

Addendum No. 2 to IFB 15-105-Rebid



CITY OF SOMERVILLE, MASSACHUSETTS
Department of Purchasing
JOSEPH A. CURTATONE
MAYOR

To: All Parties on Record with the City of Somerville as Holding **IFB 15-105-Rebid**
USQ Utility and Roadway Construction

From: Alex Nosnik, Assistant Director, Purchasing

Date: January 26, 2016

Re: **Extension of Due Date of IFB**, Clarification on Specification, Addition of Appendices A-D

Addendum No. 2 to IFB 15-105-Rebid

Please acknowledge receipt of this Addendum by signing below and including this form in your proposal package. Failure to do so may subject the proposer to disqualification.

X

Name of Authorized Signatory
Title of Authorized Signatory

The purpose of this Addendum is to make the following changes:

- 1.) Extend the Due Date to 2/03/16 at 11 am**
- 2.) Part 3: Technical Specifications – Items No. 815-701 through 815-704**
On page 164, under “MATERIALS” paragraph M.1., **DELETE** the words “Interim 1998 AASHTO Standard Specifications” and **REPLACE** with “2001 AASHTO Standard Specifications.”
- 3.) Part 3: Technical Specifications – Attachments A through D**
ADD Attachments A through D to the end of the Technical Specifications, included as Attachment 1 to this Addendum No. 2.

Addendum No. 2 to IFB 15-105-Rebid

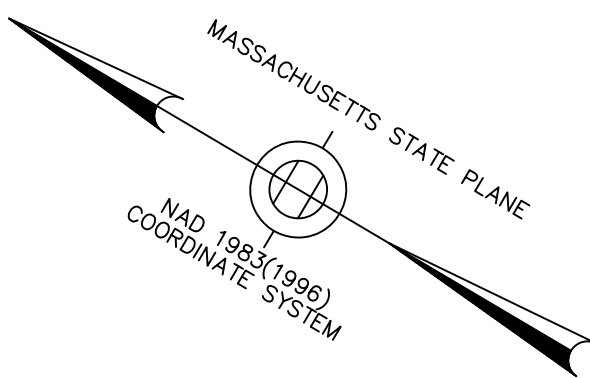
City of Somerville
Union Square Utility and Roadway Early Action Project
IFB# 15-105-Rebid

Addendum No. 2

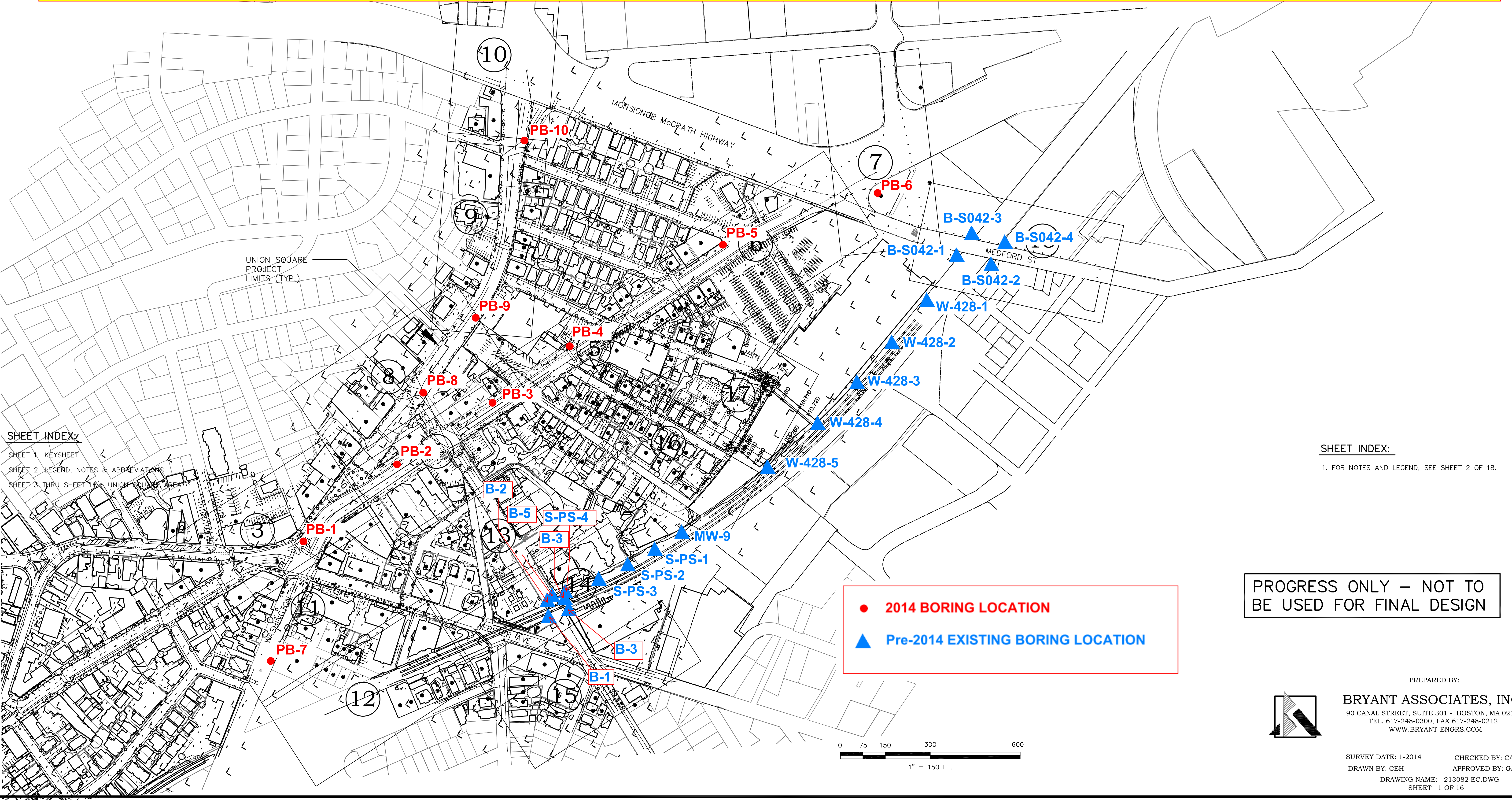
Attachment 1 – Attachments A through D of the Technical Specifications

ATTACHMENT A – GEOTECHNICAL INFORMATION

EXISTING CONDITIONS PLAN
OF LAND IN
SOMERVILLE, MASSACHUSETTS
PREPARED FOR: THE CITY OF SOMERVILLE



Mark up of Existing Conditions Plan to Show the As-Drilled Location of Sample Borings obtained in 2014 and Those Known to Exist Pre-2014

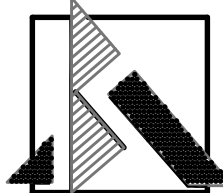


SHEET INDEX:
SHEET 1: KEYSHEET
SHEET 2: LEGEND, NOTES & ABBREVIATIONS
SHEET 3 THRU SHEET 18: UNION SQUARE AREA

SHEET INDEX:
1. FOR NOTES AND LEGEND, SEE SHEET 2 OF 18.

PROGRESS ONLY – NOT TO
BE USED FOR FINAL DESIGN

● 2014 BORING LOCATION
▲ Pre-2014 EXISTING BORING LOCATION

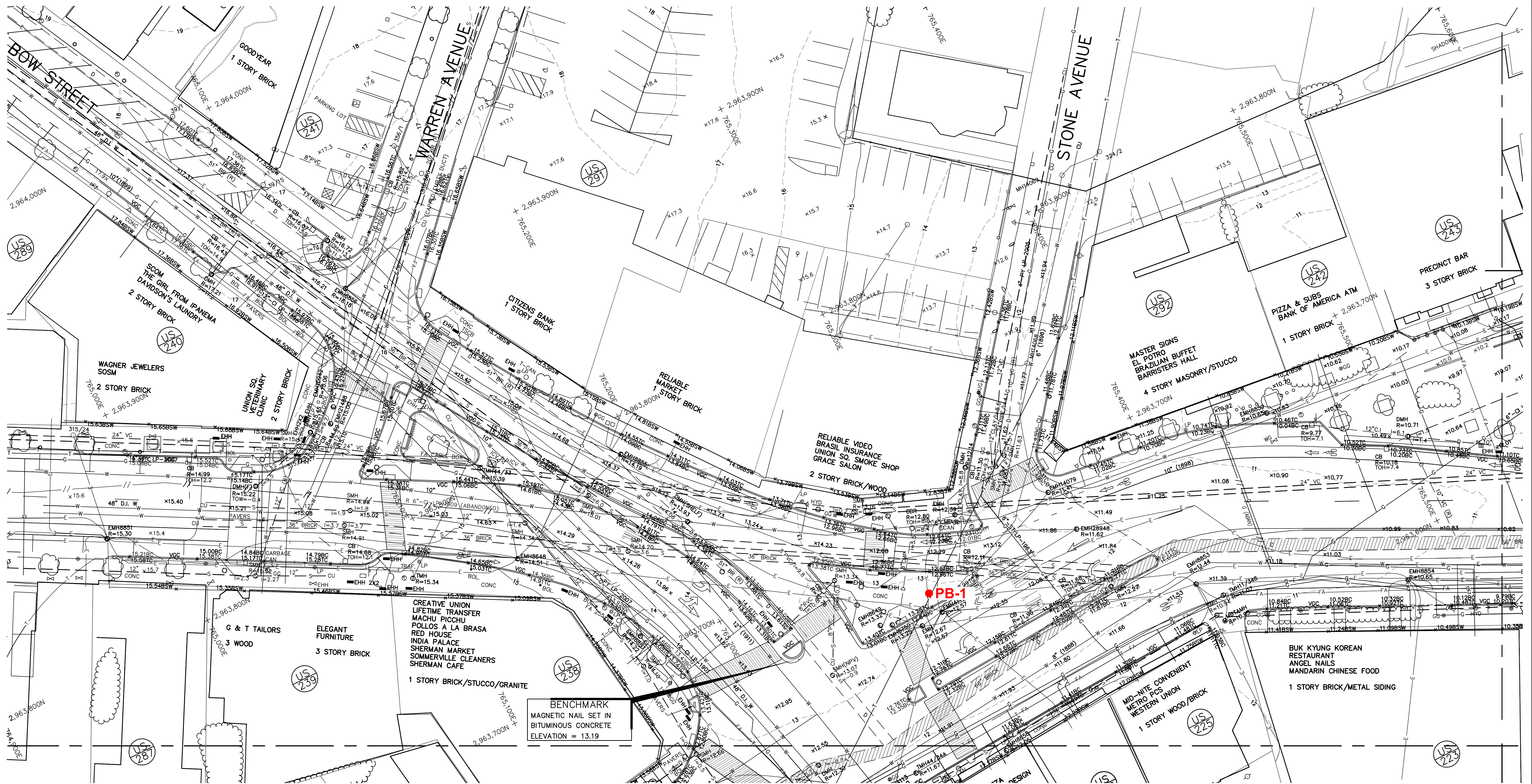


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WASHINGTON
STREET

WEBSTER STREET

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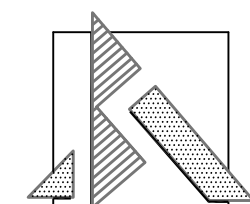
1. FOR NOTES AND LEGEND, SEE SHEET 2 OF 18.

- 2014 BORING LOCATION
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EXISTING CONDITIONS
PLAN OF LAND
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SOMERVILLE, MASSACHUSETTS

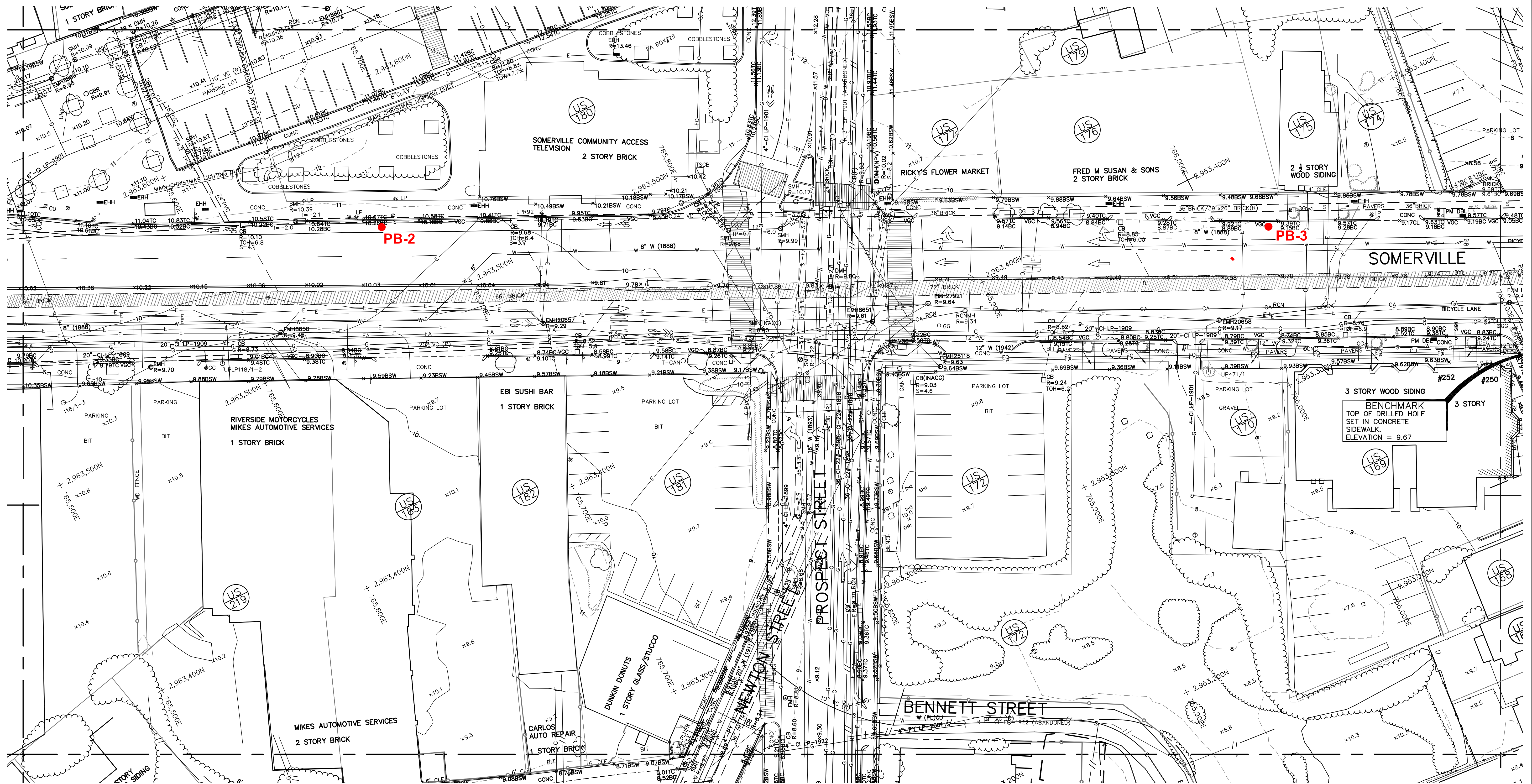
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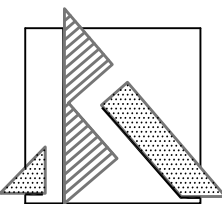


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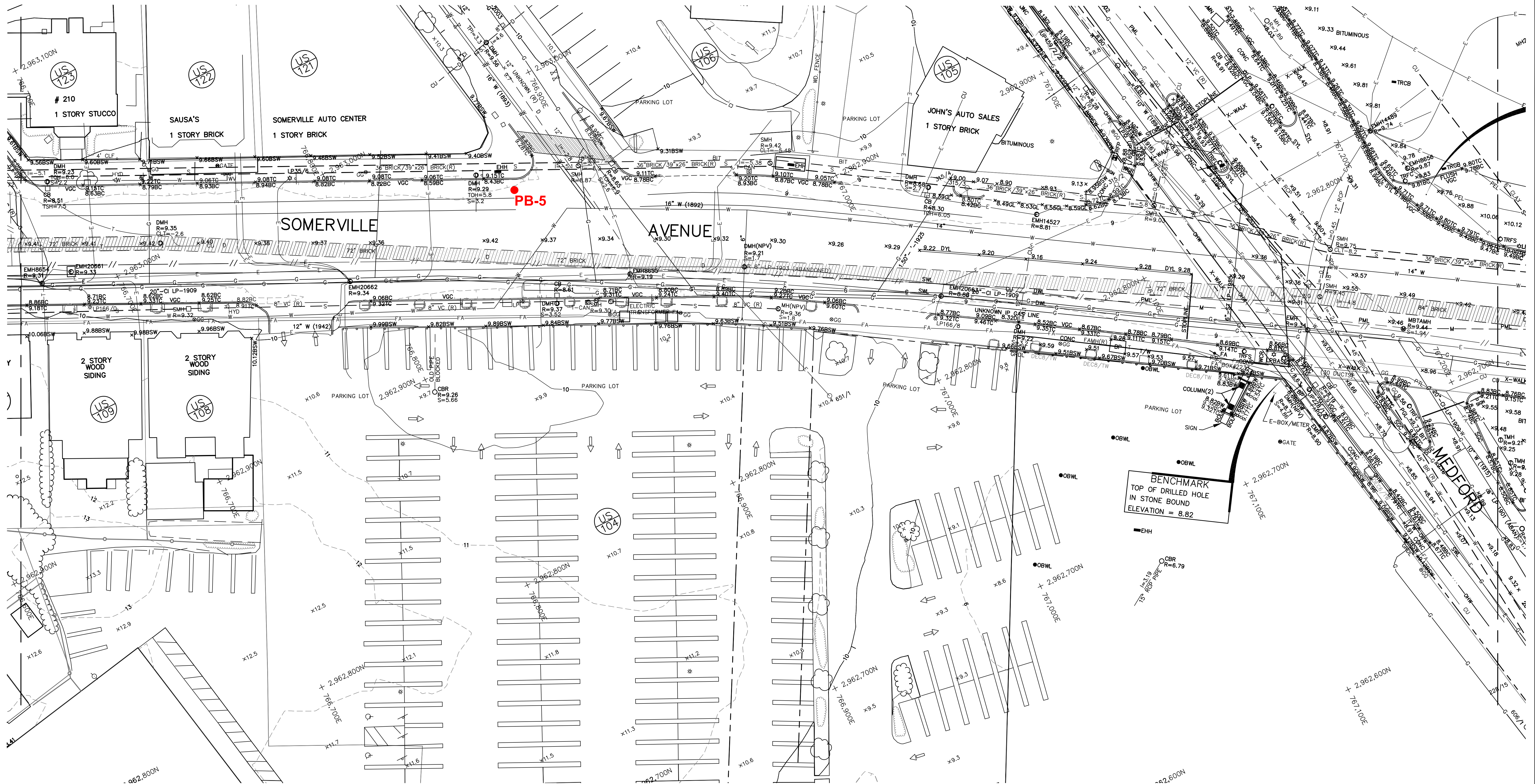
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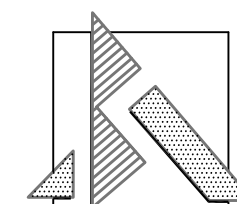
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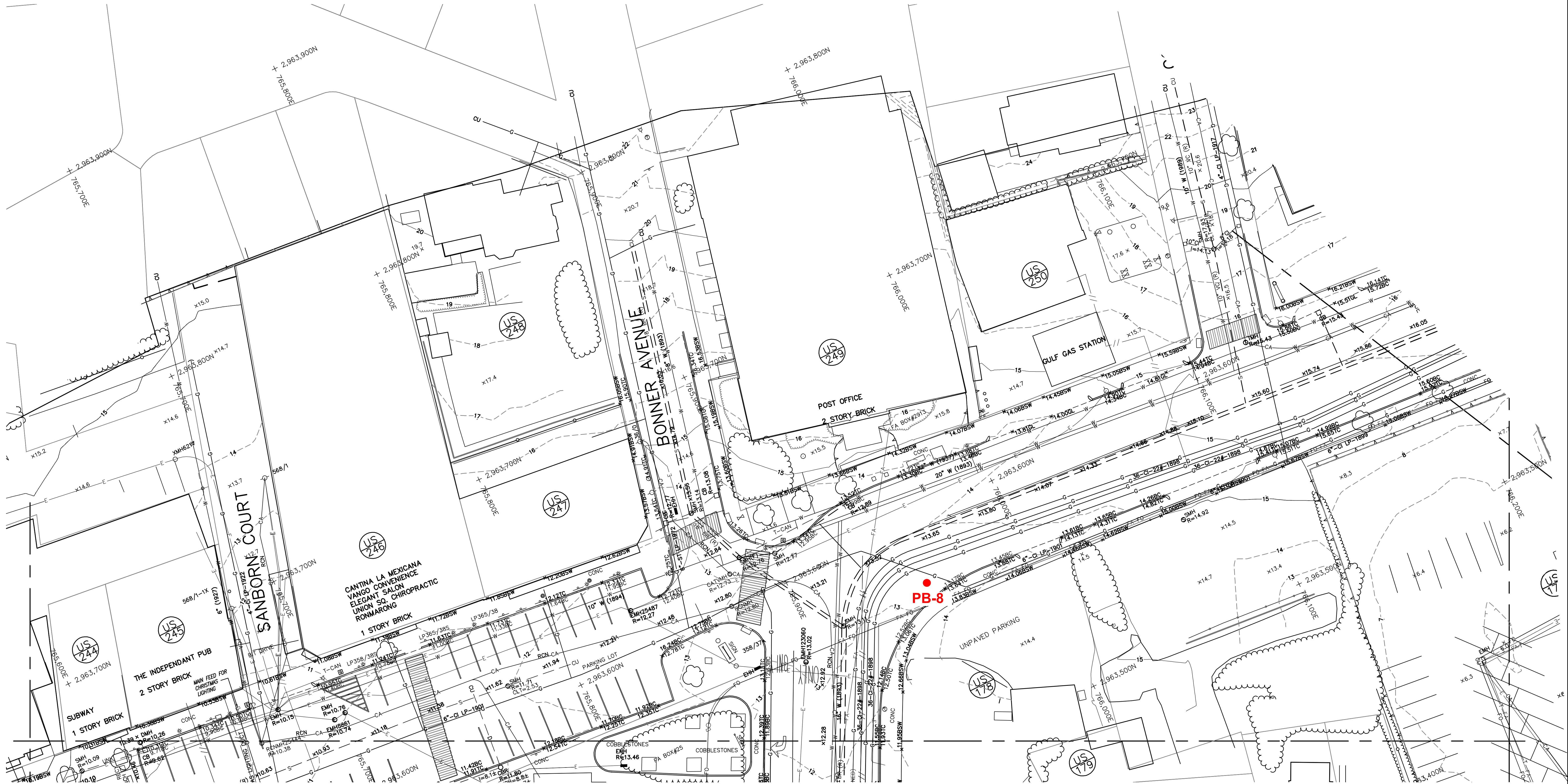
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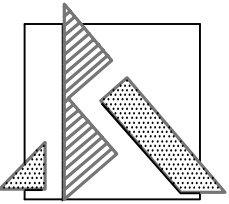
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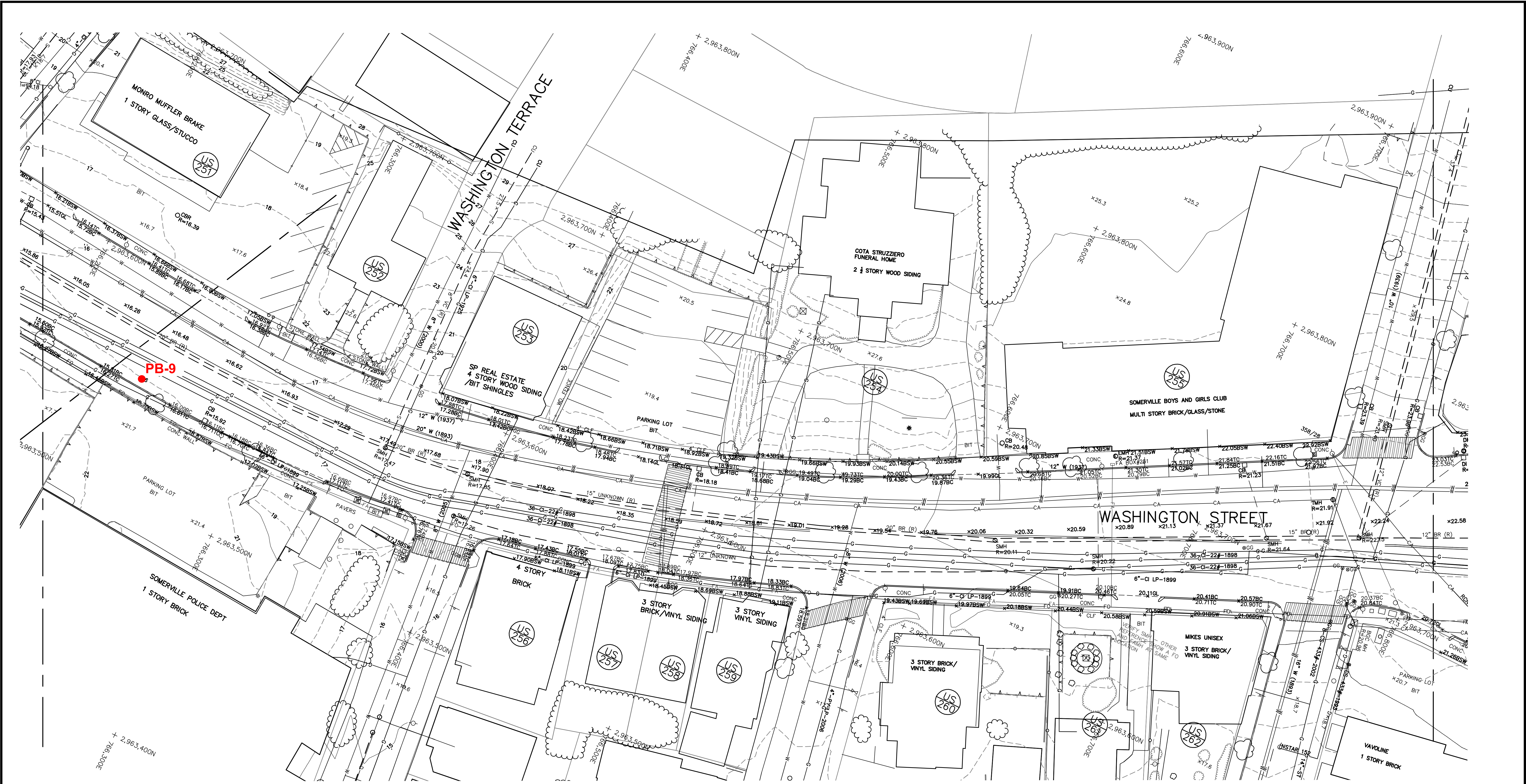
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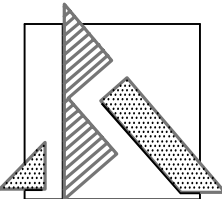
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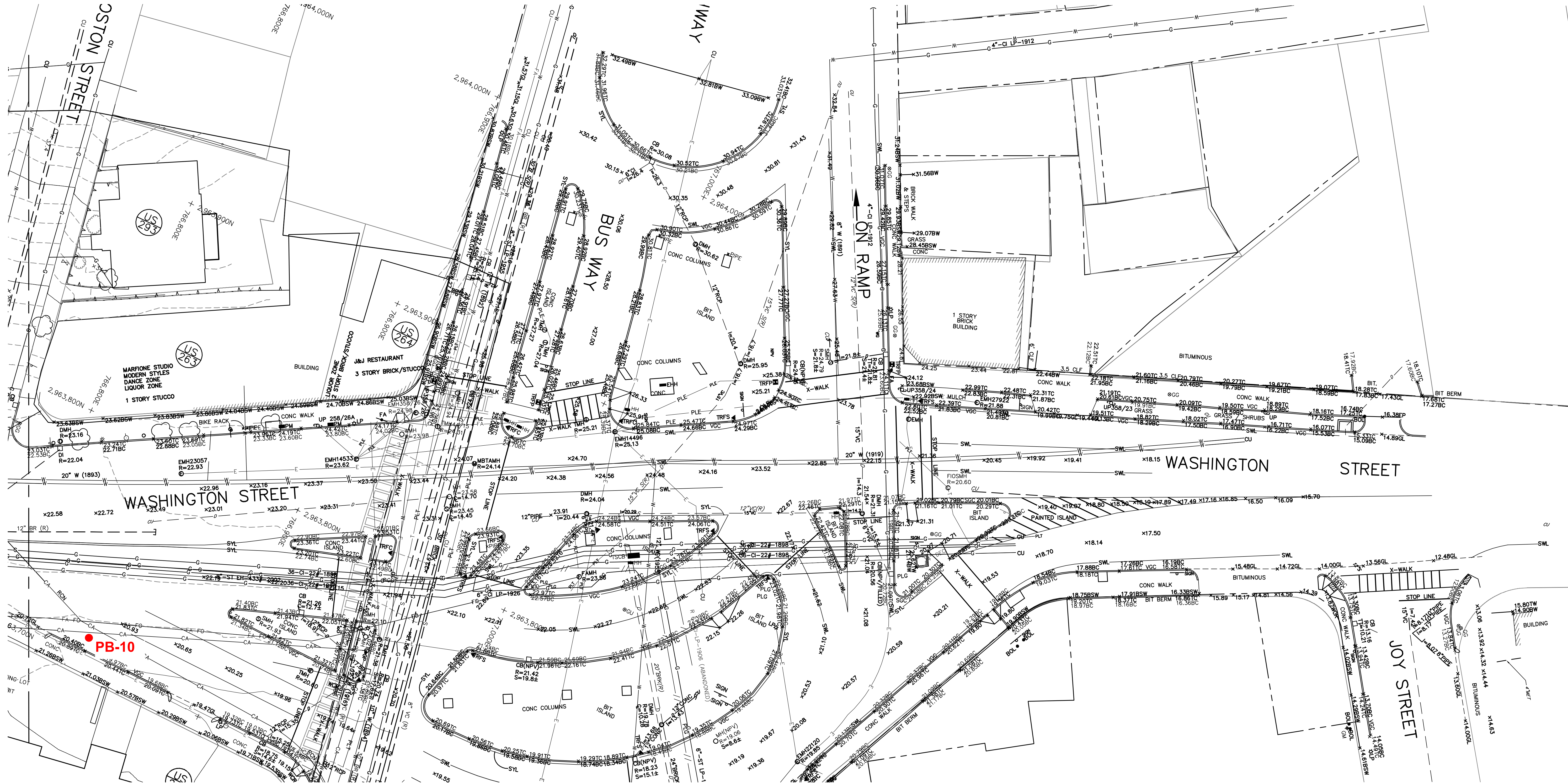
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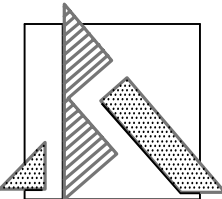
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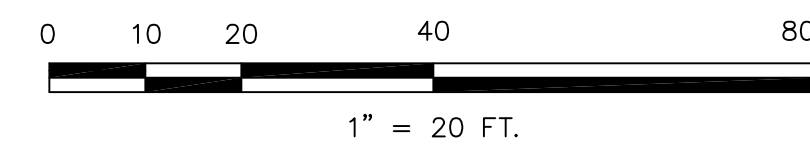
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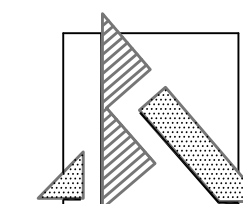
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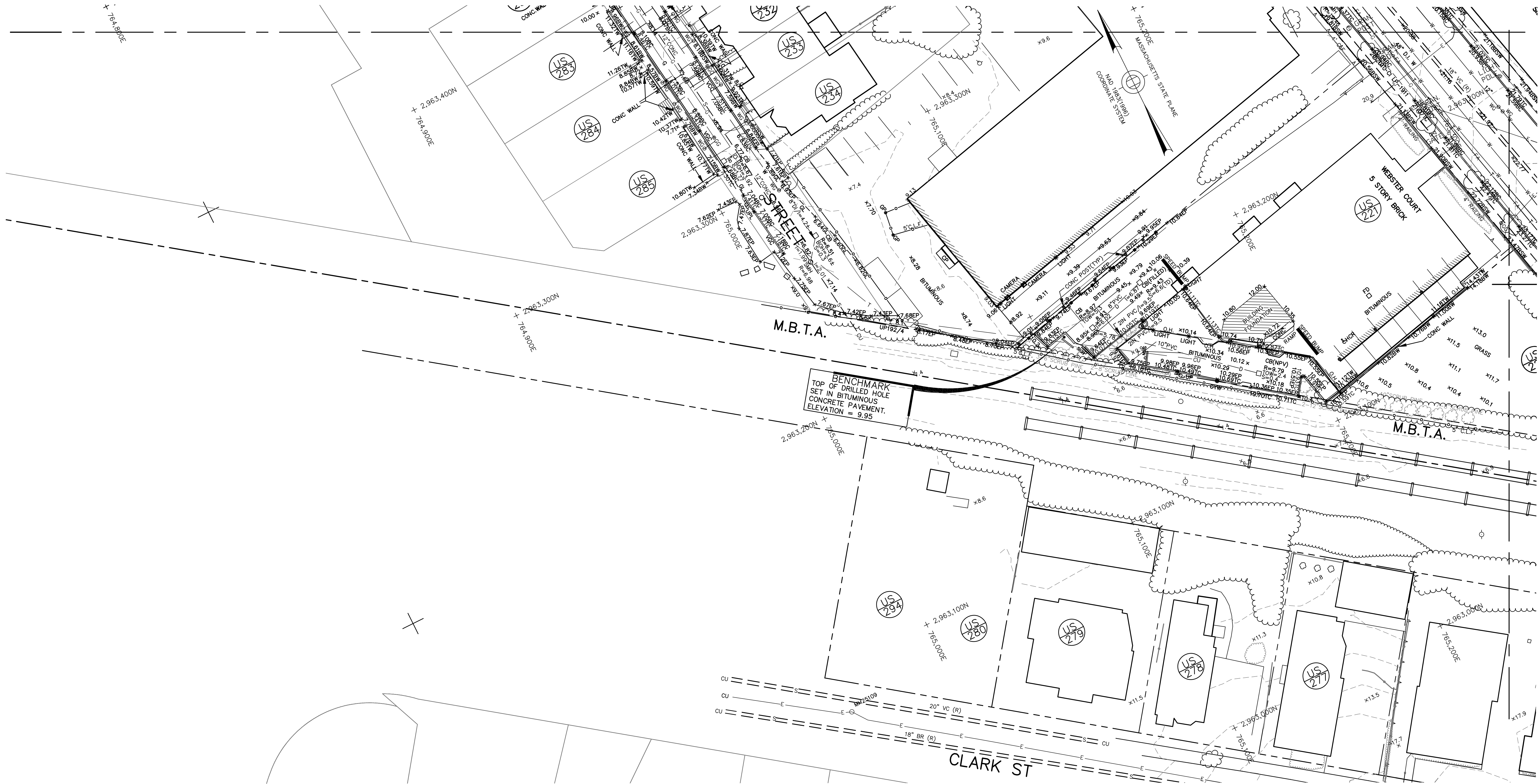
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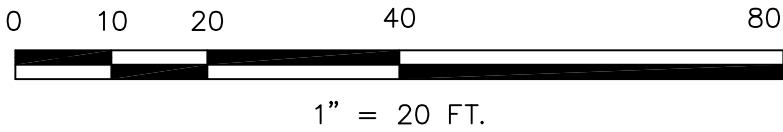


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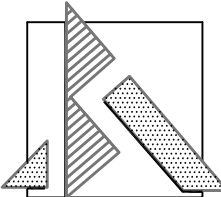
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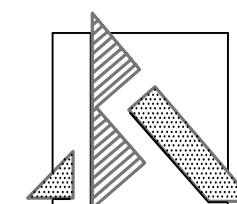
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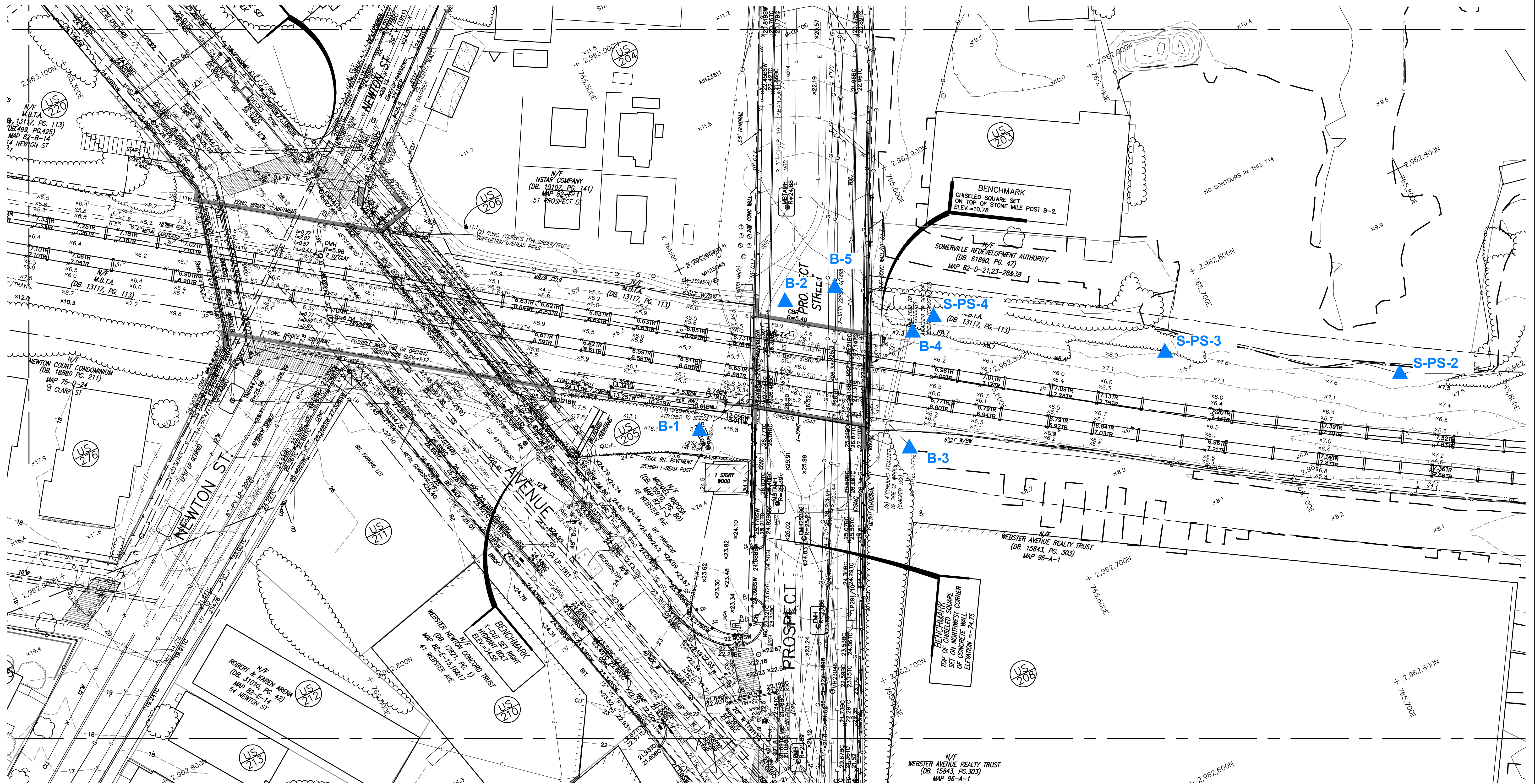
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● 2014 BORING LOCATION
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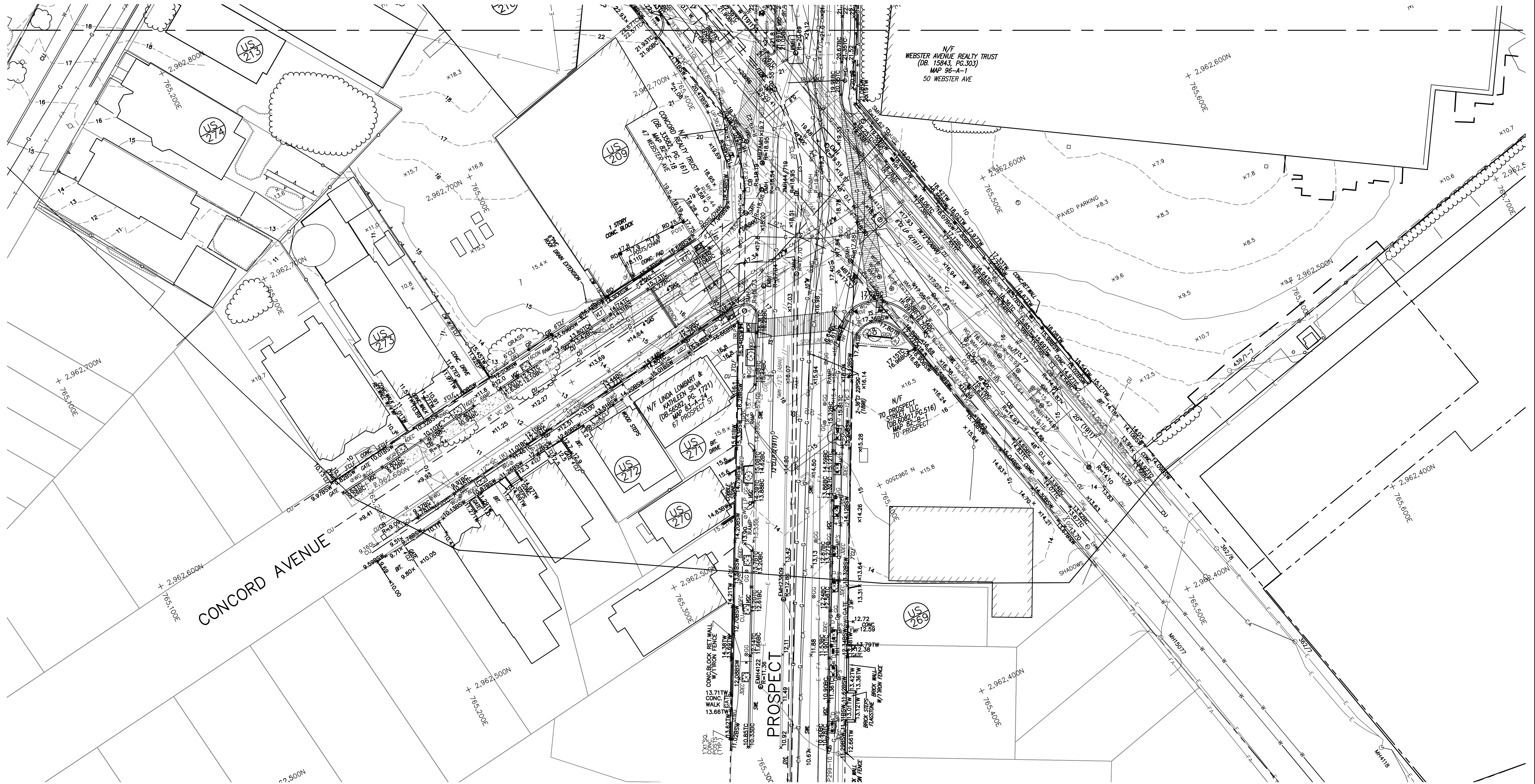
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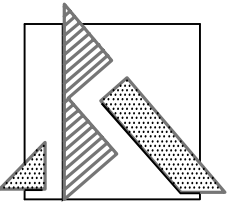
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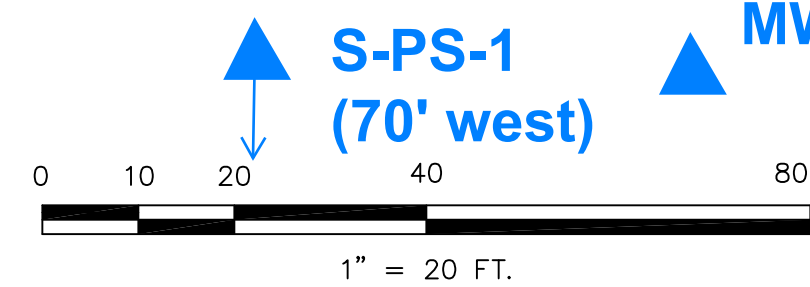
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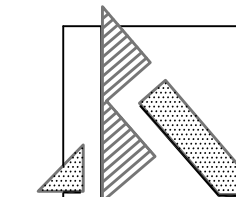
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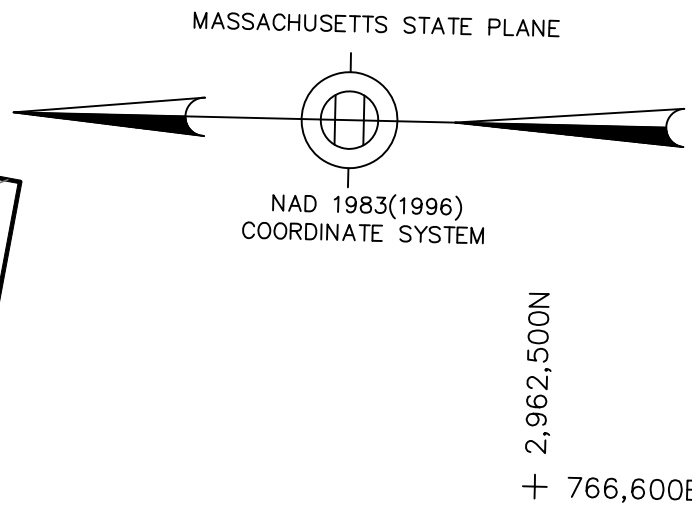
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CONCRETE BLOCK
"TARGET STORE"

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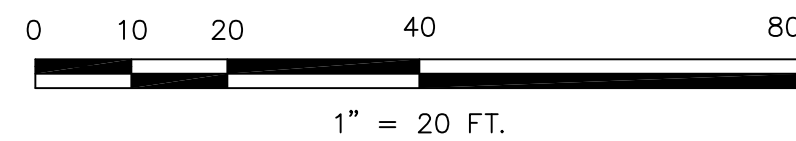
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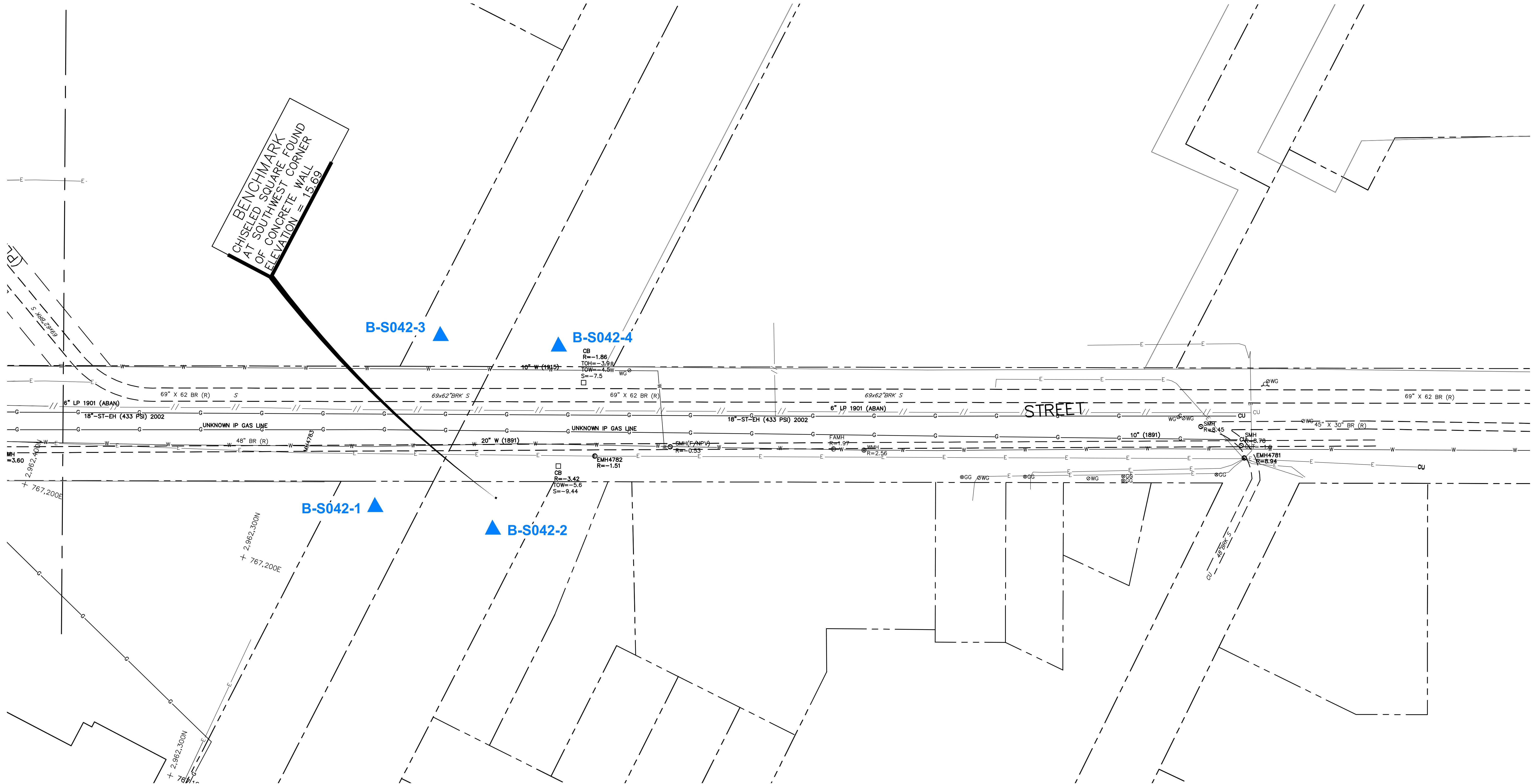
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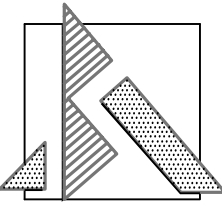
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ABBREVIATIONS

ABND	ABANDONED	PA	PLANTED AREA
APPROX	APPROXIMATE	P&C	POST AND CABLE
APPX	APPROXIMATE	PEL	PAINTED ELECTRIC LINE
B=	BOTTOM	PG	PAGE
BG	BRIDGE GIRDER	PGL	PAINTED GAS LINE
BSW	BACK OF SIDEWALK	PKT	PICKET FENCE
BIT	BITUMINOUS CONCRETE	PML	PAINTED MASSACHUSETTS BAY TRANSPORTATION LINE
BC	BOTTOM CURB	PCH	PORCH
BP	BITUMINOUS PATCH	PSIG	POUNDS PER SQ. INCH GAGE
BRK	BRICK	PL	PLAN
BW	BOTTOM WALL	PL	PLANTER
BWL	BROKEN WHITE PAINTLINE	PLNTR	PAINTED TELEPHONE LINE
BYL	BROKEN YELLOW PAINTLINE	PTL	POLYVINYL CHLORIDE
CC	CONCRETE CURB	PVC	PAINTED WATER LINE
CLF	CHAIN LINK FENCE	PWL	RECORD
CLT	CENTERLINE TROUGH	(R)	RIM
CMP	CORRUGATED METAL PIPE	R=	RECESSED
CO	CLEAN OUT	RCD	RECYCLE BIN
CONC	CONCRETE	RECY	RETAINING
COND.	CONDUIT	RET	RAILROAD TIE
CI	CAST IRON PIPE	RR TIE	ROOF DRAIN
CP	CONCRETE PAD	RD	REINFORCED CONCRETE PIPE
CPP	CORRUGATED PLASTIC PIPE	RET	SUMP
CU	CONNECTION UNKNOWN	RCP	SLOPED GRANITE CURB
DB	DEED BOOK	S=	SBT SIGNAL & COMMUNICATION
DBL	DOUBLE	SGC	STONE AND MASONRY WALL
DWL	DASHED WHITE LINE	S&M	SIGNAL
DEC	DECIDUOUS	SIG	STEEL
DH	DRILL HOLE	ST	STOCKADE FENCE
DI	DROP INLET	STY	STORY
DIA	DIAMETER	SW	SIDEWALK
DYL	DOUBLE YELLOW PAINTLINE	SWL	SINGLE WHITE PAINTLINE
ELEC	ELECTRIC	SYL	SINGLE YELLOW PAINTLINE
E-BOX	ELECTRIC BOX	TC	TOP CURB
EP	ESCHUIN PIN	T-CAN	TRASH CAN
(FL)	FLUSH	TD	TOP OF DEBRIS
(F)	FILLED W/DEBRIS	TOH	TOP OF HOOD
FD	FOUND	TOW	TOP OF WATER
FF	FINISH FLOOR	TP	TOP OF PIPE
GASM	GAS METER	TR	TOP RAIL
GRAN	GRANITE	TRANS	TRANSFORMER
GRDL	GUARDRAIL	TRI	TRIPLE
GL	GUTTERLINE	TT	TOP OF TRAP
HR	HANDRAIL	TW	TOP WALL
HP	HIGH PRESSURE	TWL/TW	TREE WELL
I=	INVERT	TYP	TYPICAL
I,PIPE	IRON PIPE	VPIT	VALVE PIT
IP	IRON PIPE	V-PIPE	VERTICAL PIPE
INACC	INACCESSIBLE	VC	VITRIFIED CLAY PIPE
I.ROD	IRON ROD	VCC	VERTICAL CONCRETE CURB
IRR.	IRRIGATION	VERT	VERTICAL
JB	JERSEY BARRIER	VGC	VERTICAL GRANITE CURB
LP	LOW PRESSURE	VLT	VAULT
MLBX	MAILEOX	WCR	WHEELCHAIR RAMP
MET	METAL	WD	WOOD
MDC	METROPOLITAN DISTRICT COMMISSION	WF	WOOD FRAME
N/A	NO ACCESS	WP	WOOD POST
NPV	NO PIPES VISIBLE	WPL	WHITE PAINTED LINE
NSM	NONSKID MAT	X-JOINT	EXPANSION JOINT
OH	OVERHANG	X-WALK	CROSSWALK
OR	ORIENTAL FENCE	YPL	YELLOW PAINTED LINE
		10"D	(TREE) 10" DECIDUOUS
		12"M	(TREE) 12" MAPLE
		6"S	(TREE) 6" SUMAC

LEGEND

-----	EXISTING CONTOUR
x 22.5	EXISTING INDEX CONTOUR
CA	SPOT GRADE
D	CABLE TELEVISION
E	SURFACE DRAIN
T	ELECTRIC
W	TELEPHONE
W	WATER MAIN
W	ABANDONED WATER MAIN
G	GAS
PL G/PYLP	LOW PRESSURE PLASTIC GAS
G	ABANDONED GAS
S	SANITARY SEWER
OHW	OVERHEAD WIRE
FA	FIRE ALARM
FO	FIBRE OPTIC
CLF	CHAIN LINK FENCE
	GUARDRAIL
	WOOD FENCE
	RAILROAD TRACKS
	TRAVERSE LINE
	BUILDING
	BITUMINOUS PATCH (BP)
	GLX PARCEL NUMBER
BO	BLOW OFF
BOL	BOLLARD
BOL	BOLLARD
BOR	BORING
CB	CATCH BASIN
CATVMH	COMMUNICATION MANHOLE
CO	CLEANOUT
DCB	DOUBLE CATCH BASIN
DMH	DRAIN MANHOLE
6DEC	6"DECIDUOUS TREE
CON	CONIFEROUS TREE
EBX	ELECTRIC BOX
EHH	ELECTRIC HANDHOLE
EMH	ELECTRIC MANHOLE
FA	FIRE ALARM
FP	FLAG POLE
FP	FENCE POST
FL	FLOOD LIGHT
FDO	FLOOR DRAIN OIL
FMH	FIRE MANHOLE
FOMH	FIBER OPTIC MANHOLE
GD	GAS DRIP
GG	GAS GATE
GM	GAS METER
GP	GATE POST
GV	GATE VALVE
HH	HANDHOLE
HYD	HYDRANT
IRRHH	IRRIGATION HANDHOLE
LP	LIGHT POLE
MB	MAIL BOX
MH	MANHOLE
MHH	MASSACHUSETTS HIGHWAY HANDHOLE
MBTAMH	MASSACHUSETTS BAY TRANSPORTATION AUTHORITY MANHOLE
MH	OIL MANHOLE
OBWL	OBSERVATION WELL
OHH	OIL HANDHOLE
X	RAILROAD SIGNAL
RRS	RAILROAD SIGNAL
SMH	SANITARY SEWER MANHOLE
SIGN	SIGN
SP	STEEL POST
	SHRUB
SWCH	RAILROAD SWITCH
TMH	TRAVERSE POINT
TRFC	TELEPHONE MANHOLE
TRFP	TRAFFIC POLE (COMBINED)
TRFV	TRAFFIC POLE (PEDESTRIAN)
TSCB	TRAFFIC POLE (VEHICLE)
6M	TRAFFIC SIGNAL CONTROL BOX
WG	MAPLE TREE WITH SIZE IN INCHES
GATE	WATER GATE
UP	UNKNOWN GATE
UPLP	UTILITY POLE
UPSTMP	UTILITY LIGHT POLE
WPST	UTILITY POLE STUMP
WMH	WOOD POST
	WATER MANHOLE

NOTES:

- HORIZONTAL DATUM IS MASSACHUSETTS STATE PLANE COORDINATE SYSTEM AND 1983(1996) DERIVED BY CONTROL ON PLAN ENTITLED "EXISTING CONDITIONS" DATED MARCH 11, 2011 PREPARED BY VANASSE HANGEN BRUSTLIN, INC. FOR THE GREENLINE EXTENSION PROJECT.
- VERTICAL DATUM IS NAVD 1988.
- THE SURFACE EVIDENCE OF THE UTILITIES SHOWN HAS BEEN LOCATED BY FIELD SURVEY. THE LINework REPRESENTING UNDERGROUND STRUCTURES AND PIPES HAS BEEN SHOWN HEREON IN ITS APPROXIMATE LOCATION BASED ON UTILITY RESEARCH RECEIVED. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.
- THE EXISTING CONDITIONS SHOWN ON THIS PLAN ARE BASED UPON AERIAL MAPPING PREPARED BY COL-EAST, INC. ON OR BEFORE NOVEMBER, 2013 AND SUPPLEMENTAL FIELD SURVEY PERFORMED BY BRYANT ASSOCIATES.
- M.B.T.A. RIGHT OF WAY LINES SHOWN HEREON ARE SHOWN FROM AN ON THE GROUND FIELD SURVEY AND PLANS OF RECORD. PROPERTY LINES OF ABUTTERS ARE APPROXIMATE.
- WETLAND MAPPING WAS NOT INCLUDED IN SCOPE OF PROJECT.

