAMMER WT.: 140 LBS.

FALL: 30 IN.

WATER LEVEL STABILIZED AT 8.31 BELOW TOC ON 3/26/98

SURVEYED ELEVATION OF T.O.C. 97.10

▼ DEPTH TO GW 8.31'

TOC = TOP OF CASING

WELL COMPLETION DIAGRAM	DEPTH (FEET)	GRAPHIC LOG	MAXIMUM PID READING	SOIL DESCRIPTION	REMARKS
	0		0.0	0'-0.5' CONCRETE	
	1			0.5-5' BLACK SILT WITH CINDERS	FLUSHMOUNT MANHOLE
	2		0.0		MASTER LOCK: : #0505
	3				PVC LOCKING CAP
	4				CEMENT : 0'-2.5'
	5			5 -7' GREY SILTY CLAY	BENTONITE : 2.5-3'
	6		0.0		GRAVELPACK : 3'-14' : #2 SAND
	7			7-9' GREY SILT AND SAND	RISER (4 FEET) : 0'-4' : 4 INCH ID : PVC : SCHEDULE 40
	8		0.0		
	9			9-11' BLACK SILT AND CLAY WITH MINOR PEAT	SCREEN (10 FEET) : 4'-14' : 4 INCH ID : PVC : SCHEDULE 40 : 0.020" SLOT
	10				
	11			11-13' BLACK SILTY CLAY WITH MINOR PEAT	BOTTOM CAP
	12				
	13			13-13.5' BLACK SAND, SHELL AND CINDERS	
	14			13.5-14' MEADOW MAT (PEAT)	

CLIENT: DEXTER CHEMICAL		WELL LOG	WELL No. MW-4
PROJECT N ^o . 970910 SITE LOCATION: BRONX, NY		THE WHITMAN COMPANIES, INC.	SHEET 1 OF 1
DRILLING Co. <u>MILLER ENVIRONMENTAL</u> DRILLER: <u>MARK MULLER</u>		DATE STARTED: <u>3/10/98</u> DATE COMPLETED: <u>3/10/98</u>	
TYPE OF RIG: <u>HOLLOW STEM AUGER</u> HOLE DIA.: <u>8"</u>		GEOLOGIST: <u>GARY WEISSBERGER</u>	
SAMPLER TYPE: <u>SPLIT SPOON</u> DIA.: <u>2</u> IN.		TOTAL DEPTH <u>11'</u>	
HAMMER WT.: <u>140</u> LBS. FALL: <u>30</u> IN.		WATER LEVEL STABILIZED AT <u>5.07</u> BELOW TOC ON <u>3/26/98</u>	
SURVEYED ELEVATION OF T.O.C. <u>93.27</u> ▼ DEPTH TO GW <u>5.07'</u>		TOC = TOP OF CASING	

WELL COMPLETION DIAGRAM	DEPTH (FEET)	GRAPHIC LOG	MAXIMUM PID READING	SOIL DESCRIPTION	REMARKS
	0		0.0	0'-0.5' CONCRETE	FLUSHMOUNT MANHOLE MASTER LOCK: : #0505 PVC LOCKING CAP CEMENT : 0'-1.5' BENTONITE : 1.5'-2' GRAVELPACK : 2'-11' : #2 SAND RISER (3 FEET) : 0'-3' : 4 INCH ID : PVC : SCHEDULE 40 SCREEN (8 FEET) : 3'-11' : 4 INCH ID : PVC : SCHEDULE 40 : 0.020" SLOT BOTTOM CAP
	1		0.0	0.5'-1' SAND, TAN, FINE	
			0.0	1'-1.5' CONCRETE	
	2		0.0	1.5'-3' SAND, BROWN, MEDIUM	
	3		0.0	3'-4.5' SILT, RED-BROWN, MICACEOUS	
	4		0.0		
	5		0.5	4.5'-8.5' CINDERS BLACK WITH MINOR WOOD FRAGMENTS	
	6				
	7				
	8				
	9		0.0	8.5'-9' FIBEROUS DEBRIS AND GRAY CLAY	
	10		0.0	9'-11' MEADOW MAT, PEAT GRADING TO ORGANIC BLACK CLAY	
	11				

CLIENT: DEXTER CHEMICAL		WELL LOG	WELL No. MW-5
PROJECT NO. 970910 SITE LOCATION: BRONX, NY		THE WHITMAN COMPANIES, INC.	SHEET 1 OF 1
DRILLING Co. <u>MILLER ENVIRONMENTAL</u> DRILLER: <u>MARK MULLER</u>		DATE STARTED: <u>3/10/98</u> DATE COMPLETED: <u>3/10/98</u>	
TYPE OF RIG: <u>HOLLOW STEM AUGER</u> HOLE DIA.: <u>8"</u>		GEOLOGIST: <u>GARY WEISSBERGER</u>	
SAMPLER TYPE: <u>SPLIT SPOON</u> DIA.: <u>2</u> IN.		TOTAL DEPTH <u>14'</u>	
HAMMER WT.: <u>140</u> LBS. FALL: <u>30</u> IN.		WATER LEVEL STABILIZED AT <u>4.93</u> BELOW TOC ON <u>3/26/98</u>	
SURVEYED ELEVATION OF T.O.C. <u>93.41</u> ▼ DEPTH TO GW <u>4.93'</u>		TOC = TOP OF CASING	

WELL COMPLETION DIAGRAM	DEPTH (FEET)	GRAPHIC LOG	MAXIMUM PID READING	SOIL DESCRIPTION	REMARKS
	0		0.0	0'-0.5' CONCRETE	FLUSHMOUNT MANHOLE
	1			0.5-4' CINDERS, BLACK	MASTER LOCK: : #0572
	2		20		PVC LOCKING CAP
	3				CEMENT : 0'-1.5'
	4		41	4-4.5' CONCRETE FRAGMENTS AND GREY CLAY	BENTONITE : 1.5'-2'
	5			4.5-14' MEDIUM COARSE GRAVEL WITH CINDERS, COAL, BRICK SHELL FRAGMENTS AND WOOD FRAGMENTS POORLY SORTED	GRAVELPACK : 2'-14' : #2 SAND
	6				RISER (4 FEET) : 0'-4' : 4 INCH ID : PVC : SCHEDULE 40
	7				
	8				
	9		34		SCREEN (10 FEET) : 4'-14' : 4 INCH ID : PVC : SCHEDULE 40 : 0.020" SLOT
	10				
	11				BOTTOM CAP
	12				
	13				
	14				

CLIENT: DEXTER CHEMICAL

WELL LOG

WELL No. MW-6

PROJECT NO. 970910 SITE LOCATION: BRONX, NY

THE WHITMAN COMPANIES, INC.

SHEET 1 OF 1

DRILLING Co. MILLER ENVIRONMENTAL DRILLER: MARK MULLERDATE STARTED: 3/12/98 DATE COMPLETED: 3/12/98TYPE OF RIG: AIR ROTARY HOLE DIA.: 8"GEOLOGIST: GARY WEISSBERGERSAMPLER TYPE: SPLIT SPOON DIA.: 2 IN.TOTAL DEPTH 11'HAMMER WT.: 140 LBS. FALL: 30 IN.WATER LEVEL STABILIZED AT 5.93 BELOW TOC ON 3/26/98SURVEYED ELEVATION OF T.O.C. 94.50 ▼ DEPTH TO GW 5.93'

TOC = TOP OF CASING

WELL COMPLETION DIAGRAM	DEPTH (FEET)	GRAPHIC LOG	MAXIMUM PID READING	SOIL DESCRIPTION	REMARKS
	0		0.0	0'-0.5' CONCRETE	FLUSHMOUNT MANHOLE MASTER LOCK: : #0572 PVC LOCKING CAP CEMENT : 0'-1.5' BENTONITE : 1.5'-2' GRAVELPACK : 2'-11' : #2 SAND RISER (3 FEET) : 0'-3' : 4 INCH ID : PVC : SCHEDULE 40 SCREEN (8 FEET) : 3'-11' : 4 INCH ID : PVC : SCHEDULE 40 : 0.020" SLOT BOTTOM CAP
	1		0.0	0.5'-1.5' BLACK CINDERS AND BRICK FRAGMENTS	
	2		0.0	1.5'-2' CONCRETE	
	2		2.0	2'-2.5' TAN SILT	
	3		0.0	2.5'-3' BLACK CLAY	
	3		0.0	3'-3.5' CONCRETE	
	4		3.0	3.5'-5' GREY SILT AND CLAY	
	5			5'-7' GREY CLAY	
	6		0.2		
	7			- SCHIST FRAGMENTS AT 7'	
	7			7'-9' GREY SILTY CLAY	
	8		5.0		
	9			9'-11' BLACK SHELL FRAGMENTS	
	10		0.0		
	11				

THE WHITMAN COMPANIES, INC.



Client : Dexter Chemical Corporation, LLC
 Site Location : 845 Edgewater Road, Bronx, New York

LOG OF WELL NO.
MW-7

Object No. : 970910

Date Started: 9/6/00

Date Completed : 9/6/00

Drilling Co. : Aquifer Drilling & Testing, Inc. Driller's Name : Jeremy

Geologist : A. Clark

Type of Rig : Hollow-stem auger Hole Diameter : 6 in.

Sampler Type : Split spoon Casing Diameter : 4 in.

Total Depth : 15 feet

Hammer Weight : 140 lbs

Water encountered at 8 feet below grade during installation.

Surveyed elevation of T.O.C.: 96.77 above mean sea level

Water stabilized at 8.49 feet below grade on 9/27/00

Well Diagram

Depth (ft)	PID (PPM)	Sample Interval	Lithology	Remarks
0	0		0-15' POORLY SORTED MEDIUM TO COARSE GRAINED SAND WITH SILT AND GRAVEL	FLUSHMOUNT STEEL CASING
1	0			PVC LOCKING CAP
2	0			RISER: 4" PVC Schedule 40
3	0			BENTONITE/GROUT SLURRY FROM 0-1.5'
4	0			
5	1			
6	1			No. 2 GRAVEL PACK: 1.5 - 15'
7	0			SCREEN: 1.5 -15' 4" PVC schedule 40
8	0			0.020" slot
9	0			
10	0			
11				
12				
13				
14				
15				BOTTOM CAP
16				
17				
18				
19				
20				

THE WHITMAN COMPANIES, INC.

Client: Dexter Chemical Corporation, LLC

Site Location: 845 Edgewater Road, Bronx, New York

LOG OF WELL NO.
MW-8



Project No.: 970910

Date Started: 9/6/00

Date Completed: 9/6/00

Drilling Co.: Aquifer Drilling & Testing, Inc. Driller's Name: Jeremy

Type of Rig: Hollow-stem auger Hole Diameter: 6 in.

Sampler Type: Split spoon Casing Diameter: 4 in.

Hammer Weight: 140 lbs

Surveyed elevation of T.O.C.: 96.77 above mean sea level

Geologist: A. Clark

Total Depth: 16 feet

Water encountered at 5 feet below grade during installation.

Water stabilized at 5.32 feet below grade on 9/27/00

Well Diagram

Depth (ft)	PID (PPM)	Sample Interval	Lithology	Remarks
0-14.5'			BLACK COARSE FILL MATERIALS CONTAINING CINDERS, GLASS & BRICKS	FLUSHMOUNT STEEL CASING
1				PVC LOCKING CAP
2				RISER: 4" PVC Schedule 40
3				BENTONITE/GROUT SLURRY FROM 0-1.5'
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
14.5 - 16'			MEADOW MAT	
16				BOTTOM CAP
17				
18				
19				
20				

Environmental Engineering & Management

ent : Dexter Chemical

e Location : Edgewater Road, Bronx, NY

Project No. : 97 - 09 - 10

illing Co. : Environmental Probing Investigations Driller's Name : George

Type of Rig : Hollow-stem auger rig Hole Diameter : 10 inch

ampler Type : None Well Diameter : 4 inch

ammer Weight : None Fall : None

Surveyed elevation of T.O.C. assumed on-site datum

MW-9

Date Installed: November 14, 2002

Geologist : Michael Percelay

Total Depth : 15 feet Well Permit No.

Water level: Encountered at 6 feet below grade.
Stabilized at 5.5 feet below grade.



Well Diagram	Depth (ft)	PID Readings	Lithology	Remarks
			0' - 0.5' Concrete sidewalk and gravel base.	LOCK: Master #3753
	1	0	0.5' - 2' Tan/brown coarse to fine sand and silt with gravel.	FLUSH MOUNT COVER
	2	0	2' - 3' Tan/brown coarse to fine sand and silt with gravel with some fill material	CONCRETE:
	3	0	- gravel and sand, ash/cinders, brick, concrete, glass, slag, and coal.	0 feet to 2 feet
	4	0	3' - 7.5' Brown medium to fine sand and silt minor clay.	BENTONITE:
	5	0		2 feet to 3 feet
	6	0		GRAVEL PACK: #1 Sand
	7	0		3 feet to 15 feet
	8	0	7.5' - 15' Fill Material: Gravel and sand, ash/cinders, brick, concrete, glass, slag, and coal.	RISER: 4 inch PVC Sch. 40
	9	0		0.5 feet to 2 feet
	10	10		SCREEN: 020 SLOT
	11	7.7		2 feet to 15 feet
	12	6.5		BOTTOM: 4 inch PVC cap
	13	0		
	14	0		
	15		15' End of well.	
	16			
	17			
	18			
	19			
	20			

Environmental Engineering & Management

ent : Dexter Chemical

Location : Edgewater Road, Bronx, NY

Project No. : 97 - 09 - 10

Drilling Co. : Environmental Probing Investigations Driller's Name : George

Type of Rig : Hollow-stem auger rig Hole Diameter : 10 inch

Sampler Type : None Well Diameter : 4 inch

Sampler Weight : None Fall : None

Surveyed elevation of T.O.C. assumed on-site datum

MW-10

Date Installed: November 14, 2002

Geologist : Michael Percelay

Total Depth : 15 feet

Well Permit No.

Water level: Encountered at 7 feet below grade.
Stabilized at 8.2 feet below grade.

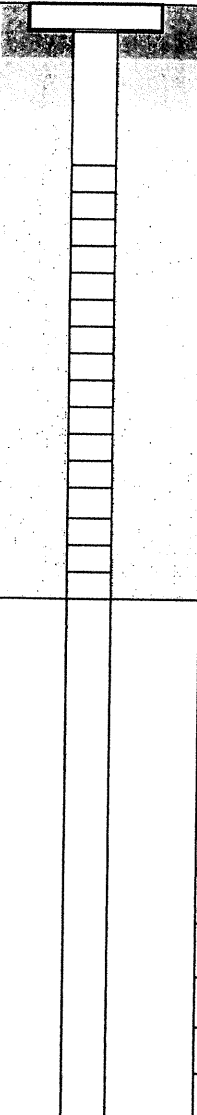


THE
WHITMAN
Companies,
INC.

Well Diagram	Depth (ft)	PID Readings	Lithology	Remarks
		0	0' - 0.5' Concrete sidewalk and gravel base.	LOCK: Master #3753
	1	0	0.5' - 6' Tan/brown coarse to fine sand and silt with gravel minor fill material. - gravel and sand, ash/cinders, brick, concrete, glass, slag, and coal.	FLUSH MOUNT COVER
	2	0	2' Asphalt and concrete pieces.	CONCRETE:
	3	0		0 feet to 2 feet
	4	0		BENTONITE:
	5	0	5.5' Brick and concrete pieces.	2 feet to 3 feet
	6	0	6' - 8' Brown medium to fine sand and silt minor clay.	GRAVEL PACK: #1 Sand
	7	0		3 feet to 15 feet
	8	0	8' - 15' Fill Material: Gravel and sand, ash/cinders, brick, concrete, glass, slag, and coal.	RISER: 4 inch PVC Sch. 40
	9	0		0.5 feet to 2 feet
	10	10		SCREEN: 020 SLOT
	11	7.7	Strong petroleum odors from 11' to 14' Sheen on cuttings.	2 feet to 15 feet
	12	6.5		BOTTOM: 4 inch PVC cap
	13	0		
	14	0		
	15		15' End of well.	
	16			
	17			
	18			
	19			
	20			

Environmental Engineering & Management

Client : Dexter Chemical		 THE WHITMAN Companies, INC.
Site Location : Edgewater Road, Bronx, NY		
Project No. : 97 - 09 - 10		PZ-1
Drilling Co. : <u>Aquifer Drilling and Testing</u> Driller's Name : <u>Dennis</u>		
Type of Rig : <u>Hollow-stem auger rig</u> Hole Diameter : <u>8 inch</u>		
Sampler Type : <u>None</u> Well Diameter : <u>2 inch</u>		
Hammer Weight : <u>None</u> Fall <u>None</u>		
Surveyed elevation of T.O.C. _____ assumed on-site datum		Date Installed: <u>January 8, 2002</u> Geologist : <u>Rich Britton</u> Total Depth : <u>11 feet</u> Well Permit No. _____ Water level: Encountered at <u>6 feet</u> below grade. Stabilized at <u>5.5 feet</u> below grade.

Well Diagram	Depth (ft)	PID Readings	Lithology	Remarks	
			0' - 0.5' Concrete sidewalk and gravel base.	LOCK:	
			0.5' - 4' Brown medium to fine sand and silt with some gravel and fill material.	FLUSH MOUNT COVER	
	1				CONCRETE:
	2				0 feet to 1 foot
	3				BENTONITE:
	4			4' - 10' Fill Material: Gravel and sand, ash/cinders, glass, slag, and coal.	1 foot to 2 feet
	5				GRAVEL PACK: #1 Sand
	6				2 feet to 11 feet
	7				RISER: 2 inch PVC Sch. 40
	8				0 feet to 3 feet
	9				SCREEN: 020 SLOT
	10			10' Meadow mat.	3 feet to 11 feet
	11			11' End of well.	
	12				
	13				
	14				
	15				
	16				
	17				
	18				
19					
20					

Client : Dexter Chemical

Site Location : Edgewater Road, Bronx, NY

Project No. : 97 - 09 - 10

Drilling Co. : Aquifer Drilling and Testing

Driller's Name : Dennis

Type of Rig : Hollow-stem auger rig

Hole Diameter : 8 inch

Sampler Type : None

Well Diameter : 2 inch

Hammer Weight : None

Fall None

Surveyed elevation of T.O.C. _____ assumed on-site datum

PZ-2

Date Installed: January 8, 2002

Geologist : Rich Britton

Total Depth : 12 feet Well Permit No. _____

Water level: Encountered at 6 feet below grade.
Stabilized at 5.5 feet below grade.