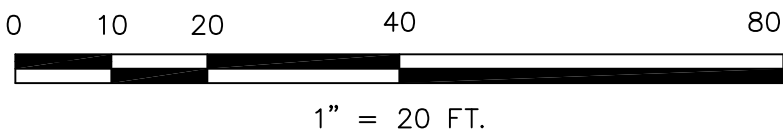
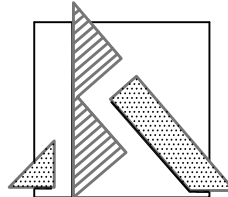
EXISTING CONDITIONS
 PLAN OF LAND
 IN
 SOMERVILLE, MASSACHUSETTS
 PREPARED FOR
 CITY OF SOMERVILLE

PREPARED BY:
 BRYANT ASSOCIATES, INC.

90 CANAL STREET, SUITE 301 - BOSTON, MA 02114
 TEL. 617-248-0300, FAX 617-248-0212
 WWW.BRYANT-ENGRS.COM

MARCH, 2014

SURVEY DATE: 1-2014 CHECKED BY: CAV
 DRAWN BY: CEH APPROVED BY: GJH
 DRAWING NAME: 213082 EC.DWG
 SHEET 2 OF 18



PROGRESS ONLY – NOT TO
 BE USED FOR FINAL DESIGN



BORING LOG

BORING NUMBER: S-PS-1

SHEET NUMBER: 1 of 2

PROJECT NUMBER: 52432S

PROJECT: Green Line Extension

LOCATION: Cambridge - Somerville - Medford, Massachusetts

CLIENT: MassDOT

CONTRACTOR: NH Boring Company

LOCATION: E of Prospect St

COORD. N: 2962660 E: 765859

STN. NO.: OFFSET:

SURFACE ELEV.: 7.5 feet

DATUM: NAVD-88

DRILLER: M Gallo

INSPECTOR: G Brooks

DRILLING METHOD: Rotary Wash

RIG TYPE: Diedrich D-50 Track Mounted Rig

START DATE: 6/4/10

FINISH DATE: 6/4/10

Type/Symbol	Casing	Split Spoon	Shelby Tube	Piston	Grab	Core Barrel	GROUNDWATER DATA				
I.D.	HW	S	U	P	G	C	Date	Time	Water Depth (ft)	Casing Depth (ft)	Hole Depth (ft)
O.D.	4"	1.375"	"	"	Hand auger	1.875"	6/4/10	10:15 am	2.5	7.0	8.0
Length	4.5"	2"	"	"	Hand Auger	2.980"	6/4/10	2:30 pm	7.5	0.0	45.3
Hammer Wt.	60"	24"	"	"	60"	7.5'					
Hammer Fall	300 lbs	140 lbs	Drill Rod Size		N						
	24"	30"	I.D. (O.D.)		1.875" (2.65")						

ELEVATION (feet)	DEPTH (feet)	SAMPLE						SOIL				N VALUE	GRAPHIC LOG	FIELD CLASSIFICATION AND REMARKS		
		TYPE	NUMBER	SYMBOL	RECOVERY (in.)	RECOVERY (%)	RQD (in.)	RQD (%)	BLOWS/6 in. ON SAMPLER (* denotes 300 lb hammer)							
									0/6	6/12	12/18			18/24		
		S	1		13				12	22	22	19	44			Dark brown fine to coarse SAND, some fine to coarse gravel, little silt, moist, dense (LABORATORY ANALYSIS PERFORMED)
5		S	2		19				15	16	23	22	39			Gray SILT, little fine to coarse gravel, little fine sand, wet, dense
5		S	3		17				16	17	16	16	33			Gray SILT, little fine sand, wet, dense
0		S	4		12				4	3	2	2	5			Gray SILT, little fine sand, wet, loose
10		S	5		24				WOH	WOH	WOH	7	0			Brown organic SILT and PEAT, trace clay, wet, loose
-5		S	6		12				6	4	5	8	9			Gray clayey SILT, some clay, little fine to coarse sand, mostly fine, trace fine gravel, loose (LABORATORY ANALYSIS PERFORMED)
-15		S	7		24				3	6	6	7	12			Gray CLAY and SILT, stiff pp= 1.5, 1.5, 1.375 tons/ft ² tv = 0.3, 0.55, 0.67 tons/ft ²
-20		S	8		20				5	6	5	7	11			Gray CLAY and SILT, trace fine sand, stiff (LABORATORY ANALYSIS PERFORMED) pp= 1.25, 0.5, 0.5 tons/ft ² tv = 0.5, 0.475 tons/ft ²
-15																



BORING LOG

(continued)

BORING NUMBER: **S-PS-1**

SHEET NUMBER: **2** of **2**

PROJECT NUMBER: **52432S**

PROJECT: **Green Line Extension**

CONTRACTOR: **NH Boring Company**

LOCATION: **Cambridge - Somerville - Medford, Massachusetts**

DRILLER: **M Gallo**

CLIENT: **MassDOT**

INSPECTOR: **G Brooks**

ELEVATION (feet)	DEPTH (feet)	SAMPLE						SOIL				N VALUE	GRAPHIC LOG	FIELD CLASSIFICATION AND REMARKS	
		TYPE	NUMBER	SYMBOL	RECOVERY (in.)	RECOVERY (%)	RQD (in.)	RQD (%)	BLOWS/6 in. ON SAMPLER (* denotes 300 lb hammer)						
									0/6	6/12	12/18				18/24
-20		S	9		6				3	4	5	5	9		Gray CLAY and SILT, wet, stiff Note: Sample disturbed, unable to take tv or pp readings
-30		S	10		24				2	3	3	4	6		Gray CLAY and SILT, trace fine sand, medium stiff (LABORATORY ANALYSIS PERFORMED) pp= 1.0, 1.0, 1.25 tons/ft ² tv = 0.3, 0.35, 0.45 tons/ft ²
-35		S	11		24				2	3	4	5	7		Gray CLAY and SILT, medium stiff pp= 1.0, 1.0, 1.0 tons/ft ² tv = 0.4 tons/ft ²
-40		S	12		16				5	6	34	100	40		Top 10": Gray fine SAND and SILT, wet, dense
-45		S	13		3				100/3"				>100		Bot 6": Gray fine to coarse GRAVEL (rock fragments) and fine to coarse SAND, trace silt, trace clay (WEATHERED ROCK) (LABORATORY ANALYSIS PERFORMED)
-45.3															Gray fine to coarse GRAVEL (rock fragments), little silt, very dense (WEATHERED ROCK) Bottom Of Hole - 45.3ft
-50															
-55															
-50															



BORING LOG

BORING NUMBER: S-PS-2

SHEET NUMBER: 1 of 2

PROJECT NUMBER: 52432S

PROJECT: Green Line Extension

LOCATION: Cambridge - Somerville - Medford, Massachusetts

CLIENT: MassDOT

CONTRACTOR: NH Boring Company

LOCATION: E of Prospect St

COORD. N: 2962718 E: 765761

STN. NO.: OFFSET:

SURFACE ELEV.: 7.7 feet

DATUM: NAVD-88

DRILLER: M Gallo

INSPECTOR: G Brooks

DRILLING METHOD: Rotary Wash

RIG TYPE: Diedrich D-50 Track Mounted Rig

START DATE: 6/7/10

FINISH DATE: 6/8/10

Type/Symbol	Casing	Split Spoon	Shelby Tube	Piston	Grab	Core Barrel	GROUNDWATER DATA				
I.D.	HW	S	U	P	G	C	Date	Time	Water Depth (ft)	Casing Depth (ft)	Hole Depth (ft)
O.D.	4"	1.375"	"	"	Hand auger	1.875"	6/7/10	8:15 am	2.0	0.0	6.0
Length	4.5"	2"	"	"	Hand Auger	2.980"	6/8/10	7:30 am	7.8	0.0	55.9
Hammer Wt.	60"	24"	"	"	60"	7.5'					
Hammer Fall	300 lbs	140 lbs	Drill Rod Size		N						
	24"	30"	I.D. (O.D.)		1.875" (2.65")						

ELEVATION (feet)	DEPTH (feet)	SAMPLE						SOIL				N VALUE	GRAPHIC LOG	FIELD CLASSIFICATION AND REMARKS		
		TYPE	NUMBER	SYMBOL	RECOVERY (in.)	RECOVERY (%)	RQD (in.)	RQD (%)	BLOWS/6 in. ON SAMPLER							
									(* denotes 300 lb hammer)							
									0/6	6/12	12/18			18/24		
		S	1		6				9	33	75	34	108			Dark brown fine SAND and fine to coarse GRAVEL, trace silt, wet, very dense
-5		S	2		4				20	14	12	10	26			Gray SILT, some clay, little fine to coarse gravel, wet, medium dense
		S	3		12				3	3	8	21	11			Dark brown fine to coarse SAND, some fine to coarse gravel, little to trace silt, wet, medium dense (LABORATORY ANALYSIS PERFORMED)
-5		S	4		24				20	20	29	48	49			Note: Permeability test conducted between 5 to 7ft
		S	5		12				20	30	36	62	66			Top 15": Dark brown fine to coarse SAND, some silt, little fine gravel, wet, dense
0		S	6		23				9	24	30	37	54			Bot 9": Gray mottled brown CLAY and SILT, hard
-5																Light gray CLAY and SILT, wet, hard
		S	7		22				7	13	16	16	29			Light gray CLAY and SILT, trace fine sand, wet, hard (LABORATORY ANALYSIS PERFORMED)
-10																pp= 2.0, 3.25, 3.25 tons/ft ² tv= 0.8 tons/ft ²
-20		S	8		24				4	5	5	6	10			Light gray CLAY and SILT, wet, stiff
-15																pp= 1.0, 1.0 tons/ft ² tv= 0.625, 0.525 tons/ft ²



BORING LOG

(continued)

BORING NUMBER: **S-PS-2**

SHEET NUMBER: **2** of **2**

PROJECT NUMBER: **52432S**

PROJECT: **Green Line Extension**

LOCATION: **Cambridge - Somerville - Medford, Massachusetts**

CLIENT: **MassDOT**

CONTRACTOR: **NH Boring Company**

DRILLER: **M Gallo**

INSPECTOR: **G Brooks**

ELEVATION (feet)	DEPTH (feet)	SAMPLE						SOIL				N VALUE	GRAPHIC LOG	FIELD CLASSIFICATION AND REMARKS	
		TYPE	NUMBER	SYMBOL	RECOVERY (in.)	RECOVERY (%)	RQD (in.)	RQD (%)	BLOWS/6 in. ON SAMPLER (* denotes 300 lb hammer)						
									0/6	6/12	12/18			18/24	Depth Elev.
-20		S	9		19				3	2	4	4	6		Light gray CLAY and SILT, trace fine sand, wet, stiff (LABORATORY ANALYSIS PERFORMED) pp= 1.0, 0.75, 1.0 tons/ft ² tv= 0.575, 0.525 tons/ft ²
-30		S	10		24				WOH	2	2	3	4		Light gray CLAY and SILT, wet, soft to medium stiff pp= 0.50, 0.75, 0.75 tons/ft ² tv= 0.35, 0.375 tons/ft ²
-35		S	11		24				WOH	3	3	4	6		Light gray CLAY and SILT, trace fine sand, wet, medium stiff (LABORATORY ANALYSIS PERFORMED) pp= 0.75, 0.75, 0.75 tons/ft ² tv= 0.35, 0.225 tons/ft ²
-40		S	12		24				WOR	4	6	12	10		Top 18": Light gray CLAY, some silt, wet, medium stiff pp= 0.75, 0.75 tons/ft ² tv= 0.15 tons/ft ²
-45		S	13		12				12	99	16	16	115		Bot 6": Light gray fine SAND and SILT, little fine gravel, wet, loose to medium dense Gray fine to coarse SAND, some fine to coarse gravel, some silt, little to trace clay, wet, very dense (LABORATORY ANALYSIS PERFORMED)
-50		S	14		7				23	22	28	29	50		Gray fine to coarse GRAVEL (rock fragments), little silt, little to trace clay, trace fine sand, wet, dense to very dense (WEATHERED ROCK)
-55		S	15		8				50	100/5"			>100		Gray fine to coarse GRAVEL (rock fragments), trace silt, trace clay, wet, very dense (WEATHERED ROCK)
-50															Bottom Of Hole - 55.3ft



BORING LOG

BORING NUMBER: S-PS-3

SHEET NUMBER: 1 of 2

PROJECT NUMBER: 52432S

PROJECT: Green Line Extension

LOCATION: Cambridge - Somerville - Medford, Massachusetts

CLIENT: MassDOT

CONTRACTOR: NH Boring Company

LOCATION: E of Prospect St

COORD. N: 2962774 E: 765674

STN. NO.: OFFSET:

SURFACE ELEV.: 8.1 feet

DATUM: NAVD-88

DRILLER: M Gallo

INSPECTOR: G Brooks

DRILLING METHOD: Rotary Wash

RIG TYPE: Diedrich D-50 Track Mounted Rig

START DATE: 6/3/10

FINISH DATE: 6/3/10

Type/Symbol	Casing	Split Spoon	Shelby Tube	Piston	Grab	Core Barrel	GROUNDWATER DATA				
I.D.	HW	S	U	P	G	C	Date	Time	Water Depth (ft)	Casing Depth (ft)	Hole Depth (ft)
O.D.	4"	1.375"	"	"	Hand auger	1.875"	6/3/10	7:30 am	2.5	0.0	4.0
Length	4.5"	2"	"	"	Hand Auger	2.980"	6/3/10	2:30 pm	2.0	0.0	55.3
Hammer Wt.	60"	24"	"	"	60"	7.5'					
Hammer Fall	300 lbs	140 lbs	Drill Rod Size		N						
	24"	30"	I.D. (O.D.)		1.875" (2.65")						

ELEVATION (feet)	DEPTH (feet)	SAMPLE						SOIL				N VALUE	GRAPHIC LOG	FIELD CLASSIFICATION AND REMARKS	
		TYPE	NUMBER	SYMBOL	RECOVERY (in.)	RECOVERY (%)	RQD (in.)	RQD (%)	BLOWS/6 in. ON SAMPLER (* denotes 300 lb hammer)						
									0/6	6/12	12/18				18/24
		S	1		10				6	14	16	9	30		Brown fine to coarse GRAVEL, some fine to coarse sand, trace silt, dry, medium dense to dense (LABORATORY ANALYSIS PERFORMED)
-5		S	2		10				18	30	40	40	70		Dark brown fine to coarse GRAVEL, some fine to coarse sand, trace silt, wet, very dense
-5		S	3		8				23	21	17	39	38		Dark brown fine to coarse GRAVEL, little fine to coarse sand, trace silt, wet, dense
		S	4		13				26	33	17	18	50		Top 6": Light brown fine to medium SAND, trace silt, wet, dense to very dense
0		S	5		5				21	8	8	8	16		Bot 7": Dark brown fine to coarse GRAVEL and fine to coarse SAND, little silt
-10		S	6		9				8	3	6	12	9		Note: Permeability test conducted from 7 to 8ft
-5		S	7		19				15	12	8	10	20		Dark brown fine to coarse GRAVEL, little fine to coarse sand, trace silt, wet, medium dense
-15		S	8		21				15	9	10	10	19		Light gray CLAY and SILT, trace fine sand, wet, stiff (LABORATORY ANALYSIS PERFORMED) pp= 2.25 tons/ft ² tv= 0.55 tons/ft ²
-10															Light gray CLAY and SILT, wet, very stiff pp= 1.5 tons/ft ² tv= 0.575 tons/ft ²
-20		S	9		9				5	6	7	8	13		Light gray CLAY and SILT, trace fine gravel, trace fine to coarse sand, wet, stiff (LABORATORY ANALYSIS PERFORMED) pp= 0.5 tons/ft ²
-15															



BORING LOG

(continued)

BORING NUMBER: **S-PS-3**

SHEET NUMBER: **2** of **2**

PROJECT NUMBER: **52432S**

PROJECT: **Green Line Extension**

LOCATION: **Cambridge - Somerville - Medford, Massachusetts**

CLIENT: **MassDOT**

CONTRACTOR: **NH Boring Company**

DRILLER: **M Gallo**

INSPECTOR: **G Brooks**

ELEVATION (feet)	DEPTH (feet)	SAMPLE						SOIL				N VALUE	GRAPHIC LOG	FIELD CLASSIFICATION AND REMARKS	
		TYPE	NUMBER	SYMBOL	RECOVERY (in.)	RECOVERY (%)	RQD (in.)	RQD (%)	BLOWS/6 in. ON SAMPLER						
									(* denotes 300 lb hammer)						
									0/6	6/12	12/18				18/24
		S	10		24				3	3	5	6	8		Light gray CLAY and SILT, trace fine sand, wet, medium stiff to stiff (LABORATORY ANALYSIS PERFORMED) pp= 1.25 tons/ft ² tv= 0.3 tons/ft ²
-20															
-30		S	11		24				2	3	3	4	6		Light gray CLAY and SILT, wet, medium stiff pp= 1.0 tons/ft ² tv= 0.275 tons/ft ²
-25															
-35		S	12		24				1	2	3	4	5		Light gray CLAY and SILT, trace fine sand, wet, medium stiff (LABORATORY ANALYSIS PERFORMED) pp= 1.0 tons/ft ² tv= 0.3 tons/ft ²
-30															
-40		S	13		24				1	2	3	6	5		Light gray CLAY and SILT, wet, medium stiff pp= 1.0 tons/ft ² tv= 0.2 tons/ft ²
-35															
-45		S	14		7				16	24	32	26	56		Gray fine to coarse SAND, mostly fine, some fine to coarse gravel, little silt, little to trace clay, wet, very dense (TILL) (LABORATORY ANALYSIS PERFORMED)
-40															
-50		S	15		7				45	60	52	76	112		Gray SILT and fine to coarse GRAVEL (rock fragments), little fine to coarse sand, very dense (WEATHERED ROCK)
-45															
-55		S	16		3				100/3"				>100		Gray coarse GRAVEL (rock fragments), little silt, wet, very dense (WEATHERED ROCK) Bottom Of Hole - 55.3ft
-50															



BORING LOG

BORING NUMBER: S-PS-4

SHEET NUMBER: 1 of 2

PROJECT NUMBER: 52432S

PROJECT: Green Line Extension

LOCATION: Cambridge - Somerville - Medford, Massachusetts

CLIENT: MassDOT

CONTRACTOR: NH Boring Company

LOCATION: E of Prospect St

COORD. N: 2962833 E: 765591

STN. NO.: OFFSET:

SURFACE ELEV.: 9.5 feet

DATUM: NAVD-88

DRILLER: M Gallo

INSPECTOR: G Brooks

DRILLING METHOD: Rotary Wash

RIG TYPE: Diedrich D-50 Track Mounted Rig

START DATE: 6/2/10

FINISH DATE: 6/2/10

Type/Symbol	Casing	Split Spoon	Shelby Tube	Piston	Grab	Core Barrel	GROUNDWATER DATA				
I.D.	HW	S	U	P	G	C	Date	Time	Water Depth (ft)	Casing Depth (ft)	Hole Depth (ft)
O.D.	4"	1.375"	"	"	Hand auger	1.875"	6/2/10	2:29 pm	2.5	0.0	55.4
Length	4.5"	2"	"	"	Hand Auger	2.980"					
Hammer Wt.	60"	24"	"	"	60"	7.5'					
Hammer Fall	300 lbs	140 lbs	Drill Rod Size		N						
	24"	30"	I.D. (O.D.)		1.875" (2.65")						

ELEVATION (feet)	DEPTH (feet)	SAMPLE						SOIL				N VALUE	GRAPHIC LOG	FIELD CLASSIFICATION AND REMARKS	
		TYPE	NUMBER	SYMBOL	RECOVERY (in.)	RECOVERY (%)	RQD (in.)	RQD (%)	BLOWS/6 in. ON SAMPLER (* denotes 300 lb hammer)						
									0/6	6/12	12/18				18/24
		S	1		12				5	13	7	10	20		Dark brown fine to medium SAND, little fine to coarse gravel, trace silt, dry, medium dense
		S	2		13				5	6	6	5	12		Light brown fine to medium SAND, little fine gravel, trace coarse sand, trace silt, wet, medium dense (LABORATORY ANALYSIS PERFORMED)
-5	5	S	3		16				3	2	3	3	5		Light brown fine to medium SAND, little fine gravel, wet, loose
		S	4		18				5	4	3	3	7		Light brown medium SAND, little fine to coarse gravel, trace coarse sand, trace silt, wet, loose Note: Permeability test conducted from 7 to 8ft
0	10	S	5		6				7	3	1	1	4		Light gray fine to medium SAND, trace fine to coarse gravel, little silt, wet, very loose
		S	6		14				1	1	1	4	2		Gray fine to coarse SAND, mostly fine, little fine gravel, trace silt, wet, very loose (LABORATORY ANALYSIS PERFORMED)
		S	7		13				12	25	18	10	43		Gray fine SAND, little medium sand, trace fine gravel, trace silt, wet, dense
-5	15	S	8		10				12	9	14	13	23		Top 5": Gray fine SAND, little medium sand, trace fine to coarse gravel, wet, medium dense
															Bot 5": Light gray CLAY and SILT, wet, very stiff pp= 1.75 tons/ft ² tv= 0.5 tons/ft ²
-10	20	S	9		6				6	8	9	9	17		Light gray CLAY and SILT, trace fine gravel, trace fine to coarse sand, wet, very stiff (LABORATORY ANALYSIS PERFORMED)
-15															



BORING LOG

(continued)

BORING NUMBER: **S-PS-4**

SHEET NUMBER: 2 of 2

PROJECT NUMBER: **52432S**

PROJECT: **Green Line Extension**

LOCATION: **Cambridge - Somerville - Medford, Massachusetts**

CLIENT: **MassDOT**

CONTRACTOR: **NH Boring Company**

DRILLER: **M Gallo**

INSPECTOR: **G Brooks**

ELEVATION (feet)	DEPTH (feet)	SAMPLE						SOIL				N VALUE	GRAPHIC LOG	FIELD CLASSIFICATION AND REMARKS	
		TYPE	NUMBER	SYMBOL	RECOVERY (in.)	RECOVERY (%)	RQD (in.)	RQD (%)	BLOWS/6 in. ON SAMPLER (* denotes 300 lb hammer)						
									0/6	6/12	12/18				18/24
		S	10		16				2	3	4	6	7		Light gray CLAY and SILT, wet, medium stiff pp= 1.0 tons/ft ² tv= 0.525 tons/ft ²
-20	30	S	11		22				2	3	2	4	5		Light gray CLAY and SILT, wet, medium stiff pp= 0.75 tons/ft ² tv= 0.3575 tons/ft ²
-25	35	S	12		24				WOH	WOH	WOH	WOH	0		Light gray CLAY and SILT, wet, soft (LABORATORY ANALYSIS PERFORMED) pp= 0.5 tons/ft ² tv= 0.25 tons/ft ²
-30	40	S	13		16				WOR	WOH	WOH	WOH	0		Light gray CLAY and SILT, wet, soft pp= 0.5 tons/ft ² tv= 0.25 tons/ft ²
-35	45	S	14		10				20	24	25	24	49		Gray fine to coarse SAND, little fine to coarse gravel, little silt, trace clay, moist, dense (TILL)
-40	50	S	15		6				30	31	36	66	67		Light gray fine GRAVEL, some fine to coarse sand, mostly medium, little silt, trace clay, wet, very dense (TILL) (LABORATORY ANALYSIS PERFORMED)
-45	55	S	16		5				100/5"				>100		55.0 45.5 55.4 45.9 Light gray SILT and coarse GRAVEL, wet, very dense (WEATHERED ROCK) Bottom Of Hole - 55.4ft
-50															



BORING LOG

BORING NUMBER: **MW-9**SHEET NUMBER: **1** of **1**PROJECT NUMBER: **52432S**PROJECT: **Green Line Extension**LOCATION: **Cambridge - Somerville - Medford, Massachusetts**CLIENT: **MassDOT**CONTRACTOR: **NH Boring Company**LOCATION: **E of Prospect St**COORD. **N: 2962615 E: 765930**

STN. NO.: OFFSET:

SURFACE ELEV.: **8.3 feet**DATUM: **NAVD-88**DRILLER: **M Gallo**INSPECTOR: **G Brooks**DRILLING METHOD: **Rotary Wash**START DATE: **6/4/10**RIG TYPE: **Diedrich D-50 Track Mounted Rig**FINISH DATE: **6/4/10**

Type/Symbol	Casing	Split Spoon	Shelby Tube	Piston	Grab	Core Barrel	GROUNDWATER DATA				
I.D.	HW	S	U	P	G	C	Date	Time	Water Depth (ft)	Casing Depth (ft)	Hole Depth (ft)
O.D.	4"	1.375"	"	"	Hand auger	1.875"	6/4/10	11:45 am	2.9		11.5
Length	4.5"	2"	"	"	Hand Auger	2.980"					
Hammer Wt.	60"	24"	"	"	60"	7.5'					
Hammer Fall	300 lbs	140 lbs	Drill Rod Size		N						
	24"	30"	I.D. (O.D.)		1.875" (2.65")						

ELEVATION (feet)	DEPTH (feet)	SAMPLE						SOIL				N VALUE	GRAPHIC LOG	FIELD CLASSIFICATION AND REMARKS			
		TYPE	NUMBER	SYMBOL	RECOVERY (in.)	RECOVERY (%)	RQD (in.)	RQD (%)	BLOWS/6 in. ON SAMPLER (* denotes 300 lb hammer)								
									0/6	6/12	12/18			18/24			
		S	1		12				5	8	14	15	22			Dark brown fine to coarse SAND, little silt, dry, medium dense (LABORATORY ANALYSIS PERFORMED)	
		S	2		15				20	13	13	34	26			Dark brown fine to medium SAND, some fine to coarse gravel, little silt, moist to wet, medium dense	
5		S	3		4				85/4"				>85		4.3	Dark brown fine to medium SAND, some coal/slag, little fine to coarse gravel, wet, very dense	
	5	S	4		6				16	16	8	12	24		4.0		
		S	5		12				6	9	6	4	15		5.5	Note: COBBLE from 4.33 to 5.5ft	
0		S	6		24				1	1	2	8	3		2.8	Gray SILT and fine SAND, little fine gravel, wet, medium dense	
	-10														7.5	Gray-brown organic SILT and CLAY, little peat fibers, trace fine to medium sand, wet, stiff (LABORATORY ANALYSIS PERFORMED)	
															0.8	Top 9": Dark brown PEAT, some organic silt, wet, loose	
															11.3	Mid 12": Dark brown organic SILT, little peat fibers, trace fine sand	
															-3.0	Bot 3": Dark brown fine to medium SAND, trace silt	
															-3.2	Bottom Of Hole - 11.5ft	



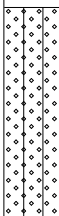
BORING LOG

BORING NUMBER: **W-428-1**SHEET NUMBER: **1** of **3**PROJECT NUMBER: **52432S**PROJECT: **Green Line Extension**LOCATION: **Cambridge - Somerville - Medford, Massachusetts**CLIENT: **MassDOT**CONTRACTOR: **NH Boring Company**DRILLER: **M Gallo**INSPECTOR: **G Brooks**DRILLING METHOD: **Rotary Wash**RIG TYPE: **Diedrich D-50 Track Mounted Rig**LOCATION: **W of Medford St**COORD. **N: 2962289 E: 767043**

STN. NO.: OFFSET:

SURFACE ELEV.: **14.0 feet**DATUM: **NAVD-88**START DATE: **6/16/10**FINISH DATE: **6/17/10**

Type/Symbol	Casing	Split Spoon	Shelby Tube	Piston	Grab	Core Barrel	GROUNDWATER DATA				
I.D.	HW	S ■	U □	P □	G □	C □	Date	Time	Water Depth (ft)	Casing Depth (ft)	Hole Depth (ft)
O.D.	4"	1.375"	"	"	Hand auger	1.875"	6/17/10	12:30 pm	11.5	25.0	65.0
Length	4.5"	2"	"	"	Hand Auger	2.980"	6/17/10	2:10 pm	9.5	0.0	65.0
Hammer Wt.	60"	24"	"	"	60"	7.5'					
Hammer Fall	300 lbs	140 lbs	Drill Rod Size		N						
	24"	30"	I.D. (O.D.)		1.875" (2.65")						

ELEVATION (feet)	DEPTH (feet)	SAMPLE						SOIL				N VALUE	GRAPHIC LOG	FIELD CLASSIFICATION AND REMARKS	
		TYPE	NUMBER	SYMBOL	RECOVERY (in.)	RECOVERY (%)	RQD (in.)	RQD (%)	BLOWS/6 in. ON SAMPLER						
									(* denotes 300 lb hammer)						
									0/6	6/12	12/18				18/24
		S	1	■	10				8	19	19	14	38		Dark brown fine to coarse SAND, little fine to coarse gravel, trace silt, moist, dense
-10															
	5	S	2	■	9				2	5	4	4	9		Light brown CLAY and SILT, trace fine gravel, trace fine to coarse sand, wet, stiff (LABORATORY ANALYSIS PERFORMED) pp= 2.0, 2.25 tons/ft ² tv= 0.45, 0.5 tons/ft ²
-5															
	10														
0															
		S	3	■	9				6	2	1	2	3		Dark gray organic SILT and CLAY, trace fine to medium sand, trace peat, trace shells, wet, soft (LABORATORY ANALYSIS PERFORMED)
-15															
-5															
	20	S	4	■	12				5	7	8	12	15		Dark gray fine to coarse SAND, mostly fine, little silt, trace fine gravel, wet, medium dense (LABORATORY ANALYSIS PERFORMED)
-10															



BORING LOG

(continued)

BORING NUMBER: **W-428-1**

SHEET NUMBER: 3 of 3

PROJECT NUMBER: **52432S**

PROJECT: **Green Line Extension**

LOCATION: **Cambridge - Somerville - Medford, Massachusetts**

CLIENT: **MassDOT**

CONTRACTOR: **NH Boring Company**

DRILLER: **M Gallo**

INSPECTOR: **G Brooks**

ELEVATION (feet)	DEPTH (feet)	SAMPLE						SOIL				N VALUE	GRAPHIC LOG	FIELD CLASSIFICATION AND REMARKS		
		TYPE	NUMBER	SYMBOL	RECOVERY (in.)	RECOVERY (%)	RQD (in.)	RQD (%)	BLOWS/6 in. ON SAMPLER (* denotes 300 lb hammer)							
									0/6	6/12	12/18					18/24
		S	12		8				15	19	27	33	46			
-50																
-65		S	13		0				100/1"				>100			65.1 -51.1
																No Recovery Bottom Of Hole - 65.1ft
-55																
-70																
-60																
-75																
-65																
-80																
-70																
-85																
-75																
-90																
-80																



BORING LOG

BORING NUMBER: **W-428-2**SHEET NUMBER: **1** of **3**PROJECT NUMBER: **52432S**PROJECT: **Green Line Extension**LOCATION: **Cambridge - Somerville - Medford, Massachusetts**CLIENT: **MassDOT**CONTRACTOR: **NH Boring Company**LOCATION: **W of Medford St**COORD. **N: 2962321 E: 766846**

STN. NO.: OFFSET:

SURFACE ELEV.: **13.0 feet**DATUM: **NAVD-88**DRILLER: **M Gallo**INSPECTOR: **G Brooks**DRILLING METHOD: **Rotary Wash**RIG TYPE: **Diedrich D-50 Track Mounted Rig**START DATE: **6/15/10**FINISH DATE: **6/15/10**

Type/Symbol	Casing	Split Spoon	Shelby Tube	Piston	Grab	Core Barrel	GROUNDWATER DATA				
I.D.	HW	S	U	P	G	C	Date	Time	Water Depth (ft)	Casing Depth (ft)	Hole Depth (ft)
O.D.	4"	1.375"	"	"	Hand auger	1.875"					
Length	4.5"	2"	"	"	Hand Auger	2.980"					
Hammer Wt.	60"	24"	"	"	60"	7.5'					
Hammer Fall	300 lbs	140 lbs	Drill Rod Size		N						
	24"	30"	I.D. (O.D.)		1.875" (2.65")						

ELEVATION (feet)	DEPTH (feet)	SAMPLE						SOIL				N VALUE	GRAPHIC LOG	FIELD CLASSIFICATION AND REMARKS	
		TYPE	NUMBER	SYMBOL	RECOVERY (in.)	RECOVERY (%)	RQD (in.)	RQD (%)	BLOWS/6 in. ON SAMPLER (* denotes 300 lb hammer)						
									0/6	6/12	12/18				18/24
		S	1		6				2	12	12	13	24		Light gray fine to coarse GRAVEL, some fine to coarse sand, some silt, wet, medium dense (LABORATORY ANALYSIS PERFORMED)
10															3.5 9.5
5		S	2		9				16	13	8	7	21		Dark brown fine to coarse SAND, trace fine to coarse gravel, trace silt, wet, medium dense
5															8.5 4.5
10		S	3		6				19	15	15	11	30		Light brown fine to coarse SAND, mostly medium little fine gravel, trace silt, wet, medium dense to dense (LABORATORY ANALYSIS PERFORMED)
0															
15		S	4		10				31	18	22	19	40		Dark brown fine to coarse SAND, little fine gravel, trace coarse gravel, trace silt, wet, dense
-5															
20		S	5		9				8	21	14	8	35		Gray fine to coarse SAND, mostly fine, little fine gravel, trace silt, wet, dense
-10															
															25.0



BORING LOG

(continued)

BORING NUMBER: **W-428-2**

SHEET NUMBER: **2** of **3**

PROJECT NUMBER: **52432S**

PROJECT: **Green Line Extension**

LOCATION: **Cambridge - Somerville - Medford, Massachusetts**

CLIENT: **MassDOT**

CONTRACTOR: **NH Boring Company**

DRILLER: **M Gallo**

INSPECTOR: **G Brooks**

ELEVATION (feet)	DEPTH (feet)	SAMPLE						SOIL				N VALUE	GRAPHIC LOG	FIELD CLASSIFICATION AND REMARKS			
		TYPE	NUMBER	SYMBOL	RECOVERY (in.)	RECOVERY (%)	RQD (in.)	RQD (%)	BLOWS/6 in. ON SAMPLER								
									(* denotes 300 lb hammer)								
									0/6	6/12	12/18					18/24	
-12.0		S	6		24				3	3	4	5	7		-12.0	Light gray CLAY, little silt, wet, medium stiff pp = 1.25 tons/ft ² tv = 0.6, 0.625 tons/ft ²	
-15																	
-30		S	7		24				2	3	3	4	6				Light gray CLAY and SILT, trace fine sand, wet, medium stiff (LABORATORY ANALYSIS PERFORMED) pp = 1.25, 0.75, 0.75 tons/ft ² tv = 0.425, 0.5 tons/ft ²
-20																	
-35		S	8		24				2	3	4	5	7				Light gray CLAY, little silt, wet, medium stiff pp = 1.25, 1.0 tons/ft ² tv = 0.4, 0.425 tons/ft ²
-25																	
-40		S	9		24				2	3	5	6	8				Light gray SILT and CLAY, trace fine sand, wet, medium stiff to stiff (LABORATORY ANALYSIS PERFORMED) pp = 1.25, 1.25, 1.0 tons/ft ² tv = 0.45, 0.425 tons/ft ²
-30																	
-45		S	10		24				2	3	4	6	7				Light gray CLAY, little silt, wet, medium stiff pp = 1.25, 1.25, 1.0 tons/ft ² tv = 0.525, 0.55 tons/ft ²
-35																	
-50		S	11		24				3	4	4	7	8				Light gray CLAY and SILT, trace fine sand, wet, medium stiff to stiff (LABORATORY ANALYSIS PERFORMED) pp = 1.25 tons/ft ² tv = 0.6, 0.625 tons/ft ²
-40															53.5		
-55		S	12		3				23	33	90	100/4"	123		-40.5		Light gray CLAY, some fine to coarse gravel, little fine sand, little silt, wet, hard (TILL)
-45															56.8		
															-43.8		



BORING LOG

(continued)

BORING NUMBER: **W-428-2**

SHEET NUMBER: 3 of 3

PROJECT NUMBER: **52432S**

PROJECT: **Green Line Extension**

LOCATION: **Cambridge - Somerville - Medford, Massachusetts**

CLIENT: **MassDOT**

CONTRACTOR: **NH Boring Company**

DRILLER: **M Gallo**

INSPECTOR: **G Brooks**

ELEVATION (feet)	DEPTH (feet)	SAMPLE						SOIL				N VALUE	GRAPHIC LOG	FIELD CLASSIFICATION AND REMARKS		
		TYPE	NUMBER	SYMBOL	RECOVERY (in.)	RECOVERY (%)	RQD (in.)	RQD (%)	BLOWS/6 in. ON SAMPLER (* denotes 300 lb hammer)							
									0/6	6/12	12/18					18/24
		S	13		2				100/2"				>100		Depth Elev.	
-50															60.2	Light gray coarse GRAVEL (rock fragments), trace silt, very dense (WEATHERED ROCK) Bottom Of Hole - 60.2ft
-65															-47.2	
-55																
-70																
-60																
-75																
-65																
-80																
-70																
-85																
-75																
-90																
-80																



BORING LOG

BORING NUMBER: **W-428-3**SHEET NUMBER: 1 of 2PROJECT NUMBER: **52432S**PROJECT: **Green Line Extension**LOCATION: **Cambridge - Somerville - Medford, Massachusetts**CLIENT: **MassDOT**CONTRACTOR: **NH Boring Company**DRILLER: **M Gallo**INSPECTOR: **G Brooks**DRILLING METHOD: **Rotary Wash**RIG TYPE: **Diedrich D-50 Track Mounted Rig**LOCATION: **W of Medford St**COORD. N: **2962359** E: **766647**

STN. NO.: OFFSET:

SURFACE ELEV.: **12.1 feet**DATUM: **NAVD-88**START DATE: **6/11/10**FINISH DATE: **6/14/10**

Type/Symbol	Casing	Split Spoon	Shelby Tube	Piston	Grab	Core Barrel	GROUNDWATER DATA				
I.D.	HW	S	U	P	G	C	Date	Time	Water Depth (ft)	Casing Depth (ft)	Hole Depth (ft)
O.D.	4"	1.375"	"	"	Hand auger	1.875"	6/14/10	8:00 am	7.0	7.0	7.5
Length	4.5"	2"	"	"	Hand Auger	2.980"					
Hammer Wt.	60"	24"	"	"	60"	7.5'					
Hammer Fall	300 lbs	140 lbs	Drill Rod Size		N						
	24"	30"	I.D. (O.D.)		1.875" (2.65")						

ELEVATION (feet)	DEPTH (feet)	SAMPLE						SOIL				N VALUE	GRAPHIC LOG	FIELD CLASSIFICATION AND REMARKS		
		TYPE	NUMBER	SYMBOL	RECOVERY (in.)	RECOVERY (%)	RQD (in.)	RQD (%)	BLOWS/6 in. ON SAMPLER (* denotes 300 lb hammer)							
									0/6	6/12	12/18			18/24		
10		S	1		14				10	14	14	12	28		Dark brown fine to coarse SAND, trace fine gravel, dry to moist, medium dense	
5		S	2		6				3	3	2	4	5		Dark brown fine to coarse SAND and fine to coarse GRAVEL, mostly fine, trace silt, wet, loose (LABORATORY ANALYSIS PERFORMED)	
5		S	3		0				50/0"				>50		10.0	No Recovery Note: Obstruction from 10 to 12ft
0															2.1	
															12.0	
																0.1
15		S	4		24				1	1	1	2	2		16.0	Top 12": Dark brown PEAT and organic SILT, wet, loose Bot 12": Light gray CLAY, little silt pp= 1.0 tons/ft ² tv= 0.5 tons/ft ²
-5															-3.9	
20		S	5		24				10	13	13	15	26			Gray CLAY and SILT, little fine to coarse gravel, trace fine sand, wet, very stiff (LABORATORY ANALYSIS PERFORMED)
-10																



BORING LOG

(continued)

BORING NUMBER: **W-428-3**

SHEET NUMBER: 2 of 2

PROJECT NUMBER: **52432S**

PROJECT: **Green Line Extension**

LOCATION: **Cambridge - Somerville - Medford, Massachusetts**

CLIENT: **MassDOT**

CONTRACTOR: **NH Boring Company**

DRILLER: **M Gallo**

INSPECTOR: **G Brooks**

ELEVATION (feet)	DEPTH (feet)	SAMPLE						SOIL				N VALUE	GRAPHIC LOG	FIELD CLASSIFICATION AND REMARKS	
		TYPE	NUMBER	SYMBOL	RECOVERY (in.)	RECOVERY (%)	RQD (in.)	RQD (%)	BLOWS/6 in. ON SAMPLER (* denotes 300 lb hammer)						
									0/6	6/12	12/18				18/24
-15		S	6		24				3	5	5	6	10		Light gray CLAY, little silt, wet, stiff pp= 1.0 tons/ft ² tv= 0.55, 0.475 tons/ft ²
-30		U	1												Light gray CLAY and SILT, with 1/16-1/8" thick silt lenses, trace gravel UU-Test Shear Strength = 1058 lbs/ft ² (LABORATORY ANALYSIS PERFORMED)
-20		S	7		24				2	4	4	7	8		Light gray CLAY and SILT, trace fine sand, wet, medium stiff to stiff (LABORATORY ANALYSIS PERFORMED) pp= 1.0, 0.75 tons/ft ² tv= 0.45 tons/ft ² Field Vane Shear Test Shear Strength = 930 lbs/ft ²
-35		V	1												Light gray CLAY, little silt, wet, medium stiff pp= 1.25, 1.5 tons/ft ² tv= 0.40 tons/ft ²
-25		S	8		24				2	2	4	6	6		
-40		S	9		17				60	39	22	70	61		40.0 -27.9 Light gray fine to coarse GRAVEL, little fine to coarse sand, trace silt, trace clay, wet, very dense (TILL) 42.0 -29.9 (LABORATORY ANALYSIS PERFORMED) Note: Possible top of rock at 42ft.
-45		S	10		0				100/0"				>100		45.0 -32.9 No Recovery Bottom Of Hole - 45ft
-35															
-50															
-40															
-55															
-45															



BORING LOG

BORING NUMBER: **W-428-4**SHEET NUMBER: **1** of **2**PROJECT NUMBER: **52432S**PROJECT: **Green Line Extension**LOCATION: **Cambridge - Somerville - Medford, Massachusetts**CLIENT: **MassDOT**CONTRACTOR: **NH Boring Company**DRILLER: **M Gallo**INSPECTOR: **G Brooks**DRILLING METHOD: **Rotary Wash**RIG TYPE: **Diedrich D-50 Track Mounted Rig**LOCATION: **W of Medford St**COORD. N: **2962407** E: **766457**

STN. NO.: OFFSET:

SURFACE ELEV.: **11.0 feet**DATUM: **NAVD-88**START DATE: **6/10/10**FINISH DATE: **6/11/10**

Type/Symbol	Casing	Split Spoon	Shelby Tube	Piston	Grab	Core Barrel	GROUNDWATER DATA				
I.D.	HW	S	U	P	G	C	Date	Time	Water Depth (ft)	Casing Depth (ft)	Hole Depth (ft)
O.D.	4"	1.375"	"	"	Hand auger	1.875"	6/11/10	7:30 am	9.5	45.0	45.0
Length	4.5"	2"	"	"	Hand Auger	2.980"					
Hammer Wt.	60"	24"	"	"	60"	7.5'					
Hammer Fall	300 lbs	140 lbs	Drill Rod Size		N						
	24"	30"	I.D. (O.D.)		1.875" (2.65")						

ELEVATION (feet)	DEPTH (feet)	SAMPLE						SOIL				N VALUE	GRAPHIC LOG	FIELD CLASSIFICATION AND REMARKS	
		TYPE	NUMBER	SYMBOL	RECOVERY (in.)	RECOVERY (%)	RQD (in.)	RQD (%)	BLOWS/6 in. ON SAMPLER (* denotes 300 lb hammer)						
									0/6	6/12	12/18				18/24
10		S	1		12				8	7	12	11	19		Dark brown fine to coarse SAND, little fine gravel, trace coarse gravel, trace silt, moist, medium dense
5		S	2		6				14	16	15	14	31		Light brown-orange fine to coarse SAND, mostly medium, and fine to coarse GRAVEL, mostly fine, trace silt, wet, dense (LABORATORY ANALYSIS PERFORMED)
0		S	3		12				16	21	25	34	46		10.0 1.0 Top 6": Gray SILT, little clay, wet, dense
															11.0 0.0 Bot 6": Gray CLAY and SILT, hard
-5		S	4		13				17	13	16	24	29		Brown-gray CLAY and SILT, trace fine to medium sand, wet, very stiff (LABORATORY ANALYSIS PERFORMED)
-10		S	5		12				8	10	11	15	21		Brown CLAY, little silt, very stiff pp = 0.5 tons/ft ²



BORING LOG

(continued)

BORING NUMBER: **W-428-4**

SHEET NUMBER: **2** of **2**

PROJECT NUMBER: **52432S**

PROJECT: **Green Line Extension**

LOCATION: **Cambridge - Somerville - Medford, Massachusetts**

CLIENT: **MassDOT**

CONTRACTOR: **NH Boring Company**

DRILLER: **M Gallo**

INSPECTOR: **G Brooks**

ELEVATION (feet)	DEPTH (feet)	SAMPLE						SOIL				N VALUE	GRAPHIC LOG	FIELD CLASSIFICATION AND REMARKS		
		TYPE	NUMBER	SYMBOL	RECOVERY (in.)	RECOVERY (%)	RQD (in.)	RQD (%)	BLOWS/6 in. ON SAMPLER							
									(* denotes 300 lb hammer)							
									0/6	6/12	12/18			18/24		
-15		S	6		24				2	3	4	6	7		Light gray CLAY and SILT, trace fine sand, medium stiff (LABORATORY ANALYSIS PERFORMED) pp = 1.0 tons/ft ² tv = 0.55, 0.475 tons/ft ²	
-20	30	S	7		24				3	5	5	7	10		Light gray CLAY, little silt, stiff pp = 0.75, 0.75, 1.0 tons/ft ² tv = 0.40, 0.575 tons/ft ²	
-25	35	S	8		10				5	5	6	7	11		Light gray CLAY and SILT, trace fine sand, stiff (LABORATORY ANALYSIS PERFORMED) pp = 0.5 tons/ft ² tv = 0.225, 0.225 tons/ft ²	
-30	40	S	9		13				2	9	14	45	23		Light gray CLAY, little silt, wet, very stiff pp = 1.25, 1.25 tons/ft ² tv = 0.475, 0.55 tons/ft ²	
-35	45	S	10		6				22	13	11	14	24		Gray fine to coarse GRAVEL, some fine to coarse sand, trace silt, medium dense (LABORATORY ANALYSIS PERFORMED)	45.0 -34.0
-40	50	S	11		4				45	100/1"			>100		Gray ARGILLITE, fine to coarse gravel-size (rock fragments), very dense	48.5 -37.5
-45	55	S	12		0				100/0"				>100		No Recovery Bottom Of Hole - 55ft	55.0 -44.0



BORING LOG

BORING NUMBER: **W-428-5**SHEET NUMBER: 1 of 3PROJECT NUMBER: **52432S**PROJECT: **Green Line Extension**LOCATION: **Cambridge - Somerville - Medford, Massachusetts**CLIENT: **MassDOT**CONTRACTOR: **NH Boring Company**DRILLER: **M Gallo**INSPECTOR: **G Brooks**DRILLING METHOD: **Rotary Wash**RIG TYPE: **Diedrich D-50 Track Mounted Rig**LOCATION: **W of Medford St**COORD. N: **2962470** E: **766272**

STN. NO.: OFFSET:

SURFACE ELEV.: **10.0 feet**DATUM: **NAVD-88**START DATE: **6/8/10**FINISH DATE: **6/10/10**

Type/Symbol	Casing	Split Spoon	Shelby Tube	Piston	Grab	Core Barrel	GROUNDWATER DATA				
I.D.	HW	S	U	P	G	C	Date	Time	Water Depth (ft)	Casing Depth (ft)	Hole Depth (ft)
O.D.	4"	1.375"	"	"	Hand auger	1.875"	6/9/10	7:30 am	3.3	15.0	32.0
Length	4.5"	2"	"	"	Hand Auger	2.980"					
Hammer Wt.	60"	24"	"	"	60"	7.5'					
Hammer Fall	300 lbs	140 lbs	Drill Rod Size		N						
	24"	30"	I.D. (O.D.)		1.875" (2.65")						

ELEVATION (feet)	DEPTH (feet)	SAMPLE						SOIL				N VALUE	GRAPHIC LOG	FIELD CLASSIFICATION AND REMARKS	
		TYPE	NUMBER	SYMBOL	RECOVERY (in.)	RECOVERY (%)	RQD (in.)	RQD (%)	BLOWS/6 in. ON SAMPLER (* denotes 300 lb hammer)						
									0/6	6/12	12/18				18/24
		S	1		9				8	13	11	8	24		Dark brown fine to coarse SAND, some fine to coarse gravel, little silt, moist, medium dense (LABORATORY ANALYSIS PERFORMED)
-5	5	S	2		9				15	16	20	14	36		Light brown and orange fine SAND, little fine to coarse gravel, little medium to coarse sand, little silt, wet, dense
0	10	S	3		8				13	12	14	8	26		Gray fine to medium SAND, little silt, trace fine gravel, trace coarse sand, wet, medium dense (LABORATORY ANALYSIS PERFORMED)
-5	15	S	4		19				4	5	7	10	12		15.0 -5.0 Light gray CLAY, little silt, stiff pp = 1.0, 1.0, 0.75 tons/ft ² tv = 0.40, 0.45 tons/ft ²
-10	20	U	1												Light gray silty CLAY, with 1/16-1/8" thick silt lenses, trace gravel UU-Test Shear Strength = 1702 lbs/ft ² (LABORATORY ANALYSIS PERFORMED)
		S	5		24				3	5	5	7	10		pp = 1.5, 1.25 tons/ft ² tv = 6.0 tons/ft ² Light gray CLAY and SILT, trace fine sand, stiff (LABORATORY ANALYSIS PERFORMED)
		V	1												pp = 0.75, 1.25 tons/ft ² tv = 0.5, 0.525 tons/ft ² Field Vane Shear Test



BORING LOG

(continued)

BORING NUMBER: **W-428-5**

SHEET NUMBER: 3 of 3

PROJECT NUMBER: **52432S**

PROJECT: **Green Line Extension**

LOCATION: **Cambridge - Somerville - Medford, Massachusetts**

CLIENT: **MassDOT**

CONTRACTOR: **NH Boring Company**

DRILLER: **M Gallo**

INSPECTOR: **G Brooks**

ELEVATION (feet)	DEPTH (feet)	SAMPLE						SOIL				N VALUE	GRAPHIC LOG	FIELD CLASSIFICATION AND REMARKS			
		TYPE	NUMBER	SYMBOL	RECOVERY (in.)	RECOVERY (%)	RQD (in.)	RQD (%)	BLOWS/6 in. ON SAMPLER (* denotes 300 lb hammer)								
									0/6	6/12	12/18				18/24		
		S	13		0				100/0"							Depth Elev. -50.0	No Recovery Bottom Of Hole - 60ft
-55	65																
-60	70																
-65	75																
-70	80																
-75	85																
-80	90																



BORING LOG

(continued)

BORING NUMBER: **B-S042-1**

SHEET NUMBER: **2** of **3**

PROJECT NUMBER: **52432S**

PROJECT: **Green Line Extension**

LOCATION: **Cambridge - Somerville - Medford, Massachusetts**

CLIENT: **MassDOT**

CONTRACTOR: **NH Boring Company**

DRILLER: **M Gallo**

INSPECTOR: **G Brooks**

ELEVATION (feet)	DEPTH (feet)	SAMPLE						SOIL				N VALUE	GRAPHIC LOG	FIELD CLASSIFICATION AND REMARKS		
		TYPE	NUMBER	SYMBOL	RECOVERY (in.)	RECOVERY (%)	RQD (in.)	RQD (%)	BLOWS/6 in. ON SAMPLER (* denotes 300 lb hammer)							
									0/6	6/12	12/18			18/24	Depth Elev.	
		S	11		20				5	6	6	7	12		-10.0	Green-gray SILT and CLAY, trace fine to coarse sand, stiff (LABORATORY ANALYSIS PERFORMED) pp=0.5 tons/ft ² tv=0.33 tons/ft ²
-15	30	S	12		24				1	1	2	4	3		30.0 -15.0	Green-gray CLAY, wet, soft pp=0.5, 0.5, 1.0 tons/ft ² tv=0.45, 0.35 tons/ft ²
		U	1			14										Gray CLAY with silt lenses, trace gravel UU-Test Shear Strength = 849 lbs/ft ² (LABORATORY ANALYSIS PERFORMED)
-20	35	S	13		24				WOH	WOH	2	2	2			Green-gray SILT and CLAY, wet, soft (LABORATORY ANALYSIS PERFORMED) pp=0.5, 0.5, 0.5 tons/ft ² tv=0.33 tons/ft ²
		V	1													Field Vane Shear Test Shear Strength = 737 lbs/ft ² Remolded Shear Strength = 481 lbs/ft ²
-25	40	S	14		24				WOH	3	3	5	6			Green-gray CLAY, wet, medium stiff pp=0.25, 0.25, 0.5 tons/ft ² tv=0.35, 0.40 tons/ft ²
		U	2			24										Gray CLAY with silt lenses, trace gravel UU-Test Shear Strength = 1112 lbs/ft ² (LABORATORY ANALYSIS PERFORMED)
		S	15		24				WOH	3	3	5	6			Gray SILT and CLAY, wet, medium stiff (LABORATORY ANALYSIS PERFORMED) pp=0.5, 0.75 tons/ft ² tv=0.35, 0.25 tons/ft ²
-35	50	V	2													Field Vane Shear Test
		S	16		24				3	4	5	8	9			Light gray CLAY, wet, stiff pp=0.5, 1.0, 0.5 tons/ft ² tv=0.23, 0.25 tons/ft ²
-40	55	S	17		6				17	30	14	18	44		55.0 -40.0	Gray fine to coarse GRAVEL, some fine to coarse sand, trace silt, wet, dense (LABORATORY ANALYSIS PERFORMED)
															60.0	