Well Diagram	Depth (ft)	PID Readings	Lithology	Remarks
			0' - 0.5' Concrete sidewalk and gravel base.	LOCK:
	1		0.5' - 5' Brown medium to fine sand and silt with some gravel and fill material.	FLUSH MOUNT COVER
	2			
	3			CONCRETE:
	4			0 feet to 1 foot
	5		5' - 11.5' Fill Material: Gravel and sand, ash/cinders, glass, slag, and coal.	BENTONITE:
	6			1 foot to 2 feet
	7			GRAVEL PACK: #1 Sand
	8			2 feet to 12 feet
	9			RISER: 2 inch PVC Sch. 40
	10			0 feet to 3 feet
	11			SCREEN: 020 SLOT
	12		11.5' Meadow mat.	3 feet to 12 feet
	13		12' End of well.	
	14			BOTTOM: 2 inch PVC cap
	15			
	16			
	17			
	18			
	19			
	20			

Environmental Engineering & Management

Client : Dexter Chemical

Site Location : Edgewater Road, Bronx, NY

Project No. : 97 - 09 - 10

Drilling Co. : Aquifer Drilling and Testing

Driller's Name : Dennis

Type of Rig : Hollow-stem auger rig

Hole Diameter : 8 inch

Sampler Type : None

Well Diameter : 2 inch

Hammer Weight : None

Fall : None

Surveyed elevation of T.O.C. : assumed on-site datum

PZ-3

Date Installed : January 9, 2002

Geologist : Rich Britton

Total Depth : 15 feet Well Permit No. :

Water level: Encountered at 6 feet below grade.
Stabilized at 5.5 feet below grade.

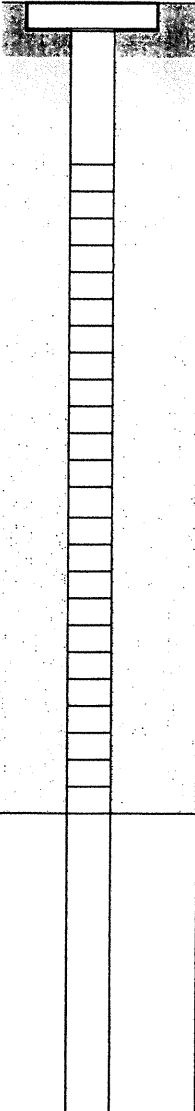


THE
WHITMAN
Companies,
INC.

Well Diagram	Depth (ft)	PID Readings	Lithology	Remarks
	1		0' - 0.5' Concrete sidewalk and gravel base.	LOCK:
	2		0.5' - 5' Brown medium to fine sand and silt with gravel and fill material.	FLUSH MOUNT COVER
	3			CONCRETE:
	4		5' - 15' Fill Material: Gravel and sand, ash/cinders, glass, slag, and coal.	0 feet to 1 foot
	5			BENTONITE:
	6			1 foot to 2 feet
	7			GRAVEL PACK: #1 Sand
	8			2 feet to 15 feet
	9			RISER: 2 inch PVC Sch. 40
	10			0 feet to 3 feet
	11			SCREEN: 020 SLOT
	12			3 feet to 15 feet
	13			BOTTOM: 2 inch PVC cap
	14			
	15		15' End of well.	
	16			
	17			
	18			
	19			
	20			

Environmental Engineering & Management

Client : Dexter Chemical		 THE WHITMAN Companies, INC.
Site Location : Edgewater Road, Bronx, NY		
Project No. : 97 - 09 - 10		
Drilling Co. : <u>Aquifer Drilling and Testing</u>	Driller's Name : <u>Dennis</u>	Date Installed: <u>January 9, 2002</u>
Type of Rig : <u>Hollow-stem auger rig</u>	Hole Diameter : <u>8 inch</u>	Geologist : <u>Rich Britton</u>
Sampler Type : <u>None</u>	Well Diameter : <u>2 inch</u>	Total Depth : <u>15 feet</u> Well Permit No. _____
Hammer Weight : <u>None</u>	Fall <u>None</u>	Water level: Encountered at <u>6 feet</u> below grade. Stabilized at <u>5.5 feet</u> below grade.
Surveyed elevation of T.O.C. _____ assumed on-site datum		

Well Diagram	Depth (ft)	PID Readings	Lithology	Remarks	
			0' - 0.5' Concrete sidewalk and gravel base.	LOCK:	
			0.5' - 5' Brown medium to fine sand and silt with gravel and fill material.	FLUSH MOUNT COVER	
	1				CONCRETE:
	2				0 feet to 1 foot
	3				BENTONITE:
	4			5' - 13' Fill Material: Gravel and sand, ash/cinders, glass, slag, and coal.	1 foot to 2 feet
	5				GRAVEL PACK: #1 Sand
	6				2 feet to 15 feet
	7				RISER: 2 inch PVC Sch. 40
	8				0 feet to 3 feet
	9				SCREEN: 020 SLOT
	10				3 feet to 15 feet
	11				BOTTOM: 2 inch PVC cap
	12				
	13			13' - 15' Black fine sand and silt with gravel and fill material.	
	14				
	15			15' End of well.	
	16				
	17				
	18				
19					
20					

Client : Dexter Chemical

Site Location : Edgewater Road, Bronx, NY

Project No. : 97 - 09 - 10

Drilling Co. : Summit Drilling Driller's Name : Bill

Type of Rig : Hollow-stem auger rig Hole Diameter : 8 inch

Sampler Type : GeoProbe\Split spoon\Cuttings Well Diameter : 2 inch

Hammer Weight : NA Fall : NA

Surveyed elevation of T.O.C. : NA assumed on-site datum

AS-1A

(Air Sparge Point)

Date Installed: September 21, 2006

Geologist : Sharon Breil

Total Depth : 17 feet

Water level: NA



Well Diagram	Depth (ft)	Lithology	Remarks
	1	Concrete 0 - 9"	FLUSH MOUNT COVER - CONCRETE SURFACE SEAL FILL SAND NA to NA GROUT/CONCRETE: 0 to 13 feet BENTONITE: NA to NA GRAVEL PACK: #1 Morie Gravel 13 feet to 17 feet RISER: 2 inch PVC Sch. 40 0 to 14 feet SCREEN: 2 inch PVC Sch. 40 10 SLOT 0.01" 14 feet to 17 feet BOTTOM: 2 inch PVC cap
	2	Brown to black silty sand with fill: stones / some silt and clay	
	3		
	4		
	5		
	6		
	7		
	8		
	9		
	10		
	11		
	12		
	13		
	14		
	15	Peat	
	16		
	17	17' End of well	
	18		
	19		
	20		

Environmental Engineering & Management

Client : Dexter Chemical

Site Location : Edgewater Road, Bronx, NY

Project No. : 97 - 09 - 10

Drilling Co. : Summit Drilling

Driller's Name : Bill

Type of Rig : Hollow-stem auger rig

Hole Diameter : 8 inch

Sampler Type : GeoProbe\Split Spoon\Cuttings

Well Diameter : 2 inch

Hammer Weight : NA

Fall : NA

Surveyed elevation of T.O.C. NA assumed on-site datum

AS-2A

(Air Sparge Point)

Date Installed: September 22, 2006

Geologist : Sharon Breil

Total Depth : 17 feet

Water level: NA



Well Diagram	Depth (ft)	Lithology	Remarks
		0' - 8" Concrete	
	1	Sub base/Fill silty brown to black sand	
	2		
	3	Brown to black silty sand with fill: stones	
	4		
	5	Gray clayey silt	
	6	Brown black silty sand with fill: stones	
	7		
	8	Gray silty sand to sandy silt with historic fill material	
	9		
	10	Gray silty sand to sandy silt with gravel	
	11		
	12		
	13		
	14		
	15		
	16		
	17	17' End of well Meadow Mat/Peat	
	18		
	19		
	20		

FLUSH MOUNT COVER - CONCRETE
SURFACE SEAL
FILL SAND

0 feet to 2 feet

GROUT/CONCRETE:

2 feet to 12.5 feet

BENTONITE:

12.5 feet to 13 feet

GRAVEL PACK: #2 Morie Gravel

13 feet to 17 feet

RISER: 2 inch PVC Sch. 40

0 to 14 feet

SCREEN: 2 inch PVC Sch. 40

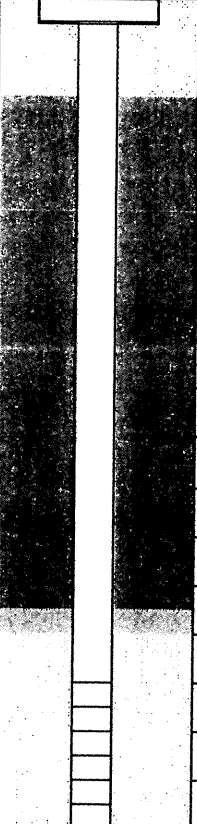
10 SLOT 0.01"

14 feet to 17 feet

BOTTOM: 2 inch PVC cap

Environmental Engineering & Management

Client : Dexter Chemical		AS-3A (Air Sparge Point)		 THE WHITMAN Companies, INC.	
Site Location : Edgewater Road, Bronx, NY					
Project No. : 97 - 09 - 10					
Drilling Co. : <u>Summit Drilling</u> Driller's Name : <u>Bill</u>		Date Installed: <u>September 28, 2006</u>			
Type of Rig : <u>Hollow-stem auger rig</u> Hole Diameter : <u>8 inch</u>		Geologist : <u>Edward Huss</u>			
Sampler Type : <u>GeoProbe\Split Spoon\Cuttings</u> Well Diameter : <u>2 inch</u>		Total Depth : <u>17 feet</u>			
Hammer Weight : <u>NA</u> Fall : <u>NA</u>		Water level: <u>5 feet</u>			
Surveyed elevation of T.O.C. <u>NA</u> assumed on-site datum					

Well Diagram	Depth (ft)	Lithology	Remarks
		0' - 8" Concrete	FLUSH MOUNT COVER - CONCRETE SURFACE SEAL FILL SAND 0 feet to 2 feet GROUT/CONCRETE: 2 feet to 12.5 feet BENTONITE: 12.5 feet to 13 feet GRAVEL PACK: #2 Morie Gravel 13 feet to 17 feet RISER: 2 inch PVC Sch. 40 0 to 14 feet SCREEN: 2 inch PVC Sch. 40 10 SLOT 0.01" 14 feet to 17 feet BOTTOM: 2 inch PVC cap
	1	Sub base / Fill silty brown to black sand	
	2		
	3		
	4		
	5	Brown silty sand	
	6		
	7	Black to light gray silty sand with fill stones	
	8	Historic Fill	
	9		
	10	Black to light gray silty sand with fill stones \ Historic Fill	
	11		
	12		
	13		
	14	Piece of wood	
	15	Black to light gray silty sand with fill stones	
	16	Peat fragments	
	17	17' End of well Meadow Mat / PEAT	
	18		
	19		
20			

Environmental Engineering & Management

Client : Dexter Chemical

Site Location : Edgewater Road, Bronx, NY

Project No. : 97 - 09 - 10

Drilling Co. : Summit Drilling Driller's Name : Bill

Type of Rig : Hollow-stem auger rig Hole Diameter : 8 inch

Sampler Type : GeoProbe/Split Spoon/Cuttings Well Diameter : 2 inch

Hammer Weight : NA Fall : NA

Surveyed elevation of T.O.C. NA assumed on-site datum

AS-4A
(Air Sparge Point)

Date Installed: September 28, 2006

Geologist : Edward Huss

Total Depth : 17 feet

Water level: NA



Well Diagram	Depth (ft)	Lithology	Remarks
		0' - 8" Concrete	
	1	Sub base/Fill silty brown to black sand	
	2		
	3	Brown to black silty sand with fill: stones	
	4		
	5	Gray clayey silt	
	6	Brown black silty sand with fill: stones	
	7		
	8	Gray silty sand to sandy silt with historic fill material	
	9		
	10		
	11		
	12		
	13		
	14		
	15		
	16	Peat Layer	
	17	17' End of well	
	18		
	19		
	20		

FLUSH MOUNT COVER - CONCRETE
SURFACE SEAL
FILL SAND

0 feet to 2 feet

GROUT/CONCRETE:

2 feet to 12.5 feet

BENTONITE:

12.5 feet to 13 feet

GRAVEL PACK: #2 Morie Gravel

13 feet to 17 feet

RISER: 2 inch PVC Sch. 40

0 to 14 feet

SCREEN: 2 inch PVC Sch. 40

10 SLOT 0.01"

14 feet to 17 feet

BOTTOM: 2 inch PVC cap

Environmental Engineering & Management

Client : Dexter Chemical

Site Location : Edgewater Road, Bronx, NY

Project No. : 97 - 09 - 10

Drilling Co. : Summit Drilling

Driller's Name : Bill

Type of Rig : Hollow-stem auger rig

Hole Diameter : 8 inch

Sampler Type : GeoProbe/Split spoon/Cuttings

Well Diameter : 2 inch

Hammer Weight : NA

Fall : NA

Surveyed elevation of T.O.C. NA assumed on-site datum

AS-5A
(Air Sparge Point)

Date Installed: September 29, 2006

Geologist : Sharon Breil

Total Depth : 17 feet

Water level: NA

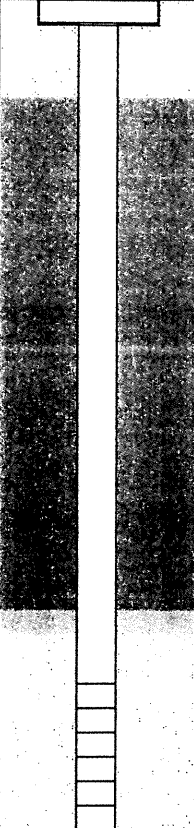


Well Diagram	Depth (ft)	Lithology	Remarks
	1	Concrete 0 - 9"	FLUSH MOUNT COVER - CONCRETE SURFACE SEAL FILL SAND 0 feet to 2 feet GROUT/CONCRETE: 2 feet to 13 feet BENTONITE: NA to NA GRAVEL PACK: #1 Morie Gravel 13 feet to 17 feet RISER: 2 inch PVC Sch. 40 0 to 14 feet SCREEN: 2 inch PVC Sch. 40 10 SLOT 0.01" 14 feet to 17 feet BOTTOM: 2 inch PVC cap
	2	Brown to black silty sand with fill: stones / some silt and clay	
	3		
	4		
	5		
	6		
	7		
	8		
	9		
	10		
	11		
	12		
	13		
	14		
	15	Peat	
	16		
	17	17' End of well	
	18		
	19		
	20		

Environmental Engineering & Management

Client : Dexter Chemical		AS-6A (Air Sparge Point)
Site Location : Edgewater Road, Bronx, NY		
Project No. : 97 - 09 - 10		Date Installed: September 21, 2006
Drilling Co. : Summit Drilling	Driller's Name : Bill	Geologist : Sharon Breil
Type of Rig : Hollow-stem auger rig	Hole Diameter : 8 inch	
Sampler Type : GeoProbe\Split Spoon\Cuttings	Well Diameter : 2 inch	
Hammer Weight : NA	Fall : NA	
Total Depth : 17 feet		
Surveyed elevation of T.O.C. NA assumed on-site datum		Water level: NA



Well Diagram	Depth (ft)	Lithology	Remarks
		0' - 8" Concrete	FLUSH MOUNT COVER - CONCRETE SURFACE SEAL FILL SAND 0 feet to 2 feet GROUT/CONCRETE: 2 feet to 12.5 feet BENTONITE: 12.5 feet to 13 feet GRAVEL PACK: #2 Morie Gravel 13 feet to 17 feet RISER: 2 inch PVC Sch. 40 0 to 14 feet SCREEN: 2 inch PVC Sch. 40 10 SLOT 0.01" 14 feet to 17 feet BOTTOM: 2 inch PVC cap
	1	Sub base/Fill silty brown to black sand	
	2	Brown to black silty sand with fill: stones	
	3		
	4		
	5	Gray clayey silt	
	6	Brown black silty sand with fill: stones	
	7	Gray silty sand to sandy silt with historic fill material	
	8		
	9		
	10		
	11		
	12		
	13		
	14		
	15		
	16		
17	17' End of well	Meadow Mat / PEAT	
18			
19			
20			

Environmental Engineering & Management



THE
WHITMAN
Companies,
INC.

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Client : Dexter Chemical		AS-8A (Air Sparge Point)
Site Location : Edgewater Road, Bronx, NY		
Project No. : 97 - 09 - 10		
Drilling Co. : Summit Drilling	Driller's Name : Bill	Date Installed: September 20, 2006
Type of Rig : Hollow-stem auger rig	Hole Diameter : 8 inch	Geologist : Sharon Breil
Sampler Type : GeoProbe/Split Spoon/Cuttings	Well Diameter : 2 inch	Total Depth : 14 feet
Hammer Weight : NA	Fall : NA	Water level: 5 feet
Surveyed elevation of T.O.C. NA assumed on-site datum		



Well Diagram	Depth (ft)	Lithology	Remarks
	1	0' - 8" Concrete	FLUSH MOUNT COVER - CONCRETE SURFACE SEAL FILL SAND 0 feet to 2 feet GROUT/CONCRETE: 2 feet to 9.5 feet BENTONITE: 9.5 feet to 10 feet GRAVEL PACK: #1 Morie Gravel 10 feet to 14 feet RISER: 2 inch PVC Sch. 40 0 to 11 feet SCREEN: 2 inch PVC Sch. 40 10 SLOT 0.01" 11 feet to 14 feet BOTTOM: 2 inch PVC cap
	2	Sub base/Fill silty brown to black sand	
	3	Brown to black silty sand with fill: stones	
	4	Gray clayey silt	
	5	Brown black silty sand with fill: stones	
	6		
	7	Gray silty sand to sandy silt with historic fill material	
	8		
	9		
	10	Gray sand with glass and pebbles	
	11	Gray sand with pebbles	
	12	Gray sand with gravel, wood, vegetation	
	13	Meadow Mat / PEAT	
	14	14' End of well	
	15		
	16		
	17		
	18		
	19		
	20		

Environmental Engineering & Management

Client : Dexter Chemical		AS-9A (Air Sparge Point)
Site Location : Edgewater Road, Bronx, NY		
Project No. : 97 - 09 - 10		
Drilling Co. : <u>Summit Drilling</u>	Driller's Name : <u>Bill</u>	
Type of Rig : <u>Hollow-stem auger rig</u>	Hole Diameter : <u>8 inch</u>	
Sampler Type : <u>GeoProbel/Split Spoon/Cuttings</u>	Well Diameter : <u>2 inch</u>	Date Installed: <u>September 22, 2006</u>
Hammer Weight : <u>NA</u>	Fall : <u>NA</u>	Geologist : <u>Sharon Breil</u>
Surveyed elevation of T.O.C. <u>NA</u> assumed on-site datum		Total Depth : <u>16 feet</u>
		Water level: <u>5 feet</u>

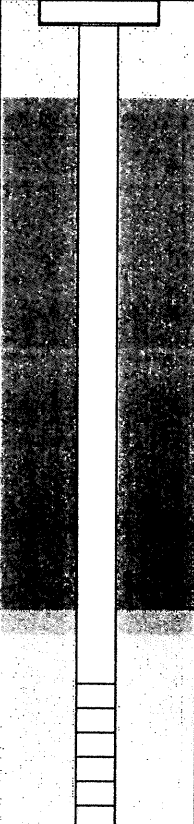


Well Diagram	Depth (ft)	PID Readings	Lithology	Remarks
			0' - 8" Concrete	FLUSH MOUNT COVER - CONCRETE SURFACE SEAL FILL SAND <u>0 feet</u> to <u>2 feet</u> GROUT/CONCRETE: <u>2 feet</u> to <u>11.5 feet</u> BENTONITE: <u>11.5 feet</u> to <u>12 feet</u> GRAVEL PACK: #2 Morie Gravel <u>12 feet</u> to <u>16 feet</u> RISER: 2 inch PVC Sch. 40 <u>0</u> to <u>13 feet</u> SCREEN: 2 inch PVC Sch. 40 <u>10</u> SLOT <u>0.01"</u> <u>13 feet</u> to <u>16 feet</u> BOTTOM: 2 inch PVC cap
	1		Sub base/Fill silty brown to black sand	
	2			
	3		Brown to black silty sand with fill: stones	
	4			
	5		Gray clayey silt	
	6	71.3	Brown black silty sand with fill: stones	
	7	806		
	8	1485		
	9		Gray silty sand to sandy silt with historic fill material	
	10			
	11	166	Gray sand with glass, wood pieces, and pebbles	
	12	494		
	13	0.9	Gray sand with pebbles	
	14		Gray sand with gravel	
	15			
	16		16' End of well Meadow Mat / PEAT	
	17			
	18			
	19			
	20			

Environmental Engineering & Management

Client : Dexter Chemical		AS-10A (Air Sparge Point)
Site Location : Edgewater Road, Bronx, NY		
Project No. : 97 - 09 - 10		
Drilling Co. : <u>Summit Drilling</u>	Driller's Name : <u>Bill</u>	Date Installed: <u>September 21, 2006</u>
Type of Rig : <u>Hollow-stem auger rig</u>	Hole Diameter : <u>8 inch</u>	Geologist : <u>Sharon Breil</u>
Sampler Type : <u>GeoProbe/Split Spoon/Cuttings</u>	Well Diameter : <u>2 inch</u>	Total Depth : <u>17 feet</u>
Hammer Weight : <u>NA</u>	Fall : <u>NA</u>	Water level: <u>NA</u>
Surveyed elevation of T.O.C. <u>NA</u> assumed on-site datum		



Well Diagram	Depth (ft)	Lithology	Remarks
		0' - 8" Concrete	FLUSH MOUNT COVER - CONCRETE SURFACE SEAL FILL SAND 0 feet to 2 feet GROUT/CONCRETE: 2 feet to 12.5 feet BENTONITE: 12.5 feet to 13 feet GRAVEL PACK: #2 Morie Gravel 13 feet to 17 feet RISER: 2 inch PVC Sch. 40 0 to 14 feet SCREEN: 2 inch PVC Sch. 40 10 SLOT 0.01" 14 feet to 17 feet BOTTOM: 2 inch PVC cap
	1	Sub base/Fill silty brown to black sand	
	2	Brown to black silty sand with fill: stones	
	3		
	4		
	5	Gray clayey silt	
	6	Brown black silty sand with fill: stones	
	7	Gray silty sand to sandy silt with historic fill material	
	8		
	9		
	10	Gray silty sand to sandy silt with gravel	
	11		
	12		
	13		
	14		
	15		
	16		
17	17' End of well	Meadow Mat / PEAT	
18			
19			
20			

Environmental Engineering & Management

Client : Dexter Chemical		AS-11A (Air Sparge Point)
Site Location : Edgewater Road, Bronx, NY		
Project No. : 97 - 09 - 10		
Date Installed: <u>September 20, 2006</u>		
Drilling Co. : <u>Summit Drilling</u>	Driller's Name : <u>Bill</u>	Geologist : <u>Sharon Breil</u> Total Depth : <u>15 feet</u> Water level: <u>5 feet</u>
Type of Rig : <u>Hollow-stem auger rig</u>	Hole Diameter : <u>8 inch</u>	
Sampler Type : <u>GeoProbe\Split Spoon\Cuttings</u>	Well Diameter : <u>2 inch</u>	
Hammer Weight : <u>NA</u>	Fall : <u>NA</u>	
Surveyed elevation of T.O.C. <u>NA</u> assumed on-site datum		



Well Diagram	Depth (ft)	Lithology	Remarks
		0' - 8" Concrete	
	1	Sub base/Fill silty brown to black sand	
	2		
	3	Brown to black silty sand with fill: stones	
	4		
	5	Gray clayey silt	
	6	Brown black silty sand with fill: stones	
	7		
	8	Gray silty sand to sandy silt with historic fill material	
	9		
	10	Gray sand with glass and pebbles	
	11	Gray sand with pebbles	
	12	Gray sand with gravel, wood, vegetation	
	13		
	14		
	15	Meadow Mat / PEAT	
	16	15' End of well	
	17		
	18		
	19		
	20		

FLUSH MOUNT COVER - CONCRETE
SURFACE SEAL
FILL SAND

0 feet to 2 feet

GROUT/CONCRETE:

2 feet to 10.5 feet

BENTONITE:

10.5 feet to 11 feet

GRAVEL PACK: #1 Morie Gravel

11 feet to 15 feet

RISER: 2 inch PVC Sch. 40

0 to 12 feet

SCREEN: 2 inch PVC Sch. 40

10 SLOT 0.01"

12 feet to 15 feet

BOTTOM: 2 inch PVC cap

Environmental Engineering & Management

Client : Dexter Chemical

Site Location : Edgewater Road, Bronx, NY

Project No. : 97 - 09 - 10

Drilling Co. : Summit Drilling

Driller's Name : Bill

Type of Rig : Hollow-stem auger rig

Hole Diameter : 8 inch

Sampler Type : GeoProbe/Split Spoon/Cuttings

Well Diameter : 2 inch

Hammer Weight : NA

Fall : NA

Surveyed elevation of T.O.C. NA assumed on-site datum

AS-12A
(Air Sparge Point)

Date Installed: September 21, 2006

Geologist : Sharon Breil

Total Depth : 15 feet

Water level: 5 feet



Well Diagram	Depth (ft)	Lithology	Remarks
		0' - 8" Concrete	
	1	Sub base/Fill silty brown to black sand	
	2		
	3	Brown to black silty sand with fill: stones	
	4		
	5	Gray clayey silt	
	6	Brown black silty sand with fill: stones	
	7		
	8	Gray silty sand to sandy silt with historic fill material	
	9		
	10	Gray sand with glass and pebbles	
	11	Gray sand with pebbles	
	12	Gray sand with gravel, wood, vegetation	
	13		
	14		
	15	Meadow Mat / PEAT	
	16	15' End of well	
	17		
	18		
	19		
	20		
			FLUSH MOUNT COVER - CONCRETE SURFACE SEAL FILL SAND 0 feet to 2 feet GROUT/CONCRETE: 2 feet to 10.5 feet BENTONITE: 10.5 feet to 11 feet GRAVEL PACK: #1 Morie Gravel 11 feet to 15 feet RISER: 2 inch PVC Sch. 40 0 to 12 feet SCREEN: 2 inch PVC Sch. 40 10 SLOT 0.01" 12 feet to 15 feet BOTTOM: 2 inch PVC cap

Environmental Engineering & Management

Client : Dexter Chemical

Site Location : Edgewater Road, Bronx, NY

Project No. : 97 - 09 - 10

Drilling Co. : Summit Drilling

Driller's Name : Bill

Type of Rig : Hollow-stem auger rig

Hole Diameter : 8 inch

Sampler Type : GeoProbe/Split Spoon/Cuttings

Well Diameter : 2 inch

Hammer Weight : NA

Fall : NA

Surveyed elevation of T.O.C. NA assumed on-site datum

AS-13A

(Air Sparge Point)

Date Installed: October 6, 2006

Geologist : Michelle Herishko

Total Depth : 17 feet

Water level: 5 feet



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Well Diagram	Depth (ft)	Lithology	Remarks
	1	0' - 8" Concrete	FLUSH MOUNT COVER - CONCRETE SURFACE SEAL FILL SAND 0 feet to 2 feet GROUT/CONCRETE: 2 feet to 12.5 feet BENTONITE: 12.5 feet to 13 feet GRAVEL PACK: #2 Morie Gravel 13 feet to 17 feet RISER: 2 inch PVC Sch. 40 0 to 14 feet SCREEN: 2 inch PVC Sch. 40 10 SLOT 0.01" 14 feet to 17 feet BOTTOM: 2 inch PVC cap
	2	Sub base/Fill silty brown to black sand	
	3	Brown to black silty sand with fill: stones	
	4	Gray clayey silt	
	5	Brown black silty sand with fill: stones	
	6		
	7		
	8	Gray silty sand to sandy silt with historic fill material	
	9		
	10	Gray sand with glass, wood pieces, and pebbles	
	11	Gray sand with pebbles	
	12	Gray sand with gravel	
	13		
	14		
	15		
	16		
	17	17' End of well Meadow Mat / PEAT	
	18		
	19		
	20		

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Client : Dexter Chemical		AS-14A (Air Sparge Point)
Site Location : Edgewater Road, Bronx, NY		
Project No. : 97 - 09 - 10		Date Installed: September 20, 2006
Drilling Co. : Summit Drilling	Driller's Name : Bill	Geologist : Sharon Breil
Type of Rig : Hollow-stem auger rig	Hole Diameter : 8 inch	
Sampler Type : GeoProbe/Split Spoon/Cuttings	Well Diameter : 2 inch	Total Depth : 20 feet
Hammer Weight : NA	Fall : NA	Water level: 5 feet
Surveyed elevation of T.O.C. NA assumed on-site datum		

Well Diagram	Depth (ft)	PID Readings	Lithology	Remarks
			0' - 8" Concrete	FLUSH MOUNT COVER - CONCRETE SURFACE SEAL FILL SAND 0 feet to 2 feet GROUT/CONCRETE: 2 feet to 15.5 feet BENTONITE: 15.5 feet to 16 feet GRAVEL PACK: #2 Morie Gravel 16 feet to 20 feet RISER: 2 inch PVC Sch. 40 0 to 17 feet SCREEN: 2 inch PVC Sch. 40 10 SLOT 0.01" 17 feet to 20 feet BOTTOM: 2 inch PVC cap
	1		Sub base/Fill silty brown to black sand	
	2			
	3		Brown to black silty sand with fill: stones	
	4			
	5	107	Gray clayey silt	
	6	251	Brown black silty sand with fill: stones	
	7	113		
	8	33		
	9		Gray silty sand to sandy silt with historic fill material	
	10			
	11	1.9	Gray sand with glass and pebbles	
	12	0.7		
	13	65.9	Gray sand with coal	
	14	6.8	Gray sand with pebble:	
	15			
	16	8		
	17	4		
	18			
	19			
	20		20' End of well Meadow Mat / PEAT	

Environmental Engineering & Management

Client : Dexter Chemical

Site Location : Edgewater Road, Bronx, NY

Project No. : 97 - 09 - 10

Drilling Co. : Summit Drilling

Driller's Name : Bill

Type of Rig : Hollow-stem auger rig

Hole Diameter : 8 inch

Sampler Type : GeoProbe/Split Spoon/Cuttings

Well Diameter : 2 inch

Hammer Weight : NA

Fall : NA

Surveyed elevation of T.O.C. NA assumed on-site datum

AS-15A

(Air Sparge Point)

Date Installed: September 26, 2006

Geologist : Michelle Herishko

Total Depth : 17 feet

Water level: NA



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Well Diagram	Depth (ft)	Lithology	Remarks
	0	0' - 8" Concrete	FLUSH MOUNT COVER - CONCRETE SURFACE SEAL FILL SAND 0 feet to 2 feet GROUT/CONCRETE: 2 feet to 12.5 feet BENTONITE: 12.5 feet to 13 feet GRAVEL PACK: #2 Morie Gravel 13 feet to 17 feet RISER: 2 inch PVC Sch. 40 0 to 14 feet SCREEN: 2 inch PVC Sch. 40 10 SLOT 0.01" 14 feet to 17 feet BOTTOM: 2 inch PVC cap
	1	Sub base/Fill silty brown to black sand	
	2		
	3	Brown to black silty sand with fill: stones	
	4		
	5	Gray clayey silt	
	6	Brown black silty sand with fill: stones	
	7		
	8	Gray silty sand to sandy silt with historic fill material	
	9		
	10	Gray sand with glass, wood pieces, and pebbles	
	11	Gray sand with pebbles	
	12	Gray sand with gravel	
	13		
	14		
	15		
	16		
	17	17' End of well Meadow Mat / PEAT	
	18		
	19		
	20		

Environmental Engineering & Management

Client : Dexter Chemical		VM3 (System Monitoring Point) Former SVE-1 Pilot Well - From 2004
Site Location : Edgewater Road, Bronx, NY		
Project No. : 97 - 09 - 10		
Drilling Co. : Environmental Management Associates	Driller's Name : Norman	
Type of Rig : Hollow-stem auger rig	Hole Diameter : 8 inch	
Sampler Type : GeoProbe	Well Diameter : 2 inch	Date Installed: June 29, 2004
Hammer Weight : NA	Fall : NA	Geologist : Mike Percelay
Surveyed elevation of T.O.C. NA assumed on-site datum		Total Depth : 15 feet
		Water level: Encountered at 4.5' stabilized at 4.5'



Well Diagram	Depth (ft)	Lithology	Remarks
	1	0-1' Concrete and gravel base	FLUSH MOUNT COVER
	2	1-15' Black Coarse to fine sand, gravel and silt mixed with historic fill: Ash, cinders, brick, wood and glass	
	3		
	4		4' - Large granite cobble
	5		
	6		
	7	Very strong odor. Soil cuttings had PID readings ranging from 0-2000 ppmv	BENTONITE: 1 foot to 1.5 feet
	8		
	9		
	10	Wood debris in cuttings and on auger when removed	GRAVEL PACK: #1 Morie Gravel 1.5 feet to 15 feet
	11		
	12		
	13	15' End of Well	RISER: 2 inch PVC Sch. 40 0.5 feet to 2 feet
	14		
	15		
	16		SCREEN: 2 inch PVC Sch. 40 10 SLOT 0.01" 2 feet to 15 feet
	17		
	18		
	19		
	20		

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Client : Dexter Chemical		VM2 (System Monitoring Point)
Site Location : Edgewater Road, Bronx, NY		
Project No. : 97 - 09 - 10		Date Installed: September 22, 2006
Drilling Co. : Summit Drilling	Driller's Name : Bill	Geologist : Michelle Herishko
Type of Rig : Hollow-stem auger rig	Hole Diameter : 8 inch	
Sampler Type : GeoProbe/Split Spoon/Cuttings	Well Diameter : 2 inch	
Hammer Weight : NA	Fall : NA	
Surveyed elevation of T.O.C. NA assumed on-site datum		
		Total Depth : 15 feet
		Water level: NA

Well Diagram	Depth (ft)	Lithology	Remarks
	1		FLUSH MOUNT COVER
	2	Concrete and sub base Dry	
	3	Black sandy clayey silt with fill Moist	
	4	Black clayey silty sand Wet	
	5		GROUT/CONCRETE:
	6		
	7	Black clayey sandy silt with small fill stones	BENTONITE:
	8	Fill: stones / coal with some silty sand	
	9	Black sandy clayey silt with fill stones	GRAVEL PACK: #2 Morie Gravel
	10	Black clayey silt sand with fill stones	
	11		RISER: 2 inch PVC Sch. 40
	12	Black sand to sandy silt with mostly fill stones	
	13	Black gray silty sand and sandy silt with fill stones	SCREEN: 2 inch PVC Sch. 40
	14	Gray sandy silt and silty sand with fill stones and wood chips	
	15	Wood chips and fill with silty sand / Peat fragments	
	16	Gray silty sand and sandy silt with fill stones	BOTTOM: 2 inch PVC cap
	17	15' End of Well	
	18		
	19		
	20		

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Client : Dexter Chemical		SVE/RW-1A (Soil Vapor Extraction / Groundwater Recovery Point)	
Site Location : Edgewater Road, Bronx, NY			
Project No. : 97 - 09 - 10		Date Installed: September 29, 2006	
Drilling Co. : Summit Drilling	Driller's Name : Bill	Geologist : Edward Huss	
Type of Rig : Hollow-stem auger rig	Hole Diameter : 10 1/4" inch	Total Depth : 14 feet	
Sampler Type : GeoProbe\Split Spoon\Cuttings	Well Diameter : 4 inch	Water level: NA	
Hammer Weight : NA	Fall : NA		
Surveyed elevation of T.O.C. NA assumed on-site datum			

Well Diagram	Depth (ft)	PID	Lithology	Remarks
	1			FLUSH MOUNT COVER - CONCRETE
	2		Concrete and sub base	SURFACE SEAL
	3		Black sandy clayey silt/fill	FILL SAND
	4		Black clayey silty sand	0 to 1 feet
	5			GROUT/BENTONITE/CONCRETE:
	6			1 feet to 3.0 feet
	7		Black clayey sandy silt with small fill stones	BENTONITE:
	8		Fill: stones / coal with some silty sand	NA to NA
	9		Black sandy clayey silt with fill stones	GRAVEL PACK: #2 Morie Gravel
	10		Black clayey silt sand with fill stones	3 feet to 14 feet
	11			RISER: 4 inch PVC Sch. 40
	12		Black sand to sandy silt with mostly fill stones	0 to 4 feet
	13		Black gray silty sand and sandy silt with fill stones	SCREEN: 4 inch PVC Sch. 40
	14		Gray sandy silt and silty sand with fill stones and wood chips	10 SLOT 0.01"
	14		Wood chips and fill with silty sand / Peat fragments at 14'	4 feet to 14 feet
	15		14' End of Well	BOTTOM: 4 inch PVC cap
	16			
	17			
	18			
	19			
	20			

Environmental Engineering & Management

Client : Dexter Chemical		SVE/RW-2A (Soil Vapor Extraction / Groundwater Recovery Point)
Site Location : Edgewater Road, Bronx, NY		
Project No. : 97 - 09 - 10		Date Installed: September 26, 2006
Drilling Co. : Summit Drilling	Driller's Name : Bill	Geologist : Michelle Herishko
Type of Rig : Hollow-stem auger rig	Hole Diameter : 10 1/4" inch	
Sampler Type : GeoProbe\Split Spoon\Cuttings	Well Diameter : 4 inch	Total Depth : 15 feet
Hammer Weight : NA	Fall : NA	Water level: NA
Surveyed elevation of T.O.C. NA assumed on-site datum		