BORING LOG

(continued)

BORING NUMBER: B-S042-1

SHEET NUMBER: 3 of 3

PROJECT NUMBER: 52432S

PROJECT: Green Line Extension

LOCATION: Cambridge - Somerville - Medford, Massachusetts

CLIENT: MassDOT

CONTRACTOR: NH Boring Company

DRILLER: M Gallo

INSPECTOR: G Brooks

ELEVATION (feet)	DEPTH (feet)	SAMPLE						SOIL				N VALUE	GRAPHIC LOG	FIELD CLASSIFICATION AND REMARKS			
		TYPE	NUMBER	SYMBOL	RECOVERY (in.)	RECOVERY (%)	RQD (in.)	RQD (%)	BLOWS/6 in. ON SAMPLER (* denotes 300 lb hammer)								
									0/6	6/12	12/18					18/24	
		S	18		1					100/1"				>100		Depth Elev.	
																-45.0	Gray CLAY and SILT, very dense (WEATHERED ROCK)
-50	65	C	1		23	74	5	16								65.0	
																-50.0	Dark gray DIABASE, weak, slightly weathered, moderately fractured, fine grained Min/Ft - 6.5, 6.8, 9.5/7"
		C	2		25	71	0	0									Dark gray DIABASE, weak, moderately weathered, moderately fractured, fine grained Min/Ft - 6, 9.5, 10.5/11"
-55	70																Dark gray DIABASE, weak, moderately weathered, moderately fractured, fine grained Min/Ft - 6, 14.5, 9, 7, 6.5
		C	3		36	60	0	0									
-60	75																Dark gray DIABASE, weak, slightly weathered, moderately fractured, fine grained Min/Ft - 2.5, 3.5, 5, 6, 7
		C	4		42	70	10	17									
-65	80															80.5	
																-65.5	Bottom Of Hole - 80.5ft
-70	85																
-75	90																



BORING LOG

BORING NUMBER: **B-S042-2**SHEET NUMBER: 1 of 3PROJECT NUMBER: **52432S**PROJECT: **Green Line Extension**LOCATION: **Cambridge - Somerville - Medford, Massachusetts**CLIENT: **MassDOT**CONTRACTOR: **NH Boring Company**DRILLER: **S Cooley**INSPECTOR: **E Fulton**DRILLING METHOD: **Rotary Wash**RIG TYPE: **CME 750 Rubber Tire ATV Rig**LOCATION: **Medford St**COORD. **N: 2962200 E: 767247**

STN. NO.: OFFSET:

SURFACE ELEV.: **15.0 feet**DATUM: **NAVD-88**START DATE: **9/19/10**FINISH DATE: **9/21/10**

Type/Symbol I.D. O.D. Length Hammer Wt. Hammer Fall	Casing	Split Spoon	Shelby Tube	Piston	Grab	Core Barrel	GROUNDWATER DATA				
	HW	S	U	P	G	C	Date	Time	Water Depth (ft)	Casing Depth (ft)	Hole Depth (ft)
I.D.	4"	1.375"	"	"	Hand auger	1.875"	9/20/10	8:30 am	3.2	19.0	35.0
O.D.	4.5"	2"	"	"	Hand Auger	2.980"	9/21/10	1:30 pm	16.5	19.0	68.5
Length	60"	24"	"	"	60"	7.5'					
Hammer Wt.	300 lbs	140 lbs	Drill Rod Size		N						
Hammer Fall	24"	30"	I.D. (O.D.)		1.875" (2.65")						

ELEVATION (feet)	DEPTH (feet)	SAMPLE						SOIL				N VALUE	GRAPHIC LOG	FIELD CLASSIFICATION AND REMARKS	
		TYPE	NUMBER	SYMBOL	RECOVERY (in.)	RECOVERY (%)	RQD (in.)	RQD (%)	BLOWS/6 in. ON SAMPLER						
									(* denotes 300 lb hammer)						
									0/6	6/12	12/18				18/24
		G	1												Gray and dark brown fine to coarse GRAVEL (Ballast), little fine to coarse sand, trace silt, dry (FILL) Dark brown medium SAND, little fine gravel, little silt, trace fine and coarse sand, moist (FILL)
10	5	S	1		13				3	3	4	4	7		Olive and light brown SILT and CLAY, trace fine to coarse sand, trace fine gravel, medium stiff (FILL) (LABORATORY ANALYSIS PERFORMED)
		S	2		16				4	8	7	7	15		Black/dark medium to coarse SAND, little fine gravel, little silt, little ash/cinders, trace fine sand, moist to wet, medium dense (FILL)
5	10	S	3		6				14	5	4	8	9		Gray fine SAND, some silt, some wood, trace fine gravel, trace medium to coarse sand, wet, loose (FILL)
		S	4		9				10	5	4	10	9		Dark brown to brown mottled gray SILT, some fine to coarse sand, little clay, trace fine gravel, wet, stiff (LABORATORY ANALYSIS PERFORMED)
		S	5		11				5	4	3	3	7		Green and gray SILT and CLAY, little fine sand, trace fine gravel, trace peat, wet, medium stiff
0	15	S	6		0				3	8	11	12	19		No Recovery
		S	7		0				12	14	13	13	27		No Recovery; Redrive with 3" spoon: Olive brown mottled gray SILT and CLAY, trace fine sand, trace peat, very stiff (LABORATORY ANALYSIS PERFORMED)
-5	20	S	8		0				5	6	8	11	14		No Recovery; Redrive with 3" spoon: Top 12": Olive brown SILT, little clay, stiff Bot 12": Olive brown CLAY, some silt pp = 1.5, 1.25 tons/ft²
		U	1		24										Gray lean CLAY, very stiff consistency UU-Test Shear Strength = 2197 lbs/ft² (LABORATORY ANALYSIS PERFORMED)



BORING LOG

(continued)

BORING NUMBER: **B-S042-2**

SHEET NUMBER: 2 of 3

PROJECT NUMBER: **52432S**

PROJECT: **Green Line Extension**

LOCATION: **Cambridge - Somerville - Medford, Massachusetts**

CLIENT: **MassDOT**

CONTRACTOR: **NH Boring Company**

DRILLER: **S Cooley**

INSPECTOR: **E Fulton**

ELEVATION (feet)	DEPTH (feet)	SAMPLE						SOIL				N VALUE	GRAPHIC LOG	FIELD CLASSIFICATION AND REMARKS	
		TYPE	NUMBER	SYMBOL	RECOVERY (in.)	RECOVERY (%)	RQD (in.)	RQD (%)	BLOWS/6 in. ON SAMPLER						
									(* denotes 300 lb hammer)						
									0/6	6/12	12/18				18/24
		S	9		24				4	5	5	4	10		Olive brown and gray SILT and CLAY, stiff pp = 1.0 tons/ft ²
		V	1												Field Vane Shear Test Shear Strength = 775 lbs/ft ² Remolded Shear Strength = 465 lbs/ft ²
-15	30	S	10		24				1	2	3	3	5		Olive brown and gray SILT and CLAY, stiff pp = 0.5 tons/ft ²
		U	2		24										Gray fat CLAY, stiff consistency UU-Test Shear Strength = 1175 lbs/ft ² (LABORATORY ANALYSIS PERFORMED)
-20	35	S	11		24				1	2	3	2	5		Olive brown and gray CLAY, some silt seams, medium stiff pp = 0.5 tons/ft ²
		V	2												Field Vane Shear Test Shear Strength = 682 lbs/ft ² Remolded Shear Strength = 372 lbs/ft ²
-25	40	S	12		24				2	2	2	2	4		Olive gray CLAY, little silt, soft to medium stiff pp = 0.5 tons/ft ²
		U	3		24										Gray fat CLAY, stiff consistency UU-Test Shear Strength = 1255 lbs/ft ² (LABORATORY ANALYSIS PERFORMED)
-30	45	S	13		24				2	3	4	4	7		Olive gray SILT, some clay, trace fine to medium sand, medium stiff (LABORATORY ANALYSIS PERFORMED) pp = 1.0 tons/ft ²
-35	50	S	14		5				18	16	15	20	31		Gray SILT and fine SAND, little fine gravel, trace clay, dense (TILL)
-40	55	S	15		6				13	23	23	23	46		Gray SILT and fine to coarse SAND, little fine gravel, little clay, dense (TILL) (LABORATORY ANALYSIS PERFORMED)
															Note: Top of weathered rock noted by driller at depth 57ft
															Gray ARGILLITE, weak to medium strong, unweathered to highly weathered, fine grained



BORING LOG

(continued)

BORING NUMBER: **B-S042-2**

SHEET NUMBER: 3 of 3

PROJECT NUMBER: **52432S**

PROJECT: **Green Line Extension**

LOCATION: **Cambridge - Somerville - Medford, Massachusetts**

CLIENT: **MassDOT**

CONTRACTOR: **NH Boring Company**

DRILLER: **S Cooley**

INSPECTOR: **E Fulton**

ELEVATION (feet)	DEPTH (feet)	SAMPLE						SOIL				N VALUE	GRAPHIC LOG	FIELD CLASSIFICATION AND REMARKS		
		TYPE	NUMBER	SYMBOL	RECOVERY (in.)	RECOVERY (%)	RQD (in.)	RQD (%)	BLOWS/6 in. ON SAMPLER (* denotes 300 lb hammer)							
									0/6	6/12	12/18				18/24	
		C	1		60	100	23	38								Min/Ft - 5.5, 5, 5, 5.5, 5
-50	65	C	2		53	88	12	20								Gray ARGILLITE, weak to medium strong, unweathered to highly weathered, fine grained Unconfined Compressive Strength = 6.54 KSI (LABORATORY ANALYSIS PERFORMED)
																Min/Ft - 5, 5.5, 5.5, 5, 5
															68.5	
-55	70														-53.5	Bottom Of Hole - 68.5ft
-60	75															
-65	80															
-70	85															
-75	90															



BORING LOG

BORING NUMBER: **B-S042-3**SHEET NUMBER: 1 of 3PROJECT NUMBER: **52432S**PROJECT: **Green Line Extension**LOCATION: **Cambridge - Somerville - Medford, Massachusetts**CLIENT: **MassDOT**CONTRACTOR: **NH Boring Company**DRILLER: **S Cooley**INSPECTOR: **G Brooks**DRILLING METHOD: **Rotary Wash**RIG TYPE: **CME 750 Rubber Tire ATV Rig**LOCATION: **Medford St**COORD. N: **2962248** E: **767319**

STN. NO.: OFFSET:

SURFACE ELEV.: **14.5 feet**DATUM: **NAVD-88**START DATE: **9/27/10**FINISH DATE: **9/29/10**

Type/Symbol	Casing	Split Spoon	Shelby Tube	Piston	Grab	Core Barrel	GROUNDWATER DATA				
I.D.	HW	S	U	P	G	C	Date	Time	Water Depth (ft)	Casing Depth (ft)	Hole Depth (ft)
O.D.	4"	1.375"	"	"	Hand auger	1.875"	9/28/10	8:15 am	8.4	20.0	40.0
Length	4.5"	2"	"	"	Hand Auger	2.980"					
Hammer Wt.	60"	24"	"	"	60"	7.5'					
Hammer Fall	300 lbs	140 lbs	Drill Rod Size		N						
	24"	30"	I.D. (O.D.)		1.875" (2.65")						

ELEVATION (feet)	DEPTH (feet)	SAMPLE						SOIL				N VALUE	GRAPHIC LOG	FIELD CLASSIFICATION AND REMARKS	
		TYPE	NUMBER	SYMBOL	RECOVERY (in.)	RECOVERY (%)	RQD (in.)	RQD (%)	BLOWS/6 in. ON SAMPLER (* denotes 300 lb hammer)						
									0/6	6/12	12/18				18/24
														Depth Elev.	
														1.0	BALLAST, little fine to coarse sand, little silt
														13.5	
		G	1	⊠											Black fine to coarse SAND, some ash/cinders, little fine gravel, little silt, dry (FILL)
10	5	S	1		7			7	7	7	12	14			Black fine to coarse SAND, some ash/cinders, little fine gravel, little silt, dry, medium dense (FILL)
		S	2		4			9	7	9	8	16			Black fine to coarse SAND, some ash/cinders, little fine gravel, little silt, dry, medium dense (FILL)
5	10	S	3		10			7	4	4	4	8			Black fine to coarse SAND, some fine gravel, little ash/cinders, little silt, dry, loose (FILL) (LABORATORY ANALYSIS PERFORMED)
		S	4		3			10	2	5	4	7			Black fine to coarse SAND, some ash/cinders, little fine gravel, little silt, dry, loose (FILL)
		S	5		16			3	3	6	12	9		13.0	
0	15	S	6		0			24	29	29	34	58		1.5	Gray SILT and CLAY, trace fine to coarse sand, trace peat, wet, stiff (LABORATORY ANALYSIS PERFORMED) No Recovery
		S	7		13			7	9	10	14	19		17.0	
-5	20													-2.5	Brown SILT, trace clay, wet, medium dense
		S	8		16			5	7	9	12	16			Brown SILT, little clay, wet, medium dense
-10														25.0	



BORING LOG

(continued)

BORING NUMBER: **B-S042-3**

SHEET NUMBER: 2 of 3

PROJECT NUMBER: **52432S**

PROJECT: **Green Line Extension**

LOCATION: **Cambridge - Somerville - Medford, Massachusetts**

CLIENT: **MassDOT**

CONTRACTOR: **NH Boring Company**

DRILLER: **S Cooley**

INSPECTOR: **G Brooks**

ELEVATION (feet)	DEPTH (feet)	SAMPLE						SOIL				N VALUE	GRAPHIC LOG	FIELD CLASSIFICATION AND REMARKS		
		TYPE	NUMBER	SYMBOL	RECOVERY (in.)	RECOVERY (%)	RQD (in.)	RQD (%)	BLOWS/6 in. ON SAMPLER							
									(* denotes 300 lb hammer)							
									0/6	6/12	12/18					18/24
		S	9		24				4	4	6	6	10		-10.5	Gray SILT and CLAY, trace fine sand, wet, stiff (LABORATORY ANALYSIS PERFORMED) pp= 1.5, 1.75 tons/ft ² tv= 0.15, 0.20 tons/ft ²
		U	1		24											Gray lean CLAY, stiff consistency UU-Test Shear Strength = 1565 lbs/ft ² (LABORATORY ANALYSIS PERFORMED)
-15	30	S	10		24				2	2	2	3	4			Olive gray CLAY, wet, soft to medium stiff pp= 1.25, 1.25 tons/ft ² tv= 0.3, 0.35 tons/ft ²
		V	1													Field Vane Shear Test Shear Strength = 876 lbs/ft ² Remolded Shear Strength = 248 lbs/ft ²
-20	35	S	11		24				2	2	2	3	4			Olive gray CLAY, wet, soft to medium stiff pp= 1.0 tons/ft ² tv= 0.43 tons/ft ²
		U	2		24											Gray lean CLAY, stiff consistency UU-Test Shear Strength = 1258 lbs/ft ² (LABORATORY ANALYSIS PERFORMED)
-25	40	S	12		24				2	2	4	4	6			Light gray SILT and CLAY, wet, medium stiff (LABORATORY ANALYSIS PERFORMED) pp= 0.5, 0.75 tons/ft ² tv= 0.4 tons/ft ²
		V	2													Field Vane Shear Test
-30	45	S	13		24				WOH	WOH	2	3	2			Olive brown CLAY, wet, soft pp= 0.5, 0.75 tons/ft ² tv= 0.4, 0.45 tons/ft ²
		U	3		14											Gray lean CLAY, stiff consistency UU-Test Shear Strength = 1480 lbs/ft ² (LABORATORY ANALYSIS PERFORMED)
-35	50	S	14		10				24	20	27	18	47		49.0 -34.5	Gray fine SAND, trace silt, trace clay, wet, dense
-40	55	S	15		9				19	33	28	28	61			Gray fine to coarse SAND, some fine to coarse gravel, some silt, wet, very dense (LABORATORY ANALYSIS PERFORMED)
-45															58.5 -44.0	Dark green DIABASE, medium strong, highly weathered, moderately to extremely fractured, fine



BORING LOG

(continued)

BORING NUMBER: **B-S042-3**

SHEET NUMBER: 3 of 3

PROJECT NUMBER: **52432S**

PROJECT: **Green Line Extension**

LOCATION: **Cambridge - Somerville - Medford, Massachusetts**

CLIENT: **MassDOT**

CONTRACTOR: **NH Boring Company**

DRILLER: **S Cooley**

INSPECTOR: **G Brooks**

ELEVATION (feet)	DEPTH (feet)	SAMPLE						SOIL				N VALUE	GRAPHIC LOG	FIELD CLASSIFICATION AND REMARKS	
		TYPE	NUMBER	SYMBOL	RECOVERY (in.)	RECOVERY (%)	RQD (in.)	RQD (%)	BLOWS/6 in. ON SAMPLER (* denotes 300 lb hammer)						
									0/6	6/12	12/18				18/24
-50	65	C	1		58	97	0	0							grained Min/Ft - 8.8, 3.8, 3.8, 4, 4.5 Dark green DIABASE, medium strong, moderately to slightly weathered, sound to extremely fractured, fine grained Unconfined Compressive Strength = 23.09 KSI (LABORATORY ANALYSIS PERFORMED) Min/Ft - 4, 3.5, 2.5, 2.5, 3.5
-55	70	C	2		60	100	31	52							68.5 -54.0 Bottom Of Hole - 68.5ft
-60	75														
-65	80														
-70	85														
-75	90														
-80															



BORING LOG

BORING NUMBER: **B-S042-4**SHEET NUMBER: 1 of 3PROJECT NUMBER: **52432S**PROJECT: **Green Line Extension**LOCATION: **Cambridge - Somerville - Medford, Massachusetts**CLIENT: **MassDOT**CONTRACTOR: **NH Boring Company**DRILLER: **S Cooley**INSPECTOR: **G Brooks**DRILLING METHOD: **Rotary Wash**RIG TYPE: **CME 750 Rubber Tire ATV Rig**LOCATION: **Medford St**COORD. N: **2962198** E: **767332**

STN. NO.: OFFSET:

SURFACE ELEV.: **15.0 feet**DATUM: **NAVD-88**START DATE: **9/22/10**FINISH DATE: **9/24/10**

Type/Symbol	Casing	Split Spoon	Shelby Tube	Piston	Grab	Core Barrel	GROUNDWATER DATA				
I.D.	HW	S	U	P	G	C	Date	Time	Water Depth (ft)	Casing Depth (ft)	Hole Depth (ft)
O.D.	4"	1.375"	"	"	Hand auger	1.875"	9/24/10	8:00 am	14.6	54.0	57.0
Length	4.5"	2"	"	"	Hand Auger	2.980"					
Hammer Wt.	60"	24"	"	"	60"	7.5'					
Hammer Fall	300 lbs	140 lbs	Drill Rod Size		N						
	24"	30"	I.D. (O.D.)		1.875" (2.65")						

ELEVATION (feet)	DEPTH (feet)	SAMPLE						SOIL				N VALUE	GRAPHIC LOG	FIELD CLASSIFICATION AND REMARKS	
		TYPE	NUMBER	SYMBOL	RECOVERY (in.)	RECOVERY (%)	RQD (in.)	RQD (%)	BLOWS/6 in. ON SAMPLER (* denotes 300 lb hammer)						
									0/6	6/12	12/18			18/24	
		G	1												Dark and light brown fine to coarse GRAVEL, dry
10	5	S	1		3				5	7	7	13	14		Dark brown fine to coarse SAND, little fine gravel, dry, medium dense (FILL)
		S	2		9				18	12	13	20	25		Brown SILT, little fine gravel, little fine to coarse sand, trace clay, dry, medium dense (FILL) (LABORATORY ANALYSIS PERFORMED)
5	10	S	3		10				8	5	6	5	11		Brown fine to coarse SAND and fine to coarse GRAVEL, little silt, wet, medium dense (FILL)
		S	4		8				5	4	5	4	9		Dark brown fine to coarse SAND, some fine to coarse gravel, trace silt, wet, loose
		S	5		13				2	5	8	11	13		Gray fine to medium SAND, some silt, little coarse sand, trace fine gravel, wet, medium dense (LABORATORY ANALYSIS PERFORMED)
0	15	S	6		7				7	8	11	14	19		Dark brown fine SAND, some silt, little fine gravel, wet, medium dense
		S	7		0				7	10	13	16	23		No Recovery
-5	20	S	8		24				13	12	10	15	22		Olive brown CLAY, some silt, trace fine sand, moist, very stiff pp= 3.5, 3.25 tons/ft ² tv= 0.53, 0.5 tons/ft ²
		S	9		6				5	8	8	9	16		Gray-brown SILT and CLAY, trace fine to coarse sand, wet, very stiff (LABORATORY ANALYSIS PERFORMED)



BORING LOG

(continued)

BORING NUMBER: **B-S042-4**

SHEET NUMBER: 2 of 3

PROJECT NUMBER: **52432S**

PROJECT: **Green Line Extension**

LOCATION: **Cambridge - Somerville - Medford, Massachusetts**

CLIENT: **MassDOT**

CONTRACTOR: **NH Boring Company**

DRILLER: **S Cooley**

INSPECTOR: **G Brooks**

ELEVATION (feet)	DEPTH (feet)	SAMPLE						SOIL				N VALUE	GRAPHIC LOG	FIELD CLASSIFICATION AND REMARKS		
		TYPE	NUMBER	SYMBOL	RECOVERY (in.)	RECOVERY (%)	RQD (in.)	RQD (%)	BLOWS/6 in. ON SAMPLER (* denotes 300 lb hammer)							
									0/6	6/12	12/18				18/24	
		U	1		24										pp= 1.0, 1.5 tons/ft ² Gray lean CLAY, stiff consistency UU-Test Shear Strength = 2129 lbs/ft ² (LABORATORY ANALYSIS PERFORMED)	
		S	10		24				2	4	5	4	9			Olive brown CLAY, trace silt, stiff pp= 1.0, 1.0 tons/ft ² tv= 0.4 tons/ft ²
-15	30	V	1													Field Vane Shear Test
		S	11		24				2	3	4	5	7			Olive brown CLAY, wet, medium stiff pp= 1.0, 1.0 tons/ft ² tv= 0.4 tons/ft ²
-20	35	U	2		24											Gray lean CLAY, stiff consistency UU-Test Shear Strength = 1813 lbs/ft ² (LABORATORY ANALYSIS PERFORMED)
		S	12		24				3	4	6	6	10			Olive gray SILT and CLAY, wet, stiff (LABORATORY ANALYSIS PERFORMED) pp= 1.0, 1.3 tons/ft ² tv= 0.6, 0.58 tons/ft ²
-25	40	V	2													Field Vane Shear Test
		S	13		24				3	3	4	5	7			Olive gray CLAY, wet, medium stiff pp= 1.0, 1.25 tons/ft ² tv= 0.4, 0.43 tons/ft ²
-30	45	S	14		24				25	16	22	43	38		47.0 -32.0	Olive gray CLAY, some fine sand, little fine gravel, little silt, dense (TILL)
-35	50	S	15		6				7	10	11	13	21			Gray fine to coarse GRAVEL, some fine to coarse sand, trace silt, wet, medium dense (TILL) (LABORATORY ANALYSIS PERFORMED)
-40	55	S	16		6				22	31	49	84	80		57.0 -42.0 59.0 -44.0	Gray and dark gray fine to coarse GRAVEL, wet, very dense (WEATHERED ROCK)



BORING LOG

(continued)

BORING NUMBER: **B-S042-4**

SHEET NUMBER: 3 of 3

PROJECT NUMBER: **52432S**

PROJECT: **Green Line Extension**

LOCATION: **Cambridge - Somerville - Medford, Massachusetts**

CLIENT: **MassDOT**

CONTRACTOR: **NH Boring Company**

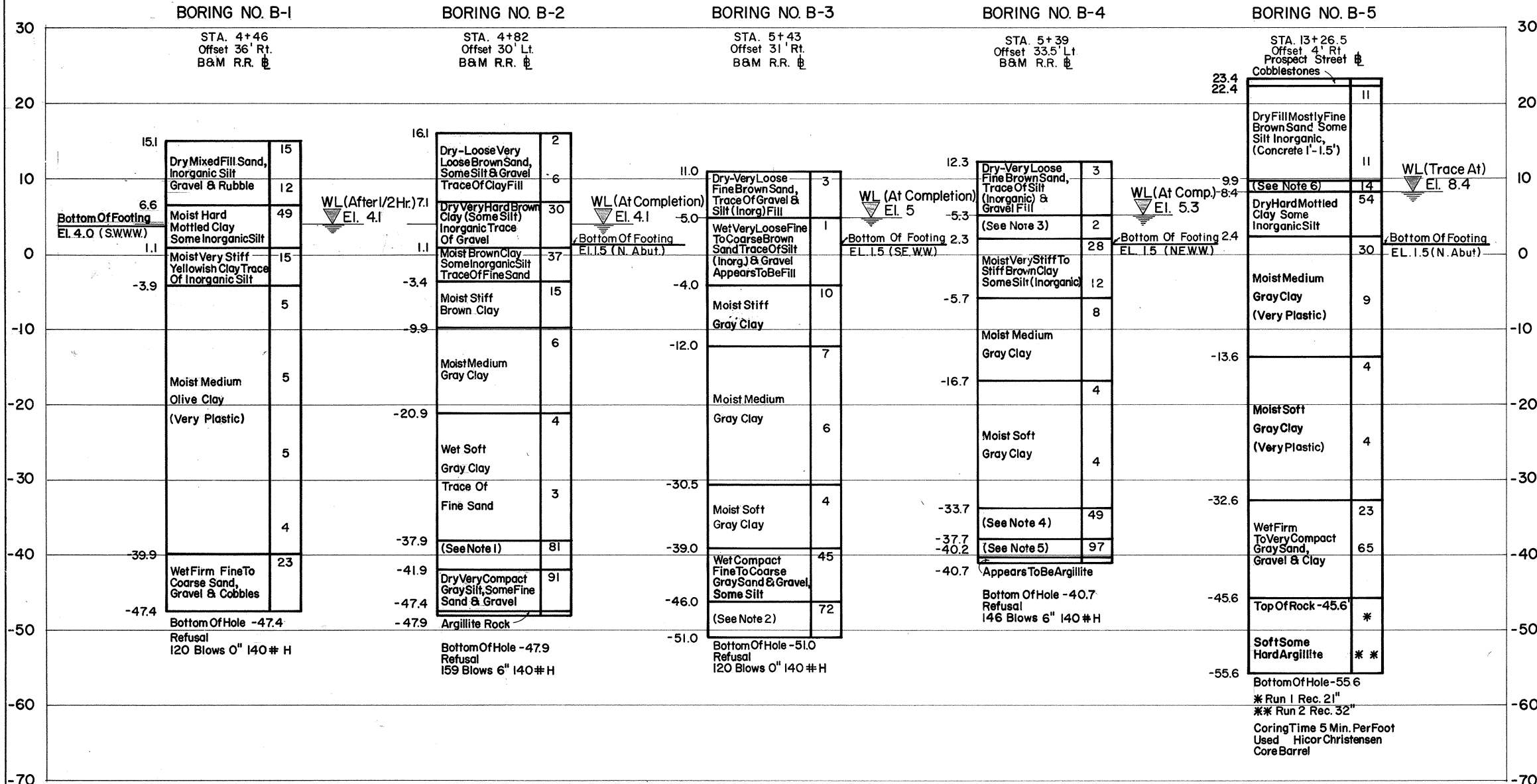
DRILLER: **S Cooley**

INSPECTOR: **G Brooks**

ELEVATION (feet)	DEPTH (feet)	SAMPLE							SOIL				N VALUE	GRAPHIC LOG	FIELD CLASSIFICATION AND REMARKS	
		TYPE	NUMBER	SYMBOL	RECOVERY (in.)	RECOVERY (%)	RQD (in.)	RQD (%)	BLOWS/6 in. ON SAMPLER (* denotes 300 lb hammer)							
									0/6	6/12	12/18	18/24				

SOMERVILLE - PROSPECT STREET

PUB. DIV. NO.	STATE	FEDERAL PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.				



GENERAL NOTES FOR BORINGS:

- Ground Surface Elevation Based On U.S.C. & G.S. Mean Sea Level.
- Borings Do Not Necessarily Show The Nature Of Materials To Be Encountered During Construction. They Are Taken For Design Purposes & Show Conditions At Boring Points Only.
- Water Levels Shown Were Observed When Borings Were Taken, And Do Not Necessarily Indicate Ground Water Elevations.
- Figures In The Right Hand Column Indicate Number Of Blows Required To Drive A 2" O.D. Spoon Sampler 12" Using 140-lb Weight Falling 30" Unless Otherwise Noted.
- Borings Were Taken By Northeast Test Boring Co. Inc., Weymouth, Massachusetts, During April 1977.
- The Depths As Shown On The Original Boring Logs Have Been Converted To Elevations On These "BORINGS LOGS" By The Engineer.
- Boring Samples May Be Examined At The Offices Of D. P. W. Research And Materials Division, 99 Worcester Street, Wellesley, Massachusetts 02181. (Intersection Of Routes 9 And 128).
- Boring Locations Are Shown Thus  On Sheet 1.

NOTES:

- Wet Very Compact Fine Gray Sand Some Silt (Inorganic) Trace Of Gravel.
- Moist Very Compact Gray Silt Some Gravel & Fine Sand.
- Wet Very Loose Brown Silt, (Inorganic) Gravel, Some Sand & Clay Fill.
- Wet Compact Fine To Coarse Gray Sand And Gravel, Some Silt (Inorganic).
- Moist V. Compact Gray Silt (Inorg.) Some Fine Sand & Gravel.
- Dry Firm Mixed Fill Cinders, Inorg. Silt.

GENERAL NOTES (CONT.)

SURVEY BOOK NUMBERS

Survey Notebooks Used In The Preparation Of Construction Drawings:
 Baseline: 17438; 23472; 36539
 Details: 17438; 10028; 36539
 Cross Sections: 34775; 40221

UTILITIES

All Existing Utilities Shall Be Located And Protected By The Contractor. Test Pits Shall Be Performed By The Contractor, Prior To Construction To Determine Exact Utility Locations. (In Particular, This Shall Include: Gas, Electric, Telegraph & Sewer Lines Located In The Abutment Areas.)

STANDARD PROTECTIVE SCREEN

See Department Standard Plans Dated Jan. 1975; Revised May 1976 For Details Of Protective Screen. Also See Special Provisions For Project Requirements.

BRIDGE RAILING

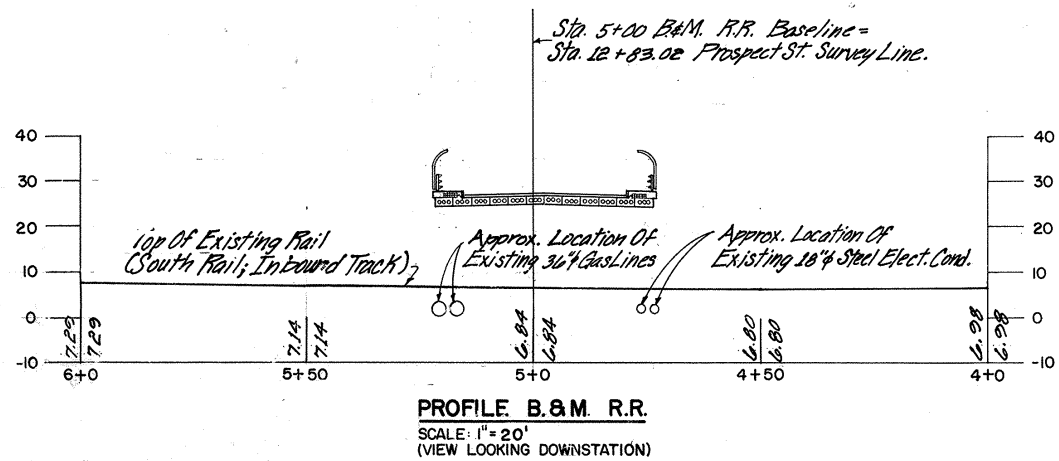
See Department Standard Plans Dated Oct. 1978 For Details Of Bridge Railing.

DIMENSIONS

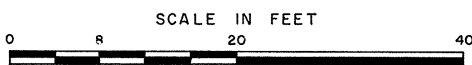
All Dimensions And Details Shown For Existing Structure Shall Be Checked In The Field By The Contractor. Plans Of The Existing Structure Are Available At The Office Of The Bridge Section, 100 Nashua St. Boston Mass.

BORING LOGS

Scale: 1" = 8'



PROFILE B.&M. R.R.
 SCALE: 1" = 20'
 (VIEW LOOKING DOWNSTATION)



APR. 24, 1982 ISSUED FOR CONSTRUCTION

BORING REPORT											Boring: PB-1					
LOCATION: Somerville, Massachusetts																
PROJECT NAME: Union Square Utility and Roadway Improvements Project											Date Started: 8/18/2014					
											Date Finished: 8-18-2014					
PB PROJECT NUMBER: 52647											N. Coordinate 2963671					
INSPECTOR (Parsons Brinckerhoff): David D'Angelo											E. Coordinate 765287					
DRILLER (New Hampshire Boring): Mark D'Ambrosio											Surface Elevation: 13.0					
Groundwater Observations: Measured at depth of 12.9 feet from ground surface post well installation			Casing				Auger		Mud	Sampler		Core Barrel				
			Utilized													
			Type	BW	NW	HW	Pipe	Solid	Hollow		S	U	B (st)	B (dt)	NX (st)	NX (dt)
			Size I.D. (in)			4					1 3/8					
			Hammer (lb)			300					140		Type		Diamond	
			Fall (in)			24					30		of Bit		Carbide	
DEPTH (FT)	CASING BLOWS PER FOOT	SAMPLE						DEPTH ELEV. (FT)	DESCRIPTION							
		NO.	DEPTH (FT) FROM - TO	BLOWS PER 6 INCHES						PEN. (IN)	REC. (IN)					
0										0 to 0.5' Concrete Sidewalk						
									0.5							
	G-1	0.5 - 2.5							12.5	Brown fine to coarse SAND and fine to coarse GRAVEL little silt - NRCS Texture: Loamy sand, very gravelly (LS,GRV) - Hydrologic Soil Group: C						
1																
2																
3									2.5							
	S-1	2.5 - 4.5	8	8	6	4	24	14	8.5	Brown fine to coarse SAND and fine to coarse GRAVEL trace silt, medium dense - NRCS Texture: Loamy sand, very gravelly (LS,GRV) - Hydrologic Soil Group: B						
4																
5																
	S-2	4.5 - 6.5	3	2	3	3	24	12	6.5	Brown fine to medium SAND, trace fine to coarse gravel, trace silt, loose - NRCS Texture: Loamy sand (LS) - Hydrologic Soil Group: B						
6																
7									6.5							
	S-3	6.5 - 8.5	7	7	7	10	24	18	6.5	Brown fine SAND, trace silt, medium dense - NRCS Texture: Sand (S) - Hydrologic Soil Group: A						

NOTES: 1. Boring drilled using a truck-mounted Diedrich D-50 rig
2. Split spoon samples taken using a 140# safety hammer and rope & cathead
3. Stated Hydrologic Soil Groups are independent of water level or depth to impermeable layers

SAMPLE TYPE CODING: S=Standard Split Spoon G = Grab Sample C=Core U=Undisturbed Piston										Boring: PB-1	
PROPORTIONS USED: Trace = 1 -10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%										Sheet 1 of 4	

BORING REPORT										Boring: PB-1									
LOCATION: Somerville, Massachusetts																			
PROJECT NAME: Union Square Utility and Roadway Improvements Project										Date Started: 8/18/2014									
										Date Finished: 8-18-2014									
PB PROJECT NUMBER: 52647										N. Coordinate 2963671									
INSPECTOR (Parsons Brinckerhoff): David D'Angelo										E. Coordinate 765287									
DRILLER (New Hampshire Boring): Mark D'Ambrosio										Surface Elevation: 13.0									

Groundwater Observations:	Casing				Auger		Mud	Sampler		Core Barrel				
	Utilized													
	Type	BW	NW	HW	Pipe	Solid	Hollow		S	U	B (st)	B (dt)	NX (st)	NX (dt)
	Size I.D. (in)			4					1 3/8					
	Hammer (lb)			300					140		Type		Diamond	
	Fall (in)			24					30		of Bit		Carbide	

DEPTH (FT)	CASING BLOWS PER FOOT	SAMPLE							DEPTH ELEV. (FT)	DESCRIPTION
		NO.	DEPTH (FT) FROM - TO	BLOWS PER 6 INCHES				PEN. (IN)		
8										Brown fine to medium SAND, trace silt, medium dense - NRCS Texture: Sand (S) - Hydrologic Soil Group: A Brown fine to medium SAND, trace silt, medium dense - NRCS Texture: sand (S) - Hydrologic Soil Group: A Brown fine to medium SAND, little fine gravel, trace silt, medium dense - NRCS Texture: Sand (S) - Hydrologic Soil Group: A
		S-4	8.5 - 10.5	11	9	8	9	24	20	
9										
10										
		S-5	10.5 - 12.5	7	10	10	12	24	12	
11										
12										
		S-6	12.5 - 14.5	10	11	8	10	24	19	
13										
14										
15										

NOTES: 1. Boring drilled using a truck-mounted Diedrich D-50 rig
 2. Split spoon samples taken using a 140# safety hammer and rope & cathead
 3. Stated Hydrologic Soil Groups are independent of water level or depth to impermeable layers

SAMPLE TYPE CODING: S=Standard Split Spoon G = Grab Sample C=Core U=Undisturbed Piston										Boring: PB-1									
PROPORTIONS USED: Trace = 1 -10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%										Sheet 2 of 4									

BORING REPORT										Boring: PB-1														
LOCATION: Somerville, Massachusetts																								
PROJECT NAME: Union Square Utility and Roadway Improvements Project										Date Started: 8/18/2014														
										Date Finished: 8-18-2014														
PB PROJECT NUMBER: 52647										N. Coordinate 2963671														
INSPECTOR (Parsons Brinckerhoff): David D'Angelo										E. Coordinate 765287														
DRILLER (New Hampshire Boring): Mark D'Ambrosio										Surface Elevation: 13.0														
Groundwater Observations:										Casing				Auger		Mud	Sampler		Core Barrel					
										Utilized														
										Type	BW	NW	HW	Pipe	Solid	Hollow		S	U	B (st)	B (dt)	NX (st)	NX (dt)	
										Size I.D. (in)			4					1 3/8						
										Hammer (lb)			300					140		Type		Diamond		
										Fall (in)			24					30		of Bit		Carbide		
DEPTH (FT)	CASING BLOWS PER FOOT	SAMPLE							DEPTH ELEV. (FT)	DESCRIPTION														
		NO.	DEPTH (FT) FROM - TO	BLOWS PER 6 INCHES				PEN. (IN)			REC. (IN)													
15		S-7	15 - 17	16	17	19	30	24	10	-2.0	Brown fine SAND, little silt, dense - NRCS Texture: Loamy sand (LS) - Hydrologic Soil Group: B													
16																								
17																								
18																								
19																								
20																								
		S-8	20 - 22	8	10	13	16	24	14															
21																								
22																								

NOTES: 1. Boring drilled using a truck-mounted Diedrich D-50 rig
2. Split spoon samples taken using a 140# safety hammer and rope & cathead
3. Stated Hydrologic Soil Groups are independent of water level or depth to impermeable layers

SAMPLE TYPE CODING: S=Standard Split Spoon G = Grab Sample C=Core U=Undisturbed Piston
PROPORTIONS USED: Trace = 1 -10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%

Boring: PB-1
Sheet 3 of 4

BORING REPORT										Boring: PB-1														
LOCATION: Somerville, Massachusetts										Date Started: 8/18/2014														
PROJECT NAME: Union Square Utility and Roadway Improvements Project										Date Finished: 8-18-2014														
PB PROJECT NUMBER: 52647										N. Coordinate 2963671														
INSPECTOR (Parsons Brinckerhoff): David D'Angelo										E. Coordinate 765287														
DRILLER (New Hampshire Boring): Mark D'Ambrosio										Surface Elevation: 13.0														
Groundwater Observations:										Casing		Auger		Mud	Sampler		Core Barrel							
										Utilized														
										Type		BW	NW	HW	Pipe	Solid	Hollow		S	U	B (st)	B (dt)	NX (st)	NX (dt)
										Size I.D. (in)				4					1 3/8					
										Hammer (lb)				300					140		Type		Diamond	
										Fall (in)				24					30		of Bit		Carbide	
DEPTH (FT)	CASING BLOWS PER FOOT	SAMPLE						DEPTH ELEV. (FT)	DESCRIPTION															
		NO.	DEPTH (FT) FROM - TO	BLOWS PER 6 INCHES						PEN. (IN)	REC. (IN)													
23																								
24																								
25																								
		S-9	25 - 27	10	11	8	13	24	16															
26																								
27																								
28																								
29																								
30																								
NOTES: 1. Boring drilled using a truck-mounted Diedrich D-50 rig 2. Split spoon samples taken using a 140# safety hammer and rope & cathead 3. Stated Hydrologic Soil Groups are independent of water level or depth to impermeable layers																								
SAMPLE TYPE CODING: S=Standard Split Spoon G = Grab Sample C=Core U=Undisturbed Piston PROPORTIONS USED: Trace = 1 -10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%										Boring: PB-1 Sheet 4 of 4														

BORING REPORT											Boring: PB-2					
LOCATION: Somerville, Massachusetts																
PROJECT NAME: Union Square Utility and Roadway Improvements Project											Date Started: 8/12/2014					
											Date Finished: 8-12-2014					
PB PROJECT NUMBER: 52647											N. Coordinate 2963538					
INSPECTOR (Parsons Brinckerhoff): David D'Angelo											E. Coordinate 765676					
DRILLER (New Hampshire Boring): Mark D'Ambrosio											Surface Elevation: 10.3					
Groundwater Observations: Estimated at ~10.0 feet			Casing				Auger		Mud	Sampler		Core Barrel				
			Utilized													
			Type	BW	NW	HW	Pipe	Solid	Hollow		S	U	B (st)	B (dt)	NX (st)	NX (dt)
			Size I.D. (in)			4					1 3/8					
			Hammer (lb)			300					140		Type		Diamond	
			Fall (in)			24					30		of Bit		Carbide	
DEPTH (FT)	CASING BLOWS PER FOOT	SAMPLE						DEPTH ELEV. (FT)	DESCRIPTION							
		NO.	DEPTH (FT) FROM - TO	BLOWS PER 6 INCHES						PEN. (IN)	REC. (IN)					
0									0	0 to 0.6' Asphalt pavement						
									0.6							
									9.7	0.6' to 1.3' Brown fine to coarse SAND, some fine to coarse gravel, little silt						
1									1.3							
									9.0	1.3' to 1.8' Concrete						
									1.8							
2									8.5	Brown fine to coarse SAND, little silt, little fine to coarse gravel, medium dense - NRCS Texture: Sandy loam, gravelly (SL,GR) - Hydrologic Soil Group: C S-2: 1 inch of recovery. Spoon likely pushing gravel. Material presumed similar to S-1						
		S-1	2 - 4	9	6	5	6	24	14							
3																
4																
		S-2	4 - 6	6	9	7	5	24	1							
5																
6									6.0							
		S-3	6 - 8	6	4	3	3	24	0							
7									4.3	S-3: No recovery. Spoon likely pushing gravel. Material presumed similar to S-4A						

NOTES: 1. Boring drilled using a truck-mounted Acker ADII rig
2. Split spoon samples taken using a 140# safety hammer and rope & spooling winch
3. Stated Hydrologic Soil Groups are independent of water level or depth to impermeable layers

SAMPLE TYPE CODING: S=Standard Split Spoon G = Grab Sample C=Core U=Undisturbed Piston								Boring: PB-2	
PROPORTIONS USED: Trace = 1 -10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%								Sheet 1 of 5	

BORING REPORT										Boring: PB-2															
LOCATION: Somerville, Massachusetts																									
PROJECT NAME: Union Square Utility and Roadway Improvements Project										Date Started: 8/12/2014															
										Date Finished: 8-12-2014															
PB PROJECT NUMBER: 52647										N. Coordinate 2963538															
INSPECTOR (Parsons Brinckerhoff): David D'Angelo										E. Coordinate 765676															
DRILLER (New Hampshire Boring): Mark D'Ambrosio										Surface Elevation: 10.3															
Groundwater Observations:										Casing				Auger		Mud		Sampler		Core Barrel					
										Utilized															
										Type		BW		NW		HW		Pipe		Solid		Hollow			
										Size I.D. (in)						4								1 3/8	
										Hammer (lb)						300								140	
										Fall (in)						24								30	
																						Type of Bit		Diamond	
																								Carbide	
DEPTH (FT)	CASING BLOWS PER FOOT	SAMPLE							DEPTH ELEV. (FT)	DESCRIPTION															
		NO.	DEPTH (FT) FROM - TO	BLOWS PER 6 INCHES				PEN. (IN)			REC. (IN)														
8											8.5	S-4A (above 8.5'): Brown fine to coarse SAND, some silt, trace fine coarse gravel, trace brick, loose - NRCS Texture: Sandy loam, gravelly (SL, GR) - Hydrologic Soil Group: C													
	S-4	8 - 10	4	4	5	4	24	24																	
9											1.8	S-4B (8.5' to 9.5'): Dark gray-brown ORGANIC SILT and PEAT, stiff - NRCS Texture: Silt, peaty (Si, PT) - Hydrologic Soil Group: D													
10											9.5	S-4C and S-5A (9.5' to 10.5'): Gray-brown fine to coarse SAND, some silt, very loose to loose - NRCS Texture: Sandy loam (SL) - Hydrologic Soil Group: C													
	S-5	10 - 12	2	2	2	2	24	16																	
11											10.5	S-5B (below 10.5'): Gray fine to coarse SAND, little silt, trace fine to coarse gravel, very loose to loose - NRCS Texture: Loamy sand (LS) - Hydrologic Soil Group: C													
12											-0.2	S-5B (below 10.5'): Gray fine to coarse SAND, little silt, trace fine to coarse gravel, very loose to loose - NRCS Texture: Loamy sand (LS) - Hydrologic Soil Group: C													
13											12.0	S-5B (below 10.5'): Gray fine to coarse SAND, little silt, trace fine to coarse gravel, very loose to loose - NRCS Texture: Loamy sand (LS) - Hydrologic Soil Group: C													
14											-1.7	Gray-Brown fine SAND, trace silt, medium dense - NRCS Texture: Loamy sand (LS) - Hydrologic Soil Group: B													
15																									

NOTES: 1. Boring drilled using a truck-mounted Acker ADII rig
2. Split spoon samples taken using a 140# safety hammer and rope & spooling winch
3. Stated Hydrologic Soil Groups are independent of water level or depth to impermeable layers

SAMPLE TYPE CODING: S=Standard Split Spoon G = Grab Sample C=Core U=Undisturbed Piston
PROPORTIONS USED: Trace = 1 -10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%

Boring: PB-2
Sheet 2 of 5

BORING REPORT										Boring: PB-2							
LOCATION: Somerville, Massachusetts										Date Started: 8/12/2014							
PROJECT NAME: Union Square Utility and Roadway Improvements Project										Date Finished: 8-12-2014							
PB PROJECT NUMBER: 52647										N. Coordinate 2963538							
INSPECTOR (Parsons Brinckerhoff): David D'Angelo										E. Coordinate 765676							
DRILLER (New Hampshire Boring): Mark D'Ambrosio										Surface Elevation: 10.3							
Groundwater Observations:				Casing				Auger		Mud	Sampler		Core Barrel				
				Utilized													
				Type	BW	NW	HW	Pipe	Solid	Hollow		S	U	B (st)	B (dt)	NX (st)	NX (dt)
				Size I.D. (in)			4					1 3/8					
				Hammer (lb)			300					140		Type		Diamond	
				Fall (in)			24					30		of Bit		Carbide	
DEPTH (FT)	CASING BLOWS PER FOOT	SAMPLE							DEPTH ELEV. (FT)	DESCRIPTION							
		NO.	DEPTH (FT) FROM - TO	BLOWS PER 6 INCHES				PEN. (IN)			REC. (IN)						
15		S-7	15 - 17	8	13	16	17	24	12	Brown fine SAND, little silt, medium dense - NRCS Texture: Loamy sand (LS) - Hydrologic Soil Group: B Brown fine SAND, little silt, medium dense - NRCS Texture: Loamy sand (LS) - Hydrologic Soil Group: B							
	16																
17																	
	18																
19																	
	20																
21																	
	22																
NOTES: 1. Boring drilled using a truck-mounted Acker ADII rig																	
2. Split spoon samples taken using a 140# safety hammer and rope & spooling winch																	
3. Stated Hydrologic Soil Groups are independent of water level or depth to impermeable layers																	
SAMPLE TYPE CODING: S=Standard Split Spoon G = Grab Sample C=Core U=Undisturbed Piston											Boring: PB-2						
PROPORTIONS USED: Trace = 1 -10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%											Sheet 3 of 5						

BORING REPORT										Boring: PB-2														
LOCATION: Somerville, Massachusetts																								
PROJECT NAME: Union Square Utility and Roadway Improvements Project										Date Started: 8/12/2014														
										Date Finished: 8-12-2014														
PB PROJECT NUMBER: 52647										N. Coordinate 2963538														
INSPECTOR (Parsons Brinckerhoff): David D'Angelo										E. Coordinate 765676														
DRILLER (New Hampshire Boring): Mark D'Ambrosio										Surface Elevation: 10.3														
Groundwater Observations:										Casing				Auger		Mud	Sampler		Core Barrel					
										Utilized														
										Type	BW	NW	HW	Pipe	Solid	Hollow		S	U	B (st)	B (dt)	NX (st)	NX (dt)	
										Size I.D. (in)			4					1 3/8						
										Hammer (lb)			300					140		Type		Diamond		
										Fall (in)			24					30		of Bit		Carbide		
DEPTH (FT)	CASING BLOWS PER FOOT	SAMPLE						DEPTH ELEV. (FT)	DESCRIPTION															
		NO.	DEPTH (FT) FROM - TO	BLOWS PER 6 INCHES		PEN. (IN)	REC. (IN)																	
23								23.5																
24								-13.2																
25								25.5	S-9A (above 25.5'): Brown fine to medium SAND, some silt, medium dense - NRCS Texture: Sandy loam (SL) - Hydrologic Soil Group: C															
	S-9	25 - 27	9	5	18	11	24			20														
26								-15.2	S-9B (below 25.5'): Gray SILT and fine SAND, little clay, medium dense - NRCS Texture: Silt loam (SiL) - Hydrologic Soil Group: D															
27																								
28								28.5																
29								-18.2																
30																								
NOTES: 1. Boring drilled using a truck-mounted Acker ADII rig																								
2. Split spoon samples taken using a 140# safety hammer and rope & spooling winch																								
3. Stated Hydrologic Soil Groups are independent of water level or depth to impermeable layers																								
SAMPLE TYPE CODING: S=Standard Split Spoon G = Grab Sample C=Core U=Undisturbed Piston															Boring: PB-2									
PROPORTIONS USED: Trace = 1 -10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%															Sheet 4 of 5									

BORING REPORT											Boring: PB-2				
LOCATION: Somerville, Massachusetts															
PROJECT NAME: Union Square Utility and Roadway Improvements Project											Date Started: 8/12/2014				
											Date Finished: 8-12-2014				
PB PROJECT NUMBER: 52647											N. Coordinate 2963538				
INSPECTOR (Parsons Brinckerhoff): David D'Angelo											E. Coordinate 765676				
DRILLER (New Hampshire Boring): Mark D'Ambrosio											Surface Elevation: 10.3				
Groundwater Observations:															
			Casing				Auger		Mud	Sampler		Core Barrel			
Utilized															
Type			BW	NW	HW	Pipe	Solid	Hollow		S	U	B (st)	B (dt)	NX (st)	NX (dt)
Size I.D. (in)					4					1 3/8					
Hammer (lb)					300					140		Type		Diamond	
Fall (in)					24					30		of Bit		Carbide	
DEPTH (FT)	CASING BLOWS PER FOOT	NO.	DEPTH (FT) FROM - TO	BLOWS PER 6 INCHES				PEN. (IN)	REC. (IN)	DEPTH ELEV. (FT)	DESCRIPTION				
30		S-10	30 - 32	7	9	14	13	24	24		Gray CLAY, little silt, very stiff - NRCS Texture: Clay (C) - Hydrologic Soil Group: D				
31															
32										32.0	Bottom of Boring 32 feet				
										-21.7					
33															
34															
35															
36															
37															

NOTES: 1. Boring drilled using a truck-mounted Acker ADII rig
2. Split spoon samples taken using a 140# safety hammer and rope & spooling winch
3. Stated Hydrologic Soil Groups are independent of water level or depth to impermeable layers

SAMPLE TYPE CODING: S=Standard Split Spoon G = Grab Sample C=Core U=Undisturbed Piston
PROPORTIONS USED: Trace = 1 -10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%

Boring: PB-2
Sheet 5 of 5

BORING REPORT										Boring: PB-3						
LOCATION: Somerville, Massachusetts																
PROJECT NAME: Union Square Utility and Roadway Improvements Project										Date Started: 8-4-2014						
										Date Finished: 8-14-2014						
PB PROJECT NUMBER: 52647										N. Coordinate 2963366						
INSPECTOR (Parsons Brinckerhoff): David D'Angelo										E. Coordinate 766023						
DRILLER (New Hampshire Boring): Mark D'Ambrosio										Surface Elevation: 9.2						
Groundwater Observations: Measured at depth of 9.0 feet from ground surface post well installation			Casing				Auger		Mud	Sampler		Core Barrel				
			Utilized													
			Type	BW	NW	HW	Pipe	Solid	Hollow		S	U	B (st)	B (dt)	NX (st)	NX (dt)
			Size I.D. (in)			4					1 3/8					
			Hammer (lb)			300					140		Type		Diamond	
			Fall (in)			24				30		of Bit		Carbide		
DEPTH (FT)	CASING BLOWS PER FOOT	NO.	DEPTH (FT) FROM - TO	BLOWS PER 6 INCHES	PEN. (IN)	REC. (IN)	DEPTH ELEV. (FT)	DESCRIPTION								
0								0 to 0.5' Asphalt pavement								
							0.5									
		G-1	0.5 - 7.0				8.7	Brown fine to coarse SAND, little silt, trace fine to coarse gravel, trace cobbles								
1								- NRCS Texture: Loamy sand (LS)								
								- Hydrologic Soil Group: B								
2																
3																
4																
5																
6																
7							7									
		S-1	7 - 9	9 14 14 15	24	6	2.2	Brown fine to coarse SAND, trace fine to medium gravel, medium dense								

NOTES: 1. Boring drilled using a truck-mounted Acker ADII rig
2. Split spoon samples taken using a 140# safety hammer and rope & spooling winch
3. Stated Hydrologic Soil Groups are independent of water level or depth to impermeable layers
4. Borehole vacuum-excavated from 0 to 7 feet on 8-4 and drilled from 7 feet to 27 feet on 8-14

SAMPLE TYPE CODING: S=Standard Split Spoon G = Grab Sample C=Core U=Undisturbed Piston										Boring: PB-3			
PROPORTIONS USED: Trace = 1 -10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%										Sheet 1 of 4			