Well Diagram	Depth (ft)		Remarks
	1		
	2	Concrete and sub base	
	3	Black sandy clayey silt/fill	moist
			wet
	4	Black clayey silty sand	wet
	5		
	6		
	7	Black clayey sandy silt with small fill stones	
		Fill: stones / coal with some silty sand	
	8		
	9	Black sandy clayey silt with fill stones	
	10	Black clayey silt sand with fill stones	
	11		
	12	Black sand to sandy silt with mostly fill stones	
	13	Black gray silty sand and sandy silt with fill stones	
	14	Gray sandy silt and silty sand with fill stones and wood chips	
		Wood chips and fill with silty sand / Peat fragments	
		Gray silty sand and sandy silt with fill stones	
	15	15' End of Well	
	16		
	17		
	18		
	19		
	20		

Environmental Engineering & Management

Client : Dexter Chemical		SVE/RW-3A (Soil Vapor Extraction / Groundwater Recovery Point)
Site Location : Edgewater Road, Bronx, NY		
Project No. : 97 - 09 - 10		
Drilling Co. : Summit Drilling	Driller's Name : Bill	
Type of Rig : Hollow-stem auger rig	Hole Diameter : 10 1/4" inch	
Sampler Type : GeoProbe/Split Spoon/Cuttings	Well Diameter : 4 inch	
Hammer Weight : NA	Fall : NA	Date Installed: September 26, 2006
Surveyed elevation of T.O.C. NA assumed on-site datum		Geologist : Michelle Herishko
		Total Depth : 15 feet
		Water level: NA



Well Diagram	Depth (ft)		Remarks
	1		
	2	Concrete and sub base	
	3	Black sandy clayey silt/fill	moist wet wet
	4	Black clayey silty sand	wet
	5		
	6		
	7	Black clayey sandy silt with small fill stones	
	8	Fill: stones / coal with some silty sand	
	9		
	10	Black sandy clayey silt with fill stones	
	11	Black clayey silt sand with fill stones	
	12		
	13	Black sand to sandy silt with mostly fill stones	
	14	Black gray silty sand and sandy silt with fill stones	
	15	Gray sandy silt and silty sand with fill stones and wood chips	
	16	Wood chips and fill with silty sand / Peat fragments	
	17	Gray silty sand and sandy silt with fill stones	
	18		
	19		
	20	15' End of Well	

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Client : Dexter Chemical		SVE/RW-4A (Soil Vapor Extraction / Groundwater Recovery Point)	
Site Location : Edgewater Road, Bronx, NY			
Project No. : 97 - 09 - 10		Date Installed: September 25, 2006	
Drilling Co. : Summit Drilling	Driller's Name : Bill	Geologist : Sharon Breil	
Type of Rig : Hollow-stem auger rig	Hole Diameter : 10 1/4" inch		
Sampler Type : GeoProbe/Split Spoon/Cuttings	Well Diameter : 4 inch	Total Depth : 17 feet	
Hammer Weight : NA	Fall : NA	Water level: NA	
Surveyed elevation of T.O.C. NA assumed on-site datum			

Well Diagram	Depth (ft)	Lithology	Remarks
		0' - 8" Concrete	
	1	Sub base/Fill silty brown to black sand	
	2		
	3	Brown to black silty sand with fill: stones	
	4		
	5	Gray clayey silt	
	6	Brown black silty sand with fill: stones and gravel	
	7		
	8	Gray silty sand to sandy silt with historic fill material	
	9		
	10	Gray silty sand to sandy silt with gravel	
	11		
	12		
	13		
	14		
	15		
	16	Gray silty sand to sandy silt with gravel / evidence of meadow mat	
	17	17' End of well Meadow Mat / PEAT	
	18		
	19		
	20		

FLUSH MOUNT COVER - CONCRETE
SURFACE SEAL
FILL SAND
0 feet to 2 feet

GROUT/CONCRETE:
2 feet to 6 feet

BENTONITE:
6 feet to 6.5 feet

GRAVEL PACK: #2 Morie Gravel
6.5 feet to 17

RISER: 4 inch PVC Sch. 40
0 to 7 feet

SCREEN: 4 inch PVC Sch. 40
10 SLOT 0.01"
7 feet to 17 feet

BOTTOM: 4 inch PVC cap

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Client : Dexter Chemical		SVE/RW-5A (Soil Vapor Extraction / Groundwater Recovery Point)
Site Location : Edgewater Road, Bronx, NY		
Project No. : 97 - 09 - 10		
Date Installed: September 25, 2006		
Drilling Co. : Summit Drilling	Driller's Name : Bill	Geologist : Michelle Herishko
Type of Rig : Hollow-stem auger rig	Hole Diameter : 10 1/4" inch	
Sampler Type : GeoProbe/Split Spoon/Cuttings	Well Diameter : 4 inch	
Hammer Weight : NA	Fall : NA	
Surveyed elevation of T.O.C. NA assumed on-site datum		Total Depth : 17 feet
		Water level: NA

Well Diagram	Depth (ft)	Lithology	Remarks
	1	0' - 8" Concrete Sub base/Fill silty brown to black sand	FLUSH MOUNT COVER - CONCRETE SURFACE SEAL FILL SAND 0 feet to 2 feet GROUT/CONCRETE: 2 feet to 6 feet BENTONITE: 6 feet to 6.5 feet GRAVEL PACK: #2 Morie Gravel 6.5 feet to 17 RISER: 4 inch PVC Sch. 40 0 to 7 feet SCREEN: 4 inch PVC Sch. 40 10 SLOT 0.01" 7 feet to 17 feet BOTTOM: 4 inch PVC cap
	2		
	3	Brown to black silty sand with fill: stones	
	4		
	5	Gray clayey silt Brown black silty sand with fill: stones and gravel	
	6		
	7		
	8	Gray silty sand to sandy silt with historic fill material	
	9		
	10	Gray silty sand to sandy silt with gravel	
	11		
	12		
	13		
	14		
	15	Gray silty sand to sandy silt with gravel / evidence of meadow mat	
	16		
	17	17' End of well Meadow Mat / PEAT	
	18		
	19		
	20		

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Client : Dexter Chemical		SVE/RW-6A (Soil Vapor Extraction / Groundwater Recovery Point)
Site Location : Edgewater Road, Bronx, NY		
Project No. : 97 - 09 - 10		
Drilling Co. : Summit Drilling	Driller's Name : Bill	
Type of Rig : Hollow-stem auger rig	Hole Diameter : 10 1/4" inch	
Sampler Type : GeoProbe/Split Spoon/Cuttings	Well Diameter : 4 inch	Geologist : Sharon Breil
Hammer Weight : NA	Fall : NA	Total Depth : 17 feet
Surveyed elevation of T.O.C. NA assumed on-site datum		Water level: NA

Well Diagram	Depth (ft.)	Lithology	Remarks
	0'	0' - 8" Concrete	FLUSH MOUNT COVER - CONCRETE SURFACE SEAL FILL SAND 0 feet to 2 feet GROUT/CONCRETE: 2 feet to 6 feet BENTONITE: 6 feet to 6.5 feet GRAVEL PACK: #2 Morie Gravel 6.5 feet to 17 RISER: 4 inch PVC Sch. 40 0 to 7 feet SCREEN: 4 inch PVC Sch. 40 10 SLOT 0.01" 7 feet to 17 feet BOTTOM: 4 inch PVC cap
	1	Sub base/Fill silty brown to black sand	
	2		
	3	Brown to black silty sand with fill: stones	
	4		
	5	Gray clayey silt	
	6	Brown black silty sand with fill: stones and gravel	
	7		
	8	Gray silty sand to sandy silt with historic fill material	
	9		
	10	Gray silty sand to sandy silt with gravel	
	11		
	12		
	13		
	14		
	15	Gray silty sand to sandy silt with gravel / evidence of meadow mat	
	16		
	17	17' End of well Meadow Mat / PEAT	
	18		
	19		
	20		

Environmental Engineering & Management

Client : Dexter Chemical		SVE/RW-7A (Soil Vapor Extraction/ Groundwater Recovery Point)
Site Location : Edgewater Road, Bronx, NY		
Project No. : 97 - 09 - 10		Date Installed: October 6, 2006
Drilling Co. : Summit Drilling	Driller's Name : Bill	Geologist : Michelle Herishko
Type of Rig : Hollow-stem auger rig	Hole Diameter : 10 1/4" inch	
Sampler Type : GeoProbe/Split Spoon/Cuttings	Well Diameter : 4 inch	
Hammer Weight : NA	Fail : NA	
Surveyed elevation of T.O.C. NA assumed on-site datum		
		Total Depth : 15 feet
		Water level: NA



Well Diagram	Depth (ft)	Lithology	Remarks
		0' - 8" Concrete	
	1	Sub base/Fill silty brown to black sand	
	2		
	3	Brown to black silty sand with fill: stones	
	4		
	5	Gray clayey silt	
	6	Brown black silty sand with fill: stones and gravel	
	7		
	8	Gray silty sand to sandy silt with historic fill material	
	9		
	10	Gray silty sand to sandy silt with gravel	
	11		
	12		
	13		
	14	Gray silty sand to sandy silt with gravel / evidence of meadow mat	
	15	15' End of well Meadow Mat / PEAT	
	16		
	17		
	18		
	19		
	20		

Environmental Engineering & Management

Client : Dexter Chemical		SVE/RW-8A (Soil Vapor Extraction / Groundwater Recovery Point)
Site Location : Edgewater Road, Bronx, NY		
Project No. : 97-09-10		
Drilling Co. : Summit Drilling	Driller's Name : Bill	
Type of Rig : Hollow-stem auger rig	Hole Diameter : 10 1/4" inch	
Sampler Type : GeoProbe/Split Spoon/Cuttings		Geologist : Ed Huss
Well Diameter : 4 inch		Total Depth : 14.5 feet
Hammer Weight : NA	Fall : NA	Water level: NA
Surveyed elevation of T.O.C. NA assumed on-site datum		



Well Diagram	Depth (ft)	Lithology	Remarks
		0' - 8" Concrete	
	1	Sub base/Fill silty brown to black sand	
	2		
	3	Brown to black silty sand with fill: stones	
	4		
	5	Gray clayey silt	
	6	Brown black silty sand with fill: stones and gravel	
	7		
	8	Gray silty sand to sandy silt with historic fill material	
	9		
	10	Gray silty sand to sandy silt with gravel	
	11		
	12		
	13		
	14	Gray silty sand to sandy silt with gravel / evidence of meadow mat	
	15	14.5' End of well	
	16	Meadow Mat / PEAT	
	17		
	18		
	19		
	20		

Environmental Engineering & Management

Client : Dexter Chemical

Site Location : Edgewater Road, Bronx, NY

Project No. : 97 - 09 - 10

Drilling Co. : Summit Drilling

Driller's Name : Bill

Type of Rig : Hollow-stem auger rig

Hole Diameter : 8 inch

Sampler Type : GeoProbe/Split spoon/Cuttings

Well Diameter : 2 inch

Hammer Weight : NA

Fall : NA

Surveyed elevation of T.O.C. : NA assumed on-site datum

AS-11
(Air Sparge Point)

Date Installed: October 17, 2006

Geologist : Michelle Herishko

Total Depth : 20 feet

Water level: NA



Well Diagram	Depth (ft)	Lithology	Remarks
		Brown silty sand with gravel	
	1		
	2		
	3		
	4		
	5		
	6		
	7		
	8		
	9		
	10		
	11		
	12		
	13		
	14		
	15		
	16		
	17		
	18		
	19		
	20		
		Cobbles	
		Brown silt	
		Meadow Mat / PEAT	
		20' End of well	

Environmental Engineering & Management

Client : Dexter Chemical

Site Location : Edgewater Road, Bronx, NY

Project No. : 97 - 09 - 10

Drilling Co. : Summit Drilling

Driller's Name : Bill

Type of Rig : Hollow-stem auger rig

Hole Diameter : 8 inch

Sampler Type : GeoProbe\Split spoon\Cuttings

Well Diameter : 2 inch

Hammer Weight : NA

Fall : NA

Surveyed elevation of T.O.C. NA assumed on-site datum

AS-2I

(Air Sparge Point)

Date Installed: October 17, 2006

Geologist : Michelle Herishko

Total Depth : 20 feet

Water level: NA



Well Diagram	Depth (ft)	Lithology	Remarks
		Brown silty sand with gravel	FLUSH MOUNT COVER
	1		FILL SAND
	2		NA to NA
	3		GROUT/CONCRETE:
	4		0 to 15.5 feet
	5		BENTONITE:
	6		15.5 feet to 16 feet
	7		GRAVEL PACK: #2 Morie Gravel
	8		16 feet to 20 feet
	9		RISER: 2 inch PVC Sch. 40
	10	Cobbles	0 to 17 feet
	11		SCREEN: 2 inch PVC Sch. 40
	12		10 SLOT 0.01"
	13		17 feet to 20 feet
	14		BOTTOM: 2 inch PVC cap
	15		
	16	Brown silt	
	17		
	18	Meadow Mat / PEAT	
	19		
	20	20' End of well	

Environmental Engineering & Management

Client : Dexter Chemical

Site Location : Edgewater Road, Bronx, NY

Project No. : 97 - 09 - 10

Drilling Co. : Summit Drilling

Driller's Name : Bill

Type of Rig : Hollow-stem auger rig

Hole Diameter : 8 inch

Sampler Type : GeoProbe\Split spoon\Cuttings

Well Diameter : 2 inch

Hammer Weight : NA

Fall : NA

Surveyed elevation of T.O.C. NA assumed on-site datum

AS-3I
(Air Sparge Point)

Date Installed: October 13, 2006

Geologist : Michelle Herishko

Total Depth : 20 feet

Water level: NA



Well Diagram	Depth (ft)	Lithology	Remarks
		Asphalt	
		Gravel	
	1		
	2		
	3		
	4		
	5	Gray sand with gravel	
	6		
	7	Gray sandy silt with gravel	
	8		
	9		
	10		
	11		
	12		
	13	Gray silt with gravel	
	14		
	15	Gray sandy silt with gravel	
	16		
	17		
	18	Meadow Mat / PEAT	
	19		
	20	20' End of well	
			FLUSH MOUNT COVER
			FILL SAND
			NA to NA
			GROUT/CONCRETE:
			0 to 15.5 feet
			BENTONITE:
			15.5 feet to 16 feet
			GRAVEL PACK: #2 Morie Gravel
			16 feet to 20 feet
			RISER: 2 inch PVC Sch. 40
			0 to 17 feet
			SCREEN: 2 inch PVC Sch. 40
			10 SLOT 0.01"
			17 feet to 20 feet
			BOTTOM: 2 inch PVC cap

Environmental Engineering & Management

Client : Dexter Chemical

Site Location : Edgewater Road, Bronx, NY

Project No. : 97 - 09 - 10

Drilling Co. : Summit Drilling

Driller's Name : Bill

Type of Rig : Hollow-stem auger rig

Hole Diameter : 8 inch

Sampler Type : GeoProbe/Split spoon/Cuttings

Well Diameter : 2 inch

Hammer Weight : NA

Fail : NA

Surveyed elevation of T.O.C. NA assumed on-site datum

AS-5I

(Air Sparge Point)

Date Installed: September 19, 2006

Geologist : Sharon Breil

Total Depth : 20 feet

Water level: NA



Well Diagram	Depth (ft)	Lithology	Remarks
		Concrete	
	1	Brown gray sand with gravel and pebbles	
	2		
	3	Brown to black silty sand with fill: stones	
	4	Gravel and boulder/cobbles with sand	
	5		
	6	Brown gray sand with gravel	
	7		
	8		
	9		
	10		
	11		
	12	Brown sand and gray clay	
	13	Black sand with coarse gravel	
	14	Fine gray sand	
	15	Black medium sand	
	16	Fill: wood, some glass, sand, some brick, paper	
	17		
	18		
	19		
	20	20' End of well	

FLUSH MOUNT COVER - CONCRETE
SURFACE SEAL
FILL SAND

0 feet to 2 feet

GROUT/CONCRETE:

2 feet to 14 feet

BENTONITE:

14 feet to 14.5 feet

GRAVEL PACK: #2 Morie Gravel

14.5 feet to 20 feet

RISER: 2 inch PVC Sch. 40

0 to 15 feet

SCREEN: 2 inch PVC Sch. 40

10 SLOT 0.01"

15 feet to 20 feet

BOTTOM: 2 inch PVC cap

Environmental Engineering & Management

Client : Dexter Chemical

Site Location : Edgewater Road, Bronx, NY

Project No. : 97 - 09 - 10

Drilling Co. : Summit Drilling Driller's Name : Bill

Type of Rig : Hollow-stem auger rig Hole Diameter : 8 inch

Sampler Type : GeoProbe/Split spoon/Cuttings Well Diameter : 2 inch

Hammer Weight : NA Fall : NA

Surveyed elevation of T.O.C. NA assumed on-site datum

AS-6I

(Air Sparge Point)

Date Installed: September 19, 2006

Geologist : Sharon Breil

Total Depth : 20 feet

Water level: NA



Well Diagram	Depth (ft)	Lithology	Remarks
		Concrete	
	1	Brown gray sand with gravel and pebbles	
	2		
	3	Brown to black silty sand with fill: stones	
	4	Gravel and boulder/cobbles with sand	
	5		
	6	Brown gray sand with gravel	
	7		
	8		
	9		
	10		
	11		
	12	Brown sand and gray clay	
	13	Black sand with coarse gravel	
	14	Fine gray sand	
		Black medium sand	
	15		
	16	Fill: wood, some glass, sand, some brick, paper	
	17		
	18		
	19		
	20	20' End of well	
			FLUSH MOUNT COVER - CONCRETE SURFACE SEAL FILL SAND 0 feet to 2 feet GROUT/CONCRETE: 2 feet to 14 feet BENTONITE: 14 feet to 14.5 feet GRAVEL PACK: #2 Morie Gravel 14.5 feet to 20 feet RISER: 2 inch PVC Sch. 40 0 to 15 feet SCREEN: 2 inch PVC Sch. 40 10 SLOT 0.01" 15 feet to 20 feet BOTTOM: 2 inch PVC cap

Environmental Engineering & Management

Client : Dexter Chemical

Site Location : Edgewater Road, Bronx, NY

Project No. : 97 - 09 - 10

Drilling Co. : Summit Drilling Driller's Name : Bill

Type of Rig : Hollow-stem auger rig Hole Diameter : 8 inch

Sampler Type : GeoProbe\Split Spoon\Cuttings Well Diameter : 2 inch

Hammer Weight : NA Fall : NA

Surveyed elevation of T.O.C. NA assumed on-site datum

AS-71

(Air Sparge Point)

Date Installed: September 21, 2006

Geologist : Michelle Herishko

Total Depth : 15 feet

Water level: NA



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Well Diagram	Depth (ft)	Lithology	Remarks
		0' - 5" Concrete	
	1	Black silt	
		Gray silt	
	2	Black sand and silt	
	3		
	4		
	5	Gray clayey silt	
		Brown black silty sand with fill: stones	
	6		
	7		
	8	Gray silty sand to sandy silt with historic fill material	
	9		
	10	Gray sand with glass and pebbles	
	11	Gray sand with pebbles	
	12	Gray sand with gravel, wood, vegetation	
	13		
	14		
	15	Meadow Mat / PEAT	
		15' End of well	
	16		
	17		
	18		
	19		
	20		

FLUSH MOUNT COVER - CONCRETE
SURFACE SEAL
FILL SAND

0 feet to 2 feet

GROUT/CONCRETE:

2 feet to 10.5 feet

BENTONITE:

10.5 feet to 11 feet

GRAVEL PACK: #2 Morie Gravel

11 feet to 15 feet

RISER: 2 inch PVC Sch. 40

0 to 12 feet

SCREEN: 2 inch PVC Sch. 40

10 SLOT 0.01"

12 feet to 15 feet

BOTTOM: 2 inch PVC cap

Environmental Engineering & Management

Client : Dexter Chemical

Site Location : Edgewater Road, Bronx, NY

Project No. : 97 - 09 - 10

Drilling Co. : Summit Drilling Driller's Name : Bill

Type of Rig : Hollow-stem auger rig Hole Diameter : 8 inch

Sampler Type : GeoProbe/Split spoon/Cuttings Well Diameter : 2 inch

Hammer Weight : NA Fall : NA

Surveyed elevation of T.O.C. NA assumed on-site datum

AS-81
(Air Sparge Point)

Date Installed: October 13, 2006

Geologist : Michelle Herishko

Total Depth : 20 feet

Water level: NA



Well Diagram	Depth (ft)	Lithology	Remarks
		Brown silty sand	FLUSH MOUNT COVER
	1		FILL SAND
	2		NA to NA
	3		GROUT/CONCRETE:
	4		0 to 16 feet
	5	Brown silt with gravel	BENTONITE:
	6		15.5 feet to 16 feet
	7	Cobbles	GRAVEL PACK: #2 Morie Gravel
	8		16 feet to 20 feet
	9	Brown silt with gravel	RISER: 2 inch PVC Sch. 40
	10		0 to 17 feet
	11		SCREEN: 2 inch PVC Sch. 40
	12		10 SLOT 0.01"
	13		17 feet to 20 feet
	14		BOTTOM: 2 inch PVC cap
	15		
	16		
	17		
	18		
	19		
	20	20' End of well	

Environmental Engineering & Management

Client : Dexter Chemical

Site Location : Edgewater Road, Bronx, NY

Project No. : 97 - 09 - 10

Drilling Co. : Summit Drilling Driller's Name : Bill

Type of Rig : Hollow-stem auger rig Hole Diameter : 8 inch

Sampler Type : GeoProbe/Split spoon/Cuttings Well Diameter : 2 inch

Hammer Weight : NA Fall : NA

Surveyed elevation of T.O.C. NA assumed on-site datum

AS-9I

(Air Sparge Point)

Date Installed: October 13, 2006

Geologist : Michelle Herishko

Total Depth : 20 feet

Water level: NA



Well Diagram	Depth (ft)	Lithology	Remarks
		Brown silty sand	FLUSH MOUNT COVER
	1		FILL SAND
	2		NA to NA
	3		GROUT/CONCRETE:
	4		0 to 15.5 feet
	5	Brown silt with gravel	BENTONITE:
	6		15.5 feet to 16 feet
	7	Cobbles	GRAVEL PACK: #2 Morie Gravel
	8		16 feet to 20 feet
	9	Brown silt with gravel	RISER: 2 inch PVC Sch. 40
	10		0 to 17 feet
	11		SCREEN: 2 inch PVC Sch. 40
	12		10 SLOT 0.01"
	13		17 feet to 20 feet
	14		BOTTOM: 2 inch PVC cap
	15		
	16		
	17		
	18		
	19		
	20	20' End of well	

Environmental Engineering & Management

Client : Dexter Chemical

Site Location : Edgewater Road, Bronx, NY

Project No. : 97 - 09 - 10

Drilling Co. : Summit Drilling

Driller's Name : Bill

Type of Rig : Hollow-stem auger rig

Hole Diameter : 8 inch

Sampler Type : GeoProbe\Split spoon\Cuttings

Well Diameter : 2 inch

Hammer Weight : NA

Fall : NA

Surveyed elevation of T.O.C. : NA assumed on-site datum

AS-101

(Air Sparge Point)

Date Installed: October 13, 2006

Geologist : Michelle Herishko

Total Depth : 20 feet

Water level: NA



Well Diagram	Depth (ft)	Lithology	Remarks
	1	Black sand with silt	FLUSH MOUNT COVER - CONCRETE SURFACE SEAL FILL SAND 0 to 2 feet
	2		
	3		
	4		
	5		
	6		
	7	Gravel with cobbles	GROUT/CONCRETE: 2 feet to 16 feet
	8	Cobbles	
	9	Black sand with silt	BENTONITE: 16 feet to 16.5 feet
	10		
	11		GRAVEL PACK: #2 Morie Gravel 16.5 feet to 20 feet
	12		
	13		RISER: 2 inch PVC Sch. 40 0 to 17 feet
	14		
	15		SCREEN: 2 inch PVC Sch. 40 10 SLOT 0.01" 17 feet to 20 feet
	16		
	17		BOTTOM: 2 inch PVC cap
	18		
	19	Meadow Mat / PEAT	
	20	20' End of well	

Environmental Engineering & Management



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Client : Dexter Chemical		AS-111 (Air Sparge Point)	
Site Location : Edgewater Road, Bronx, NY			
Project No. : 97 - 09 - 10		Date Installed: October 5, 2006	
Drilling Co. : Summit Drilling	Driller's Name : Bill	Geologist : Michelle Herishko	
Type of Rig : Hollow-stem auger rig	Hole Diameter : 8 inch		
Sampler Type : GeoProbe\Split spoon\Cuttings	Well Diameter : 2 inch		
Hammer Weight : NA	Fall : NA		
Surveyed elevation of T.O.C. NA assumed on-site datum			
Total Depth : 18 feet		Water level: NA	

Well Diagram	Depth (ft)	PID Readings	Lithology	Remarks	
		0	Black sand with silt	FLUSH MOUNT COVER FILL SAND NA to NA GROUT/CONCRETE: 0 to 13.5 feet BENTONITE: 13.5 feet to 14 feet GRAVEL PACK: #2 Morie Gravel 14 feet to 18 feet RISER: 2 inch PVC Sch. 40 0 to 15 feet SCREEN: 2 inch PVC Sch. 40 10 SLOT 0.01" 15 feet to 18 feet BOTTOM: 2 inch PVC cap	
	1				
	2				
	3				
	4				
	5		0		Black sand with cobbles
	6				Black sand with silt
	7				
	8				
	9				
	10				
	11				
	12				
	13				
	14				
	15				
	16				
	17				
	18				18' End of well Meadow Mat / PEAT
19					
20					

Environmental Engineering & Management

Client : Dexter Chemical

Site Location : Edgewater Road, Bronx, NY

Project No. : 97 - 09 - 10

Drilling Co. : Summit Drilling

Driller's Name : Bill

Type of Rig : Hollow-stem auger rig

Hole Diameter : 8 inch

Sampler Type : GeoProbe/Split Spoon/Cuttings

Well Diameter : 2 inch

Hammer Weight : NA

Fall : NA

Surveyed elevation of T.O.C. NA assumed on-site datum

AS-121
(Air Sparge Point)

Date Installed: October 9, 2006

Geologist : Michelle Herishko

Total Depth : 20 feet

Water level: 5 feet



Well Diagram	Depth (ft)	PID Readings	Lithology	Remarks
	1		Gray silt with sand	FLUSH MOUNT COVER FILL SAND NA to NA GROUT/CONCRETE: 0 to 15.5 feet BENTONITE: 15.5 feet to 16 feet GRAVEL PACK: #2 Morie Gravel 16 feet to 20 feet RISER: 2 inch PVC Sch. 40 0 to 17 feet SCREEN: 2 inch PVC Sch. 40 10 SLOT 0.01" 17 feet to 20 feet BOTTOM: 2 inch PVC cap
	2			
	3			
	4			
	5			
	6			
	7		Small cobbles	
	8		Gray silt with sand	
	9		Cobbles	
	10		Black silty sand	
	11			
	12		Piece of metal	
	13			
	14			
	15			
	16			
	17			
	18			
	19			
	20		Meadow Mat / PEAT	
			20' End of well	

Environmental Engineering & Management

Client : Dexter Chemical

Site Location : Edgewater Road, Bronx, NY

Project No. : 97 - 09 - 10

Drilling Co. : Summit Drilling

Driller's Name : Bill

Type of Rig : Hollow-stem auger rig

Hole Diameter : 8 inch

Sampler Type : GeoProbe/Split spoon/Cuttings

Well Diameter : 2 inch

Hammer Weight : NA

Fall : NA

Surveyed elevation of T.O.C. NA assumed on-site datum

AS-13I

(Air Sparge Point)

Date Installed: September 26, 2006

Geologist : Michelle Herishko

Total Depth : 17 feet

Water level: NA



Well Diagram	Depth (ft)	Lithology	Remarks
	1	Sand	
	2	Black silt with coarse sand	
	3		
	4		
	5	Black silty sand with gravel	
	6	moist	
	7		
	8		
	9		
	10		
	11		
	12		
	13		
	14		
	15		
	16		
	17	17' End of well	
	18		
	19		
	20		

FLUSH MOUNT COVER

FILL SAND

NA to NA

GROUT/CONCRETE:

0 to 12.5 feet

BENTONITE:

12.5 feet to 13 feet

GRAVEL PACK: #2 Morie Gravel

13 feet to 17 feet

RISER: 2 inch PVC Sch. 40

0 to 14 feet

SCREEN: 2 inch PVC Sch. 40

10 SLOT 0.01

14 feet to 17 feet

BOTTOM: 2 inch PVC cap

Environmental Engineering & Management

Client : Dexter Chemical

Site Location : Edgewater Road, Bronx, NY

Project No. : 97 - 09 - 10

Drilling Co. : Summit Drilling Driller's Name : Bill

Type of Rig : Hollow-stem auger rig Hole Diameter : 8 inch

Sampler Type : GeoProbe\Split spoon\Cuttings Well Diameter : 2 inch

Hammer Weight : NA Fall : NA

Surveyed elevation of T.O.C. : NA assumed on-site datum

AS-14I

(Air Sparge Point)

Date Installed: October 5, 2006

Geologist : Michelle Herishko

Total Depth : 18 feet

Water level: NA



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Well Diagram	Depth (ft)	PID Readings	Lithology	Remarks
		30	Gray silt with sand odor	
	1			
	2			
	3			
	4			
	5	0	Black sand with silt	
	6			
	7			
	8			
	9			
	10			
	11			
	12			
	13			
	14			
	15			
	16			
	17			
	18		18' End of well	
	19			
	20			

FLUSH MOUNT COVER

FILL SAND

NA to NA

GROUT/CONCRETE:

0 to 14 feet

BENTONITE:

14 feet to 14.5 feet

GRAVEL PACK: #2 Morie Gravel

14.5 feet to 18 feet

RISER: 2 inch PVC Sch. 40

0 to 15 feet

SCREEN: 2 inch PVC Sch. 40

10 SLOT 0.01

15 feet to 18 feet

BOTTOM: 2 inch PVC cap

Environmental Engineering & Management

Client : Dexter Chemical

Site Location : Edgewater Road, Bronx, NY

Project No. : 97 - 09 - 10

Drilling Co. : Summit Drilling

Driller's Name : Bill

Type of Rig : Hollow-stem auger rig

Hole Diameter : 8 inch

Sampler Type : GeoProbe\Split spoon\Cuttings

Well Diameter : 2 inch

Hammer Weight : NA

Fall : NA

Surveyed elevation of T.O.C. NA assumed on-site datum

AS-15I

(Air Sparge Point)

Date Installed: October 6, 2006

Geologist : Michelle Herishko

Total Depth : 20 feet

Water level: NA



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Well Diagram	Depth (ft)	PID Readings	Lithology	Remarks
			Gray silt with sand	odor
	1			
	2			
	3			
	4	0.6	Cobbles and concrete	
		0.4		
	5	0.5	Black silt with some sand	odor
	6			
	7			
	8			
	9			
	10	0.5	Gray silt with sand	
	11			
	12			
	13			
	14			
	15		Gray to black silt with some sand	
	16			
	17		Gray silty clay	
	18			
	19			
	20		20' End of well	
				FLUSH MOUNT COVER FILL SAND NA to NA GROUT/CONCRETE: 0 to 14 feet BENTONITE: 14 feet to 14.5 feet GRAVEL PACK: #2 Morie Gravel 14.5 feet to 20 feet RISER: 2 inch PVC Sch. 40 0 to 15 feet SCREEN: 2 inch PVC Sch. 40 10 SLOT 0.01 15 feet to 20 feet BOTTOM: 2 inch PVC cap

Environmental Engineering & Management

Client : Dexter Chemical

Site Location : Edgewater Road, Bronx, NY

Project No. : 97 - 09 - 10

Drilling Co. : Summit

Driller's Name : Bill

Type of Rig : Hollow-stem auger rig

Hole Diameter : 10 1/4 "

Sampler Type : GeoProbe/Split Spoon/Cuttings

Well Diameter : 4 inch

Hammer Weight : NA

Fall : NA

Surveyed elevation of T.O.C. : NA assumed on-site datum

SVE/RW-1I

(Soil Vapor Extraction / Groundwater Recovery Point)

Date Installed: September 28, 2006

Geologist : Edward Huss

Total Depth : 14 feet

Water level: NA



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Well Diagram	Depth (ft)	Lithology	
		0' - 8" Concrete	FLUSH MOUNT COVER - CONCRETE SURFACE SEAL FILL SAND 0 feet to 1 feet
	1	Sub base / Fill silty brown to black sand	
	2		
	3		
	4		GROUT/CONCRETE: 1 foot to 2.5 feet
	5	Brown silty sand	
	6		
	7	Black to light gray silty sand with fill stones	
	8	Historic Fill	BENTONITE: 2.5 feet to 3 feet
	9		
	10	Black to light gray silty sand with fill stones \ Historic Fill	
	11		
	12		GRAVEL PACK: #2 Morie Gravel 3 feet to 14 feet
	13		
	14	14' End of well	
	15		
	16		RISER: 4 inch PVC Sch. 40 0 to 4 feet
	17		
	18		
	19		
	20		SCREEN: 4 inch PVC sch. 40 10 SLOT 0.01 4 feet to 14 feet
			BOTTOM: 4 inch PVC cap

Environmental Engineering & Management

Client : Dexter Chemical

Site Location : Edgewater Road, Bronx, NY

Project No. : 97 - 09 - 10

Drilling Co. : Environmental Management Associates Driller's Name : Norman

Type of Rig : Hollow-stem auger rig Hole Diameter : 10 1/4 "

Sampler Type : GeoProbe/Split Spoon/Cuttings Well Diameter : 4 inch

Hammer Weight : NA Fall : NA

Surveyed elevation of T.O.C. NA assumed on-site datum

SVE/RW-2I

(Soil Vapor Extraction / Groundwater Recovery Point)

Date Installed: May 29, 2006

Geologist : Edward Huss

Total Depth : 20 feet

Water level: 11.5 feet



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Well Diagram	Depth (ft)	PID Readings	Lithology	
	1		Concrete	FLUSH MOUNT COVER - CONCRETE SURFACE SEAL FILL SAND
	2	0	Asphalt (sub base), fill, silty brown, sand	
		0	Brown to gray black silty sand, some sub base	
	3	0	Brown sandy silt (micaceous) mixed with cobbles, sub base, asphalt, and fill (bottom 1")	0 feet to 2.5 feet
		0	Brown to black silty sand mixed with sub base, asphalt, fill	
	4	0	Fill: Black asphalt chips, moist	GROUT/CONCRETE: 2.5 feet to 7.5 feet
		12.8	Gray marl clayey silt, moist	
	5			BENTONITE: 7.5 feet to 8 feet
	6			
	7			GRAVEL PACK: #2 Morie Gravel 8 feet to 20 feet
		19.4	Gray marl clayey silt with some small stones	
	8	325	Gray/Brown clayey silt with some white stones	RISER: 4 inch PVC Sch. 40 0.5 feet to 10 feet
		74		
	9	50.7	3" White translucent stones, 3" Gray brown silty sand	SCREEN: 4 inch PVC sch. 40 10 SLOT 0.01 10 feet to 20 feet
		121	Gray/Brown silty sand to silt	
	10			BOTTOM: 4 inch PVC cap
	11			
		52	Gray to black silty sand to sandy silt	
	12			
	13			
		64	Gray brown silty sand to sandy silt	
	14			
		173	Gray marly sandy clayey silt with Fill: stones, sub base	
	15			
	16			
		25.2	Gray sandy silt, fill with some stones	
	17	46.6		
		44.4		
	18	48.9		
		38.9	Gray silt, marl, fill	
	19	1.6		
		3.9	Peat layer	
	20		20' End of well.	