[illegible]

BORING REPORT											Boring: PB-3					
LOCATION: Somerville, Massachusetts																
PROJECT NAME: Union Square Utility and Roadway Improvements Project											Date Started: 8-4-2014					
											Date Finished: 8-14-2014					
PB PROJECT NUMBER: 52647											N. Coordinate 2963366					
INSPECTOR (Parsons Brinckerhoff): David D'Angelo											E. Coordinate 766023					
DRILLER (New Hampshire Boring): Mark D'Ambrosio											Surface Elevation: 9.2					
Groundwater Observations:			Casing				Auger		Mud	Sampler		Core Barrel				
			Utilized													
			Type	BW	NW	HW	Pipe	Solid	Hollow		S	U	B (st)	B (dt)	NX (st)	NX (dt)
			Size I.D. (in)			4					1 3/8					
			Hammer (lb)			300					140		Type		Diamond	
			Fall (in)			24					30		of Bit		Carbide	
DEPTH (FT)	CASING BLOWS PER FOOT	SAMPLE							DEPTH ELEV. (FT)	DESCRIPTION						
		NO.	DEPTH (FT) FROM - TO	BLOWS PER 6 INCHES				PEN. (IN)			REC. (IN)					
15		S-4	15 - 17	10	10	17	20	24	13	17	Brown fine to coarse SAND, trace silt, medium dense - NRCS Texture: Sand (S) - Hydrologic Soil Group: A					
16																
17										-7.8						
18																
19										21	S-5A (above 21'): Brown fine SAND, some silt, dense - NRCS Texture: Sand (S) - Hydrologic Soil Group: A					
20		S-5	20 - 22	13	20	32	39	24	20	-11.8	S-5B (below 21'): Brown fine to coarse GRAVEL, some , silt, some fine to coarse sand - NRCS Texture: Sandy loam, extremely gravelly (SL,GRX) - Hydrologic Soil Group: D					
21																
22																

NOTES: 1. Boring drilled using a truck-mounted Acker ADII rig
2. Split spoon samples taken using a 140# safety hammer and rope & spooling winch
3. Stated Hydrologic Soil Groups are independent of water level or depth to impermeable layers
4. Borehole vacuum-excavated from 0 to 7 feet on 8-4 and drilled from 7 feet to 27 feet on 8-14

SAMPLE TYPE CODING: S=Standard Split Spoon G = Grab Sample C=Core U=Undisturbed Piston										Boring: PB-3	
PROPORTIONS USED: Trace = 1 -10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%										Sheet 3 of 4	

BORING REPORT										Boring: PB-3														
LOCATION: Somerville, Massachusetts										Date Started: 8-4-2014														
PROJECT NAME: Union Square Utility and Roadway Improvements Project										Date Finished: 8-14-2014														
PB PROJECT NUMBER: 52647										N. Coordinate 2963366														
INSPECTOR (Parsons Brinckerhoff): David D'Angelo										E. Coordinate 766023														
DRILLER (New Hampshire Boring): Mark D'Ambrosio										Surface Elevation: 9.2														
Groundwater Observations:										Casing		Auger		Mud	Sampler		Core Barrel							
										Utilized														
										Type		BW	NW	HW	Pipe	Solid	Hollow		S	U	B (st)	B (dt)	NX (st)	NX (dt)
										Size I.D. (in)				4					1 3/8					
										Hammer (lb)				300					140		Type		Diamond	
										Fall (in)				24					30		of Bit		Carbide	
DEPTH (FT)	CASING BLOWS PER FOOT	SAMPLE							DEPTH ELEV. (FT)	DESCRIPTION														
		NO.	DEPTH (FT) FROM - TO	BLOWS PER 6 INCHES				PEN. (IN)			REC. (IN)													
23										23	Gray CLAY, little silt, stiff to very stiff - NRCS Texture: Clay (C) - Hydrologic Soil Group: D													
										-13.8														
24																								
25																								
		S-6	25 - 27	7	7	8	12	24	8															
26																								
27										27														
										-17.8	Bottom of Boring 27 feet NOTE: Observation well installed with depths as follows: Screen: 9.5' to 24.5' Riser: ~0.5' to 9.5' Well Sand: 7' to 27' Bentonite Plug: 4' to 7'													
28																								
29																								
30																								

NOTES: 1. Boring drilled using a truck-mounted Acker ADII rig
 2. Split spoon samples taken using a 140# safety hammer and rope & spooling winch
 3. Stated Hydrologic Soil Groups are independent of water level or depth to impermeable layers
 4. Borehole vacuum-excavated from 0 to 7 feet on 8-4 and drilled from 7 feet to 27 feet on 8-14

SAMPLE TYPE CODING: S=Standard Split Spoon G = Grab Sample C=Core U=Undisturbed Piston										Boring: PB-3	
PROPORTIONS USED: Trace = 1 -10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%										Sheet 4 of 4	

BORING REPORT										Boring: PB-4																																																																																																																																																																																																																																																																																																																																						
LOCATION: Somerville, Massachusetts																																																																																																																																																																																																																																																																																																																																																
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INSPECTOR (Parsons Brinckerhoff): David D'Angelo										E. Coordinate 766334																																																																																																																																																																																																																																																																																																																																						
DRILLER (New Hampshire Boring): Mark D'Ambrosio										Surface Elevation: 8.8																																																																																																																																																																																																																																																																																																																																						
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										Type		BW		NW		HW		Pipe		Solid		Hollow				S		U		B (st)		B (dt)		NX (st)		NX (dt)																																																																																																																																																																																																																																																																																																												
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<table border="1"> <thead> <tr> <th rowspan="2">DEPTH (FT)</th> <th rowspan="2">CASING BLOWS PER FOOT</th> <th colspan="8">SAMPLE</th> <th rowspan="2">DEPTH ELEV. (FT)</th> <th rowspan="2">DESCRIPTION</th> </tr> <tr> <th>NO.</th> <th>DEPTH (FT) FROM - TO</th> <th colspan="4">BLOWS PER 6 INCHES</th> <th>PEN. (IN)</th> <th>REC. (IN)</th> </tr> </thead> <tbody> <tr> <td rowspan="3">0</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>0 to 0.5' Asphalt Pavement</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>0.5</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>8.3</td> <td>0.5' to 1.0' Cobblestones</td> </tr> <tr> <td rowspan="3">1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>1.0</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>7.8</td> <td rowspan="5">Brown fine to coarse SAND, some silt, trace fine gravel medium dense - NRCS Texture: Sandy loam (SL) - Hydrologic Soil Group: C</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>S-1</td> <td>1.5 - 3.5</td> <td>21</td> <td>9</td> <td>6</td> <td>12</td> <td>24</td> <td>18</td> <td></td> <td></td> </tr> <tr> <td rowspan="3">2</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td rowspan="3">3</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td rowspan="3">4</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>3.5</td> <td></td> </tr> <tr> <td></td> <td>S-2</td> <td>3.5 - 5.5</td> <td>14</td> <td>10</td> <td>12</td> <td>11</td> <td>24</td> <td>18</td> <td></td> <td>5.3</td> <td>Brown fine to medium SAND, trace silt, trace fine gravel, medium dense - NRCS Texture: Sand (S) - Hydrologic Soil Group: B</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td rowspan="3">5</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td rowspan="3">6</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>5.5</td> <td></td> </tr> <tr> <td></td> <td>S-3</td> <td>5.5 - 7.5</td> <td>14</td> <td>14</td> <td>10</td> <td>10</td> <td>24</td> <td>19</td> <td></td> <td>3.3</td> <td>Light brown fine to medium SAND, little silt, medium dense - NRCS Texture: Loamy Sand (LS) - Hydrologic Soil Group: B</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td rowspan="3">7</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>										DEPTH (FT)	CASING BLOWS PER FOOT	SAMPLE								DEPTH ELEV. (FT)	DESCRIPTION	NO.	DEPTH (FT) FROM - TO	BLOWS PER 6 INCHES				PEN. (IN)	REC. (IN)	0												0 to 0.5' Asphalt Pavement											0.5												8.3	0.5' to 1.0' Cobblestones	1											1.0												7.8	Brown fine to coarse SAND, some silt, trace fine gravel medium dense - NRCS Texture: Sandy loam (SL) - Hydrologic Soil Group: C													S-1	1.5 - 3.5	21	9	6	12	24	18			2																																		3																																					4											3.5			S-2	3.5 - 5.5	14	10	12	11	24	18		5.3	Brown fine to medium SAND, trace silt, trace fine gravel, medium dense - NRCS Texture: Sand (S) - Hydrologic Soil Group: B													5																																					6											5.5			S-3	5.5 - 7.5	14	14	10	10	24	19		3.3	Light brown fine to medium SAND, little silt, medium dense - NRCS Texture: Loamy Sand (LS) - Hydrologic Soil Group: B													7																																					NOTES: 1. Boring drilled using a truck-mounted Acker ADII rig 2. 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		S-2	3.5 - 5.5	14	10	12	11	24	18		5.3	Brown fine to medium SAND, trace silt, trace fine gravel, medium dense - NRCS Texture: Sand (S) - Hydrologic Soil Group: B																																																																																																																																																																																																																																																																																																																																				
5																																																																																																																																																																																																																																																																																																																																																
6											5.5																																																																																																																																																																																																																																																																																																																																					
		S-3	5.5 - 7.5	14	14	10	10	24	19		3.3	Light brown fine to medium SAND, little silt, medium dense - NRCS Texture: Loamy Sand (LS) - Hydrologic Soil Group: B																																																																																																																																																																																																																																																																																																																																				
7																																																																																																																																																																																																																																																																																																																																																
SAMPLE TYPE CODING: S=Standard Split Spoon G = Grab Sample C=Core U=Undisturbed Piston PROPORTIONS USED: Trace = 1 -10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%										Boring: PB-4 Sheet 1 of 5																																																																																																																																																																																																																																																																																																																																						

BORING REPORT											Boring: PB-4					
LOCATION: Somerville, Massachusetts																
PROJECT NAME: Union Square Utility and Roadway Improvements Project											Date Started: 8-13-2014					
											Date Finished: 8-13-2014					
PB PROJECT NUMBER: 52647											N. Coordinate 2963218					
INSPECTOR (Parsons Brinckerhoff): David D'Angelo											E. Coordinate 766334					
DRILLER (New Hampshire Boring): Mark D'Ambrosio											Surface Elevation: 8.8					
Groundwater Observations:																
			Casing				Auger		Mud	Sampler		Core Barrel				
			Utilized													
			Type	BW	NW	HW	Pipe	Solid	Hollow		S	U	B (st)	B (dt)	NX (st)	NX (dt)
			Size I.D. (in)			4					1 3/8					
			Hammer (lb)			300					140		Type		Diamond	
			Fall (in)			24					30		of Bit		Carbide	
DEPTH (FT)	CASING BLOWS PER FOOT	SAMPLE								DEPTH ELEV. (FT)	DESCRIPTION					
		NO.	DEPTH (FT) FROM - TO	BLOWS PER 6 INCHES				PEN. (IN)	REC. (IN)							
8		S-4	7.5 - 9.5	10	9	9	10	24	19	8.5	S-4A (above 8.5'): Light brown fine SAND, little silt, medium dense - NRCS Texture: Loamy Sand (LS) - Hydrologic Soil Group: B					
9										0.3	S-4B (below 8.5'): Gray fine SAND, trace silt, medium dense - NRCS Texture: Sand (S) - Hydrologic Soil Group: A Gray fine SAND, trace silt, medium dense - NRCS Texture: Sand (S) - Hydrologic Soil Group: A					
10		S-5	9.5 - 11.5	5	6	8	9	24	24							
11																
12		S-6	11.5 - 13.5	4	6	9	14	24	24		Gray fine to medium SAND, trace silt, medium dense - NRCS Texture: Sand (S) - Hydrologic Soil Group: A					
13																
14																
15																

NOTES: 1. Boring drilled using a truck-mounted Acker ADII rig
2. Split spoon samples taken using a 140# safety hammer and rope & spooling winch
3. Stated Hydrologic Soil Groups are independent of water level or depth to impermeable layers

SAMPLE TYPE CODING: S=Standard Split Spoon G = Grab Sample C=Core U=Undisturbed Piston										Boring: PB-4	
PROPORTIONS USED: Trace = 1 -10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%										Sheet 2 of 5	

BORING REPORT											Boring: PB-4					
LOCATION: Somerville, Massachusetts																
PROJECT NAME: Union Square Utility and Roadway Improvements Project											Date Started: 8-13-2014					
											Date Finished: 8-13-2014					
PB PROJECT NUMBER: 52647											N. Coordinate 2963218					
INSPECTOR (Parsons Brinckerhoff): David D'Angelo											E. Coordinate 766334					
DRILLER (New Hampshire Boring): Mark D'Ambrosio											Surface Elevation: 8.8					
Groundwater Observations:			Casing				Auger		Mud	Sampler		Core Barrel				
			Utilized													
			Type	BW	NW	HW	Pipe	Solid	Hollow		S	U	B (st)	B (dt)	NX (st)	NX (dt)
			Size I.D. (in)			4					1 3/8					
			Hammer (lb)			300					140		Type		Diamond	
			Fall (in)			24					30		of Bit		Carbide	
DEPTH (FT)	CASING BLOWS PER FOOT	SAMPLE							DEPTH ELEV. (FT)	DESCRIPTION						
		NO.	DEPTH (FT) FROM - TO	BLOWS PER 6 INCHES				PEN. (IN)			REC. (IN)					
15		S-7	15 - 17	6	9	10	12	24	6	18.5 -9.7	Gray fine to medium SAND, trace silt, medium dense - NRCS Texture: Sand (S) - Hydrologic Soil Group: A					
16																
17																
18																
19																
20		S-8	20 - 22	14	14	20	24	24	18							
21																
22																

NOTES: 1. Boring drilled using a truck-mounted Acker ADII rig
2. Split spoon samples taken using a 140# safety hammer and rope & spooling winch
3. Stated Hydrologic Soil Groups are independent of water level or depth to impermeable layers

SAMPLE TYPE CODING: S=Standard Split Spoon G = Grab Sample C=Core U=Undisturbed Piston
PROPORTIONS USED: Trace = 1 -10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%

Boring: PB-4
Sheet 3 of 5

BORING REPORT											Boring: PB-4								
LOCATION: Somerville, Massachusetts																			
PROJECT NAME: Union Square Utility and Roadway Improvements Project											Date Started: 8-13-2014								
											Date Finished: 8-13-2014								
PB PROJECT NUMBER: 52647											N. Coordinate 2963218								
INSPECTOR (Parsons Brinckerhoff): David D'Angelo											E. Coordinate 766334								
DRILLER (New Hampshire Boring): Mark D'Ambrosio											Surface Elevation: 8.8								
Groundwater Observations:					Casing				Auger		Mud	Sampler		Core Barrel					
					Utilized														
					Type	BW	NW	HW	Pipe	Solid	Hollow		S	U	B (st)	B (dt)	NX (st)	NX (dt)	
					Size I.D. (in)			4					1 3/8						
					Hammer (lb)			300					140		Type		Diamond		
					Fall (in)			24					30		of Bit		Carbide		
DEPTH (FT)	CASING BLOWS PER FOOT	SAMPLE						DEPTH ELEV. (FT)	DESCRIPTION										
		NO.	DEPTH (FT) FROM - TO	BLOWS PER 6 INCHES						PEN. (IN)	REC. (IN)								
23									23.5										
24									-14.7	Gray CLAY, little silt, stiff - NRCS Texture: Clay (C) - Hydrologic Soil Group: D									
25																			
26																			
27																			
28																			
29																			
30																			
NOTES: 1. Boring drilled using a truck-mounted Acker ADII rig 2. Split spoon samples taken using a 140# safety hammer and rope & spooling winch 3. Stated Hydrologic Soil Groups are independent of water level or depth to impermeable layers																			
SAMPLE TYPE CODING: S=Standard Split Spoon G = Grab Sample C=Core U=Undisturbed Piston PROPORTIONS USED: Trace = 1 -10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%											Boring: PB-4 Sheet 4 of 5								

BORING REPORT											Boring: PB-4					
LOCATION: Somerville, Massachusetts																
PROJECT NAME: Union Square Utility and Roadway Improvements Project											Date Started: 8-13-2014					
											Date Finished: 8-13-2014					
PB PROJECT NUMBER: 52647											N. Coordinate 2963218					
INSPECTOR (Parsons Brinckerhoff): David D'Angelo											E. Coordinate 766334					
DRILLER (New Hampshire Boring): Mark D'Ambrosio											Surface Elevation: 8.8					
Groundwater Observations:			Casing				Auger		Mud	Sampler		Core Barrel				
			Utilized													
			Type	BW	NW	HW	Pipe	Solid	Hollow		S	U	B (st)	B (dt)	NX (st)	NX (dt)
			Size I.D. (in)			4					1 3/8					
			Hammer (lb)			300					140		Type		Diamond	
			Fall (in)			24					30		of Bit		Carbide	
DEPTH (FT)	CASING BLOWS PER FOOT	SAMPLE							DEPTH ELEV. (FT)	DESCRIPTION						
		NO.	DEPTH (FT) FROM - TO	BLOWS PER 6 INCHES				PEN. (IN)			REC. (IN)					
30		S-10	30 - 32	4	4	4	5	24	24	32.0	Gray CLAY, little silt, medium stiff to stiff - NRCS Texture: Clay (C) - Hydrologic Soil Group: D					
31																
32										-23.2	Bottom of Boring 32 feet					
33																
34																
35																
36																
37																

NOTES: 1. Boring drilled using a truck-mounted Acker ADII rig
2. Split spoon samples taken using a 140# safety hammer and rope & spooling winch
3. Stated Hydrologic Soil Groups are independent of water level or depth to impermeable layers

SAMPLE TYPE CODING: S=Standard Split Spoon G = Grab Sample C=Core U=Undisturbed Piston										Boring: PB-4	
PROPORTIONS USED: Trace = 1 -10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%										Sheet 5 of 5	

BORING REPORT										Boring: PB-5																					
LOCATION: Somerville, Massachusetts																															
PROJECT NAME: Union Square Utility and Roadway Improvements Project										Date Started: 8-5-2014																					
										Date Finished: 8-5-2014																					
PB PROJECT NUMBER: 52647										N. Coordinate 2962956																					
INSPECTOR (Parsons Brinckerhoff): David D'Angelo										E. Coordinate 766871																					
DRILLER (New Hampshire Boring): Mark D'Ambrosio										Surface Elevation: 8.8																					
Groundwater Observations:										Casing				Auger		Mud		Sampler		Core Barrel											
Measured at ~9.0 feet										Utilized																					
										Type		BW		NW		HW		Pipe		Solid		Hollow				S		U		B (st) B (dt) NX (st) NX (dt)	
										Size I.D. (in)						4										1 3/8					
										Hammer (lb)						300										140				Type of Bit Diamond	
										Fall (in)						24										30				Carbide	
DEPTH (FT)	CASING BLOWS PER FOOT	SAMPLE						DEPTH ELEV. (FT)	DESCRIPTION																						
		NO.	DEPTH (FT) FROM - TO	BLOWS PER 6 INCHES						PEN. (IN)	REC. (IN)																				
0									0.3	0 to 0.3' Asphalt Pavement																					
									8.5	0.3' to 0.7' Cobblestones																					
									0.7																						
1									8.1	Brown fine to coarse SAND, little silt, trace fine gravel, medium dense - NRCS Texture: Loamy Sand (LS) - Hydrologic Soil Group: C																					
		S-1	1 - 3	4	5	6	8	24	17																						
2																															
3									3.0																						
		S-2	3 - 5	8	8	8	8	24	19	5.8	Brown fine to coarse SAND, trace silt, trace fine gravel, medium dense - NRCS Texture: Sand (S) - Hydrologic Soil Group: B																				
4																															
5									5.0																						
		S-3	5 - 7	11	11	8	10	24	14	3.8	Brown fine to medium SAND, trace silt, trace fine gravel, medium dense - NRCS Texture: Sand (S) - Hydrologic Soil Group: A																				
6																															
7									7.0																						
		S-4	7 - 9	10	11	9	10	24	20	1.8	Brown fine to medium SAND, trace silt, trace fine gravel, medium dense																				

NOTES: 1. Boring drilled using a truck-mounted Acker ADII rig
2. Split spoon samples taken using a 140# safety hammer and rope & spooling winch
3. Stated Hydrologic Soil Groups are independent of water level or depth to impermeable layers

SAMPLE TYPE CODING: S=Standard Split Spoon G = Grab Sample C=Core U=Undisturbed Piston
PROPORTIONS USED: Trace = 1 -10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%

Boring: PB-5
Sheet 1 of 5

BORING REPORT										Boring: PB-5														
LOCATION: Somerville, Massachusetts										Date Started: 8-5-2014														
PROJECT NAME: Union Square Utility and Roadway Improvements Project										Date Finished: 8-5-2014														
PB PROJECT NUMBER: 52647										N. Coordinate 2962956														
INSPECTOR (Parsons Brinckerhoff): David D'Angelo										E. Coordinate 766871														
DRILLER (New Hampshire Boring): Mark D'Ambrosio										Surface Elevation: 8.8														
Groundwater Observations:										Casing				Auger		Mud	Sampler		Core Barrel					
										Utilized														
										Type	BW	NW	HW	Pipe	Solid	Hollow		S	U	B (st)	B (dt)	NX (st)	NX (dt)	
										Size I.D. (in)			4					1 3/8						
										Hammer (lb)			300					140		Type		Diamond		
										Fall (in)			24				30		of Bit		Carbide			
DEPTH (FT)	CASING BLOWS PER FOOT	SAMPLE						DEPTH ELEV. (FT)	DESCRIPTION															
		NO.	DEPTH (FT) FROM - TO	BLOWS PER 6 INCHES						PEN. (IN)	REC. (IN)													
8									9.0	- NRCS Texture: Loamy sand (LS) - Hydrologic Soil Group: B														
9									-0.2	Brown fine to coarse SAND, medium dense - NRCS Texture: Sand (S) - Hydrologic Soil Group: A														
		S-5	9 - 11	7	9	8	8	24			20													
10									11.0															
11									-2.2	Brown fine SAND, trace silt, dense - NRCS Texture: Loamy sand (LS) - Hydrologic Soil Group: B														
		S-6	11 - 13	9	18	20	17	24			24													
12																								
13																								
14																								
15																								
NOTES: 1. Boring drilled using a truck-mounted Acker ADII rig																								
2. Split spoon samples taken using a 140# safety hammer and rope & spooling winch																								
3. Stated Hydrologic Soil Groups are independent of water level or depth to impermeable layers																								
SAMPLE TYPE CODING: S=Standard Split Spoon G = Grab Sample C=Core U=Undisturbed Piston															Boring: PB-5									
PROPORTIONS USED: Trace = 1 -10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%															Sheet 2 of 5									

BORING REPORT										Boring: PB-5														
LOCATION: Somerville, Massachusetts										Date Started: 8-5-2014														
PROJECT NAME: Union Square Utility and Roadway Improvements Project										Date Finished: 8-5-2014														
PB PROJECT NUMBER: 52647										N. Coordinate 2962956														
INSPECTOR (Parsons Brinckerhoff): David D'Angelo										E. Coordinate 766871														
DRILLER (New Hampshire Boring): Mark D'Ambrosio										Surface Elevation: 8.8														
Groundwater Observations:										Casing				Auger		Mud	Sampler		Core Barrel					
										Utilized														
										Type	BW	NW	HW	Pipe	Solid	Hollow		S	U	B (st)	B (dt)	NX (st)	NX (dt)	
										Size I.D. (in)			4					1 3/8						
										Hammer (lb)			300					140		Type		Diamond		
										Fall (in)			24				30		of Bit		Carbide			
DEPTH (FT)	CASING BLOWS PER FOOT	SAMPLE								DEPTH ELEV. (FT)	DESCRIPTION													
		NO.	DEPTH (FT) FROM - TO	BLOWS PER 6 INCHES				PEN. (IN)	REC. (IN)															
15		S-7	15 - 17	9	9	10	13	24	10	18.0 -9.2	Brown fine to medium SAND, trace silt, medium dense - NRCS Texture: Sand (S) - Hydrologic Soil Group: B													
16																								
17																								
18																								
19																								
20		S-8	20 - 22	7	18	19	25	24	14	Brown stratified fine SAND and SILT, trace clay, dense - NRCS Texture: Sandy loam - Silt Loam (SL - SiL) - Hydrologic Soil Group: D														
21																								
22																								
NOTES: 1. Boring drilled using a truck-mounted Acker ADII rig																								
2. Split spoon samples taken using a 140# safety hammer and rope & spooling winch																								
3. Stated Hydrologic Soil Groups are independent of water level or depth to impermeable layers																								
SAMPLE TYPE CODING: S=Standard Split Spoon G = Grab Sample C=Core U=Undisturbed Piston										Boring: PB-5														
PROPORTIONS USED: Trace = 1 -10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%										Sheet 3 of 5														

BORING REPORT											Boring: PB-5																
LOCATION: Somerville, Massachusetts																											
PROJECT NAME: Union Square Utility and Roadway Improvements Project											Date Started: 8-5-2014																
											Date Finished: 8-5-2014																
PB PROJECT NUMBER: 52647											N. Coordinate 2962956																
INSPECTOR (Parsons Brinckerhoff): David D'Angelo											E. Coordinate 766871																
DRILLER (New Hampshire Boring): Mark D'Ambrosio											Surface Elevation: 8.8																
Groundwater Observations:											Casing				Auger		Mud	Sampler		Core Barrel							
											Utilized																
											Type				BW	NW	HW	Pipe	Solid	Hollow		S	U	B (st)	B (dt)	NX (st)	NX (dt)
											Size I.D. (in)						4					1 3/8					
											Hammer (lb)						300					140		Type		Diamond	
											Fall (in)						24					30		of Bit		Carbide	
DEPTH (FT)	CASING BLOWS PER FOOT	SAMPLE								DEPTH ELEV. (FT)	DESCRIPTION																
		NO.	DEPTH (FT) FROM - TO	BLOWS PER 6 INCHES			PEN. (IN)	REC. (IN)																			
23										23.5																	
24										-14.7																	
25																											
		S-9	25 - 27	WOR	4	4	5	24	24		Gray CLAY, little silt, medium stiff to stiff																
26											- NRCS Texture: Clay (C)																
27											- Hydrologic Soil Group: D																
28																											
29																											
30																											
NOTES: 1. Boring drilled using a truck-mounted Acker ADII rig																											
2. Split spoon samples taken using a 140# safety hammer and rope & spooling winch																											
3. Stated Hydrologic Soil Groups are independent of water level or depth to impermeable layers																											
SAMPLE TYPE CODING: S=Standard Split Spoon G = Grab Sample C=Core U=Undisturbed Piston										Boring: PB-5																	
PROPORTIONS USED: Trace = 1 -10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%										Sheet 4 of 5																	

BORING REPORT										Boring: PB-5													
LOCATION: Somerville, Massachusetts										Date Started: 8-5-2014													
PROJECT NAME: Union Square Utility and Roadway Improvements Project										Date Finished: 8-5-2014													
PB PROJECT NUMBER: 52647										N. Coordinate 2962956													
INSPECTOR (Parsons Brinckerhoff): David D'Angelo										E. Coordinate 766871													
DRILLER (New Hampshire Boring): Mark D'Ambrosio										Surface Elevation: 8.8													
Groundwater Observations:										Casing		Auger		Mud	Sampler		Core Barrel						
										Utilized													
										Type	BW	NW	HW	Pipe	Solid	Hollow		S	U	B (st)	B (dt)	NX (st)	NX (dt)
										Size I.D. (in)			4					1 3/8					
										Hammer (lb)			300					140		Type		Diamond	
										Fall (in)			24					30		of Bit		Carbide	
DEPTH (FT)	CASING BLOWS PER FOOT	SAMPLE							DEPTH ELEV. (FT)	DESCRIPTION													
		NO.	DEPTH (FT) FROM - TO	BLOWS PER 6 INCHES				PEN. (IN)			REC. (IN)												
30		S-10	30 - 32	2	2	3	3	24	24	32.0	Gray CLAY, little silt, medium stiff - NRCS Texture: Clay (C) - Hydrologic Soil Group: D												
31																							
32																							
										-23.2	Bottom of Boring 32 feet NOTE: Observation well installed with depths as follows: Screen: 15' to 25' Riser: ~0.5' to 15' Well Sand: 14' to 25' Bentonite Plug: 13' to 14'												
33																							
34																							
35																							
36																							
37																							

NOTES: 1. Boring drilled using a truck-mounted Acker ADII rig
2. Split spoon samples taken using a 140# safety hammer and rope & spooling winch
3. Stated Hydrologic Soil Groups are independent of water level or depth to impermeable layers

SAMPLE TYPE CODING: S=Standard Split Spoon G = Grab Sample C=Core U=Undisturbed Piston										Boring: PB-5	
PROPORTIONS USED: Trace = 1 -10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%										Sheet 5 of 5	

BORING REPORT										Boring: PB-6																					
LOCATION: Somerville, Massachusetts																															
PROJECT NAME: Union Square Utility and Roadway Improvements Project										Date Started: 8-7-2014																					
										Date Finished: 8-7-2014																					
PB PROJECT NUMBER: 52647										N. Coordinate 2962669																					
INSPECTOR (Parsons Brinckerhoff): David D'Angelo										E. Coordinate 767218																					
DRILLER (New Hampshire Boring): Mark D'Ambrosio										Surface Elevation: 9.5																					
Groundwater Observations:										Casing				Auger		Mud		Sampler		Core Barrel											
Measured at ~9.5 feet										Utilized																					
										Type		BW		NW		HW		Pipe		Solid		Hollow				S		U		B (st) B (dt) NX (st) NX (dt)	
										Size I.D. (in)						4										1 3/8					
										Hammer (lb)						300										140				Type of Bit	
										Fall (in)						24										30				Diamond Carbide	
DEPTH (FT)	CASING BLOWS PER FOOT	NO.	DEPTH (FT) FROM - TO	SAMPLE				PEN. (IN)	REC. (IN)	DEPTH ELEV. (FT)	DESCRIPTION																				
0										0.3	0 to 0.3' Asphalt Pavement																				
1										9.2	Brown fine to coarse SAND and fine to coarse GRAVEL, trace silt, loose - NRCS Texture: Loamy gravelly sand (LS, GR) - Hydrologic Soil Group: C Brown fine to coarse SAND some fine to coarse gravel, some silt, very loose to loose - NRCS Texture: Loamy gravelly sand (LS, GR) - Hydrologic Soil Group: C Brown to white fine to coarse SAND, some silt, some fine to coarse gravel, loose - NRCS Texture: Loamy gravelly sand (LS, GR) - Hydrologic Soil Group: C S-4A (above 8'): Brown to white fine to coarse SAND, some silt, trace fine to medium gravel, loose - NRCS Texture: Loamy sand (LS) - Hydrologic Soil Group: C																				
	S-1	1 - 3	7	5	4	2	24	6																							
2																															
3																															
		S-2	3 - 5	3	2	2	2	24	7																						
4																															
5																															
		S-3	5 - 7	3	4	4	4	24	8																						
6																															
7																															
		S-4	7 - 9	4	2	2	2	24	11																						

NOTES: 1. Boring drilled using a truck-mounted Mobile B-57 rig
2. Split spoon samples taken using a 140# safety hammer and rope & cathead
3. Stated Hydrologic Soil Groups are independent of water level or depth to impermeable layers

SAMPLE TYPE CODING: S=Standard Split Spoon G = Grab Sample C=Core U=Undisturbed Piston
PROPORTIONS USED: Trace = 1 -10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%

Boring: PB-6
Sheet 1 of 5

BORING REPORT										Boring: PB-6															
LOCATION: Somerville, Massachusetts																									
PROJECT NAME: Union Square Utility and Roadway Improvements Project										Date Started: 8-7-2014															
										Date Finished: 8-7-2014															
PB PROJECT NUMBER: 52647										N. Coordinate 2962669															
INSPECTOR (Parsons Brinckerhoff): David D'Angelo										E. Coordinate 767218															
DRILLER (New Hampshire Boring): Mark D'Ambrosio										Surface Elevation: 9.5															
Groundwater Observations:										Casing				Auger		Mud	Sampler		Core Barrel						
										Utilized															
										Type	BW	NW	HW	Pipe	Solid	Hollow		S	U	B (st)	B (dt)	NX (st)	NX (dt)		
										Size I.D. (in)			4					1 3/8							
										Hammer (lb)			300					140		Type		Diamond			
										Fall (in)			24					30		of Bit		Carbide			
DEPTH (FT)	CASING BLOWS PER FOOT	SAMPLE							DEPTH ELEV. (FT)	DESCRIPTION															
		NO.	DEPTH (FT) FROM - TO	BLOWS PER 6 INCHES				PEN. (IN)			REC. (IN)														
8										8.0															
										1.5	S-4B (below 8'): Brown fine to coarse SAND, some silt little fine to medium gravel, trace wood, very loose to loose - NRCS Texture: Loamy sand (LS) - Hydrologic Soil Group: D														
9										9.0															
											Black WOOD, little organic silt, trace fine to coarse sand, trace fine to medium gravel (probable timber structure) - Probable NRCS Texture: Silt (Si) - Probable Hydrologic Soil Group: D														
10		S-5	9 - 11	2	2	10	4	24	4	0.5															
											Black WOOD, little organic silt, trace fine to coarse sand, trace fine to medium gravel (probable timber structure) - Probable NRCS Texture: Silt (Si) - Probable Hydrologic Soil Group: D														
11											Black WOOD, little organic silt, trace fine to coarse sand, trace fine to medium gravel (probable timber structure) - Probable NRCS Texture: Silt (Si) - Probable Hydrologic Soil Group: D														
12		S-6	11 - 13	4	7	8	7	24	6																
											Black WOOD (probable timber structure and possible void from 14 to 16 feet) - Probable NRCS Texture: Silt (Si) - Probable Hydrologic Soil Group: D														
13											Black WOOD (probable timber structure and possible void from 14 to 16 feet) - Probable NRCS Texture: Silt (Si) - Probable Hydrologic Soil Group: D														
14											Black WOOD (probable timber structure and possible void from 14 to 16 feet) - Probable NRCS Texture: Silt (Si) - Probable Hydrologic Soil Group: D														
15		S-7	14 - 16.3	1 / 24"	4 / 3"			27	3																
											Black WOOD (probable timber structure and possible void from 14 to 16 feet) - Probable NRCS Texture: Silt (Si) - Probable Hydrologic Soil Group: D														

NOTES: 1. Boring drilled using a truck-mounted Mobile B-57 rig
2. Split spoon samples taken using a 140# safety hammer and rope & cathead
3. Stated Hydrologic Soil Groups are independent of water level or depth to impermeable layers

SAMPLE TYPE CODING: S=Standard Split Spoon G = Grab Sample C=Core U=Undisturbed Piston
PROPORTIONS USED: Trace = 1 -10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%

Boring: PB-6
Sheet 2 of 5

BORING REPORT										Boring: PB-6													
LOCATION: Somerville, Massachusetts																							
PROJECT NAME: Union Square Utility and Roadway Improvements Project										Date Started: 8-7-2014													
										Date Finished: 8-7-2014													
PB PROJECT NUMBER: 52647										N. Coordinate 2962669													
INSPECTOR (Parsons Brinckerhoff): David D'Angelo										E. Coordinate 767218													
DRILLER (New Hampshire Boring): Mark D'Ambrosio										Surface Elevation: 9.5													
Groundwater Observations:										Casing		Auger		Mud	Sampler		Core Barrel						
										Utilized													
										Type	BW	NW	HW	Pipe	Solid	Hollow		S	U	B (st)	B (dt)	NX (st)	NX (dt)
										Size I.D. (in)			4					1 3/8					
										Hammer (lb)			300					140		Type		Diamond	
										Fall (in)			24					30		of Bit		Carbide	
DEPTH (FT)	CASING BLOWS PER FOOT	SAMPLE						DEPTH ELEV. (FT)	DESCRIPTION														
		NO.	DEPTH (FT) FROM - TO	BLOWS PER 6 INCHES						PEN. (IN)	REC. (IN)												
15																							
16																							
17																							
18																							
19																							
		S-8	19 - 21	10	7	7	5	24	7														
20										20.5	S-8A (above 20.5'): Black silty WOOD (probable timber structure) - Probable NRCS Texture: Silt (Si) - Probable Hydrologic Soil Group: D												
										-11.0	S-8B (below 20.5'): Gray fine to coarse SAND, little silt, medium dense - NRCS Texture: Loamy sand (LS) - Hydrologic Soil Group: B												
21																							
22																							
										22.5													

NOTES: 1. Boring drilled using a truck-mounted Mobile B-57 rig
2. Split spoon samples taken using a 140# safety hammer and rope & cathead
3. Stated Hydrologic Soil Groups are independent of water level or depth to impermeable layers

SAMPLE TYPE CODING: S=Standard Split Spoon G = Grab Sample C=Core U=Undisturbed Piston
PROPORTIONS USED: Trace = 1 -10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%

Boring: PB-6
Sheet 3 of 5

BORING REPORT										Boring: PB-6														
LOCATION: Somerville, Massachusetts																								
PROJECT NAME: Union Square Utility and Roadway Improvements Project										Date Started: 8-7-2014														
										Date Finished: 8-7-2014														
PB PROJECT NUMBER: 52647										N. Coordinate 2962669														
INSPECTOR (Parsons Brinckerhoff): David D'Angelo										E. Coordinate 767218														
DRILLER (New Hampshire Boring): Mark D'Ambrosio										Surface Elevation: 9.5														
Groundwater Observations:										Casing				Auger		Mud	Sampler		Core Barrel					
										Utilized														
										Type	BW	NW	HW	Pipe	Solid	Hollow		S	U	B (st)	B (dt)	NX (st)	NX (dt)	
										Size I.D. (in)			4					1 3/8						
										Hammer (lb)			300					140		Type		Diamond		
										Fall (in)			24					30		of Bit		Carbide		
DEPTH (FT)	CASING BLOWS PER FOOT	SAMPLE							DEPTH ELEV. (FT)	DESCRIPTION														
		NO.	DEPTH (FT) FROM - TO	BLOWS PER 6 INCHES				PEN. (IN)									REC. (IN)							
23									-13.0	Gray CLAY, little silt, soft to medium stiff - NRCS Texture: Clay (C) - Hydrologic Soil Group: D														
	24																							
25		S-9	24 - 26	1	2	2	3	24									24							
26																								
27																								
28																								
29																								
30		S-10	29 - 31	1	1	1	1	24	24															
NOTES: 1. Boring drilled using a truck-mounted Mobile B-57 rig																								
2. Split spoon samples taken using a 140# safety hammer and rope & cathead																								
3. Stated Hydrologic Soil Groups are independent of water level or depth to impermeable layers																								
SAMPLE TYPE CODING: S=Standard Split Spoon G = Grab Sample C=Core U=Undisturbed Piston															Boring: PB-6									
PROPORTIONS USED: Trace = 1 -10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%															Sheet 4 of 5									

BORING REPORT										Boring: PB-6															
LOCATION: Somerville, Massachusetts																									
PROJECT NAME: Union Square Utility and Roadway Improvements Project										Date Started: 8-7-2014															
										Date Finished: 8-7-2014															
PB PROJECT NUMBER: 52647										N. Coordinate 2962669															
INSPECTOR (Parsons Brinckerhoff): David D'Angelo										E. Coordinate 767218															
DRILLER (New Hampshire Boring): Mark D'Ambrosio										Surface Elevation: 9.5															
Groundwater Observations:										Casing				Auger		Mud	Sampler		Core Barrel						
										Utilized															
										Type	BW	NW	HW	Pipe	Solid	Hollow		S	U	B (st)	B (dt)	NX (st)	NX (dt)		
										Size I.D. (in)			4					1 3/8							
										Hammer (lb)			300					140		Type		Diamond			
										Fall (in)			24					30		of Bit		Carbide			
DEPTH (FT)	CASING BLOWS PER FOOT	SAMPLE					DEPTH ELEV. (FT)	DESCRIPTION																	
		NO.	DEPTH (FT) FROM - TO	BLOWS PER 6 INCHES	PEN. (IN)	REC. (IN)																			
30							31.0	Bottom of Boring 31 feet																	
31																									
32							-21.5																		
33									-21.5																
34											-21.5														
35													-21.5												
36							-21.5																		
37									-21.5																
NOTES: 1. Boring drilled using a truck-mounted Mobile B-57 rig																									
2. Split spoon samples taken using a 140# safety hammer and rope & cathead																									
3. Stated Hydrologic Soil Groups are independent of water level or depth to impermeable layers																									
SAMPLE TYPE CODING: S=Standard Split Spoon G = Grab Sample C=Core U=Undisturbed Piston											Boring: PB-6														
PROPORTIONS USED: Trace = 1 -10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%											Sheet 5 of 5														

BORING REPORT										Boring: PB-7													
LOCATION: Somerville, Massachusetts																							
PROJECT NAME: Union Square Utility and Roadway Improvements Project										Date Started: 8-6-2014													
										Date Finished: 8-8-2014													
PB PROJECT NUMBER: 52647										N. Coordinate 2963551													
INSPECTOR (Parsons Brinckerhoff): David D'Angelo										E. Coordinate 764895													
DRILLER (New Hampshire Boring): Mark D'Ambrosio										Surface Elevation: 13.1													
Groundwater Observations: Estimated at ~14.0 feet										Casing		Auger		Mud	Sampler		Core Barrel						
										Utilized													
										Type	BW	NW	HW	Pipe	Solid	Hollow		S	U	B (st)	B (dt)	NX (st)	NX (dt)
										Size I.D. (in)			4					1 3/8					
										Hammer (lb)			300					140		Type		Diamond	
										Fall (in)			24					30		of Bit		Carbide	
DEPTH (FT)	CASING BLOWS PER FOOT	SAMPLE					DEPTH ELEV. (FT)	DESCRIPTION															
		NO.	DEPTH (FT) FROM - TO	BLOWS PER 6 INCHES	PEN. (IN)	REC. (IN)																	
0							0.4	0 to 0.4' Asphalt Pavement															
							12.7	0.4' to 1.0' Concrete and Sand															
							1.0																
1		G-1	1 - 8.5				12.1	Brown fine to medium SAND, trace silt, trace fine gravel - NRCS Texture: Loamy sand (LS) - Hydrologic Soil Group: B															
2																							
3																							
4																							
5																							
6																							
7																							
NOTES: 1. Boring drilled using a truck-mounted Acker ADII rig 2. Split spoon samples taken using a 140# safety hammer and rope & spooling winch 3. Stated Hydrologic Soil Groups are independent of water level or depth to impermeable layers 4. Borehole vacuum-excavated from 0 to 8.5 feet on 8-6 and drilled from 8.5 feet to 32 feet on 8-8																							
SAMPLE TYPE CODING: S=Standard Split Spoon G = Grab Sample C=Core U=Undisturbed Piston PROPORTIONS USED: Trace = 1 -10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%								Boring: PB-7 Sheet 1 of 5															

BORING REPORT										Boring: PB-7																													
LOCATION: Somerville, Massachusetts																																							
PROJECT NAME: Union Square Utility and Roadway Improvements Project										Date Started: 8-6-2014																													
										Date Finished: 8-8-2014																													
PB PROJECT NUMBER: 52647										N. Coordinate 2963551																													
INSPECTOR (Parsons Brinckerhoff): David D'Angelo										E. Coordinate 764895																													
DRILLER (New Hampshire Boring): Mark D'Ambrosio										Surface Elevation: 13.1																													
Groundwater Observations:										Casing				Auger		Mud		Sampler		Core Barrel																			
										Utilized																													
										Type				BW		NW		HW		Pipe		Solid		Hollow				S		U		B (st)		B (dt)		NX (st)		NX (dt)	
										Size I.D. (in)								4										1 3/8											
										Hammer (lb)								300										140				Type				Diamond			
										Fall (in)								24										30				of Bit				Carbide			
DEPTH (FT)	CASING BLOWS PER FOOT	SAMPLE							DEPTH ELEV. (FT)	DESCRIPTION																													
		NO.	DEPTH (FT) FROM - TO	BLOWS PER 6 INCHES				PEN. (IN)			REC. (IN)																												
8										8.5																													
9										4.6	Brown fine SAND, trace silt, medium dense - NRCS Texture: Sand (S) - Hydrologic Soil Group: B																												
10		S-1	9 - 11	7	7	10	17	24	16	11.0																													
11		S-2	11 - 13	15	16	14	17	24	14	2.1	S-2A (above 12'): Brown fine SAND and SILT, medium dense to dense - NRCS Texture: Sandy loam (SL) - Hydrologic Soil Group: D																												
12										12.0	S-2B (below 12'): Brown fine to medium SAND, trace silt, medium dense to dense - NRCS Texture: Sand (S) - Hydrologic Soil Group: A																												
13										13.0																													
14		S-3	13 - 15	16	14	19	22	24	20	0.1	Brown fine SAND, trace silt, dense - NRCS Texture: Loamy sand (LS) - Hydrologic Soil Group: B																												
15																																							

NOTES: 1. Boring drilled using a truck-mounted Acker ADII rig
2. Split spoon samples taken using a 140# safety hammer and rope & spooling winch
3. Stated Hydrologic Soil Groups are independent of water level or depth to impermeable layers
4. Borehole vacuum-excavated from 0 to 8.5 feet on 8-6 and drilled from 8.5 feet to 32 feet on 8-8

SAMPLE TYPE CODING: S=Standard Split Spoon G = Grab Sample C=Core U=Undisturbed Piston										Boring: PB-5	
PROPORTIONS USED: Trace = 1 -10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%										Sheet 2 of 5	

BORING REPORT										Boring: PB-7																
LOCATION: Somerville, Massachusetts																										
PROJECT NAME: Union Square Utility and Roadway Improvements Project										Date Started: 8-6-2014																
										Date Finished: 8-8-2014																
PB PROJECT NUMBER: 52647										N. Coordinate 2963551																
INSPECTOR (Parsons Brinckerhoff): David D'Angelo										E. Coordinate 764895																
DRILLER (New Hampshire Boring): Mark D'Ambrosio										Surface Elevation: 13.1																
Groundwater Observations:										Casing				Auger		Mud	Sampler		Core Barrel							
										Utilized																
										Type				BW	NW	HW	Pipe	Solid	Hollow		S	U	B (st)	B (dt)	NX (st)	NX (dt)
										Size I.D. (in)						4					1 3/8					
										Hammer (lb)						300					140		Type		Diamond	
Fall (in)						24					30		of Bit		Carbide											
DEPTH (FT)	CASING BLOWS PER FOOT	SAMPLE							DEPTH ELEV. (FT)	DESCRIPTION																
		NO.	DEPTH (FT) FROM - TO	BLOWS PER 6 INCHES				PEN. (IN)			REC. (IN)															
15		S-4	15 - 17	15	12	17	16	24	17	Brown fine SAND, some silt, medium dense - NRCS Texture: Sandy loam (SL) - Hydrologic Soil Group: C																
16											S-5A (above 18'): Brown fine SAND, little silt, dense - NRCS Texture: loamy sand (LS) - Hydrologic Soil Group: C															
17		S-5	17 - 19	13	20	17	30	24	24			S-5B (below 18'): Brown SILT, some fine sand, little clay, dense - NRCS Texture: Silt loam (SiL) - Hydrologic Soil Group: D														
18										18.0																
19										-4.9																
20		S-6	20 - 22	7	11	18	17	24	14	Brown fine SAND, some silt including a 1-inch silt layer at 21 feet, medium dense - NRCS Texture: Sandy loam (SL) - Hydrologic Soil Group: D																
21											-5.9															
22																										

NOTES: 1. Boring drilled using a truck-mounted Acker ADII rig
2. Split spoon samples taken using a 140# safety hammer and rope & spooling winch
3. Stated Hydrologic Soil Groups are independent of water level or depth to impermeable layers
4. Borehole vacuum-excavated from 0 to 8.5 feet on 8-6 and drilled from 8.5 feet to 32 feet on 8-8

SAMPLE TYPE CODING: S=Standard Split Spoon G = Grab Sample C=Core U=Undisturbed Piston										Boring: PB-7	
PROPORTIONS USED: Trace = 1 -10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%										Sheet 3 of 5	

BORING REPORT										Boring: PB-7							
LOCATION: Somerville, Massachusetts																	
PROJECT NAME: Union Square Utility and Roadway Improvements Project										Date Started: 8-6-2014							
										Date Finished: 8-8-2014							
PB PROJECT NUMBER: 52647										N. Coordinate 2963551							
INSPECTOR (Parsons Brinckerhoff): David D'Angelo										E. Coordinate 764895							
DRILLER (New Hampshire Boring): Mark D'Ambrosio										Surface Elevation: 13.1							
Groundwater Observations:				Casing				Auger		Mud	Sampler		Core Barrel				
				Utilized													
				Type	BW	NW	HW	Pipe	Solid	Hollow		S	U	B (st)	B (dt)	NX (st)	NX (dt)
				Size I.D. (in)			4					1 3/8					
				Hammer (lb)			300					140		Type		Diamond	
				Fall (in)			24				30		of Bit		Carbide		
DEPTH (FT)	CASING BLOWS PER FOOT	SAMPLE						DEPTH ELEV. (FT)	DESCRIPTION								
		NO.	DEPTH (FT) FROM - TO	BLOWS PER 6 INCHES						PEN. (IN)	REC. (IN)						
23										Brown fine SAND, some silt including a 4-inch silt layer at 25.5 feet, medium dense - NRCS Texture: Sandy loam (SL) - Hydrologic Soil Group: D							
24																	
25																	
		S-7	25 - 27	5	8	10	11	24	16								
26																	
27																	
28																	
29																	
30																	

NOTES: 1. Boring drilled using a truck-mounted Acker ADII rig
2. Split spoon samples taken using a 140# safety hammer and rope & spooling winch
3. Stated Hydrologic Soil Groups are independent of water level or depth to impermeable layers
4. Borehole vacuum-excavated from 0 to 8.5 feet on 8-6 and drilled from 8.5 feet to 32 feet on 8-8

SAMPLE TYPE CODING: S=Standard Split Spoon G = Grab Sample C=Core U=Undisturbed Piston										Boring: PB-7	
PROPORTIONS USED: Trace = 1 -10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%										Sheet 4 of 5	

BORING REPORT										Boring: PB-7							
LOCATION: Somerville, Massachusetts																	
PROJECT NAME: Union Square Utility and Roadway Improvements Project										Date Started: 8-6-2014							
										Date Finished: 8-8-2014							
PB PROJECT NUMBER: 52647										N. Coordinate 2963551							
INSPECTOR (Parsons Brinckerhoff): David D'Angelo										E. Coordinate 764895							
DRILLER (New Hampshire Boring): Mark D'Ambrosio										Surface Elevation: 13.1							
Groundwater Observations:				Casing				Auger		Mud	Sampler		Core Barrel				
				Utilized													
				Type	BW	NW	HW	Pipe	Solid	Hollow		S	U	B (st)	B (dt)	NX (st)	NX (dt)
				Size I.D. (in)			4					1 3/8					
				Hammer (lb)			300					140		Type		Diamond	
				Fall (in)			24					30		of Bit		Carbide	
DEPTH (FT)	CASING BLOWS PER FOOT	SAMPLE							DEPTH ELEV. (FT)	DESCRIPTION							
		NO.	DEPTH (FT) FROM - TO	BLOWS PER 6 INCHES				PEN. (IN)			REC. (IN)						
30		S-8	30 - 32	12	16	27	30	24	15	32.0	Brown fine SAND, little silt, dense - NRCS Texture: Loamy sand (LS) - Hydrologic Soil Group: C						
31																	
32										-18.9	Bottom of Boring 32 feet						
33																	
34																	
35																	
36																	
37																	

NOTES: 1. Boring drilled using a truck-mounted Acker ADII rig
2. Split spoon samples taken using a 140# safety hammer and rope & spooling winch
3. Stated Hydrologic Soil Groups are independent of water level or depth to impermeable layers
4. Borehole vacuum-excavated from 0 to 8.5 feet on 8-6 and drilled from 8.5 feet to 32 feet on 8-8

SAMPLE TYPE CODING: S=Standard Split Spoon G = Grab Sample C=Core U=Undisturbed Piston										Boring: PB-7	
PROPORTIONS USED: Trace = 1 -10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%										Sheet 5 of 5	

BORING REPORT											Boring: PB-8					
LOCATION: Somerville, Massachusetts																
PROJECT NAME: Union Square Utility and Roadway Improvements Project											Date Started: 8-14-2014					
											Date Finished: 8-14-2014					
PB PROJECT NUMBER: 52647											N. Coordinate 2963572					
INSPECTOR (Parsons Brinckerhoff): David D'Angelo											E. Coordinate 765955					
DRILLER (New Hampshire Boring): Mark D'Ambrosio											Surface Elevation: 13.1					
Groundwater Observations: Estimated at ~13.5 feet			Casing				Auger		Mud	Sampler		Core Barrel				
			Utilized													
			Type	BW	NW	HW	Pipe	Solid	Hollow		S	U	B (st)	B (dt)	NX (st)	NX (dt)
			Size I.D. (in)			4					1 3/8					
			Hammer (lb)			300					140		Type		Diamond	
			Fall (in)			24					30		of Bit		Carbide	
DEPTH (FT)	CASING BLOWS PER FOOT	SAMPLE							DEPTH ELEV. (FT)	DESCRIPTION						
		NO.	DEPTH (FT) FROM - TO	BLOWS PER 6 INCHES				PEN. (IN)			REC. (IN)					
0										0 to 0.5' Asphalt Pavement						
1		G-1	0.5 - 2							12.6	Brown fine to coarse SAND, some silt, little fine to medium gravel - NRCS Texture: Sandy loam (SL) - Hydrologic Soil Group: C Brown fine to coarse SAND, some silt, little fine to medium gravel, loose to medium dense - NRCS Texture: Sandy loam (SL) - Hydrologic Soil Group: C					
2																
		S-1	2 - 4	5	5	5	7	24	17							
3																
4										4						
		S-2	4 - 6	10	14	15	13	24	18	9.1	Brown and gray fine to coarse SAND, little fine gravel, trace silt, medium dense - NRCS Texture: Loamy sand, gravelly (LS, GR) - Hydrologic Soil Group: B					
5																
6										6						
		S-3	6 - 8	18	16	21	27	24	12	7.1		Olive - gray (mottled) CLAY, hard - NRCS Texture: Clay (C) - Hydrologic Soil Group: D				
7																

NOTES: 1. Boring drilled using a truck-mounted Acker ADII rig
2. Split spoon samples taken using a 140# safety hammer and rope & spooling winch
3. Stated Hydrologic Soil Groups are independent of water level or depth to impermeable layers

SAMPLE TYPE CODING: S=Standard Split Spoon G = Grab Sample C=Core U=Undisturbed Piston										Boring: PB-8	
PROPORTIONS USED: Trace = 1 -10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%										Sheet 1 of 5	

BORING REPORT										Boring: PB-8							
LOCATION: Somerville, Massachusetts																	
PROJECT NAME: Union Square Utility and Roadway Improvements Project										Date Started: 8-14-2014							
										Date Finished: 8-14-2014							
PB PROJECT NUMBER: 52647										N. Coordinate 2963572							
INSPECTOR (Parsons Brinckerhoff): David D'Angelo										E. Coordinate 765955							
DRILLER (New Hampshire Boring): Mark D'Ambrosio										Surface Elevation: 13.1							
Groundwater Observations:				Casing				Auger		Mud	Sampler		Core Barrel				
				Utilized													
				Type	BW	NW	HW	Pipe	Solid	Hollow		S	U	B (st)	B (dt)	NX (st)	NX (dt)
				Size I.D. (in)			4					1 3/8					
				Hammer (lb)			300					140		Type		Diamond	
				Fall (in)			24					30		of Bit		Carbide	
DEPTH (FT)	CASING BLOWS PER FOOT	SAMPLE								DEPTH ELEV. (FT)	DESCRIPTION						
		NO.	DEPTH (FT) FROM - TO	BLOWS PER 6 INCHES				PEN. (IN)	REC. (IN)								
8											Olive - gray (mottled) CLAY, hard - NRCS Texture: Clay (C) - Hydrologic Soil Group: D Olive - gray (mottled) CLAY, very stiff - NRCS Texture: Clay (C) - Hydrologic Soil Group: D						
	S-4	8 - 10	29	30	32	38	24	16									
9																	
10																	
	S-5	10 - 12	12	11	17	21	24	24									
11																	
12																	
13																	
14																	
15																	
NOTES: 1. Boring drilled using a truck-mounted Acker ADII rig 2. Split spoon samples taken using a 140# safety hammer and rope & spooling winch 3. Stated Hydrologic Soil Groups are independent of water level or depth to impermeable layers																	
SAMPLE TYPE CODING: S=Standard Split Spoon G = Grab Sample C=Core U=Undisturbed Piston										Boring: PB-8							
PROPORTIONS USED: Trace = 1 -10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%										Sheet 2 of 5							

BORING REPORT										Boring: PB-8							
LOCATION: Somerville, Massachusetts										Date Started: 8-14-2014							
PROJECT NAME: Union Square Utility and Roadway Improvements Project										Date Finished: 8-14-2014							
PB PROJECT NUMBER: 52647										N. Coordinate 2963572							
INSPECTOR (Parsons Brinckerhoff): David D'Angelo										E. Coordinate 765955							
DRILLER (New Hampshire Boring): Mark D'Ambrosio										Surface Elevation: 13.1							
Groundwater Observations:				Casing				Auger		Mud	Sampler		Core Barrel				
				Utilized													
				Type	BW	NW	HW	Pipe	Solid	Hollow		S	U	B (st)	B (dt)	NX (st)	NX (dt)
				Size I.D. (in)			4					1 3/8					
				Hammer (lb)			300					140		Type		Diamond	
				Fall (in)			24					30		of Bit		Carbide	
DEPTH (FT)	CASING BLOWS PER FOOT	SAMPLE							DEPTH ELEV. (FT)	DESCRIPTION							
		NO.	DEPTH (FT) FROM - TO	BLOWS PER 6 INCHES				PEN. (IN)			REC. (IN)						
15		S-6	15 - 17	6	6	9	10	24	24	Gray CLAY, little silt, stiff to very stiff - NRCS Texture: Clay (C) - Hydrologic Soil Group: D							
16																	
17																	
18																	
19																	
20																	
21		S-7	20 - 22	3	3	4	4	24	24	Gray CLAY, little silt, medium stiff - NRCS Texture: Clay (C) - Hydrologic Soil Group: D							
22																	

NOTES: 1. Boring drilled using a truck-mounted Acker ADII rig

2. Split spoon samples taken using a 140# safety hammer and rope & spooling winch

3. Stated Hydrologic Soil Groups are independent of water level or depth to impermeable layers

SAMPLE TYPE CODING: S=Standard Split Spoon G = Grab Sample C=Core U=Undisturbed Piston

PROPORTIONS USED: Trace = 1 -10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%

Boring: PB-8

Sheet 3 of 5

BORING REPORT										Boring: PB-8							
LOCATION: Somerville, Massachusetts																	
PROJECT NAME: Union Square Utility and Roadway Improvements Project										Date Started: 8-14-2014							
										Date Finished: 8-14-2014							
PB PROJECT NUMBER: 52647										N. Coordinate 2963572							
INSPECTOR (Parsons Brinckerhoff): David D'Angelo										E. Coordinate 765955							
DRILLER (New Hampshire Boring): Mark D'Ambrosio										Surface Elevation: 13.1							
Groundwater Observations:				Casing				Auger		Mud	Sampler		Core Barrel				
				Utilized													
				Type	BW	NW	HW	Pipe	Solid	Hollow		S	U	B (st)	B (dt)	NX (st)	NX (dt)
				Size I.D. (in)			4					1 3/8					
				Hammer (lb)			300					140		Type		Diamond	
				Fall (in)			24					30		of Bit		Carbide	
DEPTH (FT)	CASING BLOWS PER FOOT	NO.	DEPTH (FT) FROM - TO	SAMPLE				PEN. (IN)	REC. (IN)	DEPTH ELEV. (FT)	DESCRIPTION						
23																	
24																	
25										25.0							
26		S-8	25 - 27	3	3	5	4	24	24	-11.9	Gray SILT and fine to coarse SAND, little fine to medium gravel, little clay, loose - NRCS Texture: Silt loam, gravelly (SiL - GR) - Hydrologic Soil Group: D						
27										27.5							
28										-14.4	Note: Drill through probable boulder from 27.5 to 29 feet						
29										29.0							
30										-15.9							
NOTES: 1. Boring drilled using a truck-mounted Acker ADII rig																	
2. Split spoon samples taken using a 140# safety hammer and rope & spooling winch																	
3. Stated Hydrologic Soil Groups are independent of water level or depth to impermeable layers																	
SAMPLE TYPE CODING: S=Standard Split Spoon G = Grab Sample C=Core U=Undisturbed Piston												Boring: PB-8					
PROPORTIONS USED: Trace = 1 -10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%												Sheet 4 of 5					

BORING REPORT										Boring: PB-8							
LOCATION: Somerville, Massachusetts																	
PROJECT NAME: Union Square Utility and Roadway Improvements Project										Date Started: 8-14-2014							
										Date Finished: 8-14-2014							
PB PROJECT NUMBER: 52647										N. Coordinate 2963572							
INSPECTOR (Parsons Brinckerhoff): David D'Angelo										E. Coordinate 765955							
DRILLER (New Hampshire Boring): Mark D'Ambrosio										Surface Elevation: 13.1							
Groundwater Observations:				Casing				Auger		Mud	Sampler		Core Barrel				
				Utilized													
				Type	BW	NW	HW	Pipe	Solid	Hollow		S	U	B (st)	B (dt)	NX (st)	NX (dt)
				Size I.D. (in)			4					1 3/8					
				Hammer (lb)			300					140		Type		Diamond	
				Fall (in)			24					30		of Bit		Carbide	
DEPTH (FT)	CASING BLOWS PER FOOT	SAMPLE							DEPTH ELEV. (FT)	DESCRIPTION							
		NO.	DEPTH (FT) FROM - TO	BLOWS PER 6 INCHES				PEN. (IN)			REC. (IN)						
30		S-9	30 - 32	12	15	18	21	24	12	32.0	Gray SILT and fine to coarse SAND, some fine to coarse gravel, little clay, dense - NRCS Texture: Silt loam, very gravelly (SL - GRV) - Hydrologic Soil Group: D						
31																	
32										-18.9	Bottom of Boring 32 feet						
33																	
34																	
35																	
36																	
37																	

NOTES: 1. Boring drilled using a truck-mounted Acker ADII rig
2. Split spoon samples taken using a 140# safety hammer and rope & spooling winch
3. Stated Hydrologic Soil Groups are independent of water level or depth to impermeable layers

SAMPLE TYPE CODING: S=Standard Split Spoon G = Grab Sample C=Core U=Undisturbed Piston										Boring: PB-8	
PROPORTIONS USED: Trace = 1 -10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%										Sheet 5 of 5	

BORING REPORT											Boring: PB-9					
LOCATION: Somerville, Massachusetts																
PROJECT NAME: Union Square Utility and Roadway Improvements Project											Date Started: 8-11-2014					
											Date Finished: 8-11-2014					
PB PROJECT NUMBER: 52647											N. Coordinate 2963551					
INSPECTOR (Parsons Brinckerhoff): David D'Angelo											E. Coordinate 766241					
DRILLER (New Hampshire Boring): Mark D'Ambrosio											Surface Elevation: 15.9					
Groundwater Observations: Estimated at ~13.5 feet			Casing				Auger		Mud	Sampler		Core Barrel				
			Utilized													
			Type	BW	NW	HW	Pipe	Solid	Hollow		S	U	B (st)	B (dt)	NX (st)	NX (dt)
			Size I.D. (in)			4					1 3/8					
			Hammer (lb)			300					140		Type		Diamond	
			Fall (in)			24					30		of Bit		Carbide	
DEPTH (FT)	CASING BLOWS PER FOOT	SAMPLE						DEPTH ELEV. (FT)	DESCRIPTION							
		NO.	DEPTH (FT) FROM - TO	BLOWS PER 6 INCHES						PEN. (IN)	REC. (IN)					
0										0 to 1.0' Asphalt Pavement						
1									1.0							
		S-1	1 - 3	7	6	6	4	24	14.9	Brown - gray fine to medium SAND, little silt, trace fine gravel, medium dense - NRCS Texture: Loamy sand (LS) - Hydrologic Soil Group: B						
2																
3									3.0							
		S-2	3 - 5	9	9	6	6	24	12.9	Brown - gray fine to coarse SAND and fine GRAVEL, little silt, medium dense - NRCS Texture: Sandy loam, extremely gravelly (SL - GRX) - Hydrologic Soil Group: C						
4																
5																
		S-3	5 - 7	7	5	5	7	24	10	Brown - gray fine to coarse GRAVEL, little fine to coarse sand, little silt, medium dense - NRCS Texture: Sandy loam, extremely gravelly (SL - GRX) - Hydrologic Soil Group: C						
6																
7									7.0							
		S-4	7 - 9	16	16	23	25	24	17	8.9	S-4A (above 8'): Brown - gray fine to coarse SAND, some fine to medium gravel, little clay, little silt, dense					
NOTES: 1. Boring drilled using a truck-mounted Acker ADII rig 2. Split spoon samples taken using a 140# safety hammer and rope & spooling winch 3. Stated Hydrologic Soil Groups are independent of water level or depth to impermeable layers																
SAMPLE TYPE CODING: S=Standard Split Spoon G = Grab Sample C=Core U=Undisturbed Piston PROPORTIONS USED: Trace = 1 -10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%										Boring: PB-9 Sheet 1 of 3						

BORING REPORT										Boring: PB-9															
LOCATION: Somerville, Massachusetts																									
PROJECT NAME: Union Square Utility and Roadway Improvements Project										Date Started: 8-11-2014															
										Date Finished: 8-11-2014															
PB PROJECT NUMBER: 52647										N. Coordinate 2963551															
INSPECTOR (Parsons Brinckerhoff): David D'Angelo										E. Coordinate 766241															
DRILLER (New Hampshire Boring): Mark D'Ambrosio										Surface Elevation: 15.9															
Groundwater Observations:										Casing				Auger		Mud		Sampler		Core Barrel					
										Utilized															
										Type		BW		NW		HW		Pipe		Solid		Hollow			
										Size I.D. (in)						4								1 3/8	
										Hammer (lb)						300								140	
										Fall (in)						24								30	
																						Type of Bit		Diamond	
																								Carbide	
DEPTH (FT)	CASING BLOWS PER FOOT	SAMPLE								DEPTH ELEV. (FT)	DESCRIPTION														
		NO.	DEPTH (FT) FROM - TO	BLOWS PER 6 INCHES				PEN. (IN)	REC. (IN)																
8											8.0	- NRCS Texture: Sandy clay (SC) - Hydrologic Soil Group: D													
											7.9	S-4B (below 8'): Olive - gray (mottled) CLAY, hard - NRCS Texture: Clay (C) - Hydrologic Soil Group: D													
9												Olive - gray (mottled) CLAY, hard - NRCS Texture: Clay (C) - Hydrologic Soil Group: D													
		S-5	9 - 11	27	37	42	39	24	12																
10																									
11																									
		S-6	11 - 13	10	17	18	26	24	22			Olive - gray (mottled) CLAY, hard - NRCS Texture: Clay (C) - Hydrologic Soil Group: D													
12																									
13																									
14																									
15												S-7A (above 15.5'): Olive - gray (mottled) CLAY, hard - NRCS Texture: Clay (C)													

NOTES: 1. Boring drilled using a truck-mounted Acker ADII rig
2. Split spoon samples taken using a 140# safety hammer and rope & spooling winch
3. Stated Hydrologic Soil Groups are independent of water level or depth to impermeable layers

SAMPLE TYPE CODING: S=Standard Split Spoon G = Grab Sample C=Core U=Undisturbed Piston
PROPORTIONS USED: Trace = 1 -10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%

Boring: PB-9
Sheet 2 of 3

BORING REPORT										Boring: PB-9															
LOCATION: Somerville, Massachusetts																									
PROJECT NAME: Union Square Utility and Roadway Improvements Project										Date Started: 8-11-2014															
										Date Finished: 8-11-2014															
PB PROJECT NUMBER: 52647										N. Coordinate 2963551															
INSPECTOR (Parsons Brinckerhoff): David D'Angelo										E. Coordinate 766241															
DRILLER (New Hampshire Boring): Mark D'Ambrosio										Surface Elevation: 15.9															
Groundwater Observations:										Casing				Auger		Mud		Sampler		Core Barrel					
										Utilized															
										Type		BW		NW		HW		Pipe		Solid		Hollow			
										Size I.D. (in)						4								1 3/8	
										Hammer (lb)						300								140	
										Fall (in)						24								30	
																						Type of Bit		Diamond	
																								Carbide	
DEPTH (FT)	CASING BLOWS PER FOOT	SAMPLE							DEPTH ELEV. (FT)	DESCRIPTION															
		NO.	DEPTH (FT) FROM - TO	BLOWS PER 6 INCHES			PEN. (IN)	REC. (IN)																	
15		S-7	15 - 16	11	30	100/ <1"		12	12	15.5	- Hydrologic Soil Group: D														
16										0.4	S-7B (below 15.5'): Olive SILT, some fine to coarse sand, some fine to coarse gravel, little clay, very dense														
										16	- NRCS Texture: Silt loam, extremely gravelly (SL - GRX)														
										-0.1	- Hydrologic Soil Group: D														
17										Note: Drill into probable bedrock, possible boulder from 16 to 20 feet															
18																									
19																									
20											20														
21										-4.1	Bottom of Boring 20 feet														
22																									

NOTES: 1. Boring drilled using a truck-mounted Acker ADII rig
2. Split spoon samples taken using a 140# safety hammer and rope & spooling winch
3. Stated Hydrologic Soil Groups are independent of water level or depth to impermeable layers

SAMPLE TYPE CODING: S=Standard Split Spoon G = Grab Sample C=Core U=Undisturbed Piston										Boring: PB-9	
PROPORTIONS USED: Trace = 1 -10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%										Sheet 3 of 3	

BORING REPORT										Boring: PB-10														
LOCATION: Somerville, Massachusetts																								
PROJECT NAME: Union Square Utility and Roadway Improvements Project										Date Started: 8-6-2014														
										Date Finished: 8-15-2014														
PB PROJECT NUMBER: 52647										N. Coordinate 2963710														
INSPECTOR (Parsons Brinckerhoff): David D'Angelo										E. Coordinate 766842														
DRILLER (New Hampshire Boring): Mark D'Ambrosio										Surface Elevation: 20.5														
Groundwater Observations: No discernable groundwater levels observed										Casing				Auger		Mud	Sampler		Core Barrel					
										Utilized														
										Type	BW	NW	HW	Pipe	Solid	Hollow		S	U	B (st)	B (dt)	NX (st)	NX (dt)	
										Size I.D. (in)			4					1 3/8						
										Hammer (lb)			300					140		Type		Diamond		
										Fall (in)			24					30		of Bit		Carbide		
DEPTH (FT)	CASING BLOWS PER FOOT	SAMPLE								DEPTH ELEV. (FT)	DESCRIPTION													
		NO.	DEPTH (FT) FROM - TO	BLOWS PER 6 INCHES				PEN. (IN)	REC. (IN)															
0										0.8	0 to 0.8' Asphalt Pavement													
1		G-1	0.8 - 6							19.7		Brown fine to coarse SAND, some fine to coarse gravel, trace silt - NRCS Texture: Loamy sand, gravelly (LS - GR) - Hydrologic Soil Group: C												
2																								
3																								
4																								
5																								
6										6.0														
7		S-1	6 - 8	11	10	11	12	24	18	14.5	Brown fine to coarse SAND, trace fine gravel, trace silt, medium dense - NRCS Texture: Loamy sand (LS) - Hydrologic Soil Group: B													

NOTES: 1. Boring drilled using a truck-mounted Acker ADII rig
2. Split spoon samples taken using a 140# safety hammer and rope & spooling winch
3. Stated Hydrologic Soil Groups are independent of water level or depth to impermeable layers
4. Borehole vacuum-excavated from 0 to 6 feet on 8-6 and drilled from 6 feet to 25 feet on 8-15

SAMPLE TYPE CODING: S=Standard Split Spoon G = Grab Sample C=Core U=Undisturbed Piston										Boring: PB-10	
PROPORTIONS USED: Trace = 1 -10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%										Sheet 1 of 4	

BORING REPORT										Boring: PB-10													
LOCATION: Somerville, Massachusetts																							
PROJECT NAME: Union Square Utility and Roadway Improvements Project										Date Started: 8-6-2014													
										Date Finished: 8-15-2014													
PB PROJECT NUMBER: 52647										N. Coordinate 2963710													
INSPECTOR (Parsons Brinckerhoff): David D'Angelo										E. Coordinate 766842													
DRILLER (New Hampshire Boring): Mark D'Ambrosio										Surface Elevation: 20.5													
Groundwater Observations:										Casing		Auger		Mud	Sampler		Core Barrel						
										Utilized													
										Type	BW	NW	HW	Pipe	Solid	Hollow		S	U	B (st)	B (dt)	NX (st)	NX (dt)
										Size I.D. (in)			4					1 3/8					
										Hammer (lb)			300					140		Type		Diamond	
										Fall (in)			24					30		of Bit		Carbide	
DEPTH (FT)	CASING BLOWS PER FOOT	SAMPLE						DEPTH ELEV. (FT)	DESCRIPTION														
		NO.	DEPTH (FT) FROM - TO	BLOWS PER 6 INCHES						PEN. (IN)	REC. (IN)												
8										9.0	S-2A (above 9'): Brown fine to coarse SAND, trace silt, medium dense - NRCS Texture: loamy sand (LS) - Hydrologic Soil Group: B												
	S-2	8 - 10	10	13	11	14	24	24															
9										11.5	S-2B (below 9'): Olive CLAY, little silt, very stiff - NRCS Texture: Clay (C) - Hydrologic Soil Group: D												
10										13.0	Olive CLAY, little silt, very stiff - NRCS Texture: Clay (C) - Hydrologic Soil Group: D												
	S-3	10 - 12	8	11	10	12	24	12															
11										7.5													
12																							
13																							
14																							
15																							

NOTES: 1. Boring drilled using a truck-mounted Acker ADII rig
2. Split spoon samples taken using a 140# safety hammer and rope & spooling winch
3. Stated Hydrologic Soil Groups are independent of water level or depth to impermeable layers
4. Borehole vacuum-excavated from 0 to 6 feet on 8-6 and drilled from 6 feet to 25 feet on 8-15

SAMPLE TYPE CODING: S=Standard Split Spoon G = Grab Sample C=Core U=Undisturbed Piston										Boring: PB-10			
PROPORTIONS USED: Trace = 1 -10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%										Sheet 2 of 4			

BORING REPORT										Boring: PB-10							
LOCATION: Somerville, Massachusetts																	
PROJECT NAME: Union Square Utility and Roadway Improvements Project										Date Started: 8-6-2014							
										Date Finished: 8-15-2014							
PB PROJECT NUMBER: 52647										N. Coordinate 2963710							
INSPECTOR (Parsons Brinckerhoff): David D'Angelo										E. Coordinate 766842							
DRILLER (New Hampshire Boring): Mark D'Ambrosio										Surface Elevation: 20.5							
Groundwater Observations:				Casing				Auger		Mud	Sampler		Core Barrel				
				Utilized													
				Type	BW	NW	HW	Pipe	Solid	Hollow		S	U	B (st)	B (dt)	NX (st)	NX (dt)
				Size I.D. (in)			4					1 3/8					
				Hammer (lb)			300					140		Type		Diamond	
				Fall (in)			24					30		of Bit		Carbide	
DEPTH (FT)	CASING BLOWS PER FOOT	SAMPLE							DEPTH ELEV. (FT)	DESCRIPTION							
		NO.	DEPTH (FT) FROM - TO	BLOWS PER 6 INCHES				PEN. (IN)			REC. (IN)						
15		S-4	15 - 17	32	10	13	30	24	14	17	Gray SILT, some fine to coarse sand, some fine to coarse gravel, little clay, medium dense - NRCS Texture: Silt loam, very gravelly (SL - GRV) - Hydrologic Soil Group: D						
16																	
17										3.5	Note: Drill through probable boulder from 17 to 18 feet						
18										21	Gray SILT, some clay, little fine to medium gravel, little fine fine to coarse sand, medium dense - NRCS Texture: Silt loam, very gravelly (SL - GRV) - Hydrologic Soil Group: D						
19										-0.5	Note: Drill into probable bedrock, possible boulder from 21 to 25 feet						
20		S-5	20 - 21	12	10	60 / 0"		12	8	21							
21										-0.5							
22										-0.5							

NOTES: 1. Boring drilled using a truck-mounted Acker ADII rig
2. Split spoon samples taken using a 140# safety hammer and rope & spooling winch
3. Stated Hydrologic Soil Groups are independent of water level or depth to impermeable layers
4. Borehole vacuum-excavated from 0 to 6 feet on 8-6 and drilled from 6 feet to 25 feet on 8-15

SAMPLE TYPE CODING: S=Standard Split Spoon G = Grab Sample C=Core U=Undisturbed Piston										Boring: PB-10	
PROPORTIONS USED: Trace = 1 -10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%										Sheet 3 of 4	

BORING REPORT										Boring: PB-10													
LOCATION: Somerville, Massachusetts																							
PROJECT NAME: Union Square Utility and Roadway Improvements Project										Date Started: 8-6-2014													
										Date Finished: 8-15-2014													
PB PROJECT NUMBER: 52647										N. Coordinate 2963710													
INSPECTOR (Parsons Brinckerhoff): David D'Angelo										E. Coordinate 766842													
DRILLER (New Hampshire Boring): Mark D'Ambrosio										Surface Elevation: 20.5													
Groundwater Observations:										Casing		Auger		Mud	Sampler		Core Barrel						
										Utilized													
										Type	BW	NW	HW	Pipe	Solid	Hollow		S	U	B (st)	B (dt)	NX (st)	NX (dt)
										Size I.D. (in)			4					1 3/8					
										Hammer (lb)			300					140		Type		Diamond	
										Fall (in)			24					30		of Bit		Carbide	
DEPTH (FT)	CASING BLOWS PER FOOT	NO.	DEPTH (FT) FROM - TO	BLOWS PER 6 INCHES	PEN. (IN)	REC. (IN)	DEPTH ELEV. (FT)	DESCRIPTION															
23							25.0 -4.5	Bottom of Boring 25 feet															
24							25.0 -4.5	Bottom of Boring 25 feet															
25							25.0 -4.5	Bottom of Boring 25 feet															
26							25.0 -4.5	Bottom of Boring 25 feet															
27							25.0 -4.5	Bottom of Boring 25 feet															
28							25.0 -4.5	Bottom of Boring 25 feet															
29							25.0 -4.5	Bottom of Boring 25 feet															
30							25.0 -4.5	Bottom of Boring 25 feet															

NOTES: 1. Boring drilled using a truck-mounted Acker ADII rig
2. Split spoon samples taken using a 140# safety hammer and rope & spooling winch
3. Stated Hydrologic Soil Groups are independent of water level or depth to impermeable layers
4. Borehole vacuum-excavated from 0 to 6 feet on 8-6 and drilled from 6 feet to 25 feet on 8-15

SAMPLE TYPE CODING: S=Standard Split Spoon G = Grab Sample C=Core U=Undisturbed Piston										Boring: PB-10			
PROPORTIONS USED: Trace = 1 -10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%										Sheet 4 of 4			

LABORATORY TESTING DATA SHEET

Matthew DeGala

Project Name Union Square Utility and Roadway Improvements
 Project No. 74-13-0003.23
 Project Manager David D'Angelo

Project Location Somerville, MA
 Assigned By David D'Angelo
 Date 10/4/2014

Reviewed By _____
 Date Reviewed 10/4/2014

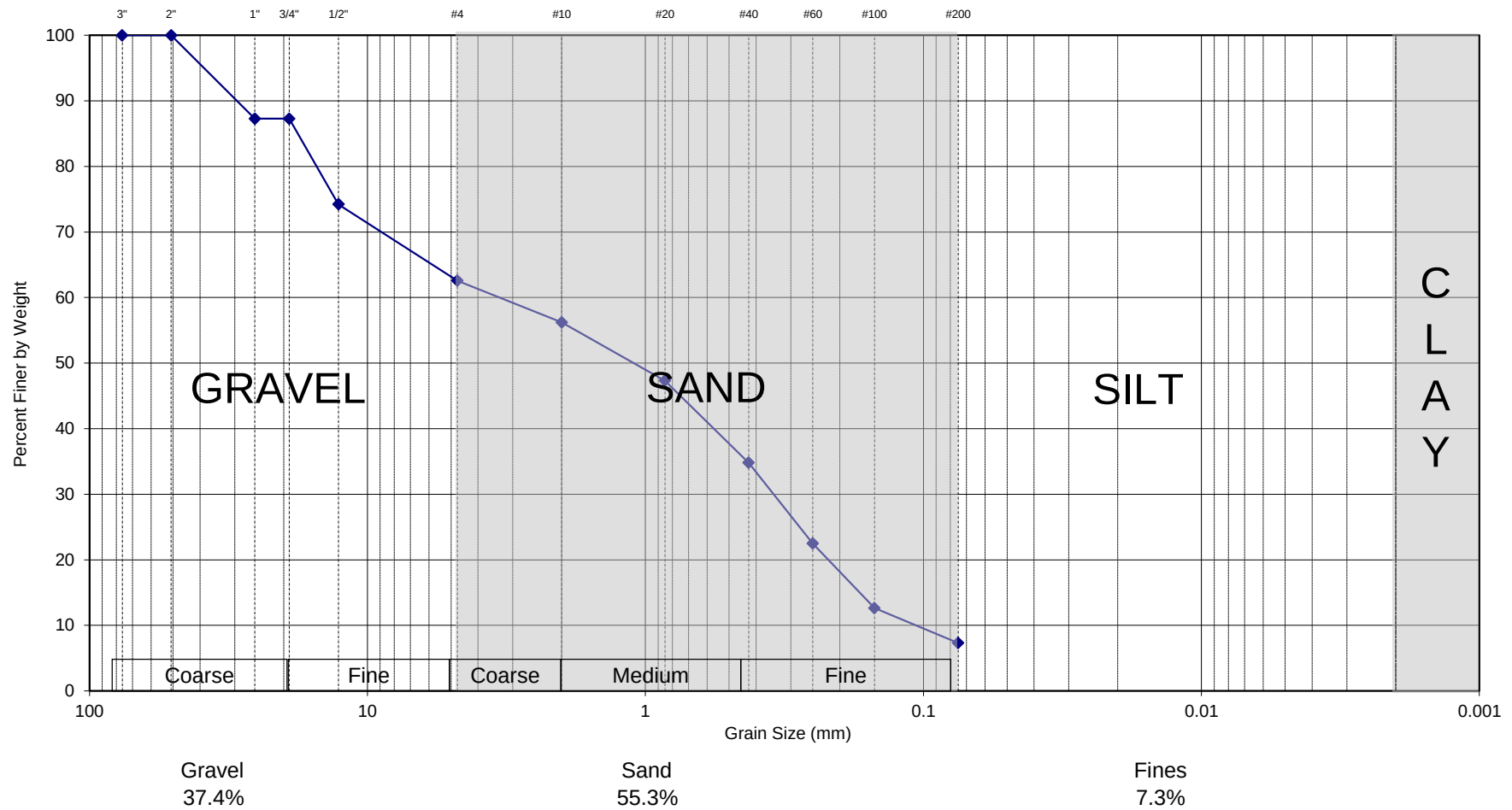
Boring/ Test Pit No.	Sample No.	Depth ft.	Lab No.	Identification Tests								Strength Tests					Consol.	Laboratory Log and Soil Description
				Water Content %	LL %	PL %	Sieve -200 %	Hyd -2 μ %	ORG %	G _s	Dry unit wt. pcf	Torvane or Type Test	σ_c psf	Failure Criteria	$\sigma_1 - \sigma_3$ psf	Strain %	$\frac{C_c}{1 + e_0}$	
PB-1	S-1	2.5-4.5	1				7.3											Brown f-c SAND and f-c GRAVEL, trace Silt (SP-SM)
PB-1	S-2	4.5-6.5	2				7.5											Brown f-m SAND, trace Gravel, trace Silt (SP-SM)
PB-1	S-3	6.5-8.5	3				4.2											Light brown fine SAND, trace Silt (SP)
PB-1	S-6	12.5-14.5	4				4.9											Gray-brown f-m SAND, little fine Gravel, trace Silt (SP)



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U.S. STANDARD SIEVE AND HYDROMETER



Lab #	Exploration	Sample	Depth	Description	WC	LL	PL	PI
1	PB-1	S-1	2.5-4.5'	Brown f-c SAND and f-c GRAVEL, trace Silt (SP-SM)				

Sieve Size	% Passing
3/4"	87.3
1/2"	74.2
#4	62.6
#10	56.2
#20	47.3
#40	34.8
#60	22.5
#100	12.6
#200	7.3

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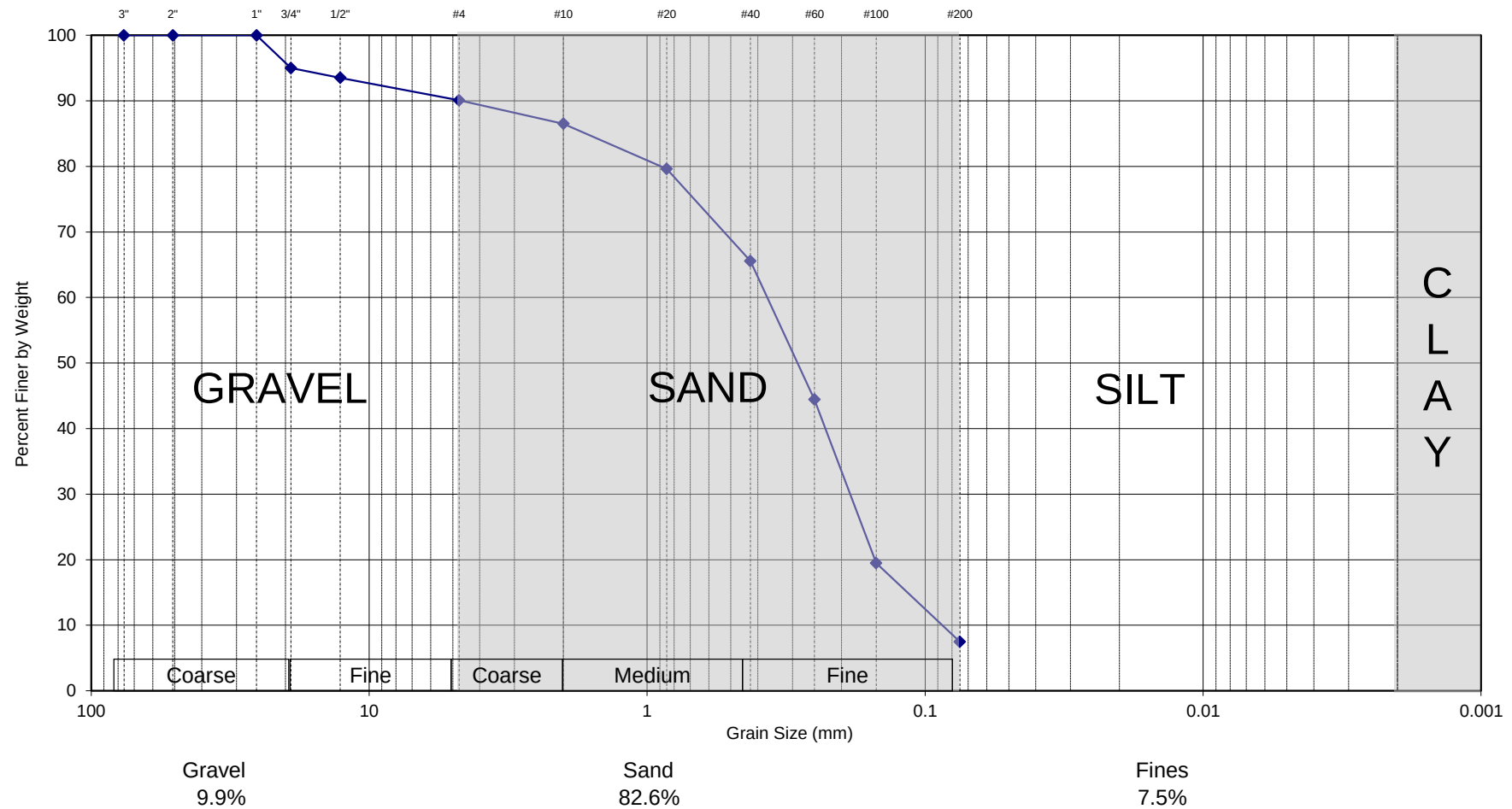
195 Frances Ave., Cranston, RI 02910
401-467-6454

Union Square Utility and Roadway Improvements
Somerville, MA

Thielsch CTS Project # 74-14-0003.23c

Tested by: LM/MS Date: 10/1/14
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U.S. STANDARD SIEVE AND HYDROMETER



Lab #	Exploration	Sample	Depth	Description	WC	LL	PL	PI
2	PB-1	S-2	4.5-6.5'	Brown f-m SAND, trace Gravel, trace Silt (SP-SM)				

Sieve Size	% Passing
3/4"	95.0
1/2"	93.5
#4	90.1
#10	86.5
#20	79.6
#40	65.6
#60	44.4
#100	19.5
#200	7.5

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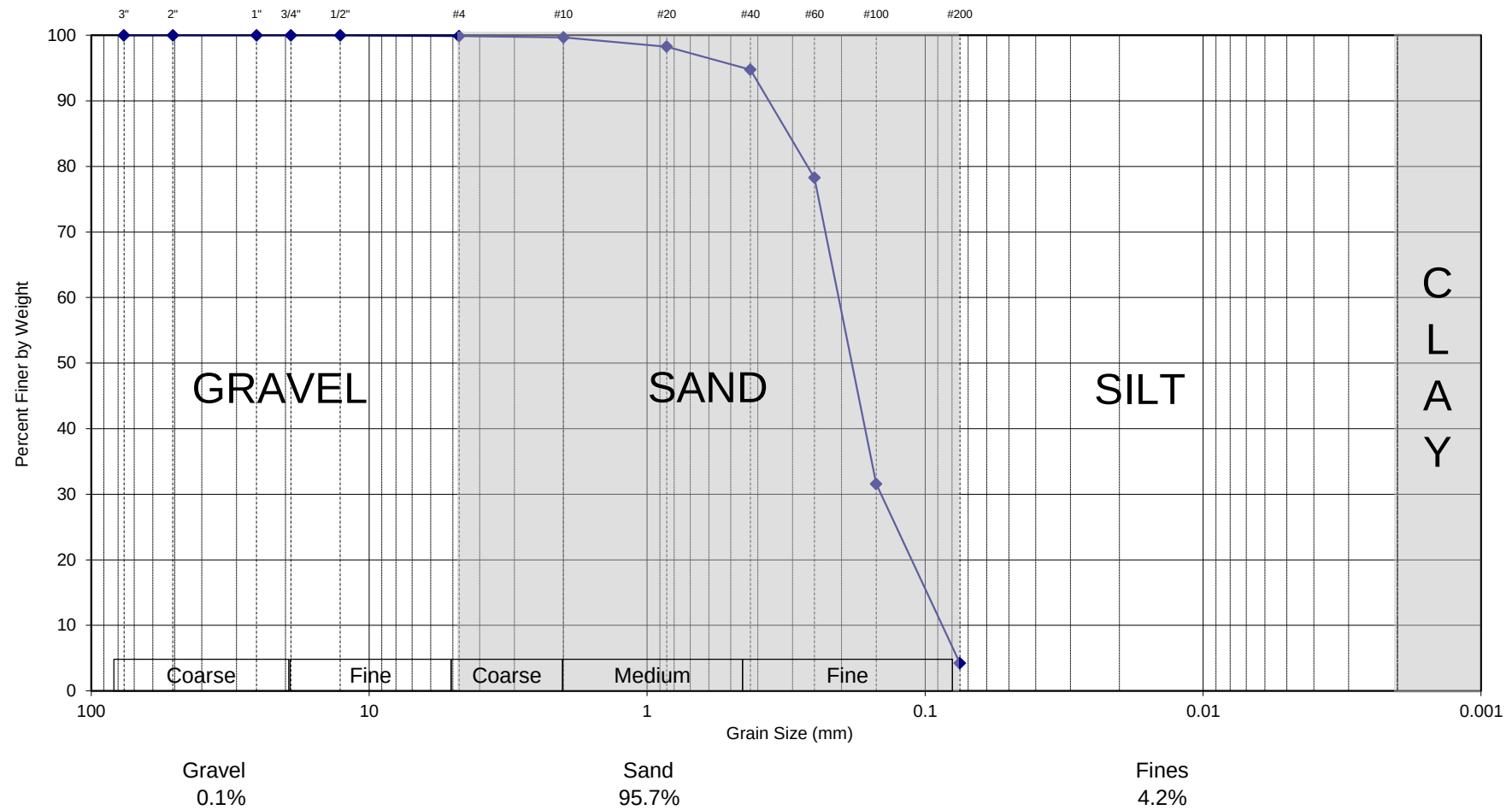
195 Frances Ave., Cranston, RI 02910
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U.S. STANDARD SIEVE AND HYDROMETER



Lab #	Exploration	Sample	Depth	Description	WC	LL	PL	PI
3	PB-1	S-3	6.5-8.5'	Light brown fine SAND, trace Silt (SP)				

Sieve Size	% Passing
¾"	100.0
½"	100.0
#4	99.9
#10	99.7
#20	98.3
#40	94.8
#60	78.3
#100	31.6
#200	4.2

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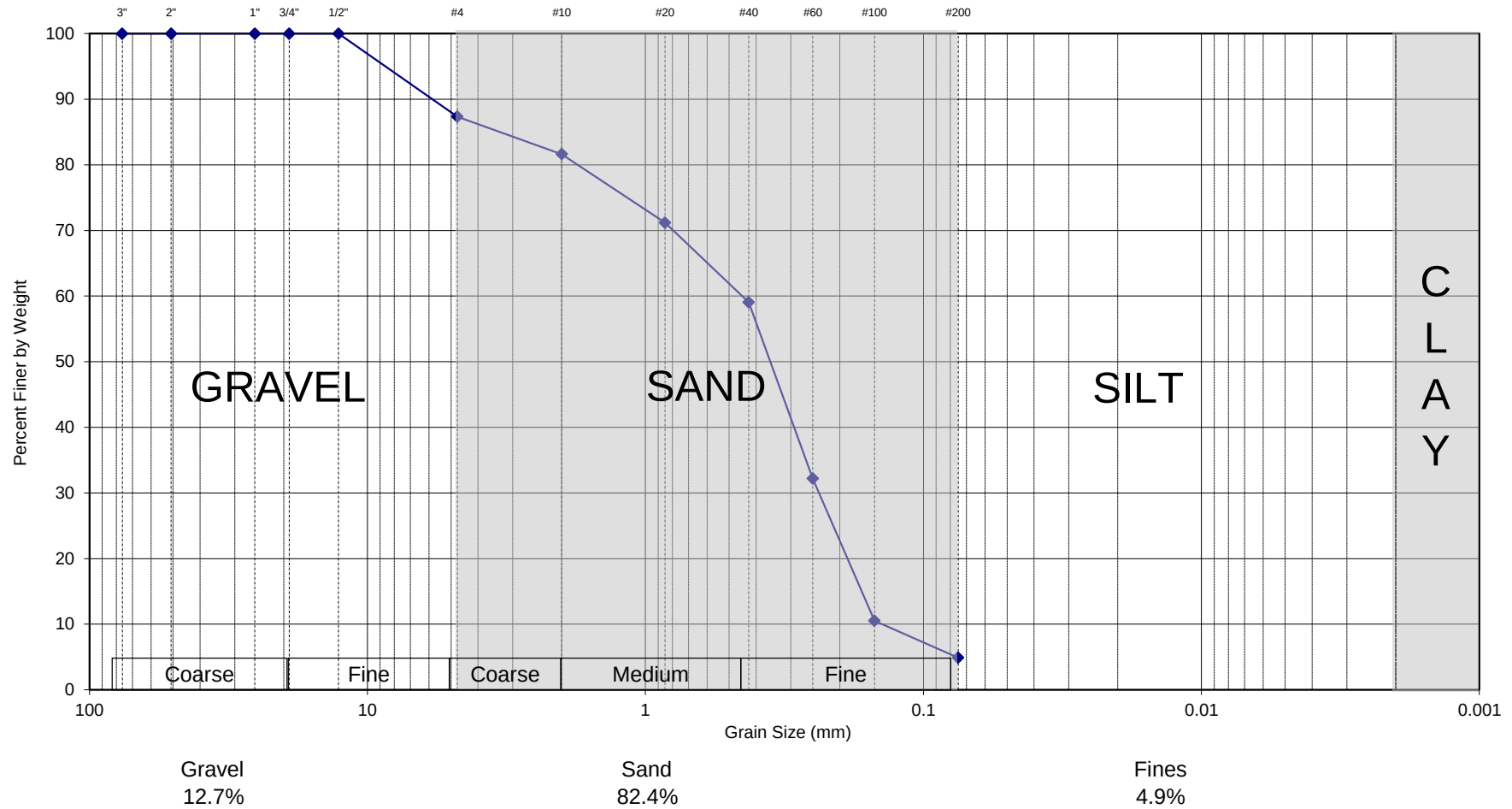
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U.S. STANDARD SIEVE AND HYDROMETER



Lab #	Exploration	Sample	Depth	Description	WC	LL	PL	PI
4	PB-1	S-6	12.5-14.5'	Gray-brown f-m SAND, little fine Gravel, trace Silt (SP)				

Sieve Size	% Passing
3/4"	100.0
1/2"	100.0
#4	87.3
#10	81.6
#20	71.2
#40	59.1
#60	32.2
#100	10.5
#200	4.9



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LABORATORY TESTING DATA SHEET

Matthew D'Angelo

Project Name Union Square Utility and Roadway Improvements
 Project No. 74-13-0003.23
 Project Manager David D'Angelo

Project Location Somerville, MA
 Assigned By David D'Angelo
 Date 10/4/2014

Reviewed By _____
 Date Reviewed 10/4/2014

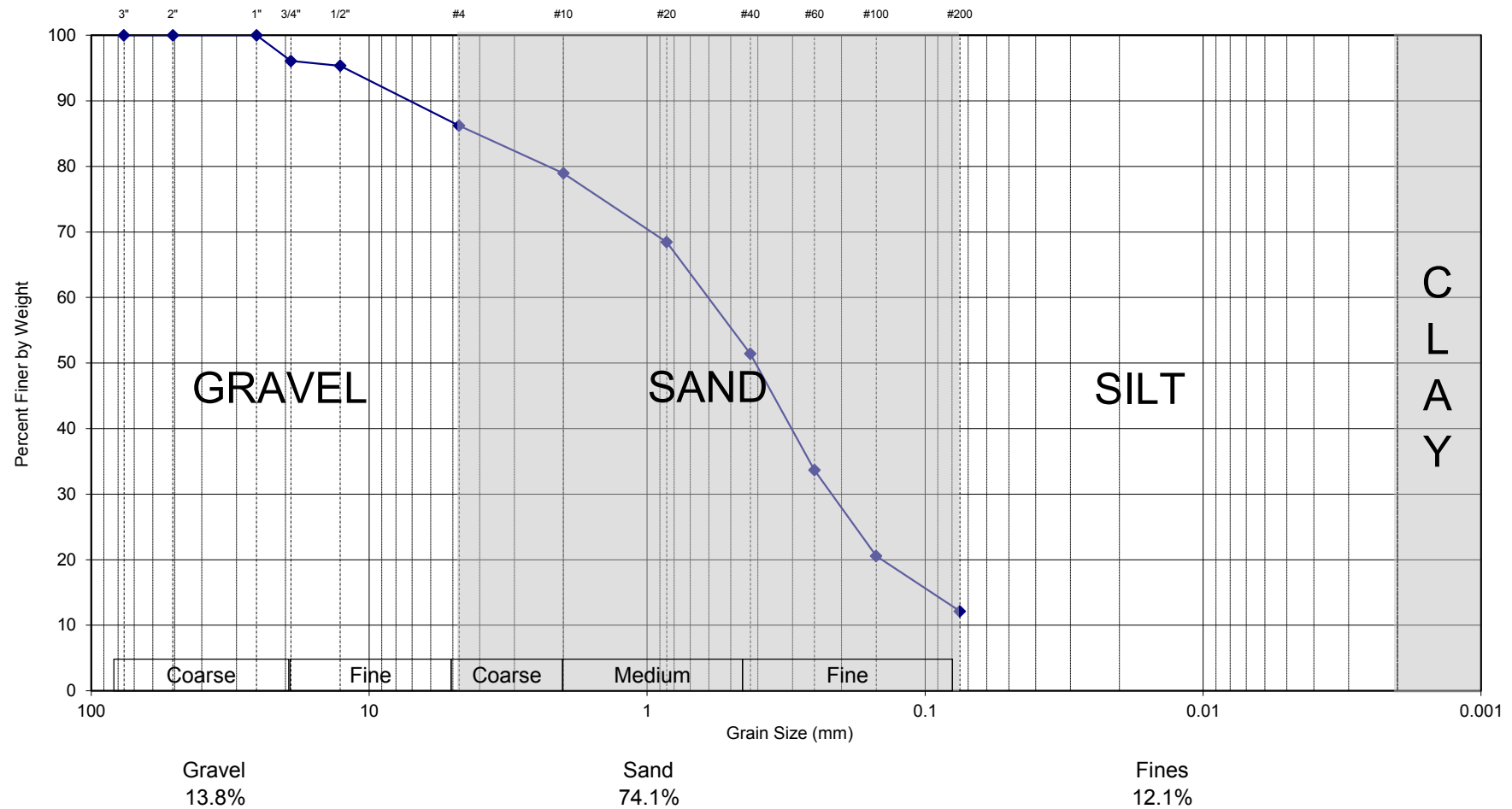
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PB-2	S-1	2-4	5				12.1											Brown f-c SAND, little f-c Gravel, little Silt (SM)
PB-2	S-4A	8-8.5	6				27.2											Brown f-c SAND, some Silt, trace Gravel (SM)
PB-2	S-6	12-14	7				4.6											Gray-brown fine SAND, trace Silt (SP)



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U.S. STANDARD SIEVE AND HYDROMETER



Lab #	Exploration	Sample	Depth	Description	WC	LL	PL	PI
5	PB-2	S-1	2-4'	Brown f-c SAND, little f-c Gravel, little Silt (SM)				

Sieve Size	% Passing
3/4"	96.1
1/2"	95.3
#4	86.2
#10	78.9
#20	68.5
#40	51.4
#60	33.6
#100	20.5
#200	12.1

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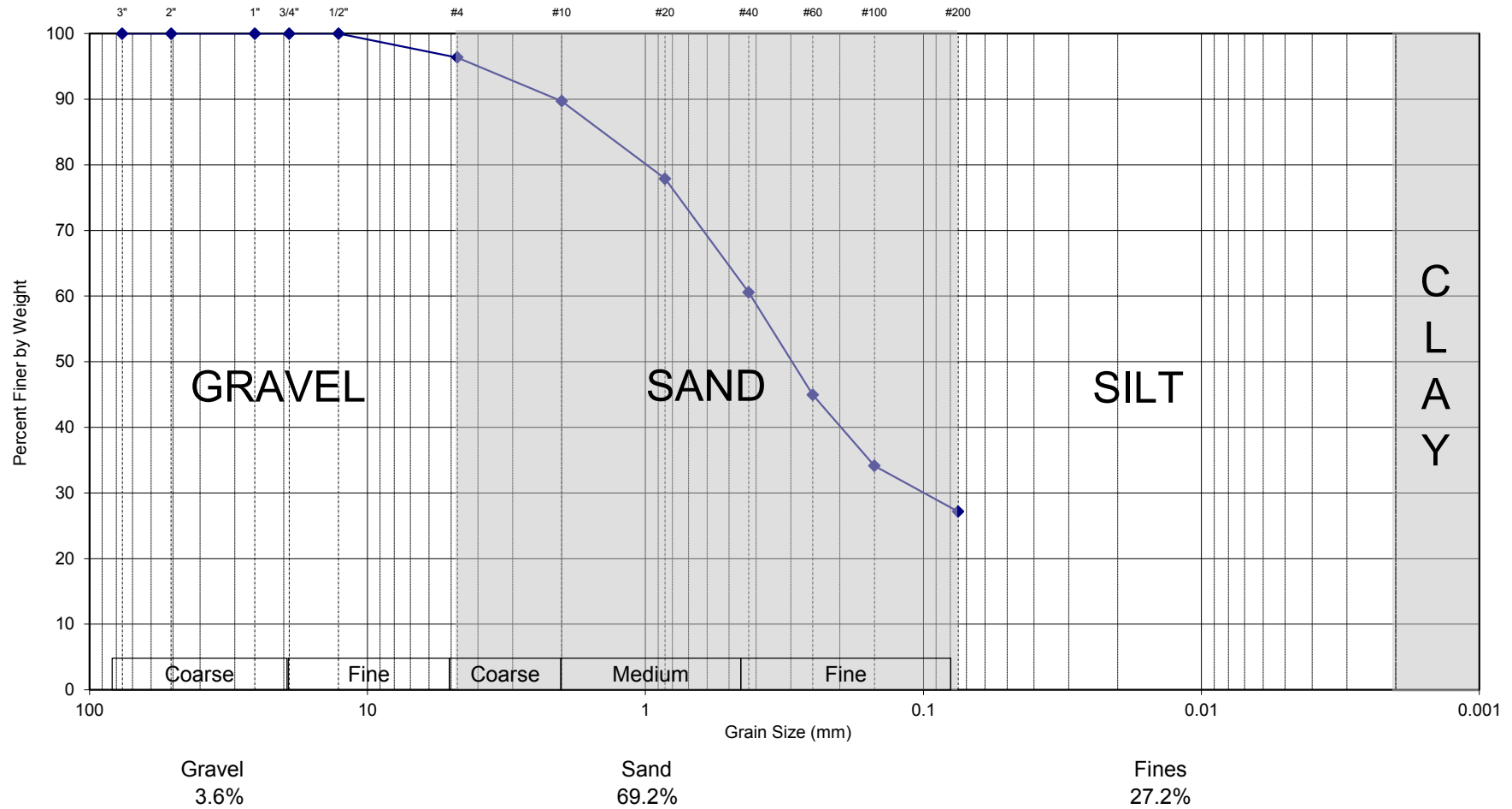
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U.S. STANDARD SIEVE AND HYDROMETER



Lab #	Exploration	Sample	Depth	Description	WC	LL	PL	PI
6	PB-2	S-4A	8-8.5'	Brown f-c SAND, some Silt, trace Gravel (SM)				

Sieve Size	% Passing
3/4"	100.0
1/2"	100.0
#4	96.4
#10	89.7
#20	77.9
#40	60.6
#60	45.0
#100	34.1
#200	27.2

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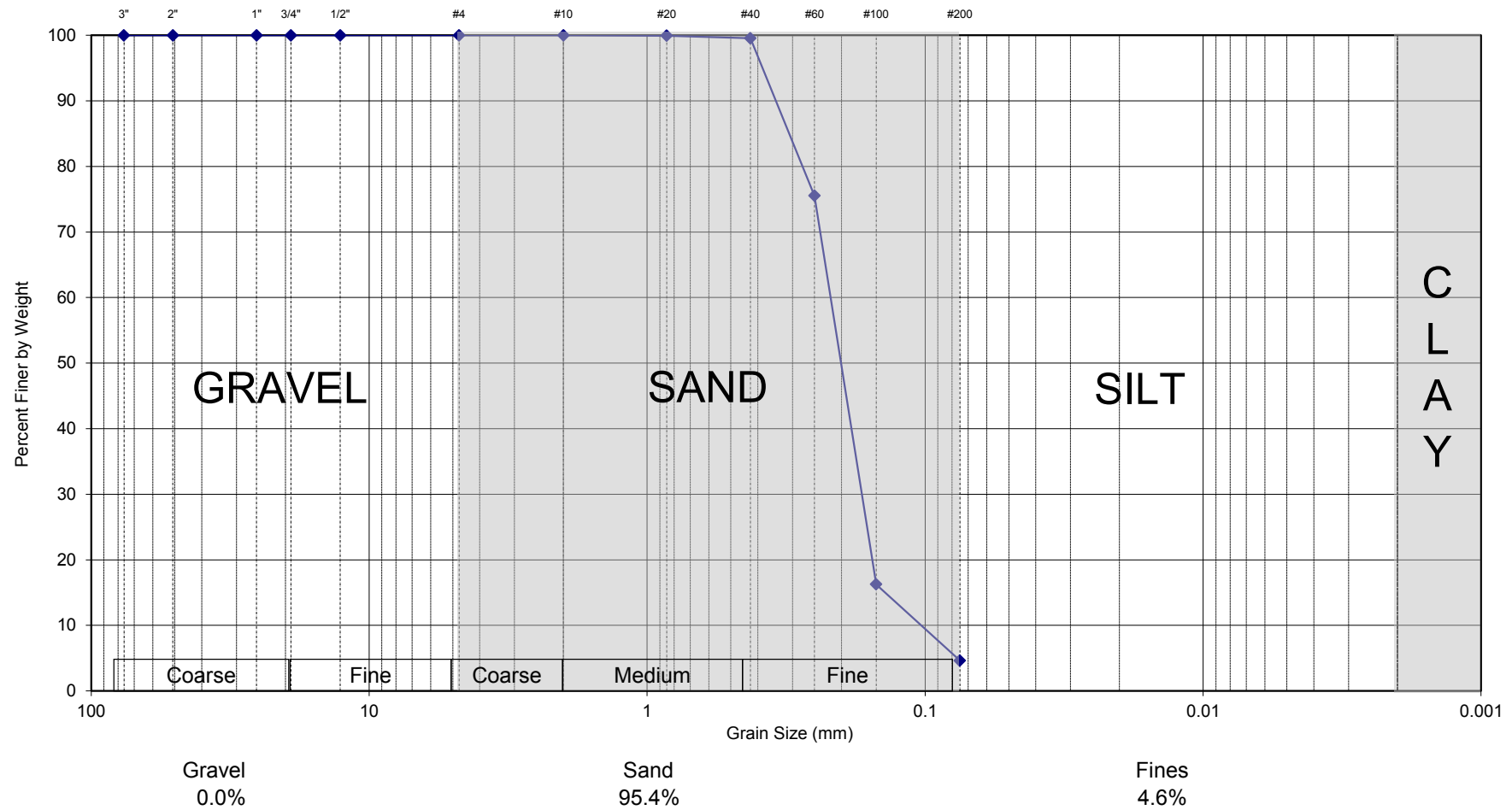
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Lab #	Exploration	Sample	Depth	Description	WC	LL	PL	PI
7	PB-2	S-6	12-14'	Gray-brown fine SAND, trace Silt (SP)				

Sieve Size	% Passing
3/4"	100.0
1/2"	100.0
#4	100.0
#10	100.0
#20	99.9
#40	99.5
#60	75.5
#100	16.2
#200	4.6

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LABORATORY TESTING DATA SHEET

Matthew D'Angelo

Project Name Union Square Utility and Roadway Improvements
 Project No. 74-13-0003.23
 Project Manager David D'Angelo

Project Location Somerville, MA
 Assigned By David D'Angelo
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Reviewed By _____
 Date Reviewed 10/4/2014