Environmental Engineering & Management

Client : Dexter Chemical

Site Location : Edgewater Road, Bronx, NY

Project No. : 97 - 09 - 10

Drilling Co. : Summit Drilling

Driller's Name : Bill

Type of Rig : Hollow-stem auger rig

Hole Diameter : 10 1/4 "

Sampler Type : GeoProbe\Split Spoon\Cuttings

Well Diameter : 4 inch

Hammer Weight : NA

Fall : NA

Surveyed elevation of T.O.C. NA assumed on-site datum

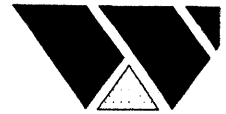
SVE/RW-31
(Soil Vapor Point)

Date Installed: September 27, 2006

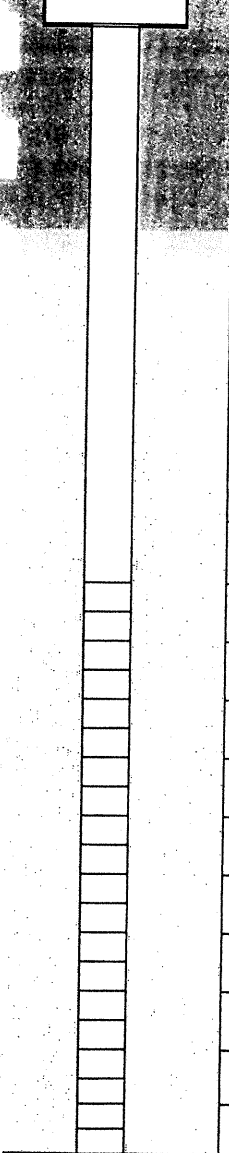
Geologist : Michelle Herisko

Total Depth : 20 feet

Water level: NA



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Well Diagram	Depth (ft)	Lithology	
	1	Concrete and sub base	
	2		FLUSH MOUNT COVER
	3	Black sandy clayey silt with fill	FILL SAND
	4	Black clayey silty sand	NA to
	5		GROUT/CONCRETE:
	6		0 to
	7	Black clayey sandy silt with small fill stones	BENTONITE:
	8	Fill: stones / coal with some silty sand	4 feet to
	9	Black sandy clayey silt with fill stones	GRAVEL PACK #2 Morie Grav
	10	Black clayey silt sand with fill stones	4.5 feet to
	11		RISER: 4 inch PVC S
	12	Black sand to sandy silt with mostly fill stones	0 feet to
	13	Black gray silty sand and sandy silt with fill stones	SCREEN: 4 inch PVC S
	14	Gray sandy silt and silty sand with fill stones and wood chips	10 SLOT
	15	Wood chips and fill with silty sand / Peat fragments	10 feet to
	16	Gray silty sand and sandy silt with fill stones	
	17		BOTTOM: 4 inch PVC cap
	18		
	19		
	20	20' End of Well	

Client : Dexter Chemical

Location : Edgewater Road, Bronx, NY

Project No. : 97 - 09 - 10

Drilling Co. : Summit Drilling

Driller's Name : Bill

Type of Rig : Hollow-stem auger rig

Hole Diameter : 10 1/4 "

Sampler Type : GeoProbe/Split Spoon/Cuttings

Well Diameter : 4 inch

Sampler Weight : NA

Fall : NA

Surveyed elevation of T.O.C. NA assumed on-site datum

SVE/RW-4I
(Soil Vapor Point)

Date Installed: September 27, 2006

Geologist : Michelle Herisko

Total Depth : 20 feet

Water level: NA



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Well Diagram	Depth (ft)	Lithology	
	1	Concrete	
	2	Asphalt (sub base), fill, silty brown, sand	FLUSH MOUNT COVER
	3	Brown to gray black silty sand, some sub base	FILL SAND
	4	Brown sandy silt (micaceous) mixed with cobbles, sub base, asphalt, and fill (bottom 1")	
	5	Brown to black silty sand mixed with sub base, asphalt, fill	NA to
	6	Fill: Black asphalt chips, moist	
	7	Gray marl clayey silt, moist	VOC odor
	8		GROUT/CONCRETE:
	9		0 to
	10		BENTONITE:
	11	Gray marl clayey silt with some small stones	4 feet to
	12	Gray/Brown clayey silt with some white stones	
	13	3" White translucent stones, 3" Gray brown silty sand	GRAVEL PACK: #2 Morie Grav
	14	Gray/Brown silty sand to silt	4.5 feet to
	15		
	16	Gray to black silty sand to sandy silt	Wet
	17		RISER: 4 inch PVC S
	18	Gray brown silty sand to sandy silt	0 feet to
	19	Gray marly sandy clayey silt with Fill: stones, sub base	Wet
	20	Peat layer	SCREEN: 4 inch PVC S
		20' End of well.	10 SLOT
			10 feet to
			BOTTOM: 4 inch PVC cap

Client : Dexter Chemical

Site Location : Edgewater Road, Bronx, NY

Project No. : 97 - 09 - 10

Drilling Co. : Summit Drilling

Driller's Name : Bill

Type of Rig : Hollow-stem auger rig

Hole Diameter : 10 1/4 "

Sampler Type : GeoProbe\Split Spoon\Cuttings

Well Diameter : 4 inch

Hammer Weight : NA

Fall NA

Surveyed elevation of T.O.C. NA assumed on-site datum

SVE/RW-5I

(Soil Vapor Point)

Date Installed: September 27, 2006

Geologist : Michelle Herisko

Total Depth : 20 feet

Water level: NA



Well Diagram	Depth (ft)	Lithology	
		Asphalt	
	1	Gray silt/gravel mixture	FLUSH MOUNT COVER
	2	Dark gray black silt with gravel	
	3		
	4		
	5	Gray silt with gravel	FILL SAND
	6		NA to
	7		GROUT/CONCRETE:
	8		0 to
	9		BENTONITE:
	10	Dark gray black silt moist	4 feet to
	11		GRAVEL PACK: #2 Morie Gr:
	12		4.5 feet to
	13		RISER: 4 inch PVC
	14		0 feet to
	15		SCREEN: 4 inch PVC
	16		10 SLOT
	17		10 feet to
	18		BOTTOM: 4 inch PVC cap
	19		
	20	20' End of Well	

Client : Dexter Chemical

Site Location : Edgewater Road, Bronx, NY

Project No. : 97 - 09 - 10

Drilling Co. : Summit Drilling

Driller's Name : Bill

Type of Rig : Hollow-stem auger rig

Hole Diameter : 10 1/4 "

Sampler Type : GeoProbe/Split Spoon/Cuttings

Well Diameter : 4 inch

Hammer Weight : NA

Fall : NA

Surveyed elevation of T.O.C. NA assumed on-site datum

SVE/RW-6I

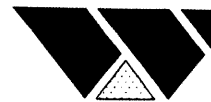
(Soil Vapor Extraction / Groundwater Recovery Point)

Date Installed: September 21, 2006

Geologist : Michelle Herisko

Total Depth : 20 feet

Water level: NA



THE
WHITMAN
Company

Well Diagram	Depth (ft)	Lithology	
	1		
	2	Concrete and sub base	FLUSH MOUNT COVER
	3	Black sandy clayey silt with fill	FILL SAND
	4	Black clayey silty sand	NA to
	5		GROUT/CONCRETE:
	6		2 feet to
	7	Black clayey sandy silt with small fill stones	BENTONITE:
	8	Fill: stones / coal with some silty sand	4 feet to
	9	Black sandy clayey silt with fill stones	GRAVEL PACK: #2 Morie Grav
	10	Black clayey silt sand with fill stones	4.5 feet to
	11		RISER: 4 inch PVC S
	12	Black sand to sandy silt with mostly fill stones	0.5 feet to
	13	Black gray silty sand and sandy silt with fill stones	SCREEN: 4 inch PVC S
	14	Gray sandy silt and silty sand with fill stones and wood chips	10 SLOT
	15	Wood chips and fill with silty sand / Peat fragments	10 feet to
	16	Gray silty sand and sandy silt with fill stones	BOTTOM: 4 inch PVC cap
	17		
	18		
	19		
	20	20' End of Well	

Environmental Engineering & Management

Client : Dexter Chemical

Site Location : Edgewater Road, Bronx, NY

Project No. : 97 - 09 - 10

Drilling Co. : Summit Drilling

Driller's Name : Bill

Type of Rig : Hollow-stem auger rig

Hole Diameter : 10 1/4 "

Sampler Type : GeoProbe/Split Spoon/Cuttings

Well Diameter : 4 inch

Hammer Weight : NA

Fall : NA

Surveyed elevation of T.O.C. NA assumed on-site datum

SVE/RW-71
(Soil Vapor Extraction / Groundwater Recovery Point)

Date Installed: September 21, 2006

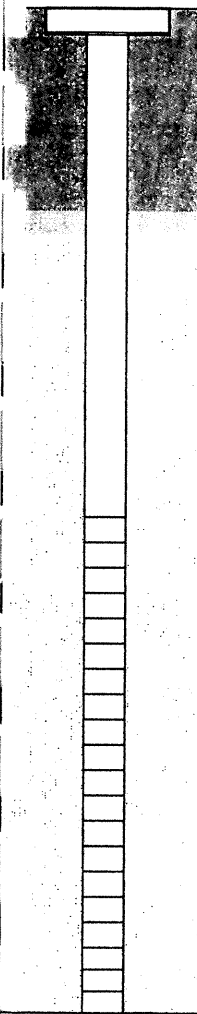
Geologist : Michelle Herisko

Total Depth : 20 feet

Water level: NA



**THE
WHITMAN
Company**

Well Diagram	Depth (ft)	Lithology	
	1		FLUSH MOUNT COVER
	2	Concrete and sub base	
	3	Black sandy clayey silt with fill	FILL SAND
	4	Black clayey silty sand	NA to
	5		GROUT/CONCRETE:
	6		0 to
	7	Black clayey sandy silt with small fill stones	BENTONITE:
	8	Fill: stones / coal with some silty sand	4 feet to
	9	Black sandy clayey silt with fill stones	GRAVEL PACK: #2 Morie Grav
	10	Black clayey silt sand with fill stones	4.5 feet to
	11		RISER: 4 inch PVC S
	12	Black sand to sandy silt with mostly fill stones	0 feet to
	13	Black gray silty sand and sandy silt with fill stones	SCREEN: 4 inch PVC S
	14	Gray sandy silt and silty sand with fill stones and wood chips	10 SLOT
	15	Wood chips and fill with silty sand / Peat fragments	10 feet to
	16	Gray silty sand and sandy silt with fill stones	
	17		BOTTOM: 4 inch PVC cap
	18		
	19		
	20	20' End of Well	

Environmental Engineering & Management

Client : Dexter Chemical

Site Location : Edgewater Road, Bronx, NY

Project No. : 97 - 09 - 10

Drilling Co. : Summit Drilling

Driller's Name : Bill

Type of Rig : Hollow-stem auger rig

Hole Diameter : 10 1/4 "

Sampler Type : GeoProbe\Split Spoon\Cuttings

Well Diameter : 4 inch

Hammer Weight : NA

Fall : NA

Surveyed elevation of T.O.C. NA assumed on-site datum

SVE/RW-81

(Soil Vapor Extraction / Groundwater Recovery Point)

Date Installed: September 21, 2006

Geologist : Michelle Herisko

Total Depth : 20 feet

Water level: NA



THE
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Companies,
INC.

Well Diagram	Depth (ft)	Lithology	
		Asphalt	
	1	Gravel and dark gray silt	
	2		
	3		
	4		
	5	Gravel and brown silt	
	6		
	7		
	8	Brown silt with some gravel	
	9	Gravel	
		Brown silt	
	10	Gravel and dark gray silt to gray silt	
	11		
	12		
	13		
	14		
	15	Gravel	
	16	Silty Clay	
	17		
	18		
	19		
	20	20' End of Well	
			FLUSH MOUNT COVER FILL SAND NA to NA GROUT/CONCRETE: 0 to 4 feet BENTONITE: 4 feet to 4.5 feet GRAVEL PACK: #2 Morie Gravel 4.5 feet to 20 feet RISER: 4 inch PVC Sch. 40 0 feet to 10 feet SCREEN: 4 inch PVC Sch. 40 10 SLOT 0.01 10 feet to 20 feet BOTTOM: 4 inch PVC cap

Environmental Engineering & Management

Client : <u>Dexter Chemical</u>		SVE/RW-9I (Soil Vapor Extraction / Groundwater Recovery Point)
Site Location : <u>Edgewater Road, Bronx, NY</u>		
Project No. : <u>97 - 09 - 10</u>		
Drilling Co. : <u>Summit Drilling</u>	Driller's Name : <u>Bill</u>	
Depth of Rig : <u>Hollow-stem auger rig</u>	Hole Diameter : <u>10 1/4 "</u>	
Sampler Type : <u>GeoProbe\Split Spoon\Cuttings</u>	Well Diameter : <u>4 inch</u>	Geologist : <u>Michelle Herisko</u>
Hammer Weight : <u>NA</u>	Fall : <u>NA</u>	Total Depth : <u>20 feet</u>
Surveyed elevation of T.O.C. <u>NA</u> assumed on-site datum		Water level: <u>NA</u>

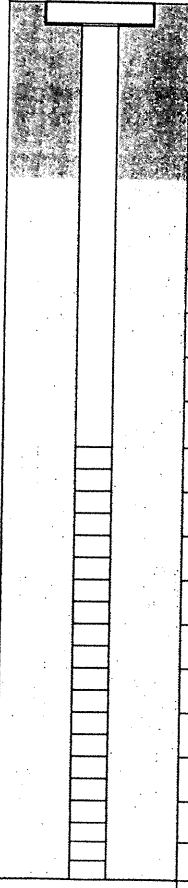


THE WHITMAN Company

Well Diagram	Depth (ft)	Lithology	
		Asphalt	
	1	Gravel and dark gray silt	
	2		FLUSH MOUNT COVER
	3		FILL SAND
	4		<u>NA</u> to
	5	Gravel and brown silt	GROUT/CONCRETE:
	6	odor	<u>0</u> to
	7		BENTONITE:
	8	Brown silt with some gravel	<u>4 feet</u> to
	9	Gravel	GRAVEL PACK: #2 Morie Grav
		Brown silt	
	10	Gravel and dark gray silt to gray silt	<u>4.5 feet</u> to
		wet strong odor	
	11		RISER: 4 inch PVC S
	12		<u>0 feet</u> to
	13		SCREEN: 4 inch PVC S
	14		<u>10</u> SLOT
	15	Gravel	<u>10 feet</u> to
	16	Silty Clay	BOTTOM: 4 inch PVC cap
	17		
	18		
	19		
	20	20' End of Well	

Environmental Engineering & Management

Client : Dexter Chemical		SVE/RW-101 (Soil Vapor Extraction / Groundwater Recovery Point)	
Site Location : Edgewater Road, Bronx, NY			
Project No. : 97 - 09 - 10			
Drilling Co. : Summit Drilling			
Type of Rig : Hollow-stem auger rig			
Sampler Type : GeoProbe/Split Spoon/Cuttings			
Driller's Name : Bill		Date Installed: September 21, 2006	
Hole Diameter : 10 1/4 "		Geologist : Michelle Herisko	
Well Diameter : 4 inch		Total Depth : 20 feet	
Hammer Weight : NA		Water level: NA	
Fall : NA			
Surveyed elevation of T.O.C.: NA assumed on-site datum			

Well Diagram	Depth (ft)	Lithology	
		Asphalt	
	1	Brown sand with small gravel	FLUSH MOUNT COVER FILL SAND NA to NA
	2		
	3		
	4		
	5	Dark gray silt	GROUT/CONCRETE: 0 to 4 feet
	6		
	7		
	8		
	9		BENTONITE: 4 feet to 4.5 feet
	10		
	11		
	12		
	13	Dark gray silt with some clay	GRAVEL PACK: #2 Morie Gravel 4.5 feet to 20 feet
	14		
	15		
	16		
	17		RISER: 4 inch PVC Sch. 40 0 feet to 10 feet
	18		
	19		
20			
	Clay	SCREEN: 4 inch PVC Sch. 40 10 SLOT 0.01 10 feet to 20 feet	
	20' End of Well		
		BOTTOM: 4 inch PVC cap	

Environmental Engineering & Management

Client: Dexter Chemical

Site Location: Edgewater Road, Bronx, NY

Project No.: 97 - 09 - 10

Drilling Co.: Summit Drilling

Driller's Name: Bill

Type of Rig: Hollow-stem auger rig

Hole Diameter: 10 1/4 "

Sampler Type: GeoProbe/Split Spoon/Cuttings

Well Diameter: 4 inch

Hammer Weight: NA

Fall: NA

Surveyed elevation of T.O.C. NA assumed on-site datum

SVE/RW-11I

(Soil Vapor Extraction / Groundwater Recovery Point)

Date Installed: October 4, 2006

Geologist: Michelle Herisko

Total Depth: 20 feet

Water level: 13 feet



THE
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Well Diagram	Depth (ft)	Lithology	
	1	Black sand with silt	
	2		FLUSH MOUNT COVER
	3		FILL SAND
	4		NA to
	5	Black silty sand with cobbles	
	6	Black sand with silt	GROUT/CONCRETE:
	7		0 to
	8		BENTONITE:
	9	Black silt with sand	4 feet to
	10		GRAVEL PACK: #2 Morie Grav
	11		4.5 feet to
	12		RISER: 4 inch PVC S
	13		0 feet to
	14		SCREEN: 4 inch PVC S
	15		10 SLOT
	16		10 feet to
	17		BOTTOM: 4 inch PVC cap
	18		
	19		
	20	20' End of Well	

Environmental Engineering & Management

Client: Dexter Chemical

Site Location: Edgewater Road, Bronx, NY

Project No.: 97 - 09 - 10

Drilling Co.: Summit

Driller's Name: Bill

Type of Rig: Hollow-stem auger rig

Hole Diameter: 10 1/4"

Sampler Type: GeoProbe/Split Spoon/Cuttings

Well Diameter: 4 inch

Hammer Weight: NA

Fall: NA

Surveyed elevation of T.O.C. NA assumed on-site datum

SVE/RW-12I

(Soil Vapor Extraction / Groundwater Recovery Point)

Date Installed: October 4, 2006

Geologist: Edward Huss

Total Depth: 20 feet

Water level: NA



THE
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Well Diagram	Depth (ft)	Lithology	
	1	Concrete	
	2	Asphalt (sub base), fill, silty brown, sand	FLUSH MOUNT COVER - CONCRETE
		Brown to gray black silty sand, some sub base	SURFACE SEAL
	3	Brown sandy silt (micaceous) mixed with cobbles, sub base, asphalt, and fill (bottom 1")	FILL SAND
		Brown to black silty sand mixed with sub base, asphalt, fill	
	4	Fill: Black asphalt chips	0 feet to 2.5 feet
		Gray marl clayey silt	
	5		GROUT/CONCRETE:
			2.0 feet to 7.5 feet
	6		
	7		BENTONITE:
			7.5 feet to 8 feet
	8	Gray marl clayey silt with some small stones	
		Gray/Brown clayey silt with some white stones	
	9	3" White translucent stones, 3" Gray brown silty sand	GRAVEL PACK: #2 Morie Gravel
		Gray/Brown silty sand to silt	8 feet to 20 feet
	10		
	11		RISER: 4 inch PVC Sch. 40
	12	Gray to black silty sand to sandy silt	0.5 feet to 10 feet
	13		
	14	Gray brown silty sand to sandy silt	SCREEN: 4 inch PVC sch. 40
		Gray marly sandy clayey silt with Fill: stones, sub base	10 SLOT 0.01
	15		10 feet to 20 feet
	16		
	17	Gray sandy silt, fill with some stones	BOTTOM: 4 inch PVC cap
	18		
	19	Gray silt, marl, fill	
		Peat layer	
	20	20' End of well.	

Environmental Engineering & Management

Client: Dexter Chemical

Site Location: Edgewater Road, Bronx, NY

Project No.: 97 - 09 - 10

Drilling Co.: Summit

Driller's Name: Bill

Type of Rig: Hollow-stem auger rig

Hole Diameter: 10 1/4"

Sampler Type: GeoProbe/Split Spoon/Cuttings

Well Diameter: 4 inch

Hammer Weight: NA

Fall: NA

Surveyed elevation of T.O.C. NA assumed on-site datum

SVE/RW-131

(Soil Vapor Extraction / Groundwater Recovery Point)

Date Installed: October 4, 2006

Geologist: Edward Huss

Total Depth: 20 feet

Water level: NA



THE
WHITMAN
Companies, INC.