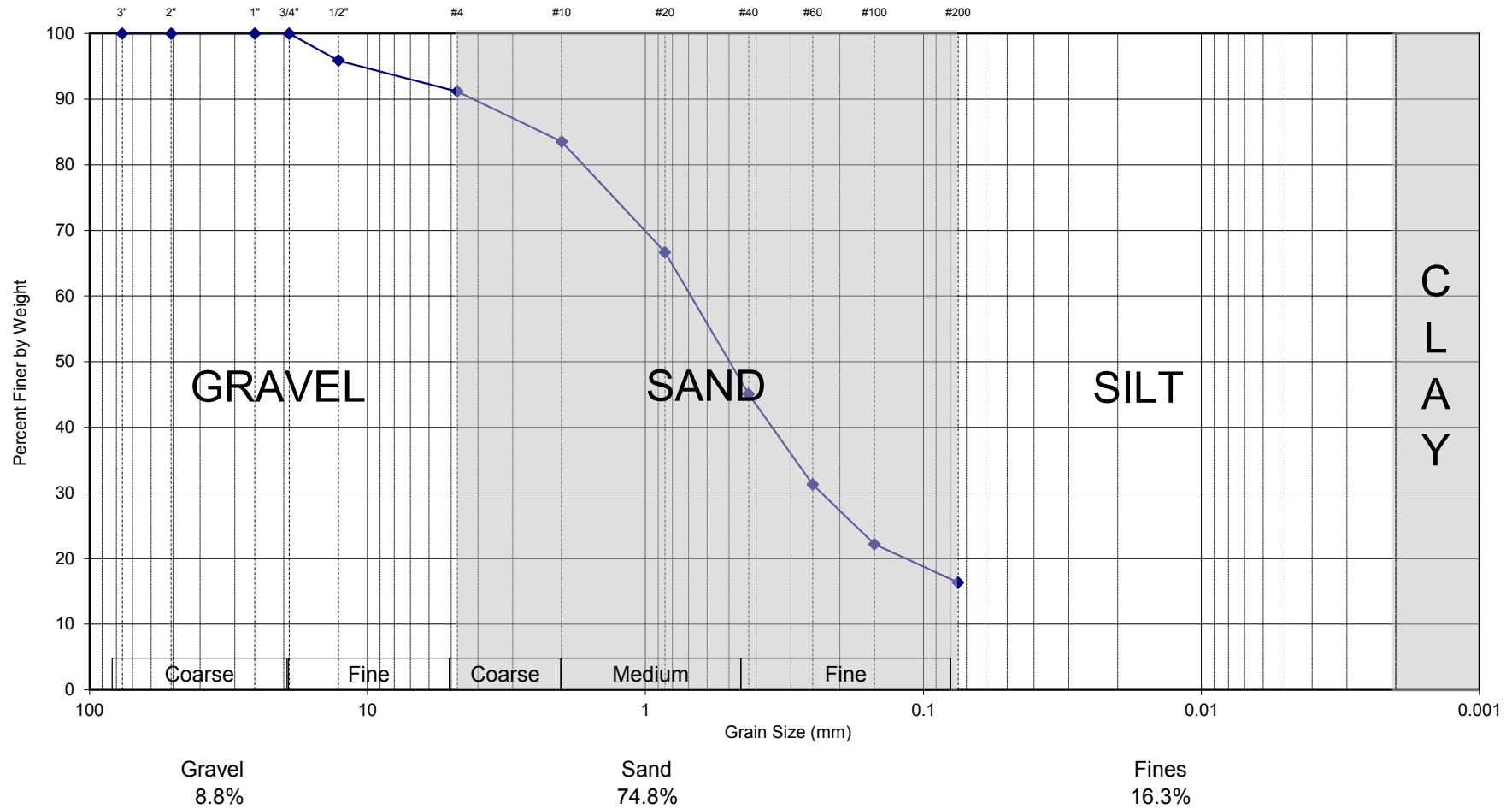
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PB-3	G-1	0.5-7.5	8				16.3											Brown f-c SAND, little Silt, trace Gravel (SM)
PB-3	S-3	11-13	9				3.8											Brown f-m SAND, trace Silt, trace Gravel (SP)



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U.S. STANDARD SIEVE AND HYDROMETER



Lab #	Exploration	Sample	Depth	Description	WC	LL	PL	PI
8	PB-3	G-1	0.5-7.5'	Brown f-c SAND, little Silt, trace Gravel (SM)				

Sieve Size	% Passing
3/4"	100.0
1/2"	95.9
#4	91.2
#10	83.5
#20	66.7
#40	45.1
#60	31.3
#100	22.2
#200	16.3



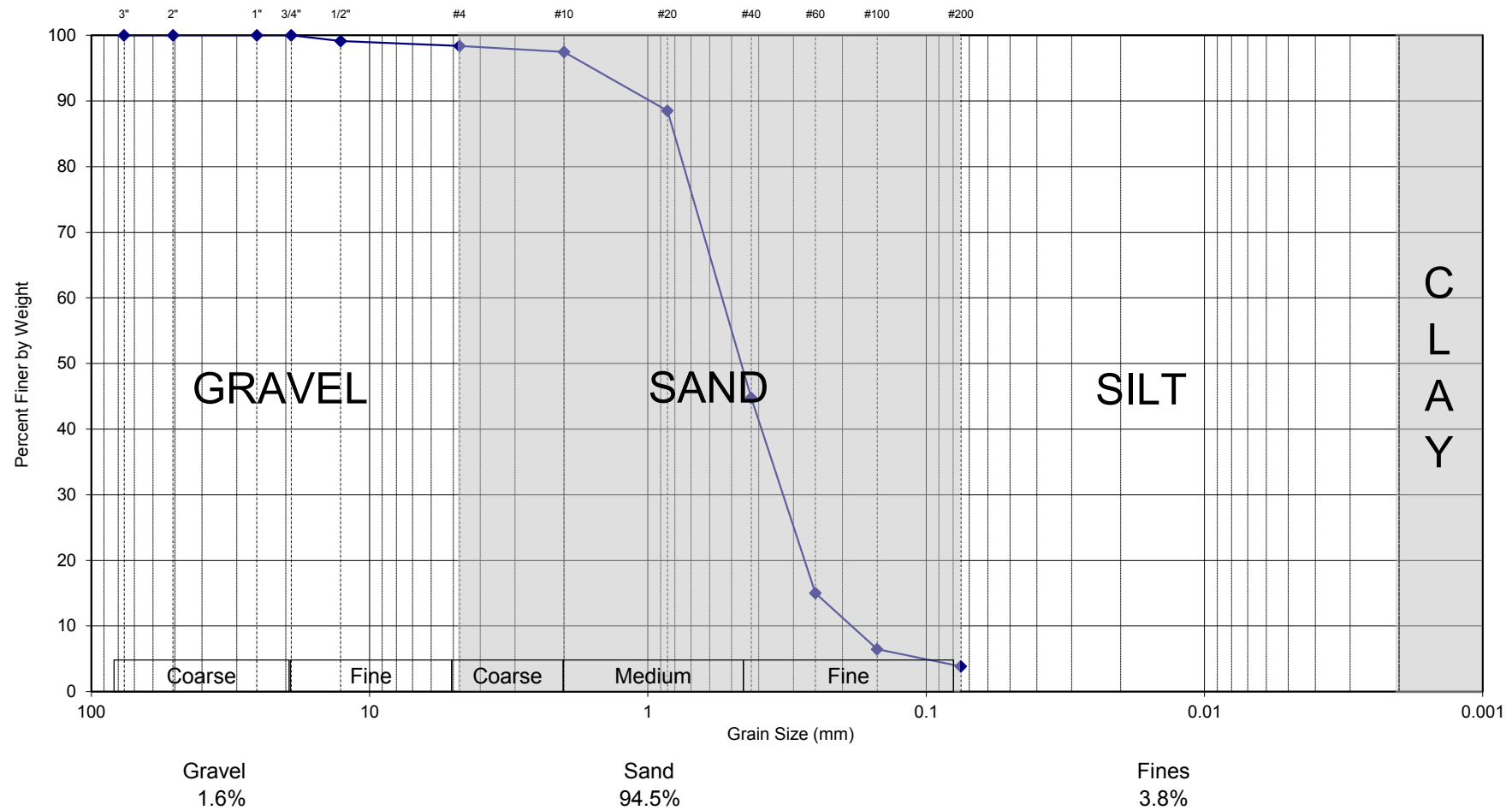
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Lab #	Exploration	Sample	Depth	Description	WC	LL	PL	PI
9	PB-3	S-3	11-13'	Brown f-m SAND, trace Silt, trace Gravel (SP)				

Sieve Size	% Passing
3/4"	100.0
1/2"	99.1
#4	98.4
#10	97.5
#20	88.5
#40	44.8
#60	15.0
#100	6.5
#200	3.8

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LABORATORY TESTING DATA SHEET

Matthew DeGala

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 Project No. 74-13-0003.23
 Project Manager David D'Angelo

Project Location Somerville, MA
 Assigned By David D'Angelo
 Date 10/4/2014

Reviewed By _____
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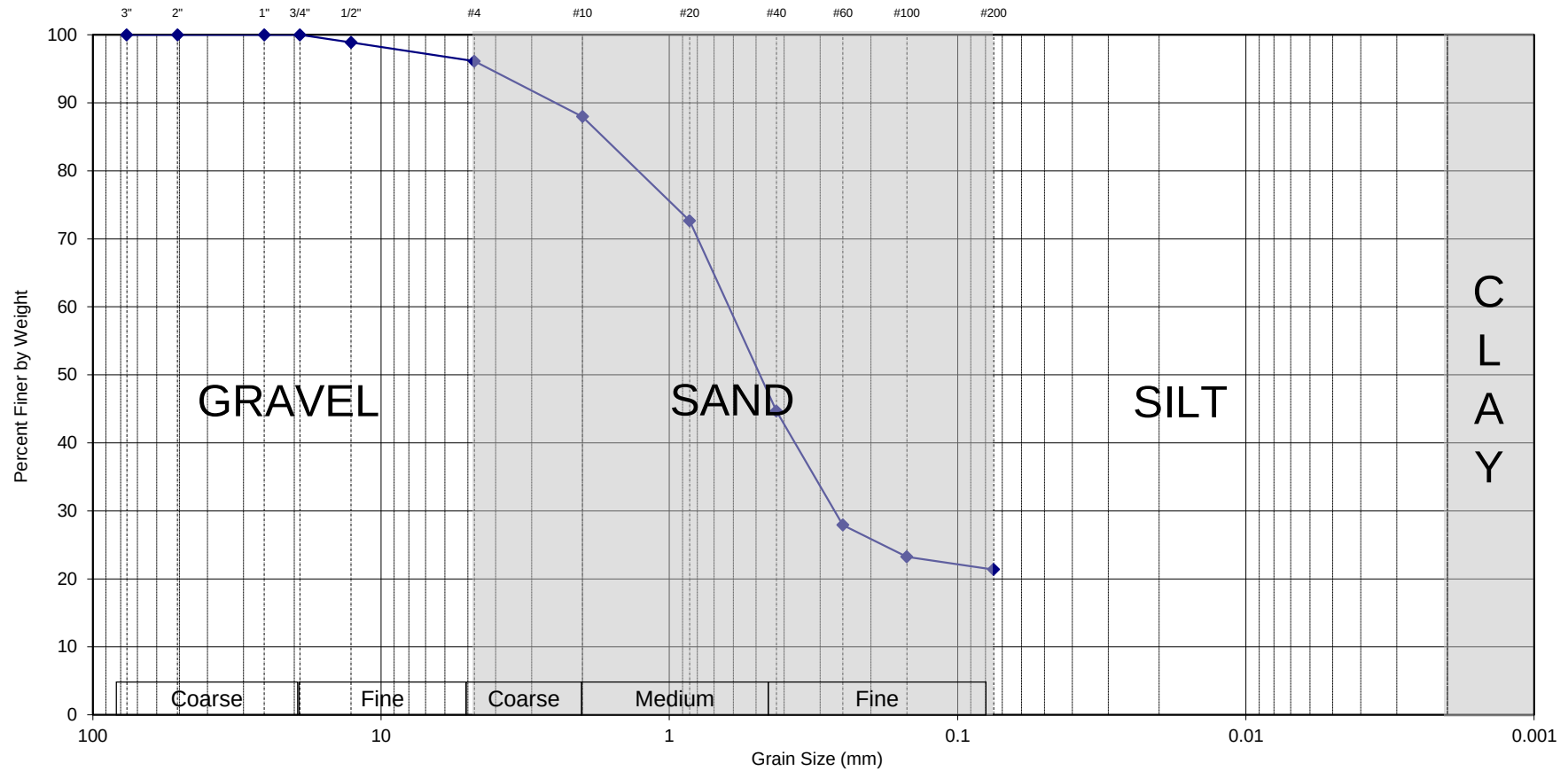
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PB-4	S-1	1.5-3.5	10				21.4											Brown f-c SAND, some Silt, trace Gravel (SM)
PB-4	S-2	3.5-5.5	11				4.1											Brown f-m SAND, trace Silt, trace Gravel (SP)
PB-4	S-3	5.5-7.5	12				14.8											Light brown f-m SAND, little Silt (SM)
PB-4	S-6	11.5-13.5	13				3.8											Gray-brown f-m SAND, trace Silt (SP)



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U.S. STANDARD SIEVE AND HYDROMETER



Gravel
3.9%

Sand
74.7%

Fines
21.4%

Lab #	Exploration	Sample	Depth	Description	WC	LL	PL	PI
10	PB-4	S-1	1.5-3.5'	Brown f-c SAND, some Silt, trace Gravel (SM)				

Sieve Size	% Passing
3/4"	100.0
1/2"	98.9
#4	96.1
#10	88.0
#20	72.6
#40	44.7
#60	27.9
#100	23.2
#200	21.4

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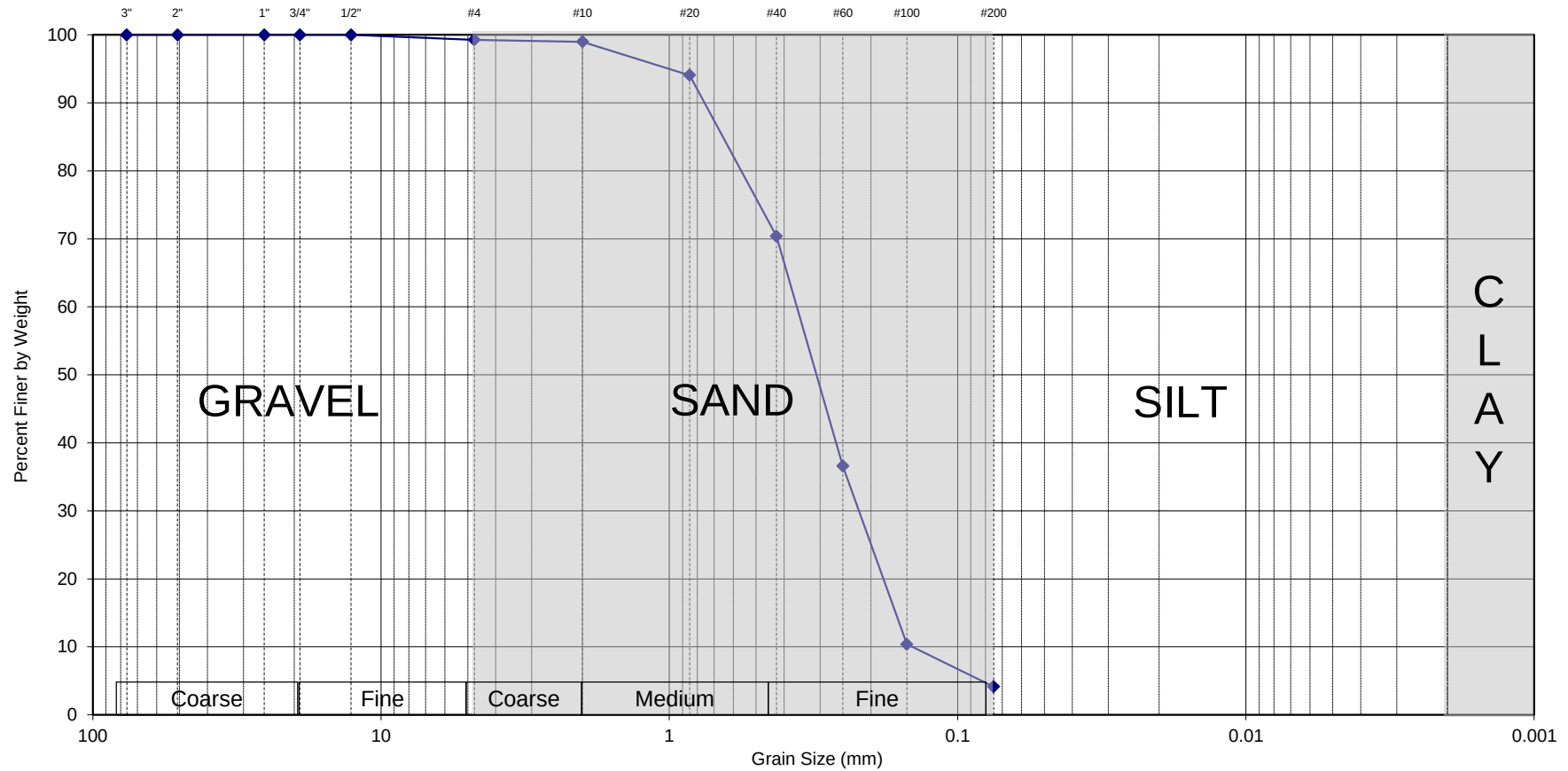
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U.S. STANDARD SIEVE AND HYDROMETER



Gravel
0.7%

Sand
95.1%

Fines
4.1%

Lab #	Exploration	Sample	Depth	Description	WC	LL	PL	PI
11	PB-4	S-2	3.5-5.5'	Brown f-m SAND, trace Silt, trace Gravel (SP)				

Sieve Size	% Passing
3/4"	100.0
1/2"	100.0
#4	99.3
#10	99.0
#20	94.1
#40	70.4
#60	36.6
#100	10.4
#200	4.1

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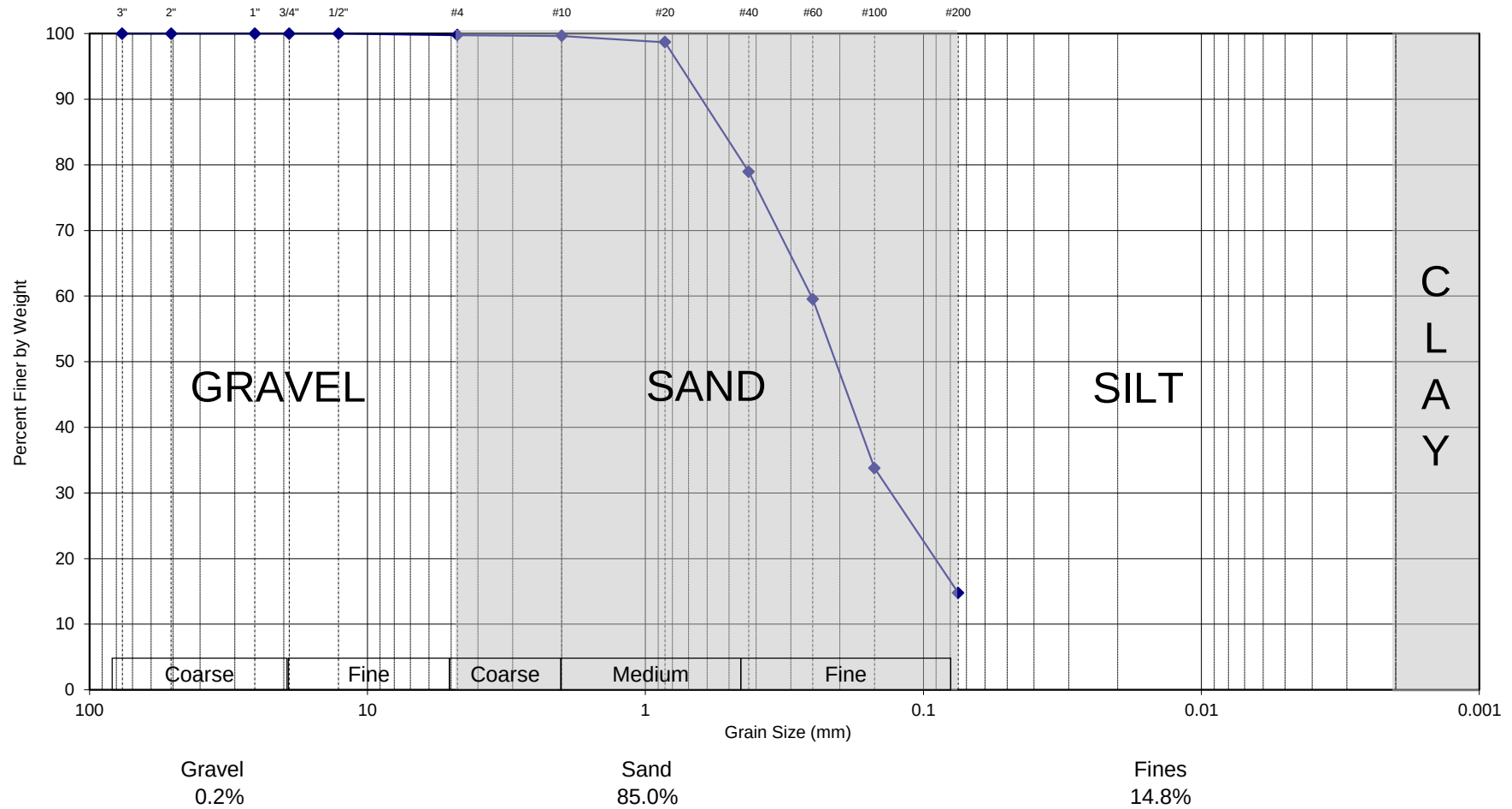
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U.S. STANDARD SIEVE AND HYDROMETER



Lab #	Exploration	Sample	Depth	Description	WC	LL	PL	PI
12	PB-4	S-3	5.5-7.5'	Light brown f-m SAND, little Silt (SM)				

Sieve Size	% Passing
3/4"	100.0
1/2"	100.0
#4	99.8
#10	99.7
#20	98.7
#40	79.0
#60	59.5
#100	33.8
#200	14.8



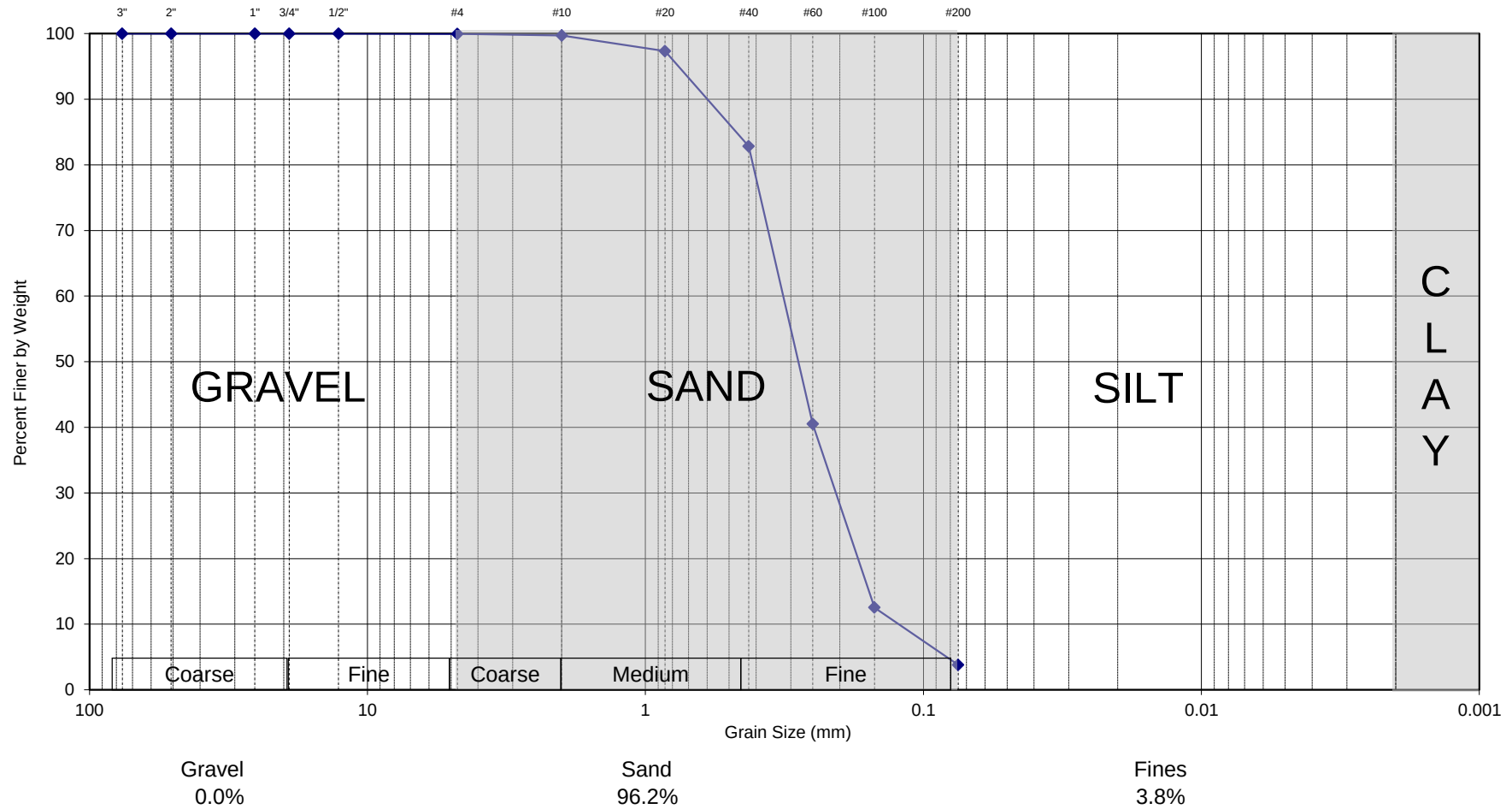
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U.S. STANDARD SIEVE AND HYDROMETER



Lab #	Exploration	Sample	Depth	Description	WC	LL	PL	PI
13	PB-4	S-6	11.5-13.5'	Gray-brown f-m SAND, trace Silt (SP)				

Sieve Size	% Passing
3/4"	100.0
1/2"	100.0
#4	100.0
#10	99.7
#20	97.3
#40	82.8
#60	40.5
#100	12.5
#200	3.8

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Matthew DeGala

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 Project Manager David D'Angelo

Project Location Somerville, MA
 Assigned By David D'Angelo
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Reviewed By _____
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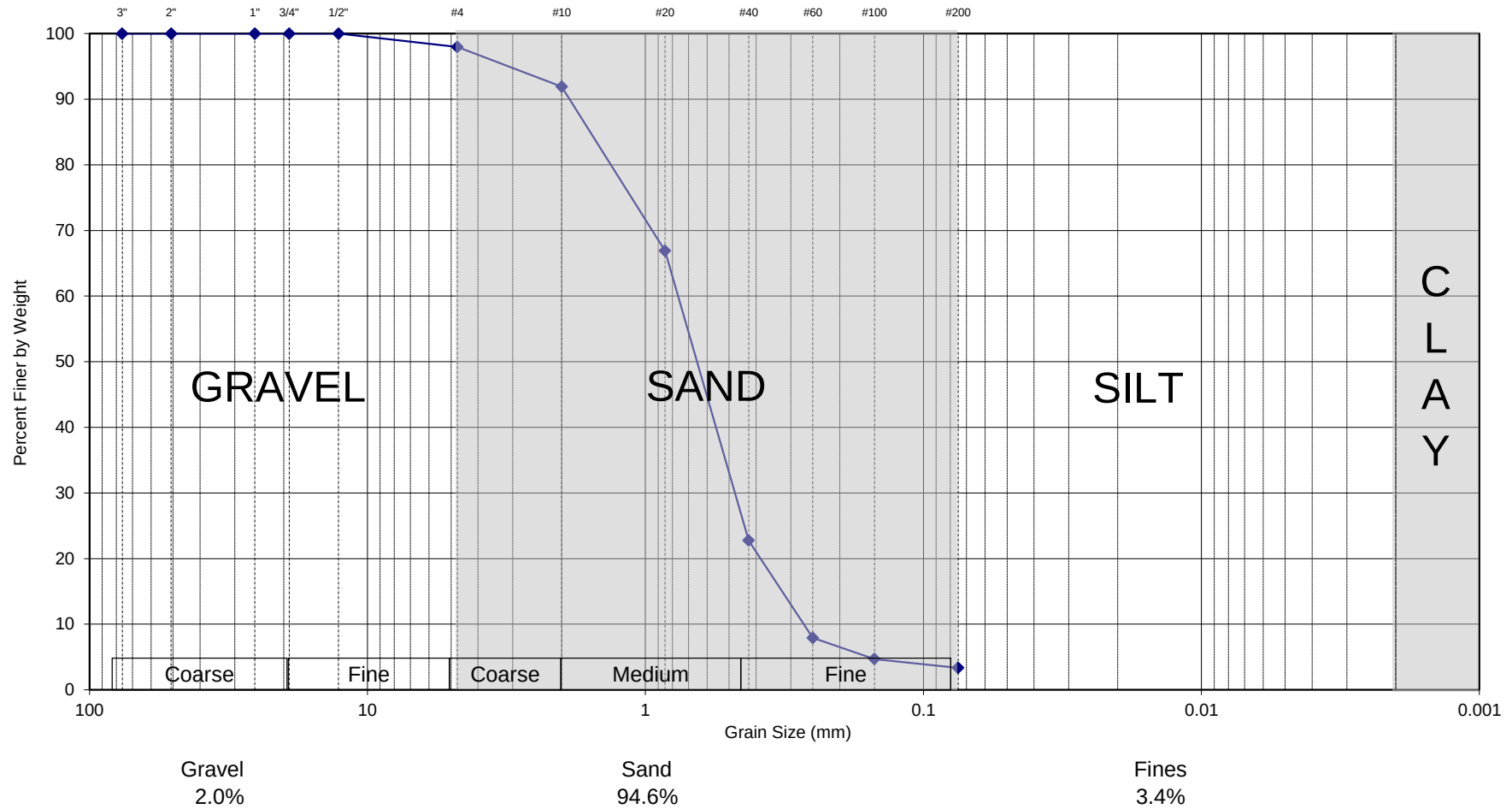
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PB-5	S-2	3-5	14				3.4											Light brown f-m SAND, trace Silt, trace Gravel (SP)
PB-5	S-3	5-7	15				4.7											Light brown f-m SAND, trace Silt, trace Gravel (SP)
PB-5	S-4	7-9	16				4.8											Light brown f-m SAND, trace Silt, trace Gravel (SP)
PB-5	S-6	11-13	17				7.5											Light brown fine SAND, trace Silt (SP-SM)



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U.S. STANDARD SIEVE AND HYDROMETER



Lab #	Exploration	Sample	Depth	Description	WC	LL	PL	PI
14	PB-5	S-2	3-5'	Light brown f-m SAND, trace Silt, trace Gravel (SP)				

Sieve Size	% Passing
3/4"	100.0
1/2"	100.0
#4	98.0
#10	91.9
#20	66.9
#40	22.7
#60	7.9
#100	4.7
#200	3.4



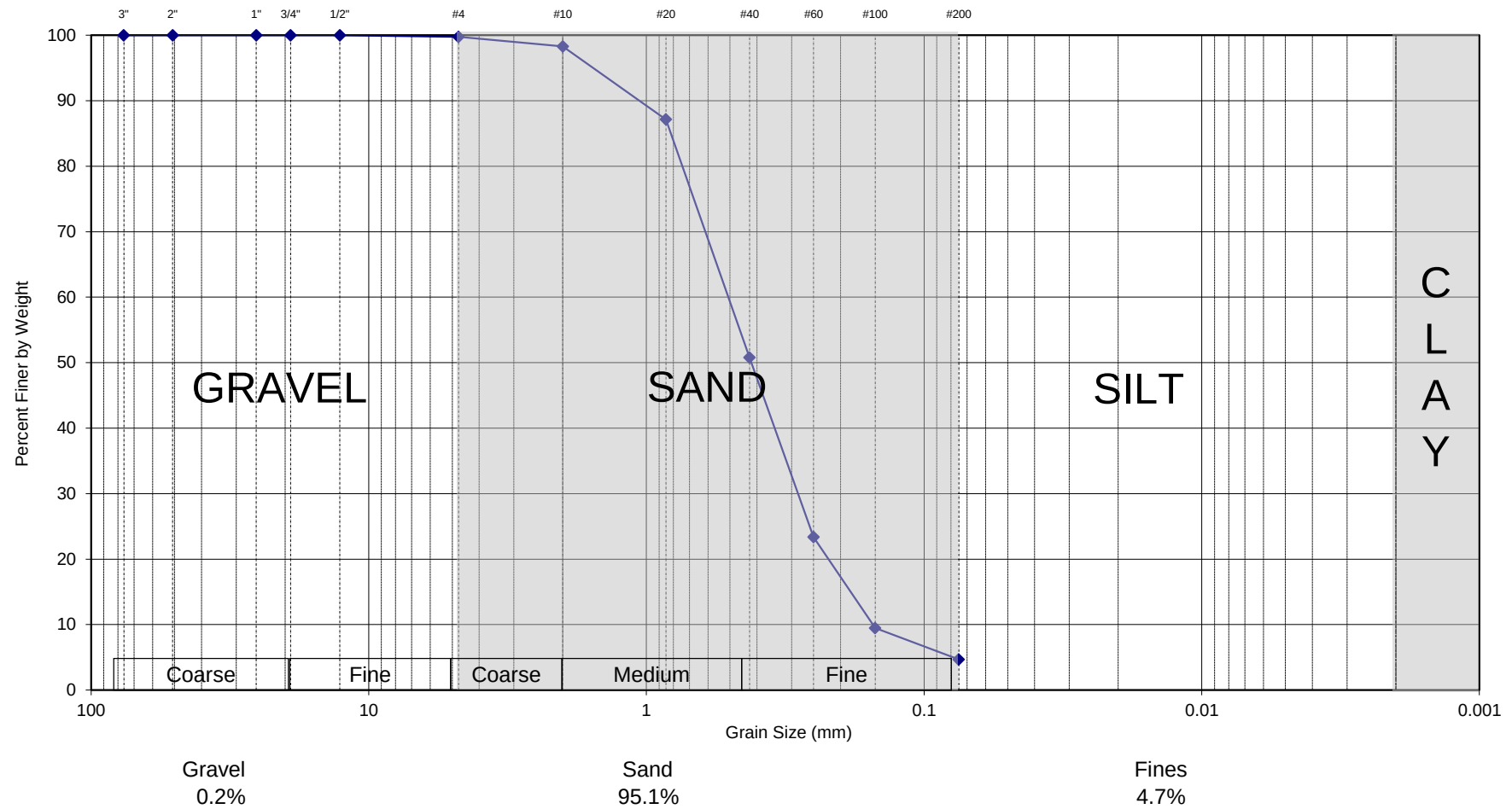
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U.S. STANDARD SIEVE AND HYDROMETER



Lab #	Exploration	Sample	Depth	Description	WC	LL	PL	PI
15	PB-5	S-3	5-7'	Light brown f-m SAND, trace Silt, trace Gravel (SP)				

Sieve Size	% Passing
3/4"	100.0
1/2"	100.0
#4	99.8
#10	98.3
#20	87.1
#40	50.8
#60	23.4
#100	9.5
#200	4.7

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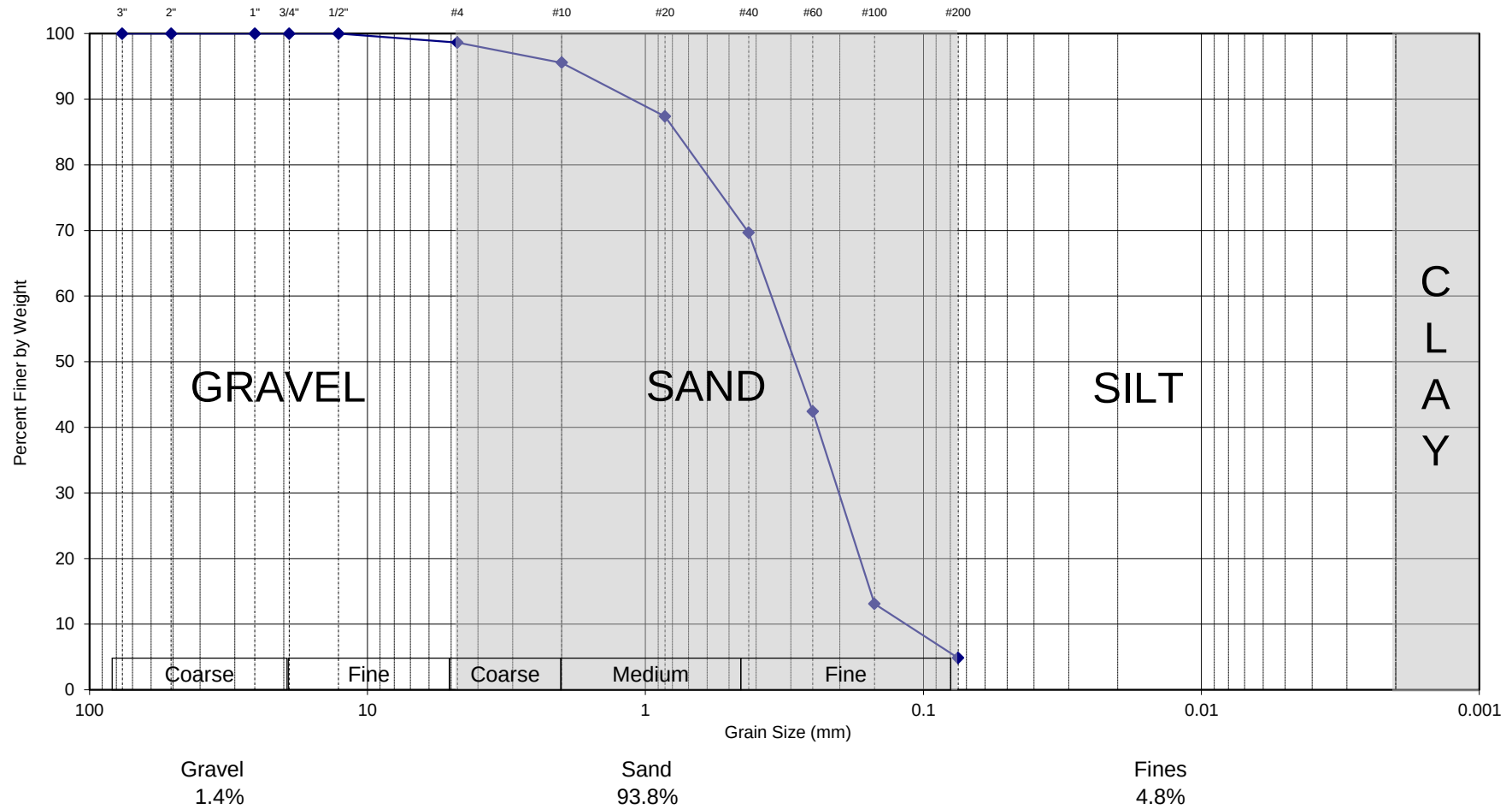
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U.S. STANDARD SIEVE AND HYDROMETER



Lab #	Exploration	Sample	Depth	Description	WC	LL	PL	PI
16	PB-5	S-4	7-9'	Light brown f-m SAND, trace Silt, trace Gravel (SP)				

Sieve Size	% Passing
3/4"	100.0
1/2"	100.0
#4	98.6
#10	95.6
#20	87.4
#40	69.7
#60	42.4
#100	13.1
#200	4.8

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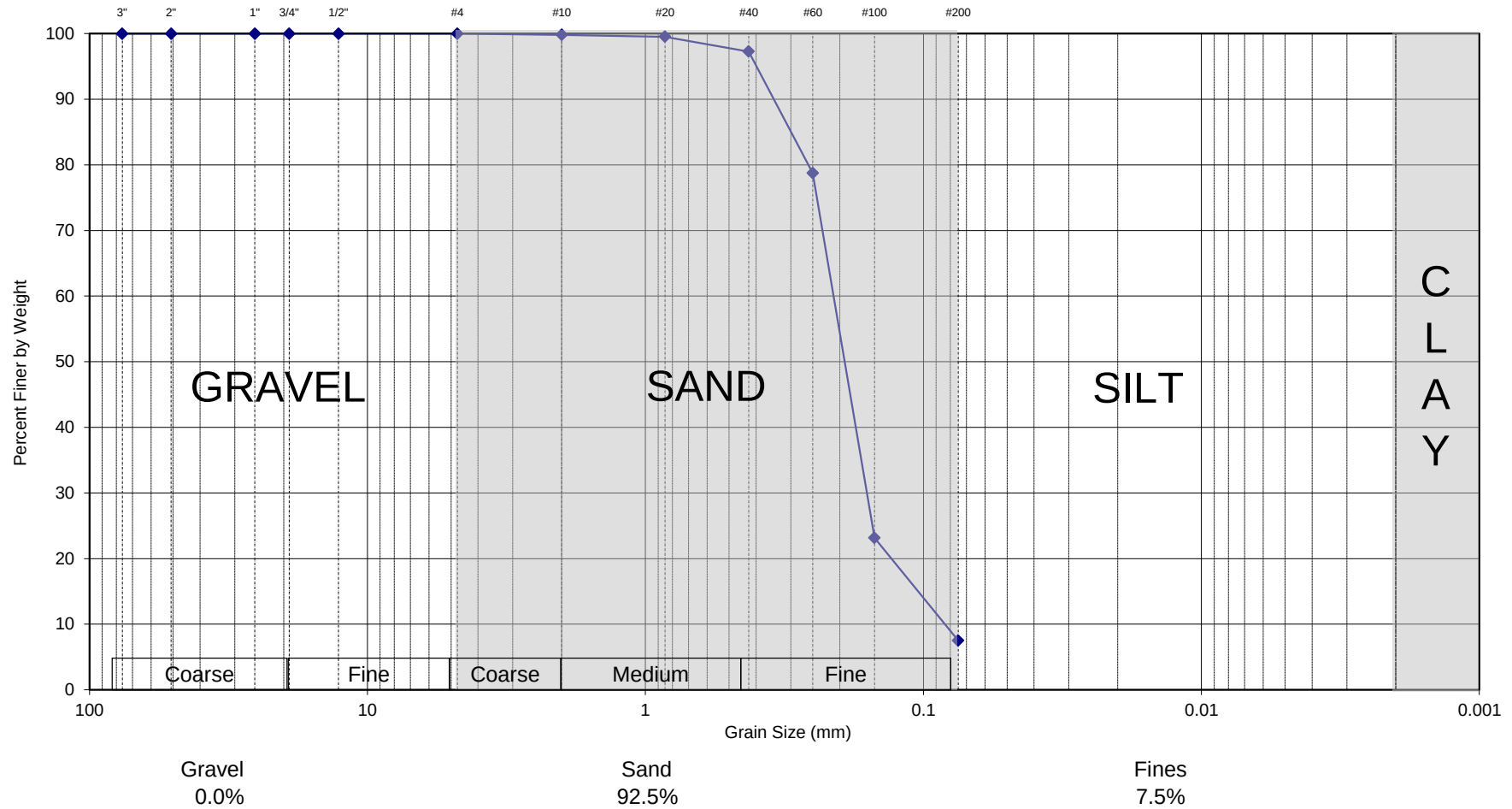
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U.S. STANDARD SIEVE AND HYDROMETER



Lab #	Exploration	Sample	Depth	Description	WC	LL	PL	PI
17	PB-5	S-6	11-13'	Light brown fine SAND, trace Silt (SP-SM)				

Sieve Size	% Passing
3/4"	100.0
1/2"	100.0
#4	100.0
#10	99.8
#20	99.5
#40	97.3
#60	78.8
#100	23.1
#200	7.5



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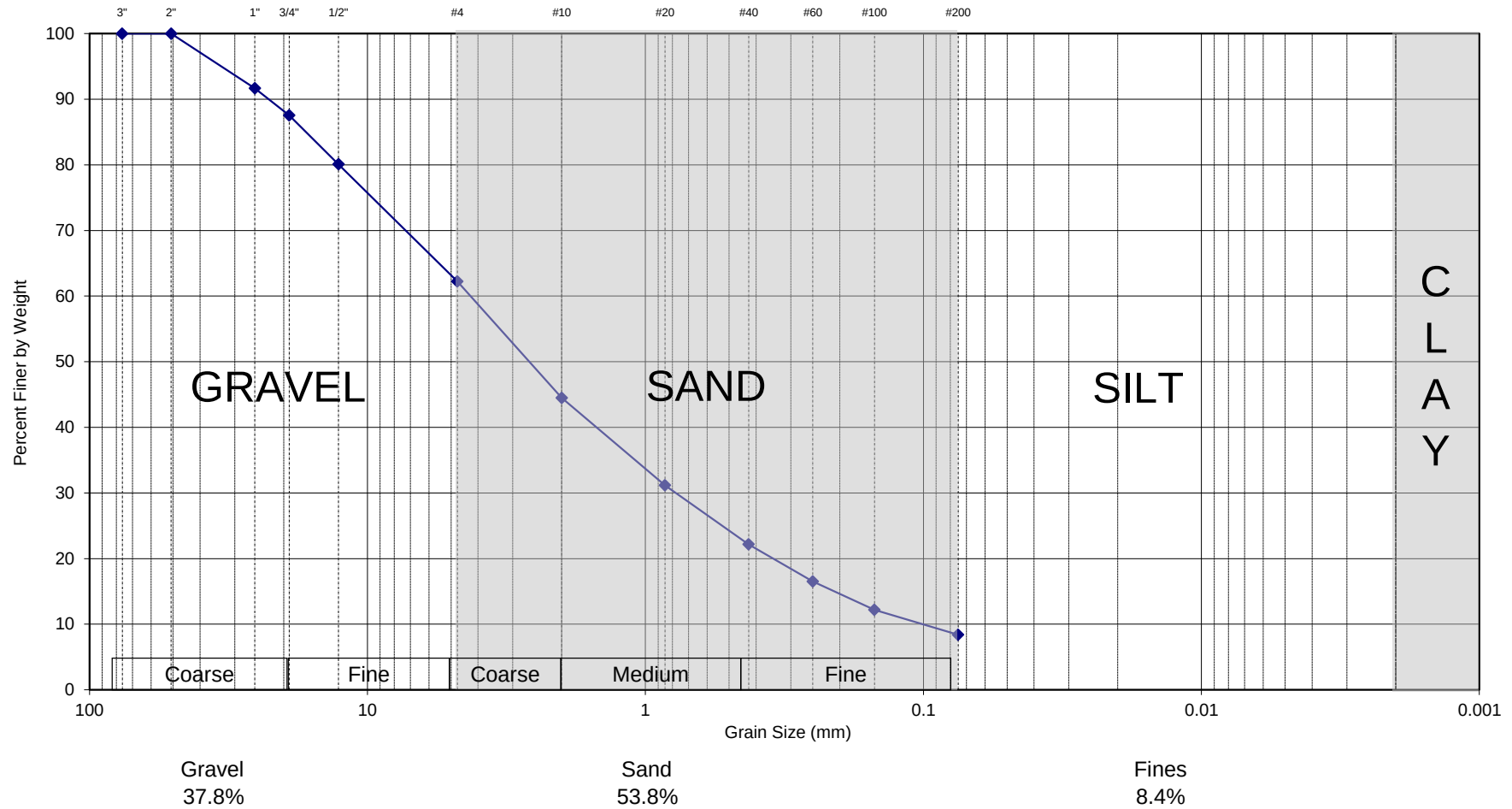
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				Water Content %	LL %	PL %	Sieve -200 %	Hyd -2 μ %	ORG %	G _s	Dry unit wt. pcf	Torvane or Type Test	σ_c psf	Failure Criteria	$\sigma_1 - \sigma_3$ psf	Strain %	$\frac{C_c}{1 + e_0}$	
PB-6	S-1	1-3	18				8.4											Dark brown f-c SAND and f-c GRAVEL, trace Silt (SW-SM)
PB-6	S-3	5-7	19				27.5											Brown f-c SAND some Silt some f-c Gravel (SM)



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U.S. STANDARD SIEVE AND HYDROMETER



Lab #	Exploration	Sample	Depth	Description	WC	LL	PL	PI
18	PB-6	S-1	1-3'	Dark brown f-c SAND and f-c GRAVEL, trace Silt (SW-SM)				

Sieve Size	% Passing
3/4"	87.6
1/2"	80.1
#4	62.2
#10	44.5
#20	31.2
#40	22.1
#60	16.5
#100	12.2
#200	8.4

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ENGINEERING

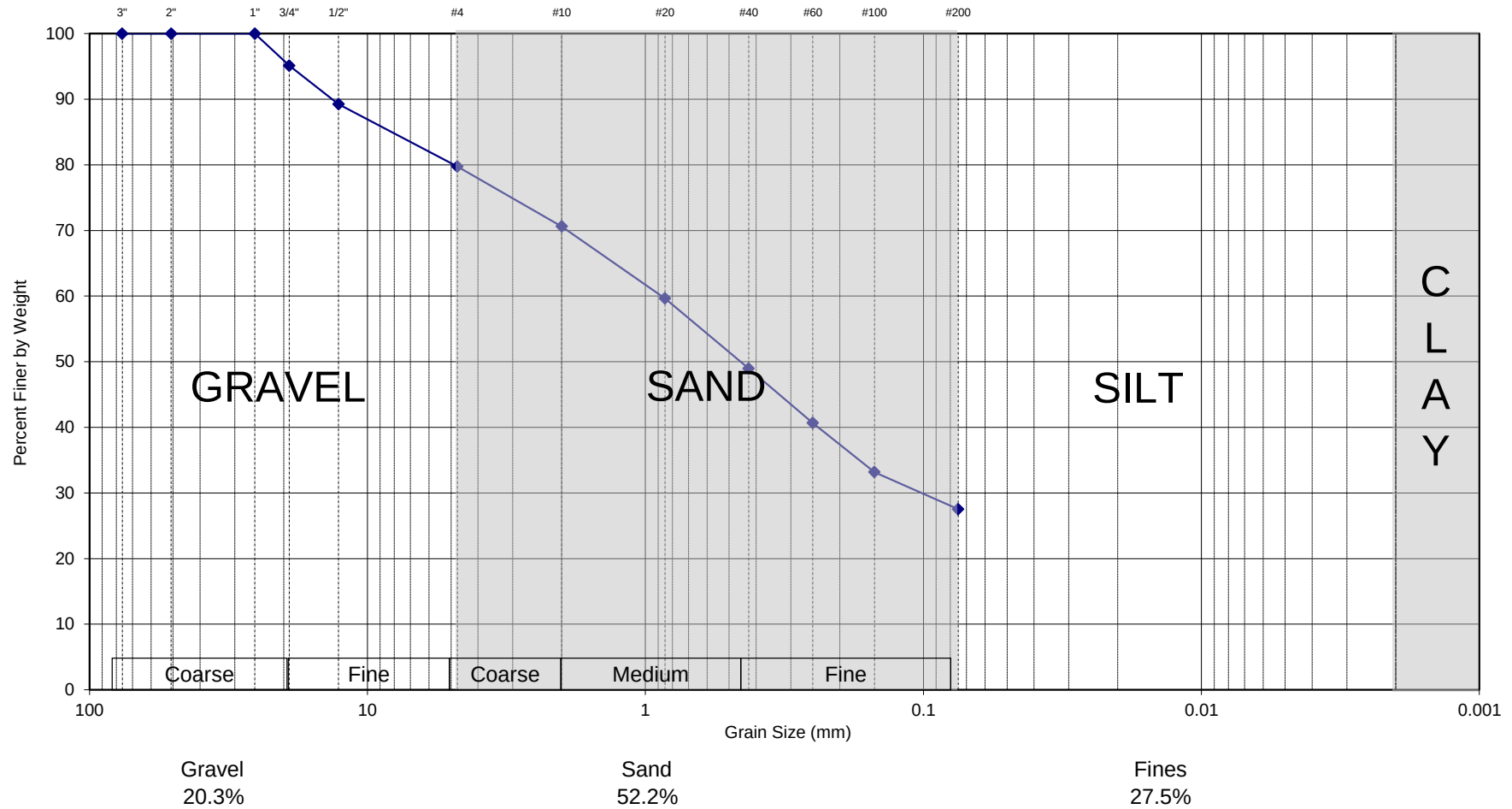
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Reviewed by: MBP Date: 10/4/14

U.S. STANDARD SIEVE AND HYDROMETER



Lab #	Exploration	Sample	Depth	Description	WC	LL	PL	PI
19	PB-6	S-3	5-7'	Brown f-c SAND some Silt some f-c Gravel (SM)				

Sieve Size	% Passing
3/4"	95.1
1/2"	89.2
#4	79.7
#10	70.6
#20	59.7
#40	48.9
#60	40.7
#100	33.2
#200	27.5

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Union Square Utility and Roadway Improvements
Somerville, MA

Thielsch CTS Project # 74-14-0003.23c

Tested by: LM/MS Date: 10/1/14
Reviewed by: MBP Date: 10/4/14

LABORATORY TESTING DATA SHEET

Matthew P. Angelo

Project Name Union Square Utility and Roadway Improvements

Project Location Somerville, MA

Reviewed By _____

Project No. 74-13-0003.23

Assigned By David D'Angelo

Project Manager David D'Angelo

Date 10/4/2014

Date Reviewed 10/4/2014

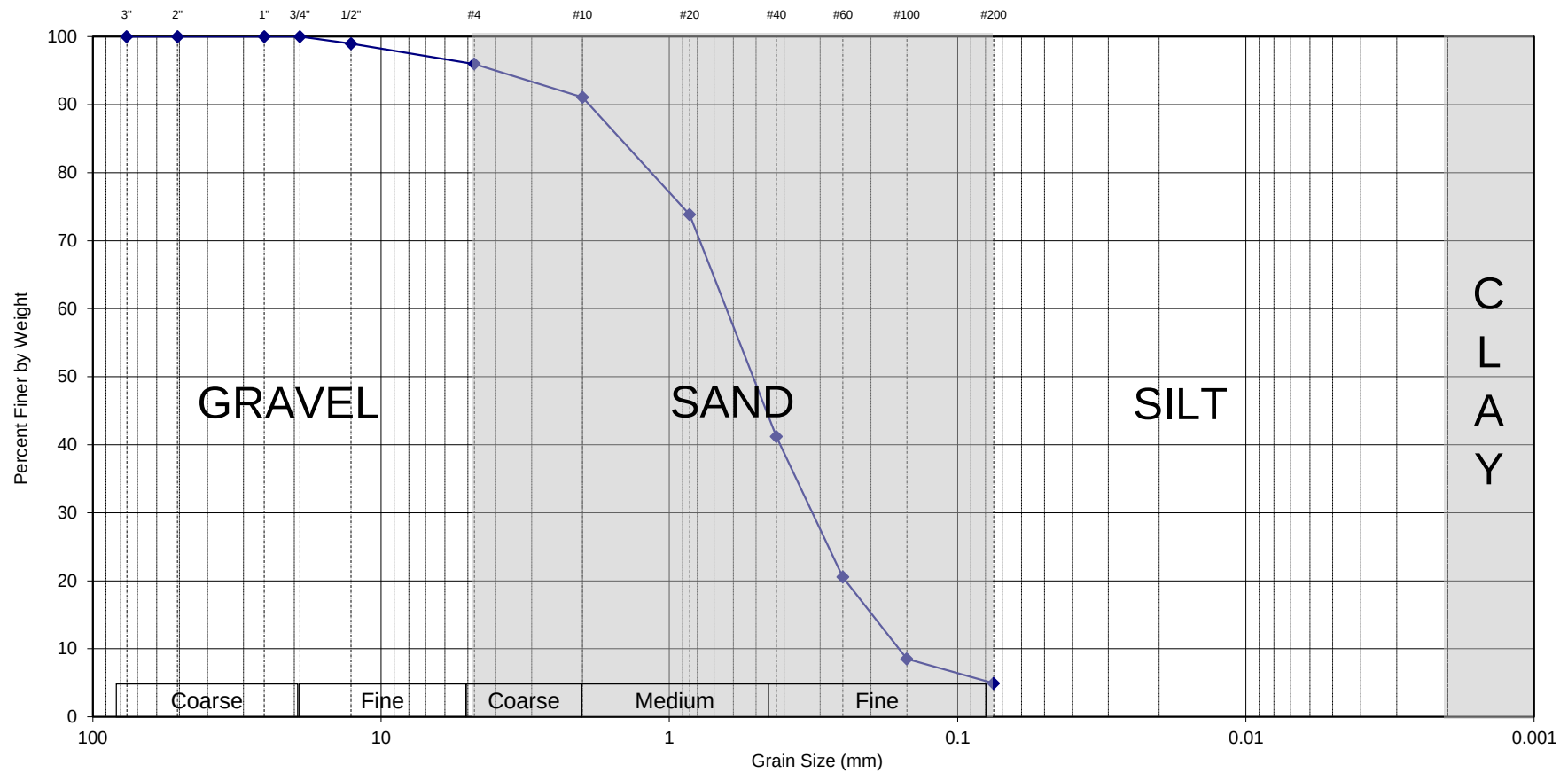
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				Water Content %	LL %	PL %	Sieve -200 %	Hyd -2 μ %	ORG %	G _s	Dry unit wt. pcf	Torvane or Type Test	σ_c psf	Failure Criteria	$\sigma_1 - \sigma_3$ psf	Strain %	$\frac{C_c}{1 + e_0}$	
PB-7	G-1	1-8.5	20				4.9											Brown f-m SAND, trace Silt, trace Gravel (SP)
PB-7	S-3	13-15	21				8.3											Brown fine SAND, trace Silt (SP-SM)