Well Diagram	Depth (ft)	Lithology	
	1	Concrete	
	2	Asphalt (sub base), fill, silty brown, sand	FLUSH MOUNT COVER - CONCRETE SURFACE SEAL
	3	Brown to gray black silty sand, some sub base	
	4	Brown sandy silt (micaceous) mixed with cobbles, sub base, asphalt, and fill (bottom 1")	FILL SAND
	5	Brown to black silty sand mixed with sub base, asphalt, fill	
	6	Fill: Black asphalt chips	0 feet to 2 feet
	7	Gray marl clayey silt	GROUT/CONCRETE:
	8		
	9		2 feet to 4 feet
	10		BENTONITE:
	11		
	12	Gray marl clayey silt with some small stones	4 feet to 4.5 feet
	13	Gray/Brown clayey silt with some white stones	GRAVEL PACK: #2 Morie Gravel
	14	3" White translucent stones, 3" Gray brown silty sand	
	15	Gray/Brown silty sand to silt	4.5 feet to 20 feet
	16		RISER: 4 inch PVC Sch. 40
	17		
	18	Gray to black silty sand to sandy silt	0.5 feet to 10 feet
	19		SCREEN: 4 inch PVC sch. 40
	20		
			10 SLOT 0.01
			10 feet to 20 feet
			BOTTOM: 4 inch PVC cap

Environmental Engineering & Management

Client: Dexter Chemical

Site Location: Edgewater Road, Bronx, NY

Project No.: 97 - 09 - 10

Drilling Co.: Summit Driller's Name: Bill

Type of Rig: Hollow-stem auger rig Hole Diameter: 10 1/4 "

Sampler Type: GeoProbe/Split Spoon/Cuttings Well Diameter: 4 inch

Hammer Weight: NA Fall: NA

Surveyed elevation of T.O.C. NA assumed on-site datum

SVE/RW-14I

(Soil Vapor Extraction / Groundwater Recovery Point)

Date Installed: October 10, 2006

Geologist: Edward Huss

Total Depth: 20 feet

Water level: NA

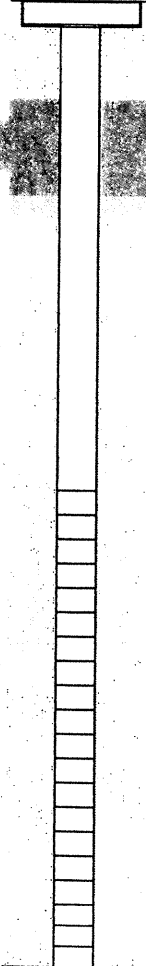


THE
WHITMAN
Companies, INC.

Well Diagram	Depth (ft)	Lithology	
	1	Concrete	FLUSH MOUNT COVER - CONCRETE SURFACE SEAL
	2	Asphalt (sub base), fill, silty brown, sand	
	3	Brown to gray black silty sand, some sub base	FILL SAND
	4	Brown sandy silt (micaceous) mixed with cobbles, sub base, asphalt, and fill (bottom 1")	
	5	Brown to black silty sand mixed with sub base, asphalt, fill	0 feet to 2 feet
	6	Cobbles	
	7	Gray marl clayey silt	VOC odor Moist
	8		
	9		GROUT/CONCRETE:
	10		
	11		2 feet to 4 feet
	12		
	13		BENTONITE:
	14		
	15		4 feet to 4.5 feet
	16		
	17		GRAVEL PACK: #2 Morie Gravel
	18		
	19		4.5 feet to 20 feet
	20		

Environmental Engineering & Management

Client: Dexter Chemical		SVE/RW-15I (Soil Vapor Extraction / Groundwater Recovery Point)		 THE WHITMAN Companies, INC.
Site Location: Edgewater Road, Bronx, NY				
Project No.: 97 - 09 - 10		Date Installed: October 10, 2006		
Drilling Co.: Summit	Driller's Name: Bill	Geologist: Edward Huss		
Type of Rig: Hollow-stem auger rig	Hole Diameter: 10 1/4 "			
Sampler Type: GeoProbe\Split Spoon\Cuttings	Well Diameter: 4 inch	Total Depth: 20 feet		
Hammer Weight: NA	Fall: NA	Water level: NA		
Surveyed elevation of T.O.C. NA assumed on-site datum				

Well Diagram	Depth (ft)	Lithology	
	1	Concrete	
	2	Asphalt (sub base), fill, silty brown, sand	FLUSH MOUNT COVER - CONCRETE SURFACE SEAL FILL SAND
		Brown to gray black silty sand, some sub base	
	3	Brown sandy silt (micaceous) mixed with cobbles, sub base, asphalt, and fill (bottom 1")	
		Brown to black silty sand mixed with sub base, asphalt, fill	
	4	Cobbles	VOC odor
		Gray marl clayey silt	Moist
	5		
	6		
	7		Wet
		Gray marl clayey silt with some small stones	
	8	Gray/Brown clayey silt with some white stones	
	9	3" White translucent stones, 3" Gray brown silty sand	
		Gray/Brown silty sand to silt	Dry
	10		
	11		
		Gray to black silty sand to sandy silt	Wet
	12		
	13		
	Gray brown silty sand to sandy silt	Wet	
14			
	Gray marly sandy clayey silt with Fill: stones, sub base	Wet	
15			
16			
	Gray sandy silt, fill with some stones	Wet	
17			
18			
	Gray silt, marl, fill	Wet	
19			
	Peat layer		
20	20' End of well.		

	0 feet	to	2 feet
GROUT/CONCRETE:	2 feet	to	4 feet
BENTONITE:	4 feet	to	4.5 feet
GRAVEL PACK: #2 Morie Gravel	4.5 feet	to	20 feet
RISER:	4 inch PVC Sch. 40		
	0.5 feet	to	10 feet
SCREEN:	4 inch PVC sch. 40		
	10	SLOT	0.01
	10 feet	to	20 feet
BOTTOM:	4 inch PVC cap		

Environmental Engineering & Management

Client : Dexter Chemical

Site Location : Edgewater Road, Bronx, NY

Project No. : 97 - 09 - 10

Drilling Co. : Summit Drilling

Driller's Name : Bill

Type of Rig : Hollow-stem auger rig

Hole Diameter : 10 1/4 "

Sampler Type : GeoProbe/Split Spoon/Cuttings

Well Diameter : 4 inch

Hammer Weight : NA

Fall : NA

Surveyed elevation of T.O.C. NA assumed on-site datum

SVE/RW-161

(Soil Vapor Extraction / Groundwater Recovery Point)

Date Installed: October 10, 2006

Geologist : Michelle Herisko

Total Depth : 20 feet

Water level: NA



THE
WHITMAN
Company

Well Diagram	Depth (ft)	Lithology	
	1	Brown sand with small gravel	FLUSH MOUNT COVER
	2		FILL SAND
	3		NA to
	4		GROUT/CONCRETE:
	5	Gray silt with sand	0 to
	6		BENTONITE:
	7	Gravel	4 feet to
	8		GRAVEL PACK#2 Morie Grav
	9		4.5 feet to
	10	Black sand to sandy silt with mostly fill stones	RISER: 4 inch PVC S
	11	Black gray silty sand and sandy silt with fill stones	0 feet to
	12	Gray sandy silt and silty sand with fill stones and wood chips	SCREEN: 4 inch PVC S
	13	Wood chips and fill with silty sand / Peat fragments	10 SLOT
	14	Gray silty sand and sandy silt with fill stones	10 feet to
	15		BOTTOM: 4 inch PVC cap
	16		
	17		
	18		
	19		
	20	20' End of Well	

Environmental Engineering & Management

Client : Dexter Chemical

Site Location : Edgewater Road, Bronx, NY

Project No. : 97 - 09 - 10

Drilling Co. : Summit Drilling

Driller's Name : Bill

Type of Rig : Hollow-stem auger rig

Hole Diameter : 10 1/4 "

Sampler Type : GeoProbe\Split Spoon\Cuttings

Well Diameter : 4 inch

Hammer Weight : NA

Fall : NA

Surveyed elevation of T.O.C. : NA assumed on-site datum

SVE/RW-171

(Soil Vapor extraction / Groundwater Recovery Point)

Date Installed: October 10, 2006

Geologist : Michelle Herisko

Total Depth : 20 feet

Water level: NA



THE
WHITMAN
Company

Well Diagram	Depth (ft)	Lithology	
	1	Brown sand with small gravel	
	2		FLUSH MOUNT COVER
	3		FILL SAND
	4		NA to
	5	Gray silt with sand	GROUT/CONCRETE:
	6		0 to
	7	Gravel	BENTONITE:
	8		4 feet to
	9		GRAVEL PACK: #2 Morie Grav
	10	Black sand to sandy silt with mostly fill stones	4.5 feet to
	11		RISER: 4 inch PVC S
	12	Black gray silty sand and sandy silt with fill stones	0 feet to
	13	Gray sandy silt and silty sand with fill stones and wood chips	SCREEN: 4 inch PVC S
	14	Wood chips and fill with silty sand / Peat fragments	10 SLOT
	15	Gray silty sand and sandy silt with fill stones	10 feet to
	16		BOTTOM: 4 inch PVC cap
	17		
	18		
	19		
	20	20' End of Well	

Environmental Engineering & Management

APPENDIX 11

Sample Well Sampling Log

WHITMAN
Well Sampling Worksheet

Page 1 of 2

SITE: Dexter WELL NO.: SVE/RW13I
DATE: 7-26-10 WEATHER: hjt
PERSONNEL: PJ

PRIOR TO PURGING

CASING DIAMETER: 4 in.
DEPTH OF WELL: 19.3 ft.
DEPTH TO WATER: 9.47 ft.
SATURATED THICKNESS: 9.83 ft.
DEPTH TO SCREEN: _____ ft.
VOLUME OF WATER: 6.38 gal.
VOLUME TO PURGE: ✓ Gal.

PID READING

Conversion Factors

1" = 0.04
2" = 0.16
4" = 0.65
6" = 1.46
8" = 2.61
10" = 4.08
12" = 5.87

PURGING

METHOD USED: bladder pump PUMP INTAKE: 14.3 Ft.
TIME STARTED: 920 TOTAL PURGED: 1 Gal.
TIME FINISHED: 950 PURGE RATE: 14 min / 0.03 Gpm
TOTAL TIME: 30 min.
COMMENTS: odor, turbid

AFTER PURGING

DEPTH OF WATER: 9.47 ft. TIME: 950

SAMPLING

METHOD USED: pump TIME: 952
DEPTH OF WATER: 9.47 ft.
COMMENTS: _____

WATER QUALITY

GROUND WATER ANALYZER MODEL

1/16 in. 022 from Envirovent

Time	pH	Cond. µS ms	Turb. (NTU)	Dis.O ₂ (ppm)	Temp °F °C	Eh (mV)	PumpRate (ml/min)	Depth to Water (ft)	Notes
20	7.82	0.428	999	3.47	23.35	187		9.47	start Low flow
25	8.17	0.444	↓	6	23.27	3		9.47	
130	8.21	0.441		0	23.67	-14		9.47	
135	8.23	0.442		0	24.00	-15		9.47	
140	8.23	0.445		0	24.03	-21		9.47	
145	8.22	0.448		0	24.05	-22		9.47	
150	8.21	0.449		0	24.07	-24		9.47	isolated

Type of Samples Collected: _____
Information: 2 in. = 617 ml/ft, 1/2 in. I.D. Tubing = 39 ml/ft. Vol_{cyl} = πr²h.

APPENDIX 12
Quality Assurance Project Plan (QUAPP)

**QUALITY ASSURANCE PROJECT PLAN
SITE MONITORING**

FOR

**DEXTER CHEMICAL
845 EDGEWATER ROAD
BRONX, NEW YORK**

MARCH 2015

**QUALITY ASSURANCE PROJECT PLAN
FOR
DEXTER CHEMICAL
845 EDGEWATER ROAD
BRONX, NEW YORK**

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**QUALITY ASSURANCE PROJECT PLAN
FOR
DEXTER CHEMICAL
845 EDGEWATER ROAD
BRONX, NEW YORK**

1.0 INTRODUCTION

This Quality Assurance Project Plan (QAPP) provides a description of the quality assurance procedures to manage sample analysis at 819 Edgewater Road,(Section 10, Block 2762, Lot 300) ("819 Edgewater"), 842 Whittier Street, (Section 10, Block 2762, Lot 272) ("842 Whittier"), 845 Edgewater Road,(Section 10, Block 2762, Lot 294) ("845 Edgewater"), 810-820 Whittier Street, (Section 10, Block 2762, Lot 257) ("810-820 Whittier") and 835 Edgewater Road,(Section 10, Block 2762, Lot 299) ("835 Edgewater") on the Bronx, New York City, hereby referred to as the Site. The procedures identified in this QAPP will be implemented at the Site in perpetuity or until extinguishment of the Declaration of Covenants and Restrictions in accordance with the Voluntary Cleanup Agreement Site / VCP #V00186-2, Index #W2-0864-03-08, which was issued on December 3, 2003 to Dexter Chemical , LLC.

2.0 PROJECT SCOPE

2.1 Background

The Site is an approximately 2-acre area bounded by a similar industrial/commercial lot to the north, a commercial lot to the south, Edgewater Road to the east, and Whittier Street to the west. The facility consists of six (6) buildings formerly operated by Dexter Chemical LLC and its predecessor Dexter Chemical Corporation. The site is now owned by Edgewater Realty, LLC (Edgewater Realty).

Historically, several rounds of ground water samples from the on site and off site monitoring wells (MW-1 through MW-10), on-site peizometers (PZ-1 through PZ-4) and three (3) grab ground water samples (GW-1 through GW-3) were collected to evaluate ground water conditions. Historic sample results indicate the primary site contaminants include several VOCs that exceed the 1998 NYSDEC Ground Water Criteria. Concentrations of Benzene, Ethylbenzene, Toluene, Xylene, cis-1,2 Dichloroethene, 1,2 Dichloropropane, Vinyl Chloride, Chlorobenzene, 1,2 Dichlorobenzene, 1,4 Dichlorobenzene, 1,2,4 Trichlorobenzene and Naphthalene, (a semivolatile) were identified above the 1998 NYSDEC Ground Water Criteria.

Dexter Chemical, L.L.C. (Dexter) entered into a Voluntary Cleanup Program (VCA) with the York State Department of Environmental Conservation (NYSDEC) in order to set forth a process through which NYSDEC will approve and the Volunteer will implement activities designed to address in whole or in part environmental contamination at the Site. The Site will be remediated in accordance with the Voluntary Cleanup Agreement (VCA) Site/VCP # V00186-2, Index # W2-0864-03-08 , which was issued on December 3, 2003 to Dexter. The Site was sold to Edgewater Realty, L.L.C., 421 Bruckner Boulevard, Bronx, NY, in May 2007. This VCA required Dexter, to investigate and remediate contaminated media at the Site.

After completion of the remedial work described in the Remedial Action Work Plan, some contamination will be left in the subsurface at this Site, which is hereafter referred to as 'residual contamination.

A project organization chart for this remediation activity is presented in Attachment 1. Resume of the Quality Assurance Officer is presented in Attachment 2.

2.2 Proposed Ground Water Sampling

Ground water monitoring will be performed on a regular basis to assess the performance of the remedy. The network of monitoring wells is designed to monitor both the up-gradient and down-gradient groundwater conditions at the Site.

As per the approved 2005 RAWP, and additional wells requested by NYSDEC, monitoring wells PZ-3, PZ-4, MW-6, MW-8 and RW-5A in Area A, and MW-3, MW-7, MW-11 and RW-13I in Area I were sampled quarterly to assess performance of the site remedy. The monitoring well sampling frequency included quarterly sampling for VO+10 analysis via EPA Method 624 during SVE/AS system operation post-remediation, ground water will be sampled for Volatile Organics +10 in six (6) designated monitoring wells.

The monitoring wells will be inspected semiannually during the sampling events to ensure they have not been damaged. All site wells will be gauged during these sampling events to continue verification of ground water flow direction. EPA low-flow sampling will be utilized to ensure representative sampling results. All well sampling activities will be recorded in a field book and a ground water sampling log prepared.

3.0 DATA QUALITY OBJECTIVES

The laboratory data collected during ground water monitoring will be utilized to characterize the condition of the subsurface ground water and assess the performance of the remedy.

The laboratory chosen for the analysis of any aqueous samples for a parameter or category for which laboratory certification exists pursuant to the NYSDEC Analytical Services Protocol (ASP), requires that the laboratory shall be certified for that specific parameter or category of parameters pursuant to NYSDEC ASP.

4.0 LABORATORY

In order to obtain data of appropriate quality to meet the objectives the laboratory selected by Dexter and/or Edgewater Realty will use EPA Method 624 for purgeable Volatile Organic Compounds +10 and Method 625 for Base/Neutral Extractable Compounds +15 (if necessary) with NYSDEC ASP Category B data deliverable. Any lab utilized must also be NYSDOH accredited.

5.0 SAMPLING METHODS, STORAGE AND HANDLING

5.1 Sampling Methods

Ground water samples will be collected using EPA low-flow methodology, with wells with the lowest level of impact sampled first up to the wells with the highest impacts sampled last to reduce possibility of cross-contamination.

5.2 Sampling Handling and Storage in Field

- Sample containers will be properly washed, decontaminated, and appropriate preservative will be added (if applicable) prior to their use by the analytical laboratory. Containers and preservative will be tagged as such.
- All sample containers will be marked before sample collection. After collection, the container will be sealed, and a sample label will be attached to the container.
- Samples will be placed in a cooler packed with ice and/or ice packs to maintain a temperature of 4°C +/- 2°C. Samples will be recorded on the Chain-of-Custody form. A copy of a Chain-of-Custody form is included as **Attachment 1**.

- Coolers will be stored in a cool location in the field.
- Coolers holding sample containers and blanks will be allowed one (1) day travel from the laboratory, two (2) days in the field and one (1) day travel back to the laboratory. Transportation of the coolers to the laboratory will occur as soon as possible. Laboratory service will provide delivery of coolers and supplies. Chain-of-Custody will be signed accordingly.
- Laboratory personnel will be responsible for the care and custody of the sample once it is transferred to them.
- Sample holding times will be in accordance with NYSDEC as calculated from the time sampled. In the field, samples, if held, will be kept at 4°C $\pm$ 2 degrees C.

5.3 Field and Trip Blanks

Field QC samples will be collected as necessary.

Field blanks are collected by pouring water supplied by the laboratory over the sampling instrument and collecting it in a bottle containing the appropriate preservative.

Trip blanks are collected at a rate of one (1) per a sample shipment (not to exceed two consecutive field days) for volatile organic compounds. Trip blanks for water samples will consist of laboratory supplied bottles filled at the laboratory with laboratory demonstrated analyte free water. The blanks will remain sealed and accompany sample bottles to and from the field. Duplicates and MS/MSD samples will be included as per NYSDEC requirement (see Section 8.0).

5.4 Equipment Decontamination Procedures

The following procedure will be followed for all non-dedicated sampling equipment:

1. Detergent and tap water wash.
2. Generous tap water rinse.
3. Distilled and deionized water rinse.
4. Total air dry or nitrogen blow out.