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U.S. STANDARD SIEVE AND HYDROMETER



Gravel
4.0%

Sand
91.1%

Fines
4.9%

Lab #	Exploration	Sample	Depth	Description	WC	LL	PL	PI
20	PB-7	G-1	1-8.5'	Brown f-m SAND, trace Silt, trace Gravel (SP)				

Sieve Size	% Passing
3/4"	100.0
1/2"	99.0
#4	96.0
#10	91.1
#20	73.8
#40	41.2
#60	20.5
#100	8.5
#200	4.9

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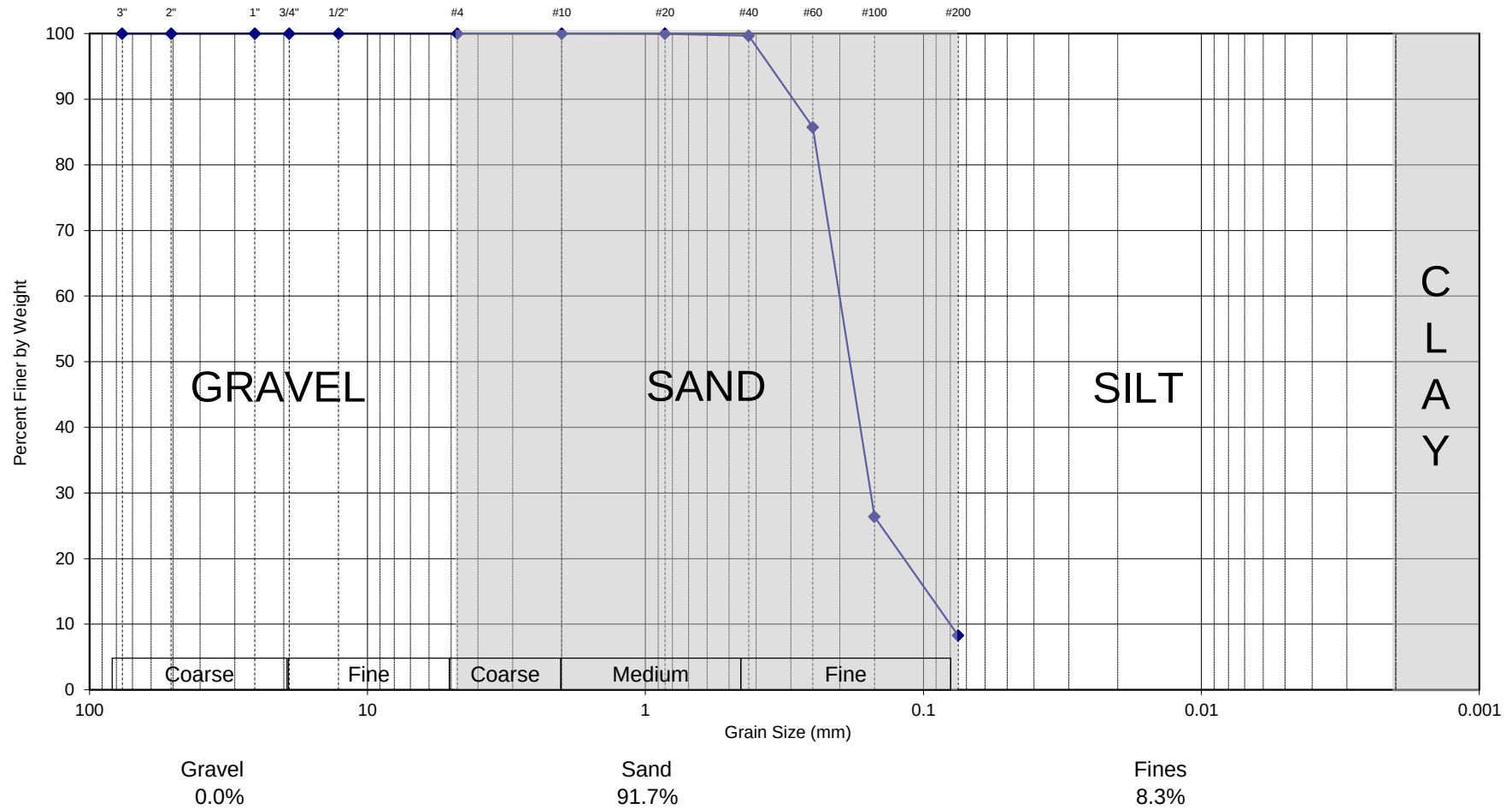
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U.S. STANDARD SIEVE AND HYDROMETER



Lab #	Exploration	Sample	Depth	Description	WC	LL	PL	PI
21	PB-7	S-3	13-15'	Brown fine SAND, trace Silt (SP-SM)				

Sieve Size	% Passing
3/4"	100.0
1/2"	100.0
#4	100.0
#10	100.0
#20	100.0
#40	99.7
#60	85.7
#100	26.4
#200	8.3

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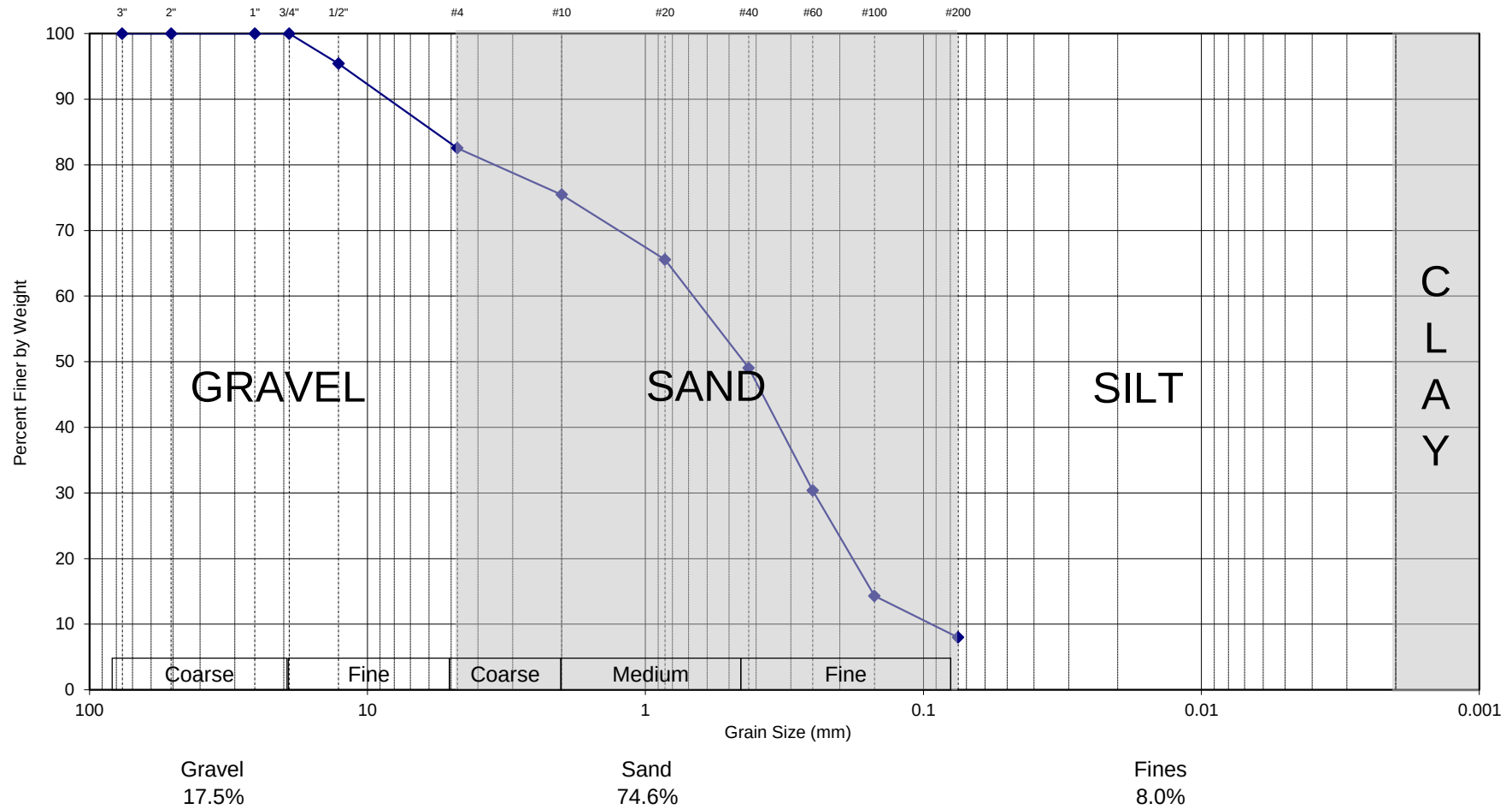
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PB-8	S-2	4-6	22				8.0											Gray-brown f-c SAND, little fine Gravel, trace Silt (SP-SM)



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U.S. STANDARD SIEVE AND HYDROMETER



Lab #	Exploration	Sample	Depth	Description	WC	LL	PL	PI
22	PB-8	S-2	4-6'	Gray-brown f-c SAND, little fine Gravel, trace Silt (SP-SM)				

Sieve Size	% Passing
3/4"	100.0
1/2"	95.4
#4	82.5
#10	75.4
#20	65.6
#40	49.0
#60	30.4
#100	14.3
#200	8.0



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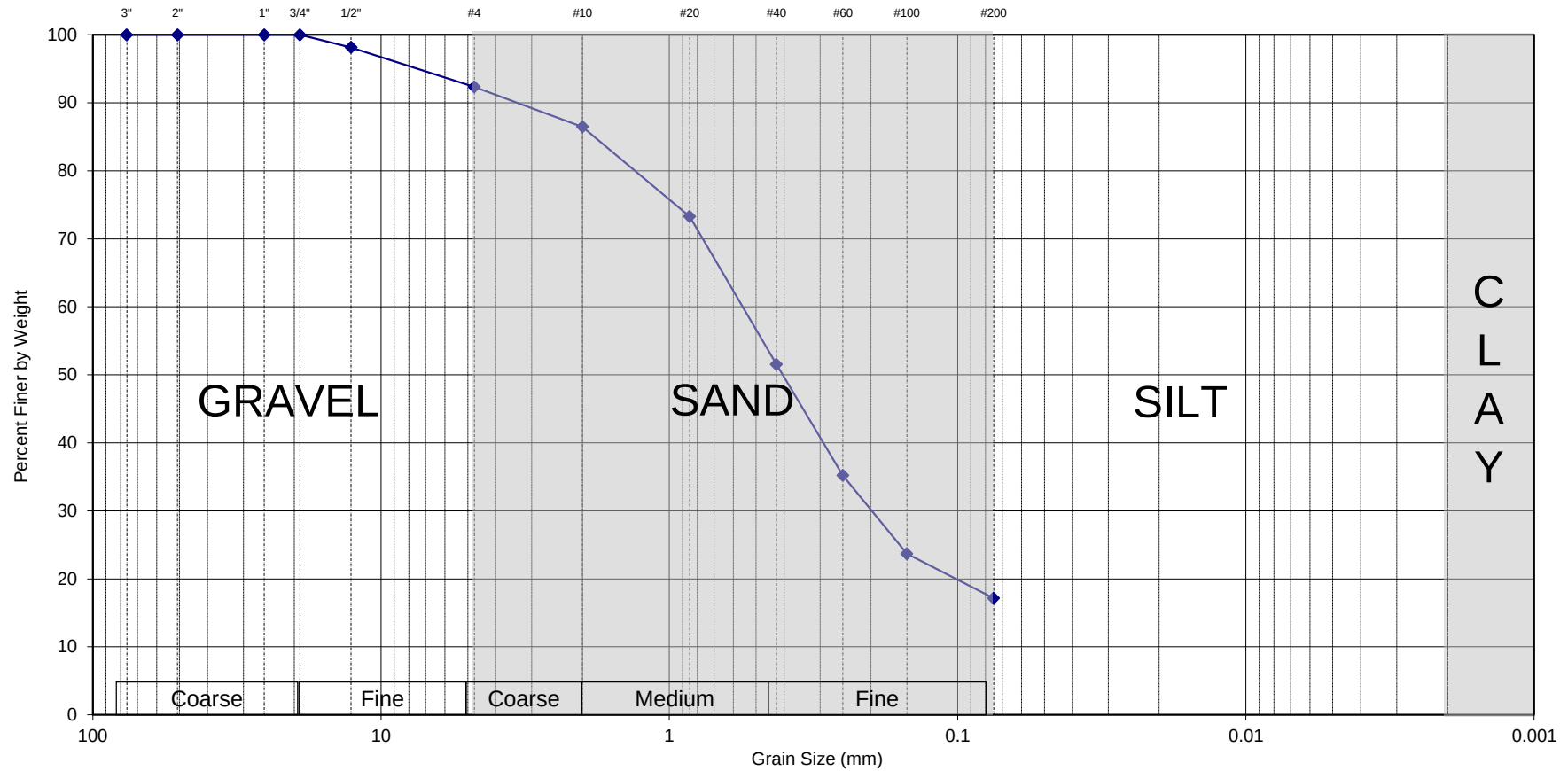
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				Water Content %	LL %	PL %	Sieve -200 %	Hyd -2 μ %	ORG %	G _s	Dry unit wt. pcf	Torvane or Type Test	σ_c psf	Failure Criteria	$\sigma_1 - \sigma_3$ psf	Strain %	$\frac{C_c}{1 + e_0}$	
PB-9	S-1	1-3	23				17.1											Gray-brown f-m SAND, little Silt, trace Gravel (SM)
PB-9	S-2	3-5	24				10.8											Dark brown f-c SAND and fine GRAVEL, little Silt (SW-SM)



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U.S. STANDARD SIEVE AND HYDROMETER



Gravel
7.7%

Sand
75.2%

Fines
17.1%

Lab #	Exploration	Sample	Depth	Description	WC	LL	PL	PI
23	PB-9	S-1	1-3'	Gray-brown f-m SAND, little Silt, trace Gravel (SM)				

Sieve Size	% Passing
3/4"	100.0
1/2"	98.1
#4	92.3
#10	86.5
#20	73.3
#40	51.5
#60	35.2
#100	23.7
#200	17.1

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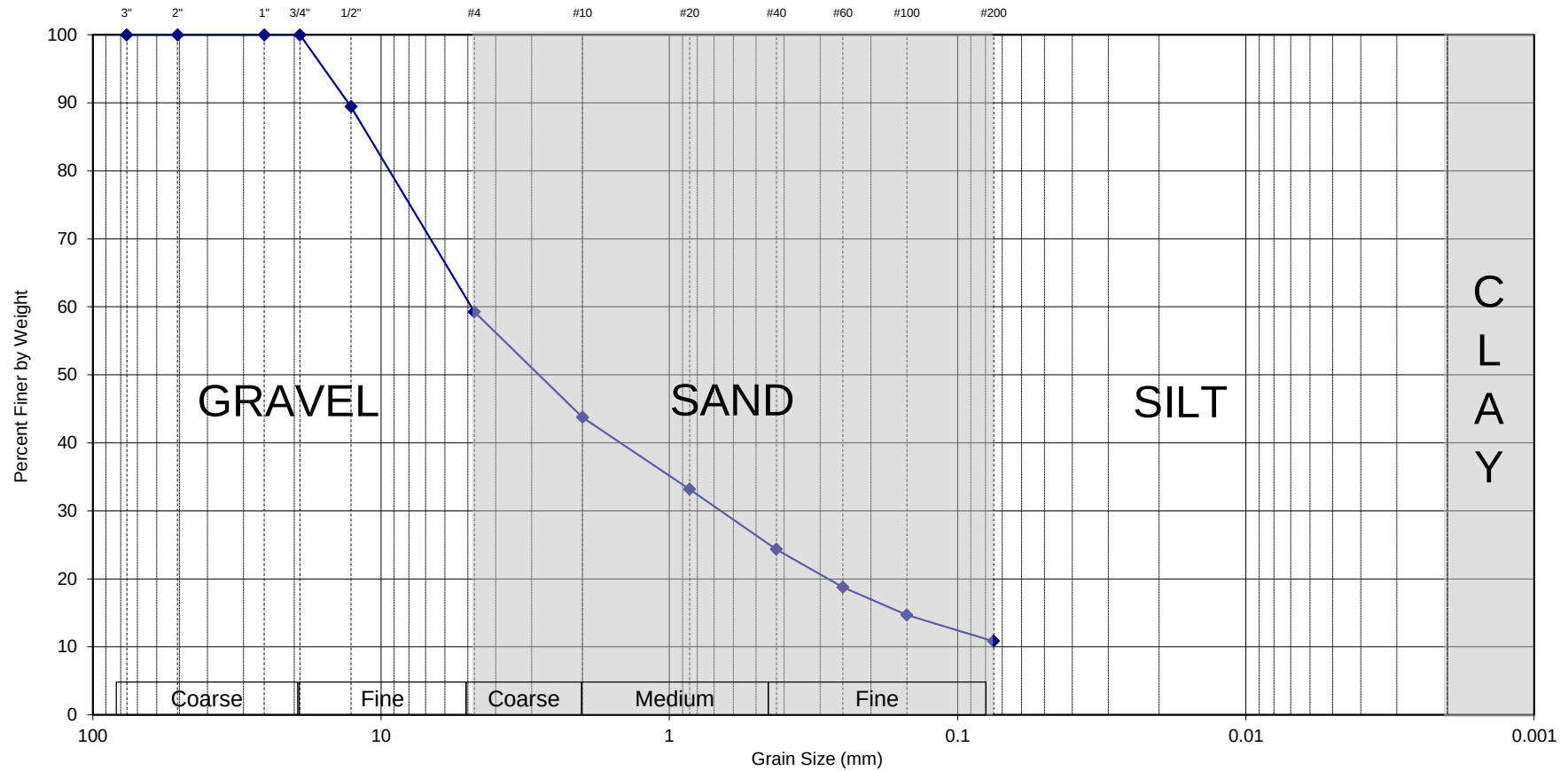
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U.S. STANDARD SIEVE AND HYDROMETER



Gravel
40.7%

Sand
48.4%

Fines
10.8%

Lab #	Exploration	Sample	Depth	Description	WC	LL	PL	PI
24	PB-9	S-2	3-5'	Dark brown f-c SAND and fine GRAVEL, little Silt (SW-SM)				

Sieve Size	% Passing
3/4"	100.0
1/2"	89.4
#4	59.3
#10	43.8
#20	33.2
#40	24.3
#60	18.8
#100	14.7
#200	10.8

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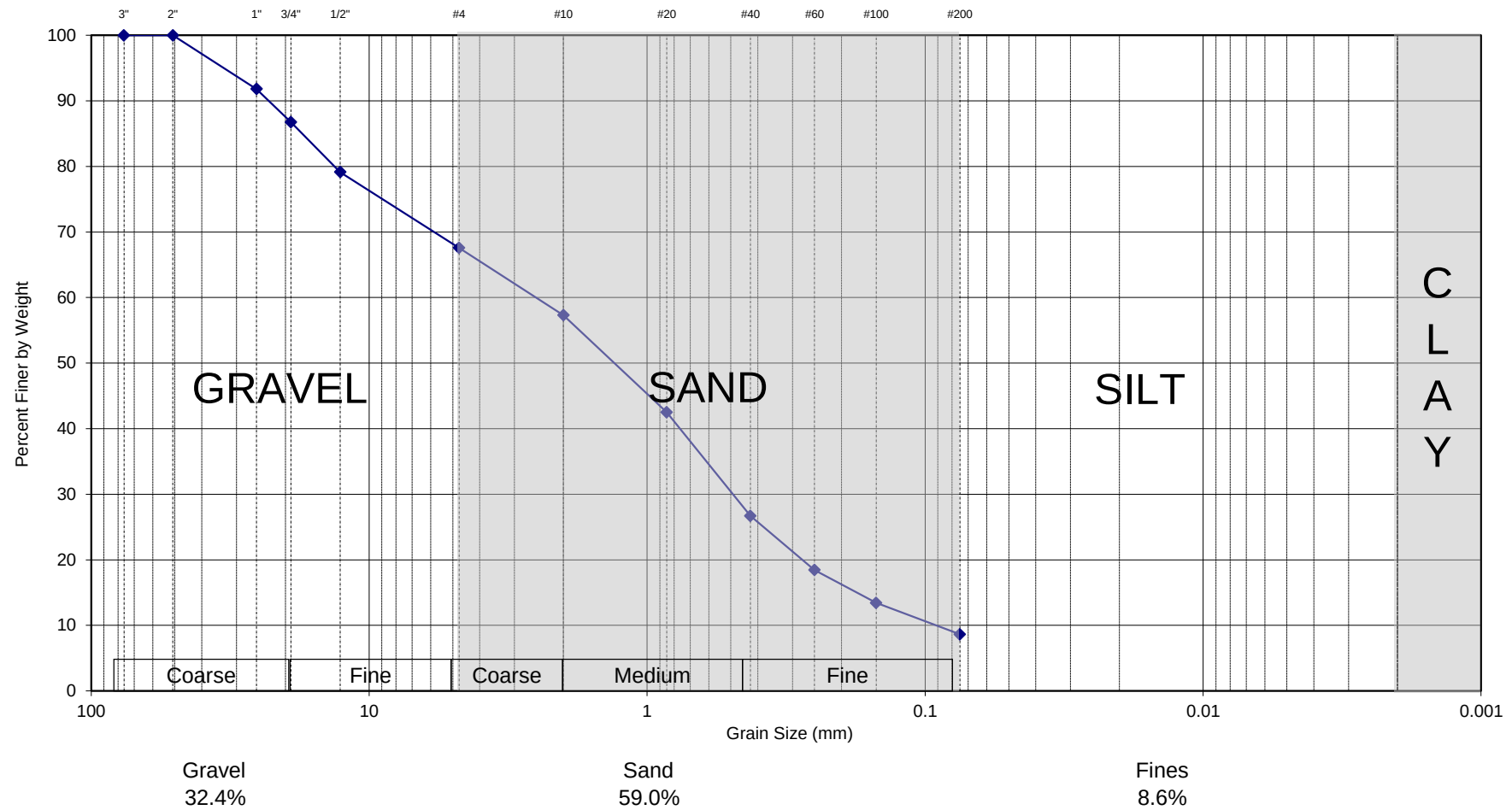
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PB-10	G-1	0.8-6	25				8.6											Brown f-c SAND, some f-c Gravel, trace Silt (SP-SM)
PB-10	S-1	6-8	26				4.2											Brown f-c SAND, trace Gravel, trace Silt (SP)



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U.S. STANDARD SIEVE AND HYDROMETER



Lab #	Exploration	Sample	Depth	Description	WC	LL	PL	PI
25	PB-10	G-1	0.8-6'	Brown f-c SAND, some f-c Gravel, trace Silt (SP-SM)				

Sieve Size	% Passing
3/4"	86.7
1/2"	79.1
#4	67.6
#10	57.3
#20	42.5
#40	26.7
#60	18.4
#100	13.4
#200	8.6

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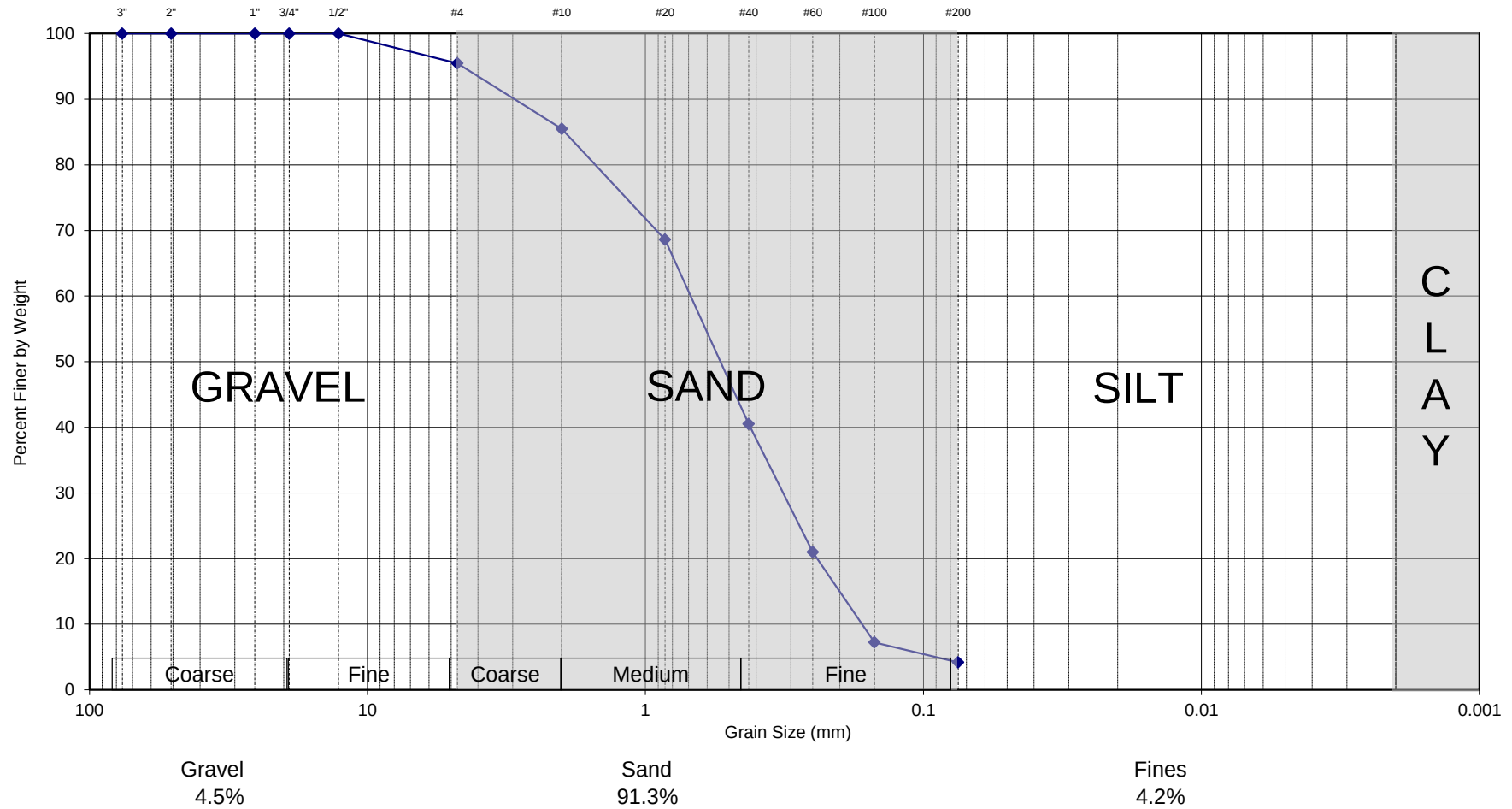
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U.S. STANDARD SIEVE AND HYDROMETER



Lab #	Exploration	Sample	Depth	Description	WC	LL	PL	PI
26	PB-10	S-1	6-8'	Brown f-c SAND, trace Gravel, trace Silt (SP)				

Sieve Size	% Passing
3/4"	100.0
1/2"	100.0
#4	95.5
#10	85.5
#20	68.6
#40	40.5
#60	21.0
#100	7.2
#200	4.2



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ATTACHMENT B – ENVIRONMENTAL SITE ASSESSMENT REPORTS

Limited Soil Sampling Investigation

Union Square Utilities and Roadway Improvements Project Washington Street and Somerville Avenue Somerville, Massachusetts

December 9, 2014

PEER Project No. 5559



Prepared for:

City of Somerville
Somerville, Massachusetts

Prepared through:

Parsons Brinckerhoff
Boston, Massachusetts

Prepared by:

PEER Consultants, P.C.
Burlington, Massachusetts



Est. 1978

99 South Bedford Street, Suite 200 • Burlington, MA 01803
Phone: 781-238-8880 • Fax: 781-238-8884

Engineers • Scientists • Planners

December 9, 2014

Parsons Brinckerhoff
75 Arlington Street
Boston, MA 02116

Attn: Ms. Rachel Burckhardt

Re: Limited Soil Sampling Investigation
Union Square Utilities and Roadway Improvements Project
Washington Street and Somerville Avenue
Somerville, Middlesex County, Massachusetts
PEER Project No. 5559

Dear Ms. Burckhardt:

PEER Consultants, P.C. (PEER) is pleased to submit our report of Limited Soil Sampling Investigation (LSSI) activities completed at the site referenced above. The report presents data from field activities that included the completion of 10 combined geotechnical/environmental borings and the collection of multiple soil samples for chemical analysis. The activities were completed to pre-characterize the soil within the Union Square area as part of the Union Square Utilities and Roadway Improvements Project.

PEER appreciates this opportunity to provide environmental support services to Parsons Brinckerhoff. Should you have any questions or require additional information, please do not hesitate to contact our office.

Sincerely,
PEER Consultants, P.C.

David Gorden, CPSS | CWS
Environmental Scientist

TABLE OF CONTENTS

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APPENDIX A

Figure 1 – USGS Topographic Map

APPENDIX B

Analytical Summary Tables

APPENDIX C

Analytical Report and Chain of Custody

ACKNOWLEDGEMENTS

This report to the City of Somerville has been prepared by PEER Consultants P.C. for Parsons Brinckerhoff. Parsons Brinckerhoff is the lead firm of the Union Square Utilities and Roadway Improvements Project. This report has been prepared by Mr. David Gorden, who serves as the PEER Project Manager for the project. This report has been reviewed by Mr. Kenneth Menzies, Licensed Site Professional.

LIMITED SOIL SAMPLING INVESTIGATION UNION SQUARE UTILITIES & ROADWAY IMPROVEMENTS PROJECT SOMERVILLE, MASSACHUSETTS

PEER Project No. 5559

December 9, 2014

1.0 INTRODUCTION

The site location is depicted on Figure 1 within Appendix A, which was reproduced from a portion of the Boston North, Massachusetts USGS 7.5-minute series topographic maps. The Union Square Utilities & Roadway Improvements project area is centered on Union Square and extends roughly in a narrow quadrilateral of 4,000 LF by 400 LF (Figure 1). The corridor is bounded on the east and west by McGrath Highway and Dane Street, respectively. The approximately linear corridor is centered on Somerville Avenue. The main utility corridor extends along Somerville Avenue from Webster Street to Medford Street on the eastern half of the project area.

PEER previously performed a Limited Environmental Site Analysis of the property for Parsons Brinckerhoff (PB) (Project No. 5559, report dated November 15, 2013). Based on the findings of this limited analysis, PEER concluded that during any Phase II investigation, it may be appropriate to collect and analyze soil samples along utility line sections which are likely to be replaced, and which are within 0.25-miles of sources that are ranked as a High Potential for Impact.

2.0 APPROACH

PEER's Limited Soil Sampling Investigation (LSSI) was undertaken in response to the findings in the limited ESA. The LSSI was conducted to assess for potential contaminants in soil that may impact the Union Square Utilities and Roadway Improvements Project and may necessitate the need to pre-characterize excess soil that may be excavated and possibly require off-site disposal to a licensed facility. The approach was not intended to identify every chemical possibly associated with the site. In addition, geotechnical boring locations, from which PEER collected environmental samples, were pre-selected by PB in advance, and may not represent soil conditions within the entire utility corridor.

PEER conducted the fieldwork under a soil sampling plan proposal developed for this project, and based soil sample collection depths on the proposed utility replacement work zones. Work was performed using United States Environmental Protection Agency (USEPA) modified Level D work attire.

Limited Soil Sampling Investigation

Union Square ■ Somerville, Massachusetts

December 9, 2014 ■ PEER Project No. 5559



From August 4, 2014 through August 19, 2014, PEER collected environmental soil samples from 10 boring locations from within this corridor. Borings were developed by either using a vacuum excavator in areas of dense existing utilities and/or by a truck-mounted Diedrich D-50 drill rig. Soil samples were collected by using a clean sample collection tool from within the bore hole, or by obtaining a representative quantity of soil directly from the split spoon.

Upon removal of the sample from the borehole or the split spoon, PEER placed the soil into a sealable plastic bag, and then collected a grab sample for volatile organic compounds (VOCs). PEER homogenized the remainder of the soil within a bag before collecting a composite sample for the remaining analyses. After packaging each sample in laboratory-provided containers, PEER recorded the sample time on each container label in permanent ink and placed the filled containers in an ice-filled cooler for transport to ESS Laboratory, a National Environmental Laboratory Accreditation Conference laboratory, in Cranston, Rhode Island.

PEER submitted the following samples for laboratory analysis:

- Soil samples PB-1 (6.5-8.5'), PB-2 (10-12'), PB-3 (1-7'), PB-4 (8.5-9.5'), PB-5 (1-3'), PB-7 (1-7'), PB-8 (4-6'), PB-9 (5-7'), and PB-10 (1-5') were submitted for laboratory analysis for VOCs by EPA Method 5035/8260B, and
- Soil samples PB-1 (0.5-12.5'), PB-2 (2-14'), PB-3 (1-13'), PB-4 (1.5-13.5'), PB-5 (1-13'), PB-7 (1-13'), PB-8 (2-6'), PB-9 (1-9'), and PB-10 (1-9') were submitted for laboratory analysis for polychlorinated biphenyls (PCBs) by EPA Method 8082A, semivolatile organic compounds (SVOCs) by EPA Method 8270D, conductivity, extractable petroleum hydrocarbons (EPH) and volatile petroleum hydrocarbons (VPH) by MADEP Methods, and total metals by EPA Method 6010C, 7010, or 7471A.

At the completion of field activities, with the exception of three borings, which were developed into groundwater monitoring wells, PB abandoned the borings and placed the excess soil back into the borehole, or into a 55-gallon drum, which was removed and properly disposed of by Enpro Services, Inc. of Salisbury, MA.

2.1 Limitations

PEER's services were performed in a manner consistent with generally accepted practices of the profession undertaken in similar studies in the same geographical area during the same time. PEER makes no warranties, either express or implied, regarding the findings, conclusions, or recommendations. Please note that PEER does not warrant the work of laboratories, regulatory agencies, or other third parties supplying information used in the preparation of the report. These LSSI services were performed in accordance with the scope of work agreed with you, our client, as reflected in our proposal and were not restricted by ASTM E1903-11.

Limited Soil Sampling Investigation

Union Square ■ Somerville, Massachusetts

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Findings, conclusions, and recommendations resulting from these services are based upon information derived from the on-site activities and other services performed under this scope of work; such information is subject to change over time. Certain indicators of the presence of hazardous substances, petroleum products, or other constituents may have been latent, inaccessible, unobservable, non-detectable, or not present during these services. We cannot represent that the site contains no hazardous substances, toxic materials, petroleum products, or other latent conditions beyond those identified during this LSSI. Subsurface conditions may vary from those encountered at specific locations during surveys, tests, assessments, investigations, or exploratory services. The data, interpretations, findings, and our recommendations are based solely upon data obtained at the time and within the scope of these services.

3.0 FINDINGS

3.1 Geology/Hydrogeology

In general, surface soil types were consistent with urban fill, soils that have been excavated or filled by anthropogenic means. The following field textural analysis and groundwater depths were as determined by PB. The following information was noted for each of the 10 borings:

- PB-1; sand and gravel to sand to clay to an end of boring depth of 27 feet.
 - Groundwater encountered at 12.9 feet below ground surface.
- PB-2; sand to organic silt to sand to clay to an end of boring depth of 32 feet.
 - Groundwater encountered at 10 feet below ground surface.
 - Buried wetland/peat soil at 8 feet.
- PB-3; sand to gravel to clay at depths to an end of boring depth of 27 feet.
 - Groundwater encountered at 9 feet below ground surface.
- PB-4; sand to sand and silt to clay to an end of boring depth of 32 feet.
 - Groundwater encountered at 9 feet below ground surface.
 - Slight aromatic hydrocarbon odor from 7.5 to 9.5 feet.
- PB-5; sand to sand and silt to clay to an end of boring depth of 32 feet.
 - Groundwater encountered at 9 feet below ground surface.
- PB-6; sand and gravel to sand to wood to sand to clay to an end of boring depth of 31 feet.
 - Note: Due to the presence of wooden board fill from approximately 7 to 20 feet, this PB boring location was not sampled as part of this LSSI. Groundwater encountered at 9.5 feet below ground surface.
- PB-7; sand to sand and silt to sand to silt to sand to an end of boring depth of 32 feet.
 - Groundwater encountered at 14 feet below ground surface.
- PB-8; sand to clay to silt and sand to sand and silt to silt to an end of boring depth of 32 feet.
 - Groundwater encountered at 13.5 feet below ground surface.
 - Slight aromatic hydrocarbon odor from 2 to 6 feet.
- PB-9; sand to gravel to sand to clay to silt to an end of boring depth of 20 feet.
 - Groundwater encountered at 13.5 feet below ground surface.

Limited Soil Sampling Investigation

Union Square ■ Somerville, Massachusetts

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- Slight aromatic hydrocarbon odor in soil from 1 to 7 feet.
- PB-10; sand to clay to silt to an end of boring depth of 25 feet. Groundwater not encountered.

3.2 Analytical Results

For the purpose of determining whether a notification obligation exists under 310 CMR 40.0315, measured concentrations of any oil or hazardous material listed at 310 CMR 40.1600 were compared to the Reportable Concentration (RC) value in the reporting category that best characterizes the current use of the site under evaluation, as described below:

(a) Reporting Category RCS-1. Reporting category RCS-1 shall be applied to all soil samples obtained:

1. at or within 500 feet of a residential dwelling, a residentially-zoned property, school, playground, recreational area or park; or
2. within the geographic boundaries of a groundwater resource area categorized as RCGW-1 in 310 CMR 40.0362(1)(a).

(b) Reporting Category RCS-2. Reporting category RCS-2 shall be applied to all soil samples that are not obtained from category RCS-1 areas.

For the purpose of this investigation, since soil samples were obtained within 500 feet of a residential dwelling, they were compared to Massachusetts Contingency Plan RC S-1 criteria.

In addition, in preparation for any soil materials that would need to be disposed of off site, analytical results were compared to MADEP's COMM-97-001 Policy, the Reuse and Disposal of Contaminated Soil at Massachusetts Landfills.

A summary of the laboratory analytical data is presented in Appendix B and the full laboratory analytical report and chain-of-custody record are attached in Appendix C. The following sections describe the results of the soil testing.

3.2.1 Soil Sample Results

The soil samples which were collected for VOCs had at least one detectable VOC for the intervals sampled except for PB-7 (1-7'), which had no detectable levels of VOCs. Concentrations of volatile oil and hazardous materials did not exceed RC S-1 criteria in any of the nine samples collected. In samples PB-4 and PB-9, concentrations of 1,1,2,2-Tetrachloroethane; 1,4-Dioxane; cis-1,3-Dichloropropene; Dibromochloromethane; Methylene Chloride; and trans-1,3-Dichloropropene were not detected. However, due to likely matrix interferences within samples from PB-4 and PB-9, the method detection limit (MDL) of the sample was raised, and the MDL did not achieve / could not be lowered to below the RC criteria.

Limited Soil Sampling Investigation

Union Square ■ Somerville, Massachusetts

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PCB concentrations were not detected in any of the soil samples analyzed as part of this project. The MDLs were all less than the RC values for S-1 and S-2 soils.

The SVOC, benzo(a)pyrene, was detected at a concentration of 0.231 milligrams per kilogram (mg/kg) in sample PB-2 (2-14'). In addition, the SVOC, chrysene, was detected at a concentration of 0.203 mg/kg in sample PB-9 (1-9'). SVOC concentrations were not detected in any of the other soil samples analyzed as part of this project. The MDLs were all less than the RC values for S-1 and S-2 soils.

The EPH, C11-C22 aromatics was detected at a concentration of 85.3 mg/kg in sample PB-4 (1.5-13.5') and 53.5 mg/kg in sample PB-9 (1-9'). In addition, the EPH, C9-C18 aliphatics was detected at a concentration of 468 mg/kg in sample PB-4 (1.5-13.5') and 42.2 mg/kg in sample PB-9 (1-9'). EPH concentrations were not detected in any of the other soil samples analyzed as part of this project. The MDLs were all less than the RC values for S-1 and S-2 soils.

The VPH, benzene (1.01 mg/kg), naphthalene (0.26 mg/kg), and toluene (0.41 mg/kg) were detected in PB-9 (1-9'). In addition, naphthalene was detected at a concentration of 2.04 mg/kg and C9-C10 aromatics were detected at a concentration of 100 mg/kg in PB-4 (1.5-13.5'). This C9-C10 aromatics concentration of 100 mg/kg is equal to the RC S-1 criteria of 100 mg/kg. VPH concentrations were not detected in any of the other soil samples analyzed as part of this project. The MDLs were all less than the RC values for S-1 and S-2 soils.

At least one metal was detected in each of the nine soil samples analyzed. Concentrations of metals did not exceed the RC S-1 or S-2 criteria in any of the samples analyzed. Antimony, cadmium, selenium, silver, and thallium were not detected in any soil sample analyzed. In addition, the MDLs were all less than the RC values for S-1 and S-2 soils.

3.2.2 Soil Disposal Parameters Sample Results

The analytical results were compared to Massachusetts Department of Environmental Protection (MADEP) Policy # COMM-97-001, Reuse and Disposal of Contaminated Soil at Massachusetts Landfills, and the Massachusetts Contingency Plan (MCP) Reporting Category RCS-1. For the purpose of determining whether a notification obligation exists under 310 CMR 40.0315, measured concentrations of any oil or hazardous material listed at 310 CMR 40.1600 shall be compared to the Reportable Concentration value in the reporting category that best characterizes the current use of the site under evaluation. In the case of Reporting Category RCS-1, reporting category RCS-1 shall be applied to all soil samples obtained:

1. at or within 500 feet of a residential dwelling, a residentially-zoned property, school, playground, recreational area or park; or
2. within the geographic boundaries of a groundwater resource area categorized as RCGW-1 in 310 CMR 40.0362(1)(a).

Limited Soil Sampling Investigation

Union Square ■ Somerville, Massachusetts

December 9, 2014 ■ PEER Project No. 5559



In the case of Reporting Category RCS-2, reporting category RCS-2 shall be applied to all soil samples that are not obtained from category RCS-1 areas. In addition, reporting category RCS-1 shall be selected whenever and wherever reasonable doubts exist over the selection of the appropriate soil Reportable Concentration category.

None of the concentrations of contaminants analyzed for as part of this investigation in the soil for samples PB-1 through PB-5 and PB-7 through PB10 exceeded MADEP Policy #COMM-97-001 for acceptance and use at a Massachusetts lined landfills.

MCP reporting category RCS-1 applies to soil samples. For this project, soil samples were collected below the pavement of the public way, and the MCP reporting category RCS-1 is used for comparison purposes. Of the analytes sampled within the nine soil sample locations, only one compound, C9-C10 aromatics (100 mg/kg), at location PB-4, was detected at a concentration equal to or above the RCS-1 reporting category of 100 mg/kg.

Several properties along the corridor as well as properties upgradient, crossgradient, and nearby to PB-4 are listed on environmental database reports for concerns related to oil and/or hazardous materials.

These include 223 Washington Street, 231 Washington Street, @Washington Street/Bonner Avenue, and 236 Washington Street.

4.0 CONCLUSIONS

Based on the approach described in this report and subject to the limitations described herein, PEER concludes the following.

- None of the concentrations of contaminants analyzed as part of this investigation in the soil for samples PB-1 through PB-5 and PB-7 through PB10 exceeded MADEP Policy #COMM-97-001 for acceptance and use at a Massachusetts lined landfills.
- None of the concentrations of contaminants analyzed as part of this investigation in the soil for samples PB-1 through PB-5 and PB-7 through PB10 exceeded MCP reporting category RCS-1, except for C9-C10 aromatics (100 mg/kg), at location PB-4, which was detected at a concentration equal to the RCS-1 reporting category of 100 mg/kg.
- Several properties along the corridor as well as properties upgradient, crossgradient, and nearby to PB-4 are listed on environmental database reports for concerns related to oil and/or hazardous materials.

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- Soil from borings PB-4 and PB-9 contained a slight aromatic hydrocarbon odor.

5.0 DISCUSSION

Based on the results of the soil sampling activities, it appears that excavated soil in many areas may be re-used on site. However, soils with a contaminant concentration within reporting category RCS-1 (within 500 feet of a residential dwelling, a residentially-zoned property, school, playground, recreational area or park), or the potential for structurally unsuitable soils, or soils in excess of the volume needed for reuse, would preclude the re-use of soil on site, and necessitate off-site disposal, preferably at a Massachusetts lined landfill.

Therefore, if surplus soil requires off-site disposal to a licensed facility, PEER suggests obtaining approvals from a Massachusetts lined landfill, or similar licensed landfill, prior to initiation of construction activities. In this manner, excavated soil above the groundwater table may be “live-loaded” and shipped off site, thereby minimizing the need for extensive stockpiling of excavated soil, which in turn, may impact the construction schedule.

PEER determined that, according to MADEP, there were 21 lined landfills, and two unlined landfills listed as active for Massachusetts. Of these lined landfills, only Bourne, Dartmouth, and Southbridge indicated that they were accepting materials, dependent on acceptance criteria. Tipping fees ranged from \$16-40/ton at these locations, which did not include acceptance review fees. In addition, Waste Management, who manages six of the landfills, indicated that they were also accepting materials at either their Middleborough or Taunton locations, dependent on acceptance criteria. Tipping fees at these locations were \$20/ton, plus landfill fees (10% environmental fee, a 9.21% fuel fee, and a 2.1% regulatory recovery fee).

PEER also identified that a landfill in adjoining states to Massachusetts, such as Connecticut, was willing to accept non-hazardous out of state waste, but generally had additional fees or submission requirements in order to receive disposal approval. Tipping fees ranged from \$35/ton for soil to \$40/ton for sediment at these locations, which did not include other imposed fees.

One compound, C9-C10 aromatics (100 mg/kg), at location PB-4, was detected at a concentration equal to the RCS-1 reporting category of 100 mg/kg. Soil within boring PB-4 and PB-9 had a slight aromatic hydrocarbon odor. It's likely that other areas within the corridor that are near known (or unknown) release sites may have elevated levels of contaminants. PEER recommends providing MADEP a Downgradient Property Status (DPS) Submittal for this release at PB-4. The DPS submittal is for properties that have been affected by contamination from an upgradient or upstream source and may not be able to meet the requirements of the MCP because they do not control the source of contamination.

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In addition, PEER recommends that an environmental monitor be present during the Union Square Utilities & Roadway Improvements project in order to monitor and assist with soil management during construction activities.

In summary, pre-characterization soil sampling has been completed for the proposed Union Square Utilities & Roadway Improvements project. Should soil need to be removed from the site in excess of the quantities proposed by Somerville, or from different areas than the currently proposed locations of sampling, additional soil characterization may be required.