6.0 CALIBRATION AND PREVENTATIVE MAINTENANCE PROCEDURES FOR INSTRUMENTATION

Prior to the initiation of each field investigation/sampling event, a preventative maintenance and calibration program will be implemented to ensure proper operation of the field instruments. The field personnel will be familiar with the maintenance, calibration, and operation of field equipment and will perform the prescribed field operating procedures outlined in the Operations Manuals accompanying each instrument.

Field instruments used during sampling will be checked for calibration consistent with manufacturer-recommended procedure. All field analytical equipment will be calibrated immediately prior to each days use. Field equipment will be supplied and maintained by Whitman or a qualified rental company.

The laboratory will follow calibration procedures and schedules as appropriate for USEPA Methods 624 and 625 and subsequent updates that apply to instruments used for these analyses.

7.0 SAMPLE CUSTODY PROCEDURES

Sample Chain-of Custody is initiated to maintain control of samples until delivered to the laboratory. To reduce the chance for error, the number of personnel assuming custody of the samples will be held to a minimum.

On-site monitoring and sampling data will be controlled and entered onto appropriate records. Personnel involved in the Chain-of-Custody and transfer of the samples will be trained on the purpose and procedures prior to implementation.

7.1 Field Sample Custody

Chain-of-Custody forms are to be initiated by the sampling crew in the field. A Chain-of-Custody form will accompany the sample from the field for sample containment and preservation, through its return to the laboratory. The Chain-of-Custody form will trace the path of each individual sample by means of a unique identification number. A sample Chain-of-Custody form is included in **Attachment 3**.

The Project Manager will notify the laboratory of upcoming field sampling activities and the subsequent transfer of samples to the laboratory. This notification will include information concerning the number and type of samples to be shipped and the anticipated date of arrival.

Samples collected will be shipped in containers (coolers) provided by the laboratory. The shipping containers will be insulated.

Field and laboratory personnel relinquishing and receiving the sample containers will sign the Chain-of Custody form as having relinquished and received the sample containers. Different columns of the Chain-of-Custody form will be used to record specific considerations associated with sample acquisition such as sample collection time, sample designation, sample depth, sample type, analysis, preservatives and special handling instructions. The laboratory will maintain on file copies of the completed form. The completed, original form will be submitted as part of the final analysis report.

7.2 Laboratory Sample Custody

Receipt, storage and tracking of samples submitted to the laboratory are conducted according to strict protocol to prevent sample contamination or loss, and to prevent the production of invalid data as a result of sample deterioration or tampering.

8.0 DUPLICATE AND SPLIT SAMPLES

Duplicate samples will be provided with a different sample designation as the original sample and submitted to the laboratory for the appropriate analysis. Whenever the samples are split with a facility or government agency, a separate Sample Receipt will be prepared for those samples and marked to indicate with whom the samples are being split. The person relinquishing the samples to the facility or agency should request the representative signatures acknowledging sample receipt. If the representative is unavailable or refuses to sign, this should be noted in the "Received By" space. Duplicates and MS/MSD samples will be included as per NYSDEC protocols calling for a frequency of 1 per every 20 samples (or part of).

9.0 LABORATORY SAMPLE STORAGE

9.1 Laboratory Sample Receipt

Upon sample receipt, the sample custodian will open the cooler and inspect the contents against the Chain-of-Custody. The project manager will be contacted in the event of any discrepancies between the sample containers and the Chain-of-Custody. The sample custodian will then log the samples in and assign each a unique laboratory sample identification number, which will be placed on each sample bottle. A laboratory internal Custody Record is initiated at

this time. Recorded in the laboratory information system will be the project name and code, sampling location, date sampled, date received and analyses required. The samples will then be placed in secure storage.

The laboratory analysts will be alerted to the arrival of samples with the use of a work order. The work order contains all the information pertinent to the analysis of the samples.

9.2 Laboratory Sample Storage

The analysts will initial and date the internal Custody Record when removing samples from storage. The sample custodian is responsible for filing all-Custody Records forms in the project file.

Laboratory personnel will be responsible for the care and custody of the sample once it is transferred to them. Once the analysis is complete, the unused portion of the sample will be returned to the sample custodian.

Samples and sample extracts will be maintained in secure storage until disposal.

All Custody Records and associated paperwork will be maintained in a separate file for the project.

10.0 DATA REDUCTION AND VALIDATION

Data validation will be performed in accordance with the USEPA validation guidelines for organic and inorganic data review. Validation will include the following:

- Verification of 100% of all QC sample results (both qualitative and quantitative);
- Verification of the identification of 100% of all sample results (both positive hits and non-detects);
- Recalculation of 10% of all investigative sample results; and
- A Data Usability Summary Report (DUSR) which will present the results of data validation, including a summary assessment of laboratory data packages, sample preservation and chain of custody procedures, and a summary assessment of precision, accuracy, representativeness, comparability, and completeness for each

analytical method. A resume outlining the education and Data Validation experience for the preparer of future DUSRs conducting post remediation sample data review will be provided to NYSDEC for approval upon the selection of the consultant and individual who will be performing this work.

10.1 Laboratory Data Deliverable Formats

The consultant selected by property owner, Edgewater Realty, will compile and review the laboratory data in electronic copy format and submit it to NYSDEC as part of the Annual Site Management Report. Electronic data will be submitted in accordance with the electronic format per the NYSDEC ASP Category B deliverables. An Analytical Methods/Quality Assurance Summary Table is presented as Table 1 in this QAPP. Following sampling, a detailed site map will be submitted to NYSDEC to accompany data submitted as part of each Annual Site Management Report. All analytical data will be provided in a format consistent with EQuIS.

TABLE 1
ANALYTICAL METHODS/QUALITY ASSURANCE

TABLE 1

**Former Dexter Chemical Site
Analytical Methods/Quality Assurance Summary
Groundwater Sampling**

	Parameter	Number of Samples	Number of Field Blanks	Number of Trip Blanks	Number of Duplicate Samples	Number of Matrix Spike (MS) Samples	Number of Matrix Spike Duplicate (MSD) Samples
Matrix: Ground Water	TCL Volatile Organic Compounds +15	TBD	1 per sampling day	1 per cooler	1 per 20 samples or at least 1 per sampling event	1 per 20 samples or at least 1 per sampling event	1 per 20 samples or at least 1 per sampling event
	TCL Base / Neutral (B/N) Semi-Volatile Organic Compounds + 15	TBD	1 per sampling day	--	1 per 20 samples or at least 1 per sampling event	1 per 20 samples or at least 1 per sampling event	1 per 20 samples or at least 1 per sampling event
Matrix: Blank Water FOR FIELD AND TRIP BLANKS	TCL Volatile Organic Compounds + 15	TBD Based on above Formula	TBD Based on above Formula	TBD Based on above Formula	--	--	--
	TCL B/N Semi-Volatile Organic Compounds +15	TBD Based on above Formula	TBD Based on above Formula	TBD Based on above Formula	--	--	--

	Parameter	Analytical Method	Sample Preservation	Sample Container Volume & Type	Sample Holding Time
Matrix: Ground Water	TCL Volatile Organic Compounds +15	EPA Method 624	HCl, Ice	40 ml. vials	14 days
	TCL Base / Neutral (B/N) Semi-Volatile Organic Compounds + 15	EPA Method 625	Ice	1,000 ml. amber glass	Extraction: 7 days. Analysis: 40 days from extraction
Matrix: Blank Water FOR FIELD AND TRIP BLANKS	TCL Volatile Organic Compounds + 15	EPA Method 624	HCl, Ice	40 ml. vials	14 days
	TCL B/N Semi-Volatile Organic Compounds +15	EPA Method 625	Ice	1,000 ml. amber glass	Extraction: 7 days. Analysis: 40 days from extraction

Notes:

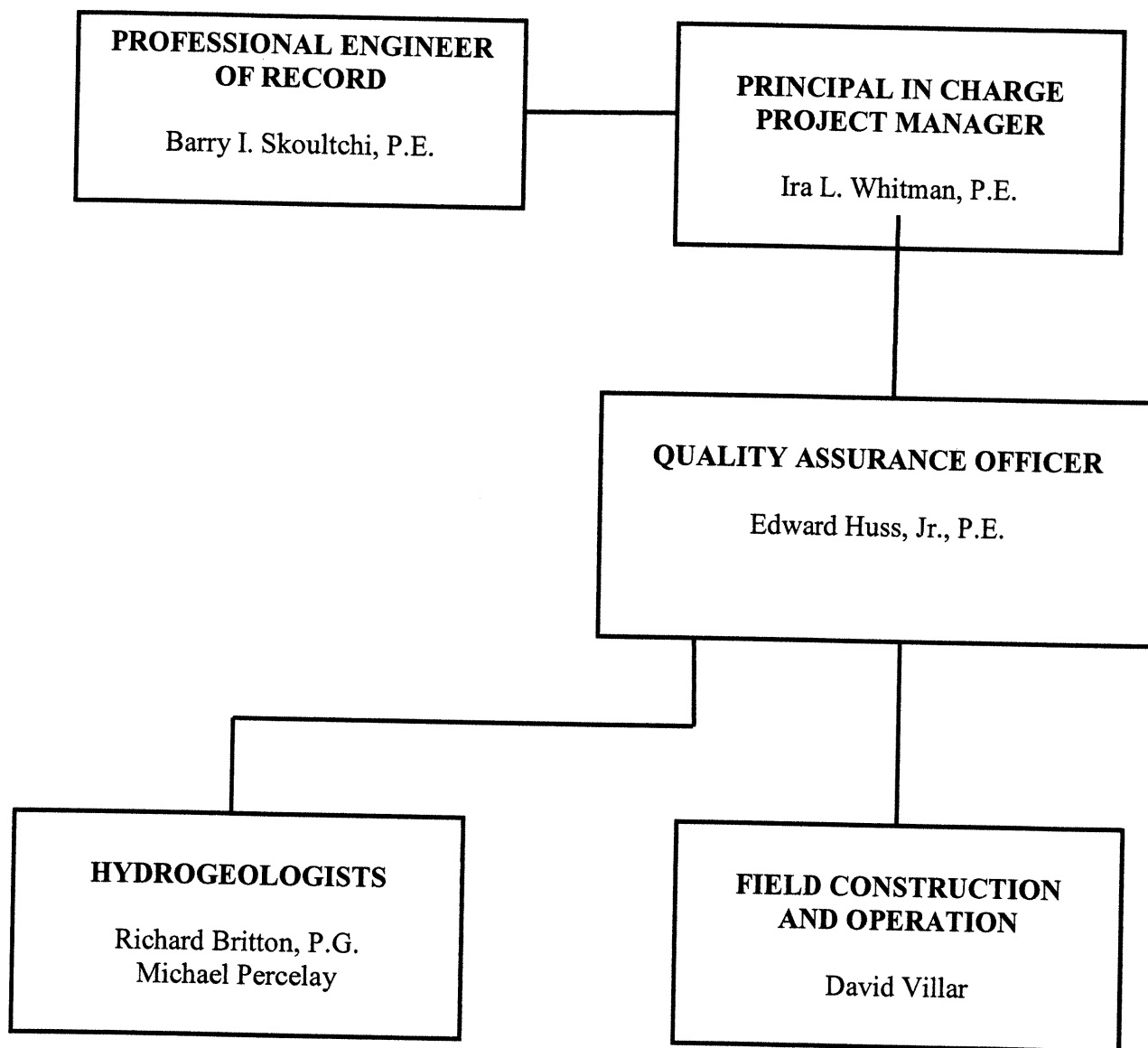
TCL = EPA Target Compound List

TBD = To Be Determined

ATTACHMENT 1

PROJECT ORGANIZATION

PROJECT ORGANIZATION



ATTACHMENT 2

QAO RESUME

EDWARD HUSS, P.E., LSRP

DIRECTOR

ENVIRONMENTAL ENGINEERING

EDUCATION

B.S. Environmental Engineering
University of Florida

1997

REGISTRATION AND CERTIFICATION

Registered Professional Engineer

No. 12608

Certified by National Council of Examiners for Engineering and Surveying

No. 39064

Certified by NJDEP as a Licensed Site
Remediation Professional (LSRP)

LSRP No. 574061

Completed 40 Hour OSHA HAZWOPER Training Course and Annual Updates

Completed 10-Hour OSHA Construction Safety Training

Competent Person Excavation and Trenching Health & Safety Training Certification

South Jersey Chemical Manufacturers Health & Safety Training

RESPONSIBILITY AND EXPERIENCE, WHITMAN

Mr. Huss joined Whitman in January 2006. His responsibilities include technical design/strategy and management of Whitman's environmental engineering and remediation projects. He directs the implementation of a wide variety of advanced and conventional remedial technologies and methods to meet client's regulatory and redevelopment driven goals. Mr. Huss has a proven record of successful remediation and remedial system design, execution, enhancement and operation.

Some of his recent professional assignments include:

- **Soil Remediation for Site Redevelopment, Northern New Jersey:** Directed the implementation of a large scale hydrocarbon impacted soil excavation project to allow the redevelopment of the site for residential use. Project involved the design and implementation of a dewatering system and impacted groundwater treatment system to facilitate removal of impacted soils beneath the groundwater table. Interlocking steel sheeting was designed and installed to facilitate the controlled removal of the impacted soils, and ensure remediation of soils to unrestricted use criteria.

EDWARD HUSS, P.E., LSRP

DIRECTOR

ENVIRONMENTAL ENGINEERING

- **EPA Superfund Site Under Record of Decision (ROD), Former Computer Manufacturing Facility, Eastern Pennsylvania:** Directed engineering, design and field execution of advanced In-Situ Chemical Oxidation (ISCO) technology using permanganate for remediation of chlorinated volatile organic compounds (CVOCs) in bedrock drinking water aquifer. Directed operation of multi-million dollar ground water treatment system. Pioneered cutting edge pilot study on potential treatment of permanganate with granular activated carbon (GAC) and peroxide for use at municipal supply wellheads. Developed site-specific design of unique injection points for shallow bedrock injection, executed fluorescent dye tracer study in angled injection wells to determine fracture interconnectedness in deep bedrock, and design-build infiltration gallery to treat shallow overburden and source area with ISCO.
- **Industrial Site Recovery Act (ISRA) Project, Former Chemical Manufacturing Facility, Northern New Jersey:** Directed operation and conceptual to detailed design upgrades to poorly performing SVE/Air Sparge system along Passaic River. Designed and executed cutting edge passive-diffusion nylon-screen sediment pore water sampler program along river frontage of site. Performed detailed remedial assessment borings using close-packed geoprobe to fully characterize submerged lithology and vertical hydrocarbon distribution. Prepared cost-benefit analysis remedy and contaminant mass calculations, resulting in proposed transition to advanced technologies to expedite site closure.

Mr. Huss functions in a Quality Assurance role on numerous site remediation projects for Whitman, including the following activities:

- Review of laboratory data non-conformance summaries.
- Coordination of field staff and project management to assure that all sampling and laboratory protocols are followed.
- Direct communication with analytical laboratories so that appropriate quality control procedures and methods are followed.

EDWARD HUSS, P.E., LSRP

DIRECTOR

ENVIRONMENTAL ENGINEERING

SUMMARY OF OTHER PROFESSIONAL EXPERIENCE

Environmental Resources Management (ERM), Inc.
Ewing, New Jersey

2003-2005

Senior Environmental Engineering Director/ Senior Project Manager

- Responsibilities included executing and managing comprehensive Phase II Site Investigation for proposed \$0.5 billion LNG Terminal, including extensive health and safety design and oversight due to subsurface pipelines.
- Implemented large scale soil excavation project on Northern New Jersey ISRA Site. Project included excavation dewatering and contaminated groundwater treatment system. Remedial design included installation of 260 foot perimeter, braced steel sheeting system to allow completion of the excavation along building edge.
- Executed and designed various field pilot tests for soil vapor extraction (SVE) and air sparging. Pilot test data was used to calculate design parameters for final full scale systems.
- Priced and evaluated various remedial options and scenarios for long term insurance liability costing. Developed and modified software cost models to determine site-specific cost probabilities.

Handex Environmental, Inc.
Morganville, New Jersey

2000-2003

Senior Engineer/Project Manager

- Superfund Site, Active Retail Gasoline Station – US Army, Central New Jersey: Executed the conceptual to detailed design, installation and operation and maintenance of major system for US Army, including conventional pump and treat, air stripping with GAC polishing and iron removal, horizontal and vertical SVE with Air Sparging and Catalytic Oxidation off-gas treatment.
- Personally bid, won and executed large scale chromium capping project for chemical manufacturer. Project included design-build of tri-planer geocomposite liner installation within earthen cap.
- Designed and implemented upgrades to two poorly performing groundwater pump-and-treat systems. Design upgrades included enhancing drawdown and hydraulic capture from pumping wells by modifying pump control systems. Results of system enhancement yielded reduced remedial requirements negotiated with NJDEP.

EDWARD HUSS, P.E., LSRP

DIRECTOR

ENVIRONMENTAL ENGINEERING

Environmental Management Associates, Inc.
Farmingdale, New Jersey

1997-2000

Project Engineer

- Design and implementation of SVE pilot test through conceptual model, pilot test execution and full scale system installation. SVE systems reduced cost of remediation through alternative approaches by greater than 50%.
- Design and installation of bioremediation system using engineered microbes to remediate residual fuel oil contamination. System resulted in case closure within 1 year of initial inoculation.
- Design and installation of surfactant-soil flushing system to remove free product from beneath building structure. Case closure was achieved following removal of free-product beneath building and reclassification of aquifer.

ADDITIONAL COURSES COMPLETED

- Master's Degree Level Course Completed: "Groundwater Restoration", University of Florida, Spring 1997
- New Jersey Industrial Site Recovery Act (ISRA) Seminar, Rutgers University - 1999
- NJDEP Regulatory Training in Underground Storage Tanks/Tech Regs, Rutgers University Multiple Refresher Courses (every three years until 2009)
- Site Remediation Basics, (Required for NJDEP LSRP Licensure), Rutgers University – May 2009
- NJDEP SRRA Implementation – The Final Rule Package (2012) - Rutgers
- Environmental Forensics (2013) and Ethics (2012), Rutgers

PUBLICATIONS AND PRESENTATIONS

Huss, E. and Brown, R., "Anatomy of an ISCO Bedrock Site," 4th International Conference on Oxidation-Reduction Technologies (ORTs-4), Chicago, Illinois, 2005.

Huss, E. and Brown, R., "Goresorbers for Site Remediation Screening," 4th International Conference on Oxidation-Reduction Technologies (ORTs-4), Chicago, Illinois, 2005.

EDWARD HUSS, P.E., LSRP

DIRECTOR

ENVIRONMENTAL ENGINEERING

Huss, E. and Brown, R., "Permanganate Removal (ISCO) in a Wellhead Treatment Area," 3rd International Conference on Oxidation-Reduction Technologies (ORTs-3), San Diego, California, 2004.

ATTACHMENT 3
SAMPLE CHAIN-OF-CUSTODY