APPENDIX A
FIGURE 1 – USGS TOPOGRAPHIC MAP

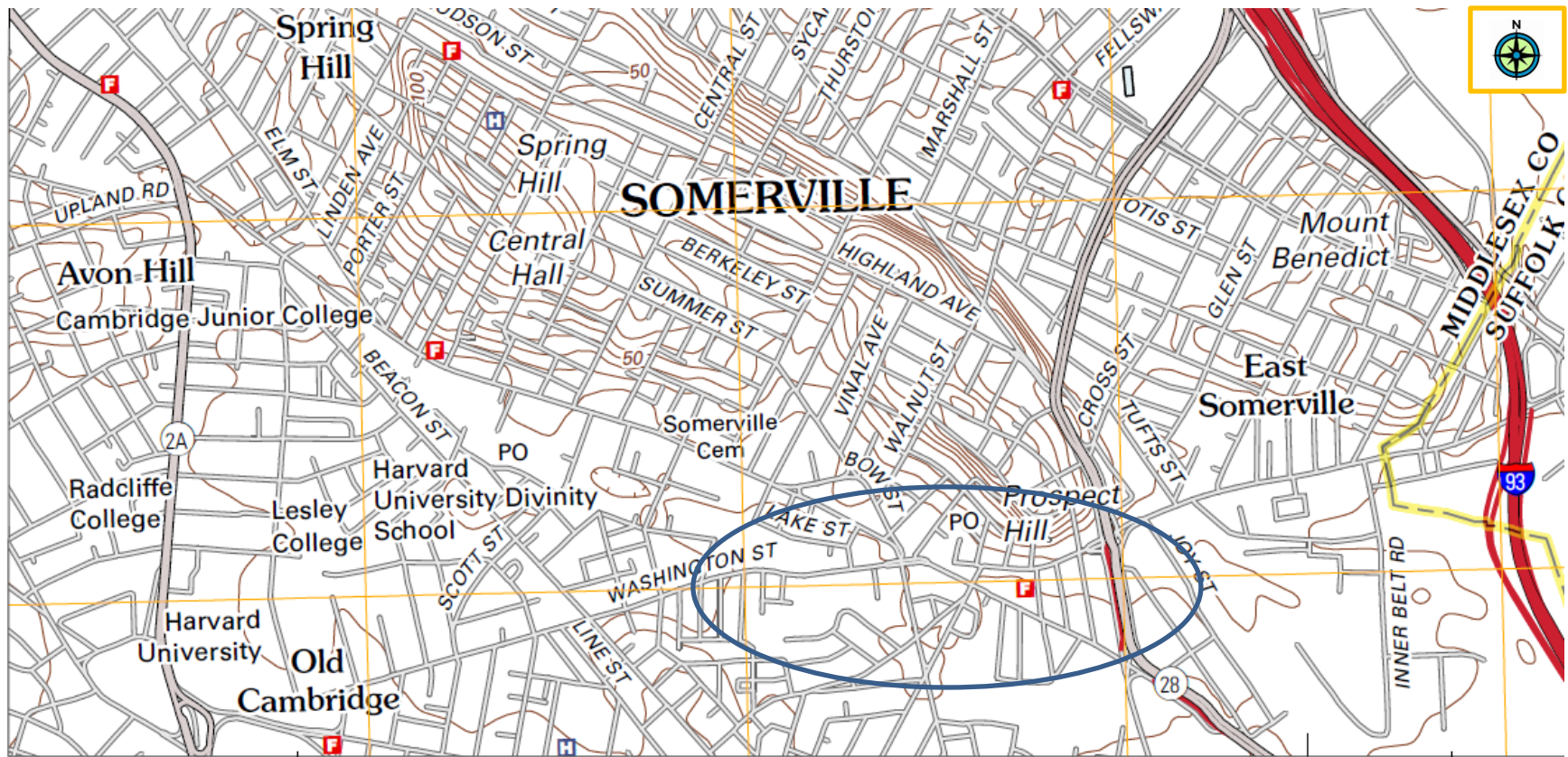


Figure 1 – USGS Topographic Map

Boston North, MA (2012), 1:24,000

Union Square
Somerville, Massachusetts

APPENDIX B
ANALYTICAL SUMMARY TABLES

Table 1
Volatile Organic Compounds
Union Square - Somerville, MA

Client Sample No.				PB-1 6.5-8.5' 08/18/2014	PB-2 10-12' 08/12/2014	PB-3 1-7' 08/07/2014	PB-4 8.5-9.5' 08/13/2014	PB-5 1-3' 08/07/2014	PB-7 1-7' 08/07/2014	PB-8 4-6' 08/14/2014	PB-9 5-7' 08/11/2014	PB-10 1-5' 08/07/2014
Client Sample Depth												
Sample Date												
Lab Sample ID	2014-RCS1	2014-RCS2	Units	1408387-01	1408202-04	1408144-05	1408317-01	1408144-02	1408144-01	1408317-04	1408202-03	1408144-04

5035/8260B VOCs																					
1,1,1,2-Tetrachloroethane	0.1	0.1	mg/kg dry	0.005	U	0.004	U	0.004	U	0.122	U	0.005	U	0.005	U	0.005	U	0.108	U	0.005	U
1,1,1-Trichloroethane	30	600	mg/kg dry	0.005	U	0.004	U	0.004	U	0.061	U	0.005	U	0.005	U	0.005	U	0.054	U	0.005	U
1,1,2,2-Tetrachloroethane	0.005	0.02	mg/kg dry	0.002	U	0.002	U	0.002	U	0.061	U	0.002	U	0.002	U	0.002	U	0.054	U	0.002	U
1,1,2-Trichloroethane	0.1	2	mg/kg dry	0.005	U	0.004	U	0.004	U	0.061	U	0.005	U	0.005	U	0.005	U	0.054	U	0.005	U
1,1-Dichloroethane	0.4	9	mg/kg dry	0.005	U	0.004	U	0.004	U	0.061	U	0.005	U	0.005	U	0.005	U	0.054	U	0.005	U
1,1-Dichloroethene	3	40	mg/kg dry	0.005	U	0.004	U	0.004	U	0.061	U	0.005	U	0.005	U	0.005	U	0.054	U	0.005	U
1,1-Dichloropropene	NA	NA	mg/kg dry	0.005	U	0.004	U	0.004	U	0.061	U	0.005	U	0.005	U	0.005	U	0.054	U	0.005	U
1,2,3-Trichlorobenzene	NA	NA	mg/kg dry	0.005	U	0.004	U	0.004	U	0.061	U	0.005	U	0.005	U	0.005	U	0.054	U	0.005	U
1,2,3-Trichloropropane	100	1,000	mg/kg dry	0.005	U	0.004	U	0.004	U	0.061	U	0.005	U	0.005	U	0.005	U	0.054	U	0.005	U
1,2,4-Trichlorobenzene	2	6	mg/kg dry	0.005	U	0.004	U	0.004	U	0.061	U	0.005	U	0.005	U	0.005	U	0.054	U	0.005	U
1,2,4-Trimethylbenzene	1,000	10,000	mg/kg dry	0.005	U	0.004	U	0.004	U	0.07		0.005	U	0.005	U	0.005	U	0.241		0.005	U
1,2-Dibromo-3-Chloropropane	10	100	mg/kg dry	0.005	U	0.004	U	0.004	U	0.244	U	0.005	U	0.005	U	0.005	U	0.216	U	0.005	U
1,2-Dibromoethane	0.1	0.1	mg/kg dry	0.005	U	0.004	U	0.004	U	0.061	U	0.005	U	0.005	U	0.005	U	0.054	U	0.005	U
1,2-Dichlorobenzene	9	100	mg/kg dry	0.005	U	0.004	U	0.004	U	0.061	U	0.005	U	0.005	U	0.005	U	0.054	U	0.005	U
1,2-Dichloroethane	0.1	0.1	mg/kg dry	0.005	U	0.004	U	0.004	U	0.061	U	0.005	U	0.005	U	0.005	U	0.054	U	0.005	U
1,2-Dichloropropane	0.1	0.1	mg/kg dry	0.005	U	0.004	U	0.004	U	0.061	U	0.005	U	0.005	U	0.005	U	0.054	U	0.005	U
1,3,5-Trimethylbenzene	10	100	mg/kg dry	0.005	U	0.004	U	0.004	U	0.061	U	0.005	U	0.005	U	0.005	U	0.066		0.005	U
1,3-Dichlorobenzene	3	200	mg/kg dry	0.005	U	0.004	U	0.004	U	0.061	U	0.005	U	0.005	U	0.005	U	0.054	U	0.005	U
1,3-Dichloropropane	500	5,000	mg/kg dry	0.005	U	0.004	U	0.004	U	0.061	U	0.005	U	0.005	U	0.005	U	0.054	U	0.005	U
1,4-Dichlorobenzene	0.7	1	mg/kg dry	0.005	U	0.004	U	0.004	U	0.061	U	0.005	U	0.005	U	0.005	U	0.054	U	0.005	U
1,4-Dioxane	0.2	6	mg/kg dry	0.103	U	0.086	U	0.088	U	6.1	U	0.094	U	0.09	U	0.091	U	5.39	U	0.092	U
2,2-Dichloropropane	NA	NA	mg/kg dry	0.005	U	0.004	U	0.004	U	0.122	U	0.005	U	0.005	U	0.005	U	0.108	U	0.005	U
2-Butanone	4	50	mg/kg dry	0.01	U	0.009		0.009	U	0.244	U	0.009	U	0.009	U	0.009	U	0.216	U	0.009	U
2-Chlorotoluene	100	1,000	mg/kg dry	0.005	U	0.004	U	0.004	U	0.061	U	0.005	U	0.005	U	0.005	U	0.054	U	0.005	U
2-Hexanone	100	1,000	mg/kg dry	0.01	U	0.009	U	0.009	U	0.244	U	0.009	U	0.009	U	0.009	U	0.216	U	0.009	U
4-Chlorotoluene	NA	NA	mg/kg dry	0.005	U	0.004	U	0.004	U	0.061	U	0.005	U	0.005	U	0.005	U	0.054	U	0.005	U
4-Isopropyltoluene	100	500	mg/kg dry	0.005	U	0.004	U	0.004	U	0.061	U	0.005	U	0.005	U	0.005	U	0.054	U	0.005	U
4-Methyl-2-Pentanone	0.4	50	mg/kg dry	0.01	U	0.009	U	0.009	U	0.244	U	0.009	U	0.009	U	0.009	U	0.216	U	0.009	U
Acetone	6	50	mg/kg dry	0.013		0.074		0.009	U	0.298	B	0.019		0.009	U	0.036		0.216	U	0.026	
Benzene	2	200	mg/kg dry	0.005	U	0.004	U	0.004	U	0.061	U	0.005	U	0.005	U	0.005	U	1.68		0.005	U
Bromobenzene	100	1,000	mg/kg dry	0.005	U	0.004	U	0.004	U	0.061	U	0.005	U	0.005	U	0.005	U	0.054	U	0.005	U
Bromochloromethane	NA	NA	mg/kg dry	0.005	U	0.004	U	0.004	U	0.061	U	0.005	U	0.005	U	0.005	U	0.054	U	0.005	U
Bromodichloromethane	0.1	0.1	mg/kg dry	0.005	U	0.004	U	0.004	U	0.061	U	0.005	U	0.005	U	0.005	U	0.054	U	0.005	U
Bromoform	0.1	1	mg/kg dry	0.005	U	0.004	U	0.004	U	0.061	U	0.005	U	0.005	U	0.005	U	0.054	U	0.005	U
Bromomethane	0.5	0.5	mg/kg dry	0.01	U	0.009	U	0.009	U	0.122	U	0.009	U	0.009	U	0.009	U	0.108	U	0.009	U
Carbon Disulfide	100	1,000	mg/kg dry	0.005	U	0.004	U	0.004	U	0.061	U	0.005	U	0.005	U	0.005	U	0.054	U	0.005	U
Carbon Tetrachloride	5	5	mg/kg dry	0.005	U	0.004	U	0.004	U	0.061	U	0.005	U	0.005	U	0.005	U	0.054	U	0.005	U
Chlorobenzene	1	3	mg/kg dry	0.005	U	0.004	U	0.004	U	0.061	U	0.005	U	0.005	U	0.005	U	0.054	U	0.005	U
Chloroethane	100	1,000	mg/kg dry	0.01	U	0.009	U	0.009	U	0.122	U	0.009	U	0.009	U	0.009	U	0.108	U	0.009	U
Chloroform	0.2	0.2	mg/kg dry	0.005	U	0.004	U	0.004	U	0.061	U	0.005	U	0.005	U	0.005	U	0.054	U	0.005	U
Chloromethane	100	1,000	mg/kg dry	0.01	U	0.009	U	0.009	U	0.122	U	0.009	U	0.009	U	0.009	U	0.108	U	0.009	U
cis-1,2-Dichloroethene	0.1	0.1	mg/kg dry	0.005	U	0.004	U	0.004	U	0.061	U	0.005	U	0.005	U	0.005	U	0.054	U	0.005	U
cis-1,3-Dichloropropene	0.01	0.1	mg/kg dry	0.005	U	0.004	U	0.004	U	0.061	U	0.005	U	0.005	U	0.005	U	0.054	U	0.005	U
Dibromochloromethane	0.005	0.03	mg/kg dry	0.002	U	0.002	U	0.002	U	0.061	U	0.002	U	0.002	U	0.002	U	0.054	U	0.002	U
Dibromomethane	500	5000	mg/kg dry	0.005	U	0.004	U	0.004	U	0.061	U	0.005	U	0.005	U	0.005	U	0.054	U	0.005	U
Dichlorodifluoromethane	1,000	10,000	mg/kg dry	0.01	U	0.009	U	0.009	U	0.061	U	0.009	U	0.009	U	0.009	U	0.054	U	0.009	U
Diethyl Ether	100	1,000	mg/kg dry	0.005	U	0.004	U	0.004	U	0.061	U	0.005	U	0.005	U	0.005	U	0.054	U	0.005	U
Di-isopropyl ether	100	1,000	mg/kg dry	0.005	U	0.004	U	0.004	U	0.061	U	0.005	U	0.005	U	0.005	U	0.054	U	0.005	U
Ethyl tertiary-butyl ether	NA	NA	mg/kg dry	0.005	U	0.004	U	0.004	U	0.061	U	0.005	U	0.005	U	0.005	U	0.054	U	0.005	U
Ethylbenzene	40	1,000	mg/kg dry	0.005	U	0.004	U	0.004	U	0.061	U	0.005	U	0.005	U	0.005	U	0.123		0.005	U
Hexachlorobutadiene	30	100	mg/kg dry	0.005	U	0.004	U	0.004	U	0.061	U	0.005	U	0.005	U	0.005	U	0.054	U	0.005	U
Isopropylbenzene	1,000	10,000	mg/kg dry	0.005	U	0.004	U	0.004	U	0.139		0.005	U	0.005	U	0.005	U	0.054	U	0.005	U
Methyl tert-Butyl Ether	0.1	100	mg/kg dry	0.005	U	0.004	U	0.004	U	0.061	U	0.005	U	0.005	U	0.005	U	0.054	U	0.005	U
Methylene Chloride	0.1	4	mg/kg dry	0.01	U	0.009	U	0.009	U	0.244	U	0.009	U	0.009	U	0.009	U	0.216	U	0.009	U
Naphthalene	4	20	mg/kg dry	0.005	U	0.004	U	0.004	U	1.48		0.005	U	0.005	U	0.005	U	0.208		0.005	U
n-Butylbenzene	100	500	mg/kg dry	0.005	U	0.004	U	0.004	U	3.8		0.005	U	0.005	U	0.005	U	0.063		0.005	U
n-Propylbenzene	100	1,000	mg/kg dry	0.005	U	0.004	U	0.004	U	0.351		0.005	U	0.005	U	0.005	U	0.054	U	0.005	U
sec-Butylbenzene	100	500	mg/kg dry	0.005	U	0.004	U	0.004	U	2.88		0.005	U	0.005	U	0.005	U	0.054	U	0.005	U
Styrene	3	4	mg/kg dry	0.005	U	0.004	U	0.004	U	0.061	U	0.005	U	0.005	U	0.005	U	0.054	U	0.005	U
tert-Butylbenzene	100	1,000	mg/kg dry	0.005	U	0.004	U	0.004	U	0.315		0.005	U	0.005	U	0.005	U	0.054			

Table 2
Polychlorinated Biphenyls
Union Square - Somerville, MA

Client Sample No.				PB-1 0.5-12.5'	PB-2 2-14'	PB-3 1-13'	PB-4 1.5-13.5'	PB-5 1-13'	PB-7 1-13'	PB-8 2-6'	PB-9 1-9'	PB-10 1-9'
Client Sample Depth				08/18/2014	08/12/2014	08/19/2014	08/13/2014	08/07/2014	08/08/2014	08/14/2014	08/11/2014	08/15/2014
Sample Date				1408387-02	1408202-05	1408387-03	1408317-02	1408144-03	1408202-01	1408317-03	1408202-02	1408349-01
Lab Sample ID	2014-RCS1	2014-RCS2	Units									

8082A PCBs																					
Aroclor 1016	1	4	mg/kg dry	0.053	U	0.062	U	0.056	U	0.057	U	0.054	U	0.053	U	0.054	U	0.054	U	0.054	U
Aroclor 1221	1	4	mg/kg dry	0.053	U	0.062	U	0.056	U	0.057	U	0.054	U	0.053	U	0.054	U	0.054	U	0.054	U
Aroclor 1232	1	4	mg/kg dry	0.053	U	0.062	U	0.056	U	0.057	U	0.054	U	0.053	U	0.054	U	0.054	U	0.054	U
Aroclor 1242	1	4	mg/kg dry	0.053	U	0.062	U	0.056	U	0.057	U	0.054	U	0.053	U	0.054	U	0.054	U	0.054	U
Aroclor 1248	1	4	mg/kg dry	0.053	U	0.062	U	0.056	U	0.057	U	0.054	U	0.053	U	0.054	U	0.054	U	0.054	U
Aroclor 1254	1	4	mg/kg dry	0.053	U	0.062	U	0.056	U	0.057	U	0.054	U	0.053	U	0.054	U	0.054	U	0.054	U
Aroclor 1260	1	4	mg/kg dry	0.053	U	0.062	U	0.056	U	0.057	U	0.054	U	0.053	U	0.054	U	0.054	U	0.054	U
Aroclor 1262	1	4	mg/kg dry	0.053	U	0.062	U	0.056	U	0.057	U	0.054	U	0.053	U	0.054	U	0.054	U	0.054	U
Aroclor 1268	1	4	mg/kg dry	0.053	U	0.062	U	0.056	U	0.057	U	0.054	U	0.053	U	0.054	U	0.054	U	0.054	U

Table 3
Semivolatile Organic Compounds
Union Square - Somerville, MA

Client Sample No. Client Sample Depth Sample Date Lab Sample ID	2014-RCS1	2014-RCS2	Units	PB-1 0.5-12.5' 08/18/2014 1408387-02	PB-2 2-14' 08/12/2014 1408202-05	PB-3 1-13' 08/19/2014 1408387-03	PB-4 1.5-13.5' 08/13/2014 1408317-02	PB-5 1-13' 08/07/2014 1408144-03	PB-7 1-13' 08/08/2014 1408202-01	PB-8 2-6' 08/14/2014 1408317-03	PB-9 1-9' 08/11/2014 1408202-02	PB-10 1-9' 08/15/2014 1408349-01
8270D SVOCs												
1,2,4-Trichlorobenzene	2	6	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
1,2-Dichlorobenzene	9	100	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
1,3-Dichlorobenzene	3	200	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
1,4-Dichlorobenzene	0.7	1	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
2,4,5-Trichlorophenol	4	600	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
2,4,6-Trichlorophenol	0.7	20	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
2,4-Dichlorophenol	0.7	40	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
2,4-Dimethylphenol	0.7	100	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
2,4-Dinitrophenol	3	50	mg/kg dry	1.8 U	2.19 U	1.93 U	1.89 U	1.92 U	1.76 U	1.79 U	1.89 U	1.82 U
2,4-Dinitrotoluene	0.7	10	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
2,6-Dinitrotoluene	100	1,000	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
2-Chloronaphthalene	1,000	10,000	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
2-Chlorophenol	0.7	100	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
2-Methylnaphthalene	0.7	80	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
2-Methylphenol	500	5,000	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
2-Nitrophenol	100	1,000	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
3,3'-Dichlorobenzidine	3	20	mg/kg dry	0.719 U	0.876 U	0.773 U	0.757 U	0.767 U	0.705 U	0.717 U	0.755 U	0.727 U
3+4-Methylphenol	500	5,000	mg/kg dry	0.719 U	0.876 U	0.773 U	0.757 U	0.767 U	0.705 U	0.717 U	0.755 U	0.727 U
4-Bromophenyl-phenylether	100	1,000	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
4-Chloroaniline	1	3	mg/kg dry	0.719 U	0.876 U	0.773 U	0.757 U	0.767 U	0.705 U	0.717 U	0.755 U	0.727 U
4-Nitrophenol	100	1,000	mg/kg dry	1.8 U	2.19 U	1.93 U	1.89 U	1.92 U	1.76 U	1.79 U	1.89 U	1.82 U
Acenaphthene	4	3,000	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
Acenaphthylene	1	10	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
Acetophenone	1,000	10,000	mg/kg dry	0.719 U	0.876 U	0.773 U	0.757 U	0.767 U	0.705 U	0.717 U	0.755 U	0.727 U
Aniline	1,000	10,000	mg/kg dry	1.8 U	2.19 U	1.93 U	1.89 U	1.92 U	1.76 U	1.79 U	1.89 U	1.82 U
Anthracene	1,000	3,000	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
Azobenzene	50	500	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
Benzo(a)anthracene	7	40	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
Benzo(a)pyrene	2	7	mg/kg dry	0.18 U	0.231 U	0.193 U	0.189 U	0.192 U	0.176 U	0.179 U	0.189 U	0.182 U
Benzo(b)fluoranthene	7	40	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
Benzo(g,h,i)perylene	1,000	3,000	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
Benzo(k)fluoranthene	70	400	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
bis(2-Chloroethoxy)methane	500	5,000	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
bis(2-Chloroethyl)ether	0.7	0.7	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
bis(2-chloroisopropyl)Ether	0.7	0.7	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
bis(2-Ethylhexyl)phthalate	90	600	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
Butylbenzylphthalate	100	1,000	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
Chrysene	70	400	mg/kg dry	0.18 U	0.219 U	0.193 U	0.189 U	0.192 U	0.176 U	0.179 U	0.203 U	0.182 U
Dibenzo(a,h)Anthracene	0.7	4	mg/kg dry	0.18 U	0.219 U	0.193 U	0.189 U	0.192 U	0.176 U	0.179 U	0.189 U	0.182 U
Dibenzofuran	100	1,000	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
Diethylphthalate	10	200	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
Dimethylphthalate	0.7	50	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
Di-n-butylphthalate	50	500	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
Di-n-octylphthalate	1,000	10,000	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
Fluoranthene	1,000	3,000	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
Fluorene	1,000	3,000	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
Hexachlorobenzene	0.7	0.8	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
Hexachlorobutadiene	30	100	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
Hexachloroethane	0.7	3	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
Indeno(1,2,3-cd)Pyrene	7	40	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
Isophorone	100	1,000	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
Naphthalene	4	20	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
Nitrobenzene	500	5,000	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
N-Nitrosodimethylamine	50	500	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
Pentachlorophenol	3	10	mg/kg dry	1.8 U	2.19 U	1.93 U	1.89 U	1.92 U	1.76 U	1.79 U	1.89 U	1.82 U
Phenanthrene	10	1,000	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
Phenol	1	20	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U
Pyrene	1,000	3,000	mg/kg dry	0.359 U	0.438 U	0.386 U	0.378 U	0.383 U	0.352 U	0.358 U	0.377 U	0.363 U

Table 5
Total Metals
Union Square, Somerville, MA

Client Sample No.				PB-1 0.5-12.5'	PB-2 2-14'	PB-3 1-13'	PB-4 1.5-13.5'	PB-5 1-13'	PB-7 1-13'	PB-8 2-6'	PB-9 1-9'	PB-10 1-9'
Client Sample Depth				08/18/2014	08/12/2014	08/19/2014	08/13/2014	08/07/2014	08/08/2014	08/14/2014	08/11/2014	08/15/2014
Sample Date				1408387-02	1408202-05	1408387-03	1408317-02	1408144-03	1408202-01	1408317-03	1408202-02	1408349-01
Lab Sample ID	2014-RCS1	2014-RCS2	Units									

Total Metals																					
Antimony	20	30	mg/kg dry	3.9	U	5.9	U	4.6	U	5.3	U	3.2	U	4.7	U	4.7	U	4.9	U		
Arsenic	20	20	mg/kg dry	4.2		3.8		3.5		3.4		2.8		3.2		3.6		4.6		3.1	
Barium	1,000	3,000	mg/kg dry	11.7		13.3		14.4		12.1		8.2		10.2		12.1		20.9		13.3	
Beryllium	90	200	mg/kg dry	0.18		0.3		0.17		0.23		0.18		0.18		0.26		0.25		0.16	
Cadmium	70	100	mg/kg dry	0.39	U	0.59	U	0.46	U	0.53	U	0.32	U	0.47	U	0.47	U	0.47	U	0.49	U
Chromium	100	200	mg/kg dry	8.9		11.2		7.2		8.5		10.9		9.1		8		15.5		8	
Lead	200	600	mg/kg dry	9		11.5		6.9		6.7		3.2	U	4.7	U	7.1		15		4.9	U
Mercury	20	30	mg/kg dry	0.165		0.038		0.037	U	0.028	U	0.01	U	0.029	U	0.035	U	0.044		0.027	U
Nickel	600	1,000	mg/kg dry	7.5		7.9		7.5		7.6		5.6		7.2		6.8		12.3		6.7	
Selenium	400	700	mg/kg dry	1.96	U, D	2.94	U, D	2.32	U, D	0.53	U, D	1.59	U, D	2.35	U, D	0.47	U, D	2.36	U, D	2.43	U, D
Silver	100	200	mg/kg dry	0.39	U	0.59	U	0.46	U	0.53	U	0.32	U	0.47	U	0.47	U	0.47	U	0.49	U
Thallium	8	60	mg/kg dry	0.98	U, D	1.47	U, D	1.16	U, D	0.53	U, D	0.8	U, D	1.17	U, D	0.47	U, D	1.18	U, D	1.21	U, D
Vanadium	400	700	mg/kg dry	12.4		16.5		11.7		12.9		9.7		13.7		14		30.6		10.6	
Zinc	1,000	3,000	mg/kg dry	21.3		22.7		16.7		19.3		12.6		14.8		18.9		126		12.8	

APPENDIX C
ANALYTICAL REPORT AND CHAIN OF CUSTODY



CERTIFICATE OF ANALYSIS

David Gorden
PEER Consultants, P.C.
99 S. Bedford Street
Burlington, MA 01803

RE: Union Square (5559)
ESS Laboratory Work Order Number: 1408144

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

REVIEWED

By ESS Laboratory at 2:49 pm, Aug 18, 2014

Analytical Summary

The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with NELAC Standards, A2LA and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408144

SAMPLE RECEIPT

The following samples were received on August 07, 2014 for the analyses specified on the enclosed Chain of Custody Record.

To achieve CAM compliance for MCP data, ESS Laboratory has performed and reviewed all QA/QC Requirements and Performance Standards listed in each method. Holding times and preservation have also been reviewed. All CAM requirements have been achieved unless noted in the project narrative.

Each method has been set-up in the laboratory to reach required MCP standards. The methods for aqueous VOA and Soil Methanol VOA have known limitations for certain analytes. The regulatory standards may not be achieved due to these limitations. In addition, for all methods, matrix interferences, dilutions, and %Solids may elevate method reporting limits above regulatory standards. ESS Laboratory can provide, upon request, a Data Checker (regulatory standard comparison spreadsheet) electronic deliverable which will highlight these exceedances.

For EPH soil samples, the aromatic range results have been corrected for identified cartridge contaminant in accordance with the CAM protocol.

Percent solid jars for samples 1408144-01, 1408144-04, and 1408144-05 were received on August 08, 2014

Percent solid for sample 1408144-02 was taken from sample 1408144-03 per client's request.

Lab Number	Sample Name	Matrix	Analysis
1408144-01	PB-7 1-7ft	Soil	8260B Low
1408144-02	PB-5 1-3ft	Soil	8260B Low
1408144-03	PB-5 1-13ft	Soil	6010C, 7010, 7471B, 8082A, 8270D, 9050A, EPH8270, MADEP-EPH, MADEP-VPH
1408144-04	PB-10 1-5ft	Soil	8260B Low
1408144-05	PB-3 1-7ft	Soil	8260B Low



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408144

PROJECT NARRATIVE

8270D Semi-Volatile Organic Compounds

CXH0104-CCV1 [Calibration required quadratic regression \(O\).](#)
2,4-Dinitrophenol (110% @ 80-120%), Pentachlorophenol (99% @ 80-120%)
CXH0104-CCV1 [Continuing Calibration recovery is above upper control limit \(C+\).](#)
Di-n-octylphthalate (121% @ 80-120%)

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

[Definitions of Quality Control Parameters](#)
[Semivolatile Organics Internal Standard Information](#)
[Semivolatile Organics Surrogate Information](#)
[Volatile Organics Internal Standard Information](#)
[Volatile Organics Surrogate Information](#)
[EPH and VPH Alkane Lists](#)



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408144

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

1010A - Flashpoint
6010C - ICP
6020A - ICP MS
7010 - Graphite Furnace
7196A - Hexavalent Chromium
7470A - Aqueous Mercury
7471B - Solid Mercury
8011 - EDB/DBCP/TCP
8015D - GRO/DRO
8081B - Pesticides
8082A - PCB
8100M - TPH
8151A - Herbicides
8260B - VOA
8270D - SVOA
8270D SIM - SVOA Low Level
9014 - Cyanide
9038 - Sulfate
9040C - Aqueous pH
9045D - Solid pH (Corrosivity)
9050A - Specific Conductance
9056A - Anions (IC)
9060A - TOC
9095B - Paint Filter
MADEP 04-1.1 - EPH / VPH

Prep Methods

3005A - Aqueous ICP Digestion
3020A - Aqueous Graphite Furnace / ICP MS Digestion
3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
3060A - Solid Hexavalent Chromium Digestion
3510C - Separatory Funnel Extraction
3520C - Liquid / Liquid Extraction
3540C - Manual Soxhlet Extraction
3541 - Automated Soxhlet Extraction
3546 - Microwave Extraction
3580A - Waste Dilution
5030B - Aqueous Purge and Trap
5030C - Aqueous Purge and Trap
5035 - Solid Purge and Trap



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408144

MassDEP Analytical Protocol Certification Form

MADEP RTN: _____

This form provides certification for the following data set: **1408144-01 through 1408144-05**

Matrices: () Ground Water/Surface Water (X) Soil/Sediment () Drinking Water () Air () Other: _____

CAM Protocol (check all that apply below):

(X) 8260 VOC CAM II A	(X) 7470/7471 Hg CAM III B	() MassDEP VPH CAM IV A	() 8081 Pesticides CAM V B	() 7196 Hex Cr CAM VI B	() MassDEP APH CAM IX A
(X) 8270 SVOC CAM II B	(X) 7010 Metals CAM III C	(X) MassDEP EPH CAM IV B	() 8151 Herbicides CAM V C	() 8330 Explosives CAM VIII A	() TO-15 VOC CAM IX B
(X) 6010 Metals CAM III A	() 6020 Metals CAM III D	(X) 8082 PCB CAM V A	() 6860 Perchlorate CAM VIII B	() 9014 Total Cyanide/PAC CAM VI A	

Affirmative responses to questions A through F are required for Presumptive Certainty's status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	Yes (X) No ()
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	Yes (X) No ()
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	Yes (X) No ()
D	Does the laboratory report comply with all the reporting requirements specified in the CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	Yes (X) No ()
E	a. VPH, EPH, APH and TO-15 only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	Yes (X) No ()
	b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	Yes () No ()
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	Yes (X) No ()

Responses to Questions G, H and I below are required for Presumptive Certainty's status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocols(s)? Data User Note: Data that achieve Presumptive Certainty's status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.	Yes (X) No ()*
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	Yes () No (X)*
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	Yes (X) No ()*

***All negative responses must be addressed in an attached laboratory narrative.**

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: Laurel Stoddard
Printed Name: Laurel Stoddard

Date: August 18, 2014
Position: Laboratory Director



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB-7 1-7ft
Date Sampled: 08/07/14 10:00
Percent Solids: 96
Initial Volume: 5.8
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1408144
ESS Laboratory Sample ID: 1408144-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1,2-Tetrachloroethane	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
1,1,1-Trichloroethane	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
1,1,2,2-Tetrachloroethane	ND (0.0018)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
1,1,2-Trichloroethane	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
1,1-Dichloroethane	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
1,1-Dichloroethene	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
1,1-Dichloropropene	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
1,2,3-Trichlorobenzene	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
1,2,3-Trichloropropane	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
1,2,4-Trichlorobenzene	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
1,2,4-Trimethylbenzene	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
1,2-Dibromo-3-Chloropropane	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
1,2-Dibromoethane	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
1,2-Dichlorobenzene	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
1,2-Dichloroethane	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
1,2-Dichloropropane	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
1,3,5-Trimethylbenzene	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
1,3-Dichlorobenzene	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
1,3-Dichloropropane	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
1,4-Dichlorobenzene	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
1,4-Dioxane	ND (0.0895)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
2,2-Dichloropropane	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
2-Butanone	ND (0.0089)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
2-Chlorotoluene	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
2-Hexanone	ND (0.0089)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
4-Chlorotoluene	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
4-Isopropyltoluene	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
4-Methyl-2-Pentanone	ND (0.0089)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
Acetone	ND (0.0089)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
Benzene	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
Bromobenzene	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
Bromochloromethane	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB-7 1-7ft
Date Sampled: 08/07/14 10:00
Percent Solids: 96
Initial Volume: 5.8
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1408144
ESS Laboratory Sample ID: 1408144-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Bromodichloromethane	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
Bromoform	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
Bromomethane	ND (0.0089)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
Carbon Disulfide	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
Carbon Tetrachloride	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
Chlorobenzene	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
Chloroethane	ND (0.0089)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
Chloroform	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
Chloromethane	ND (0.0089)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
cis-1,2-Dichloroethene	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
cis-1,3-Dichloropropene	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
Dibromochloromethane	ND (0.0018)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
Dibromomethane	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
Dichlorodifluoromethane	ND (0.0089)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
Diethyl Ether	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
Di-isopropyl ether	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
Ethyl tertiary-butyl ether	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
Ethylbenzene	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
Hexachlorobutadiene	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
Isopropylbenzene	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
Methyl tert-Butyl Ether	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
Methylene Chloride	ND (0.0089)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
Naphthalene	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
n-Butylbenzene	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
n-Propylbenzene	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
sec-Butylbenzene	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
Styrene	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
tert-Butylbenzene	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
Tertiary-amyl methyl ether	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
Tetrachloroethene	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
Tetrahydrofuran	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
Toluene	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB-7 1-7ft
Date Sampled: 08/07/14 10:00
Percent Solids: 96
Initial Volume: 5.8
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1408144
ESS Laboratory Sample ID: 1408144-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
trans-1,2-Dichloroethene	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
trans-1,3-Dichloropropene	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
Trichloroethene	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
Trichlorofluoromethane	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
Vinyl Chloride	ND (0.0089)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
Xylene O	ND (0.0045)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
Xylene P,M	ND (0.0089)		8260B Low		1	08/14/14 17:28	CXH0151	CH41425
Xylenes (Total)	ND (0.0089)		8260B Low		1	08/14/14 17:28		[CALC]

	<u>%Recovery</u>	<u>Qualifier</u>	<u>Limits</u>
Surrogate: 1,2-Dichloroethane-d4	116 %		70-130
Surrogate: 4-Bromofluorobenzene	100 %		70-130
Surrogate: Dibromofluoromethane	98 %		70-130
Surrogate: Toluene-d8	96 %		70-130



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

Client Sample ID: PB-5 1-3ft

Date Sampled: 08/07/14 11:00

Percent Solids: 89

Initial Volume: 6

Final Volume: 10

Extraction Method: 5035

ESS Laboratory Work Order: 1408144

ESS Laboratory Sample ID: 1408144-02

Sample Matrix: Soil

Units: mg/kg dry

Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1,2-Tetrachloroethane	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
1,1,1-Trichloroethane	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
1,1,2,2-Tetrachloroethane	ND (0.0019)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
1,1,2-Trichloroethane	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
1,1-Dichloroethane	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
1,1-Dichloroethene	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
1,1-Dichloropropene	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
1,2,3-Trichlorobenzene	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
1,2,3-Trichloropropane	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
1,2,4-Trichlorobenzene	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
1,2,4-Trimethylbenzene	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
1,2-Dibromo-3-Chloropropane	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
1,2-Dibromoethane	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
1,2-Dichlorobenzene	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
1,2-Dichloroethane	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
1,2-Dichloropropane	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
1,3,5-Trimethylbenzene	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
1,3-Dichlorobenzene	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
1,3-Dichloropropane	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
1,4-Dichlorobenzene	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
1,4-Dioxane	ND (0.0936)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
2,2-Dichloropropane	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
2-Butanone	ND (0.0094)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
2-Chlorotoluene	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
2-Hexanone	ND (0.0094)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
4-Chlorotoluene	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
4-Isopropyltoluene	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
4-Methyl-2-Pentanone	ND (0.0094)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
Acetone	0.0187 (0.0094)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
Benzene	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
Bromobenzene	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
Bromochloromethane	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB-5 1-3ft
Date Sampled: 08/07/14 11:00
Percent Solids: 89
Initial Volume: 6
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1408144
ESS Laboratory Sample ID: 1408144-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Bromodichloromethane	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
Bromoform	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
Bromomethane	ND (0.0094)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
Carbon Disulfide	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
Carbon Tetrachloride	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
Chlorobenzene	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
Chloroethane	ND (0.0094)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
Chloroform	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
Chloromethane	ND (0.0094)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
cis-1,2-Dichloroethene	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
cis-1,3-Dichloropropene	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
Dibromochloromethane	ND (0.0019)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
Dibromomethane	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
Dichlorodifluoromethane	ND (0.0094)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
Diethyl Ether	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
Di-isopropyl ether	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
Ethyl tertiary-butyl ether	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
Ethylbenzene	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
Hexachlorobutadiene	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
Isopropylbenzene	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
Methyl tert-Butyl Ether	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
Methylene Chloride	ND (0.0094)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
Naphthalene	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
n-Butylbenzene	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
n-Propylbenzene	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
sec-Butylbenzene	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
Styrene	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
tert-Butylbenzene	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
Tertiary-amyl methyl ether	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
Tetrachloroethene	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
Tetrahydrofuran	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
Toluene	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB-5 1-3ft
Date Sampled: 08/07/14 11:00
Percent Solids: 89
Initial Volume: 6
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1408144
ESS Laboratory Sample ID: 1408144-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
trans-1,2-Dichloroethene	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
trans-1,3-Dichloropropene	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
Trichloroethene	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
Trichlorofluoromethane	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
Vinyl Chloride	ND (0.0094)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
Xylene O	ND (0.0047)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
Xylene P,M	ND (0.0094)		8260B Low		1	08/14/14 17:56	CXH0151	CH41425
Xylenes (Total)	ND (0.0094)		8260B Low		1	08/14/14 17:56		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>116 %</i>		<i>70-130</i>
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>98 %</i>		<i>70-130</i>
<i>Surrogate: Dibromofluoromethane</i>	<i>98 %</i>		<i>70-130</i>
<i>Surrogate: Toluene-d8</i>	<i>97 %</i>		<i>70-130</i>



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB-5 1-13ft
Date Sampled: 08/07/14 11:00
Percent Solids: 89

ESS Laboratory Work Order: 1408144
ESS Laboratory Sample ID: 1408144-03
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Antimony	ND (3.2)		6010C		1	KJK	08/13/14 18:45	3.51	100	CH41302
Arsenic	2.8 (1.6)		6010C		1	KJK	08/13/14 18:45	3.51	100	CH41302
Barium	8.2 (1.6)		6010C		1	KJK	08/13/14 18:45	3.51	100	CH41302
Beryllium	0.18 (0.07)		6010C		1	KJK	08/13/14 18:45	3.51	100	CH41302
Cadmium	ND (0.32)		6010C		1	KJK	08/13/14 18:45	3.51	100	CH41302
Chromium	10.9 (0.6)		6010C		1	KJK	08/13/14 18:45	3.51	100	CH41302
Lead	ND (3.2)		6010C		1	KJK	08/13/14 18:45	3.51	100	CH41302
Mercury	ND (0.010)		7471B		1	KJK	08/13/14 16:40	2.21	40	CH41306
Nickel	5.6 (1.6)		6010C		1	KJK	08/13/14 18:45	3.51	100	CH41302
Selenium	ND (1.59)		7010		5	KJK	08/15/14 3:58	3.51	100	CH41302
Silver	ND (0.32)		6010C		1	KJK	08/13/14 18:45	3.51	100	CH41302
Thallium	ND (0.80)		7010		5	KJK	08/15/14 0:09	3.51	100	CH41302
Vanadium	9.7 (0.6)		6010C		1	KJK	08/13/14 18:45	3.51	100	CH41302
Zinc	12.6 (1.6)		6010C		1	KJK	08/13/14 18:45	3.51	100	CH41302



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB-5 1-13ft
Date Sampled: 08/07/14 11:00
Percent Solids: 89
Initial Volume: 20.7
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 1408144
ESS Laboratory Sample ID: 1408144-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: JXS
Prepared: 8/8/14 18:00
Cleanup Method: 3665A

8082A Polychlorinated Biphenyls (PCB)

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Aroclor 1016	ND (0.0540)		8082A		1	08/11/14 12:50		CH40803
Aroclor 1221	ND (0.0540)		8082A		1	08/11/14 12:50		CH40803
Aroclor 1232	ND (0.0540)		8082A		1	08/11/14 12:50		CH40803
Aroclor 1242	ND (0.0540)		8082A		1	08/11/14 12:50		CH40803
Aroclor 1248	ND (0.0540)		8082A		1	08/11/14 12:50		CH40803
Aroclor 1254	ND (0.0540)		8082A		1	08/11/14 12:50		CH40803
Aroclor 1260	ND (0.0540)		8082A		1	08/11/14 12:50		CH40803
Aroclor 1262	ND (0.0540)		8082A		1	08/11/14 12:50		CH40803
Aroclor 1268	ND (0.0540)		8082A		1	08/11/14 12:50		CH40803

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
Surrogate: Decachlorobiphenyl	83 %		30-150
Surrogate: Decachlorobiphenyl [2C]	84 %		30-150
Surrogate: Tetrachloro-m-xylene	81 %		30-150
Surrogate: Tetrachloro-m-xylene [2C]	90 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

Client Sample ID: PB-5 1-13ft

Date Sampled: 08/07/14 11:00

Percent Solids: 89

Initial Volume: 14.6

Final Volume: 0.5

Extraction Method: 3546

ESS Laboratory Work Order: 1408144

ESS Laboratory Sample ID: 1408144-03

Sample Matrix: Soil

Units: mg/kg dry

Analyst: IBM

Prepared: 8/12/14 9:30

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,2,4-Trichlorobenzene	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
1,2-Dichlorobenzene	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
1,3-Dichlorobenzene	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
1,4-Dichlorobenzene	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
2,4,5-Trichlorophenol	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
2,4,6-Trichlorophenol	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
2,4-Dichlorophenol	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
2,4-Dimethylphenol	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
2,4-Dinitrophenol	ND (1.92)		8270D		1	08/12/14 18:09	CXH0104	CH41206
2,4-Dinitrotoluene	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
2,6-Dinitrotoluene	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
2-Chloronaphthalene	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
2-Chlorophenol	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
2-Methylnaphthalene	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
2-Methylphenol	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
2-Nitrophenol	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
3,3'-Dichlorobenzidine	ND (0.767)		8270D		1	08/12/14 18:09	CXH0104	CH41206
3+4-Methylphenol	ND (0.767)		8270D		1	08/12/14 18:09	CXH0104	CH41206
4-Bromophenyl-phenylether	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
4-Chloroaniline	ND (0.767)		8270D		1	08/12/14 18:09	CXH0104	CH41206
4-Nitrophenol	ND (1.92)		8270D		1	08/12/14 18:09	CXH0104	CH41206
Acenaphthene	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
Acenaphthylene	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
Acetophenone	ND (0.767)		8270D		1	08/12/14 18:09	CXH0104	CH41206
Aniline	ND (1.92)		8270D		1	08/12/14 18:09	CXH0104	CH41206
Anthracene	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
Azobenzene	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
Benzo(a)anthracene	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
Benzo(a)pyrene	ND (0.192)		8270D		1	08/12/14 18:09	CXH0104	CH41206
Benzo(b)fluoranthene	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
Benzo(g,h,i)perylene	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
Benzo(k)fluoranthene	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB-5 1-13ft
Date Sampled: 08/07/14 11:00
Percent Solids: 89
Initial Volume: 14.6
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1408144
ESS Laboratory Sample ID: 1408144-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 8/12/14 9:30

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
bis(2-Chloroethoxy)methane	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
bis(2-Chloroethyl)ether	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
bis(2-chloroisopropyl)Ether	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
bis(2-Ethylhexyl)phthalate	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
Butylbenzylphthalate	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
Chrysene	ND (0.192)		8270D		1	08/12/14 18:09	CXH0104	CH41206
Dibenzo(a,h)Anthracene	ND (0.192)		8270D		1	08/12/14 18:09	CXH0104	CH41206
Dibenzofuran	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
Diethylphthalate	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
Dimethylphthalate	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
Di-n-butylphthalate	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
Di-n-octylphthalate	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
Fluoranthene	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
Fluorene	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
Hexachlorobenzene	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
Hexachlorobutadiene	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
Hexachloroethane	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
Indeno(1,2,3-cd)Pyrene	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
Isophorone	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
Naphthalene	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
Nitrobenzene	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
N-Nitrosodimethylamine	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
Pentachlorophenol	ND (1.92)		8270D		1	08/12/14 18:09	CXH0104	CH41206
Phenanthrene	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
Phenol	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206
Pyrene	ND (0.383)		8270D		1	08/12/14 18:09	CXH0104	CH41206

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	68 %		30-130
<i>Surrogate: 2,4,6-Tribromophenol</i>	88 %		30-130
<i>Surrogate: 2-Chlorophenol-d4</i>	68 %		30-130
<i>Surrogate: 2-Fluorobiphenyl</i>	71 %		30-130



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB-5 1-13ft
Date Sampled: 08/07/14 11:00
Percent Solids: 89
Initial Volume: 14.6
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1408144
ESS Laboratory Sample ID: 1408144-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 8/12/14 9:30

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Surrogate: 2-Fluorophenol		64 %		30-130				
Surrogate: Nitrobenzene-d5		69 %		30-130				
Surrogate: Phenol-d6		74 %		30-130				
Surrogate: p-Terphenyl-d14		104 %		30-130				



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB-5 1-13ft
Date Sampled: 08/07/14 11:00
Percent Solids: 89

ESS Laboratory Work Order: 1408144
ESS Laboratory Sample ID: 1408144-03
Sample Matrix: Soil

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Conductivity	WL 1350 (5)		9050A		1	JLK	08/14/14 12:26	umhos/cm	CH41416



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB-5 1-13ft
Date Sampled: 08/07/14 11:00
Percent Solids: 89
Initial Volume: 24.7
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1408144
ESS Laboratory Sample ID: 1408144-03
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 8/11/14 16:58

MADEP-EPH Extractable Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C18 Aliphatics1	ND (17.0)		MADEP-EPH		1	DPS	08/15/14 2:42	CXH0145	CH41105
C19-C36 Aliphatics1	ND (17.0)		MADEP-EPH		1	DPS	08/15/14 2:42	CXH0145	CH41105
C11-C22 Unadjusted Aromatics1	ND (17.0)		EPH8270		1	VSC	08/12/14 20:33	CXH0106	CH41105
C11-C22 Aromatics1,2	ND (17.0)		EPH8270			VSC	08/12/14 20:33		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1-Chlorooctadecane</i>	78 %		40-140
<i>Surrogate: 2-Bromonaphthalene</i>	92 %		40-140
<i>Surrogate: 2-Fluorobiphenyl</i>	85 %		40-140
<i>Surrogate: O-Terphenyl</i>	71 %		40-140



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB-5 1-13ft
Date Sampled: 08/07/14 11:00
Percent Solids: 89
Initial Volume: 18.2
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1408144
ESS Laboratory Sample ID: 1408144-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

MADEP-VPH Volatile Petroleum Hydrocarbon

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C10 Aromatics	ND (10.4)		MADEP-VPH		1	08/15/14 23:46	CXH0188	CH41601
C5-C8 Aliphatics1,2	ND (10.4)		MADEP-VPH		1	08/15/14 23:46		[CALC]
C9-C12 Aliphatics2,3	ND (10.4)		MADEP-VPH		1	08/15/14 23:46		[CALC]
Benzene	ND (0.21)		MADEP-VPH		1	08/15/14 23:46	CXH0188	CH41601
Ethylbenzene	ND (0.21)		MADEP-VPH		1	08/15/14 23:46	CXH0188	CH41601
Methyl tert-Butyl Ether	ND (0.05)		MADEP-VPH		1	08/15/14 23:46	CXH0188	CH41601
Naphthalene	ND (0.21)		MADEP-VPH		1	08/15/14 23:46	CXH0188	CH41601
Toluene	ND (0.21)		MADEP-VPH		1	08/15/14 23:46	CXH0188	CH41601
Xylene O	ND (0.21)		MADEP-VPH		1	08/15/14 23:46	CXH0188	CH41601
Xylene P,M	ND (0.42)		MADEP-VPH		1	08/15/14 23:46	CXH0188	CH41601
1:1 Methanol/Soil Ratio %D	21 (N/A)		MADEP-VPH			08/15/14 0:00		CH41601
Preservative:	MeOH - covered		MADEP-VPH					CH41601

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
Surrogate: 2,5-Dibromotoluene - FID	110 %		70-130
Surrogate: 2,5-Dibromotoluene - PID	110 %		70-130
Surrogate: Trifluorotoluene - FID	99 %		70-130
Surrogate: Trifluorotoluene - PID	100 %		70-130



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

Client Sample ID: PB-10 1-5ft

Date Sampled: 08/07/14 12:00

Percent Solids: 88

Initial Volume: 6.2

Final Volume: 10

Extraction Method: 5035

ESS Laboratory Work Order: 1408144

ESS Laboratory Sample ID: 1408144-04

Sample Matrix: Soil

Units: mg/kg dry

Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1,2-Tetrachloroethane	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
1,1,1-Trichloroethane	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
1,1,2,2-Tetrachloroethane	ND (0.0018)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
1,1,2-Trichloroethane	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
1,1-Dichloroethane	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
1,1-Dichloroethene	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
1,1-Dichloropropene	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
1,2,3-Trichlorobenzene	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
1,2,3-Trichloropropane	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
1,2,4-Trichlorobenzene	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
1,2,4-Trimethylbenzene	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
1,2-Dibromo-3-Chloropropane	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
1,2-Dibromoethane	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
1,2-Dichlorobenzene	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
1,2-Dichloroethane	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
1,2-Dichloropropane	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
1,3,5-Trimethylbenzene	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
1,3-Dichlorobenzene	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
1,3-Dichloropropane	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
1,4-Dichlorobenzene	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
1,4-Dioxane	ND (0.0920)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
2,2-Dichloropropane	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
2-Butanone	ND (0.0092)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
2-Chlorotoluene	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
2-Hexanone	ND (0.0092)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
4-Chlorotoluene	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
4-Isopropyltoluene	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
4-Methyl-2-Pentanone	ND (0.0092)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
Acetone	0.0264 (0.0092)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
Benzene	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
Bromobenzene	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
Bromochloromethane	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

Client Sample ID: PB-10 1-5ft

Date Sampled: 08/07/14 12:00

Percent Solids: 88

Initial Volume: 6.2

Final Volume: 10

Extraction Method: 5035

ESS Laboratory Work Order: 1408144

ESS Laboratory Sample ID: 1408144-04

Sample Matrix: Soil

Units: mg/kg dry

Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Bromodichloromethane	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
Bromoform	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
Bromomethane	ND (0.0092)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
Carbon Disulfide	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
Carbon Tetrachloride	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
Chlorobenzene	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
Chloroethane	ND (0.0092)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
Chloroform	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
Chloromethane	ND (0.0092)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
cis-1,2-Dichloroethene	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
cis-1,3-Dichloropropene	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
Dibromochloromethane	ND (0.0018)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
Dibromomethane	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
Dichlorodifluoromethane	ND (0.0092)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
Diethyl Ether	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
Di-isopropyl ether	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
Ethyl tertiary-butyl ether	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
Ethylbenzene	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
Hexachlorobutadiene	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
Isopropylbenzene	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
Methyl tert-Butyl Ether	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
Methylene Chloride	ND (0.0092)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
Naphthalene	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
n-Butylbenzene	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
n-Propylbenzene	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
sec-Butylbenzene	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
Styrene	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
tert-Butylbenzene	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
Tertiary-amyl methyl ether	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
Tetrachloroethene	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
Tetrahydrofuran	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
Toluene	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB-10 1-5ft
Date Sampled: 08/07/14 12:00
Percent Solids: 88
Initial Volume: 6.2
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1408144
ESS Laboratory Sample ID: 1408144-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
trans-1,2-Dichloroethene	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
trans-1,3-Dichloropropene	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
Trichloroethene	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
Trichlorofluoromethane	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
Vinyl Chloride	ND (0.0092)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
Xylene O	ND (0.0046)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
Xylene P,M	ND (0.0092)		8260B Low		1	08/14/14 18:24	CXH0151	CH41425
Xylenes (Total)	ND (0.0092)		8260B Low		1	08/14/14 18:24		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>113 %</i>		<i>70-130</i>
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>99 %</i>		<i>70-130</i>
<i>Surrogate: Dibromofluoromethane</i>	<i>98 %</i>		<i>70-130</i>
<i>Surrogate: Toluene-d8</i>	<i>96 %</i>		<i>70-130</i>



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB-3 1-7ft
Date Sampled: 08/07/14 13:00
Percent Solids: 90
Initial Volume: 6.3
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1408144
ESS Laboratory Sample ID: 1408144-05
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1,2-Tetrachloroethane	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
1,1,1-Trichloroethane	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
1,1,2,2-Tetrachloroethane	ND (0.0018)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
1,1,2-Trichloroethane	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
1,1-Dichloroethane	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
1,1-Dichloroethene	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
1,1-Dichloropropene	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
1,2,3-Trichlorobenzene	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
1,2,3-Trichloropropane	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
1,2,4-Trichlorobenzene	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
1,2,4-Trimethylbenzene	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
1,2-Dibromo-3-Chloropropane	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
1,2-Dibromoethane	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
1,2-Dichlorobenzene	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
1,2-Dichloroethane	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
1,2-Dichloropropane	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
1,3,5-Trimethylbenzene	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
1,3-Dichlorobenzene	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
1,3-Dichloropropane	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
1,4-Dichlorobenzene	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
1,4-Dioxane	ND (0.0880)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
2,2-Dichloropropane	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
2-Butanone	ND (0.0088)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
2-Chlorotoluene	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
2-Hexanone	ND (0.0088)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
4-Chlorotoluene	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
4-Isopropyltoluene	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
4-Methyl-2-Pentanone	ND (0.0088)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
Acetone	ND (0.0088)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
Benzene	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
Bromobenzene	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
Bromochloromethane	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB-3 1-7ft
Date Sampled: 08/07/14 13:00
Percent Solids: 90
Initial Volume: 6.3
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1408144
ESS Laboratory Sample ID: 1408144-05
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Bromodichloromethane	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
Bromoform	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
Bromomethane	ND (0.0088)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
Carbon Disulfide	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
Carbon Tetrachloride	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
Chlorobenzene	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
Chloroethane	ND (0.0088)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
Chloroform	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
Chloromethane	ND (0.0088)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
cis-1,2-Dichloroethene	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
cis-1,3-Dichloropropene	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
Dibromochloromethane	ND (0.0018)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
Dibromomethane	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
Dichlorodifluoromethane	ND (0.0088)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
Diethyl Ether	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
Di-isopropyl ether	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
Ethyl tertiary-butyl ether	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
Ethylbenzene	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
Hexachlorobutadiene	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
Isopropylbenzene	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
Methyl tert-Butyl Ether	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
Methylene Chloride	ND (0.0088)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
Naphthalene	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
n-Butylbenzene	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
n-Propylbenzene	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
sec-Butylbenzene	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
Styrene	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
tert-Butylbenzene	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
Tertiary-amyl methyl ether	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
Tetrachloroethene	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
Tetrahydrofuran	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
Toluene	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB-3 1-7ft
Date Sampled: 08/07/14 13:00
Percent Solids: 90
Initial Volume: 6.3
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1408144
ESS Laboratory Sample ID: 1408144-05
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
trans-1,2-Dichloroethene	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
trans-1,3-Dichloropropene	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
Trichloroethene	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
Trichlorofluoromethane	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
Vinyl Chloride	ND (0.0088)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
Xylene O	ND (0.0044)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
Xylene P,M	ND (0.0088)		8260B Low		1	08/14/14 18:53	CXH0151	CH41425
Xylenes (Total)	ND (0.0088)		8260B Low		1	08/14/14 18:53		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	117 %		70-130
<i>Surrogate: 4-Bromofluorobenzene</i>	96 %		70-130
<i>Surrogate: Dibromofluoromethane</i>	98 %		70-130
<i>Surrogate: Toluene-d8</i>	97 %		70-130



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408144

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

Total Metals

Batch CH41302 - 3050B

Blank

Antimony	ND	5.0	mg/kg wet
Arsenic	ND	2.5	mg/kg wet
Barium	ND	2.5	mg/kg wet
Beryllium	ND	0.11	mg/kg wet
Cadmium	ND	0.50	mg/kg wet
Chromium	ND	1.0	mg/kg wet
Lead	ND	5.0	mg/kg wet
Nickel	ND	2.5	mg/kg wet
Selenium	ND	2.50	mg/kg wet
Silver	ND	0.50	mg/kg wet
Thallium	ND	1.25	mg/kg wet
Vanadium	ND	1.0	mg/kg wet
Zinc	ND	2.5	mg/kg wet

LCS

Antimony	144	16.7	mg/kg wet	129.0	112	80-120
Arsenic	85.7	8.3	mg/kg wet	88.40	97	80-120
Barium	197	8.3	mg/kg wet	210.0	94	80-120
Beryllium	54.3	0.37	mg/kg wet	55.80	97	80-120
Cadmium	131	1.67	mg/kg wet	143.0	91	80-120
Chromium	83.3	3.3	mg/kg wet	86.80	96	80-120
Lead	96.4	16.7	mg/kg wet	97.90	98	80-120
Nickel	240	8.3	mg/kg wet	236.0	102	80-120
Selenium	122	83.3	mg/kg wet	127.0	96	80-120
Silver	63.4	1.67	mg/kg wet	66.20	96	80-120
Thallium	138	41.7	mg/kg wet	140.0	98	80-120
Vanadium	151	3.3	mg/kg wet	157.0	96	80-120
Zinc	119	8.3	mg/kg wet	130.0	91	80-120

LCS Dup

Antimony	140	16.7	mg/kg wet	129.0	108	80-120	3	20
Arsenic	79.8	8.3	mg/kg wet	88.40	90	80-120	7	20
Barium	186	8.3	mg/kg wet	210.0	88	80-120	6	20
Beryllium	51.3	0.37	mg/kg wet	55.80	92	80-120	6	20
Cadmium	124	1.67	mg/kg wet	143.0	87	80-120	5	20
Chromium	79.2	3.3	mg/kg wet	86.80	91	80-120	5	20
Lead	92.1	16.7	mg/kg wet	97.90	94	80-120	5	20
Nickel	230	8.3	mg/kg wet	236.0	97	80-120	4	20
Selenium	118	83.3	mg/kg wet	127.0	93	80-120	4	20
Silver	59.6	1.67	mg/kg wet	66.20	90	80-120	6	20
Thallium	128	41.7	mg/kg wet	140.0	91	80-120	7	20
Vanadium	145	3.3	mg/kg wet	157.0	92	80-120	4	20
Zinc	112	8.3	mg/kg wet	130.0	86	80-120	5	20

Batch CH41306 - 7471A

Blank



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408144

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

Total Metals

Batch CH41306 - 7471A

Mercury	ND	0.033	mg/kg wet							

LCS

Mercury	7.89	1.41	mg/kg wet	9.030		87	80-120			

LCS Dup

Mercury	8.93	1.65	mg/kg wet	9.030		99	80-120	12	20	

5035/8260B Volatile Organic Compounds / Low Level

Batch CH41425 - 5035

Blank

1,1,1,2-Tetrachloroethane	ND	0.0050	mg/kg wet							
1,1,1-Trichloroethane	ND	0.0050	mg/kg wet							
1,1,2,2-Tetrachloroethane	ND	0.0020	mg/kg wet							
1,1,2-Trichloroethane	ND	0.0050	mg/kg wet							
1,1-Dichloroethane	ND	0.0050	mg/kg wet							
1,1-Dichloroethene	ND	0.0050	mg/kg wet							
1,1-Dichloropropene	ND	0.0050	mg/kg wet							
1,2,3-Trichlorobenzene	ND	0.0050	mg/kg wet							
1,2,3-Trichloropropane	ND	0.0050	mg/kg wet							
1,2,4-Trichlorobenzene	ND	0.0050	mg/kg wet							
1,2,4-Trimethylbenzene	ND	0.0050	mg/kg wet							
1,2-Dibromo-3-Chloropropane	ND	0.0050	mg/kg wet							
1,2-Dibromoethane	ND	0.0050	mg/kg wet							
1,2-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,2-Dichloroethane	ND	0.0050	mg/kg wet							
1,2-Dichloropropane	ND	0.0050	mg/kg wet							
1,3,5-Trimethylbenzene	ND	0.0050	mg/kg wet							
1,3-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,3-Dichloropropane	ND	0.0050	mg/kg wet							
1,4-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,4-Dioxane	ND	0.100	mg/kg wet							
2,2-Dichloropropane	ND	0.0050	mg/kg wet							
2-Butanone	ND	0.0100	mg/kg wet							
2-Chlorotoluene	ND	0.0050	mg/kg wet							
2-Hexanone	ND	0.0100	mg/kg wet							
4-Chlorotoluene	ND	0.0050	mg/kg wet							
4-Isopropyltoluene	ND	0.0050	mg/kg wet							
4-Methyl-2-Pentanone	ND	0.0100	mg/kg wet							
Acetone	ND	0.0100	mg/kg wet							
Benzene	ND	0.0050	mg/kg wet							
Bromobenzene	ND	0.0050	mg/kg wet							
Bromochloromethane	ND	0.0050	mg/kg wet							
Bromodichloromethane	ND	0.0050	mg/kg wet							
Bromoform	ND	0.0050	mg/kg wet							
Bromomethane	ND	0.0100	mg/kg wet							



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1408144

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

5035/8260B Volatile Organic Compounds / Low Level

Batch CH41425 - 5035

Carbon Disulfide	ND	0.0050	mg/kg wet							
Carbon Tetrachloride	ND	0.0050	mg/kg wet							
Chlorobenzene	ND	0.0050	mg/kg wet							
Chloroethane	ND	0.0100	mg/kg wet							
Chloroform	ND	0.0050	mg/kg wet							
Chloromethane	ND	0.0100	mg/kg wet							
cis-1,2-Dichloroethene	ND	0.0050	mg/kg wet							
cis-1,3-Dichloropropene	ND	0.0050	mg/kg wet							
Dibromochloromethane	ND	0.0020	mg/kg wet							
Dibromomethane	ND	0.0050	mg/kg wet							
Dichlorodifluoromethane	ND	0.0100	mg/kg wet							
Diethyl Ether	ND	0.0050	mg/kg wet							
Di-isopropyl ether	ND	0.0050	mg/kg wet							
Ethyl tertiary-butyl ether	ND	0.0050	mg/kg wet							
Ethylbenzene	ND	0.0050	mg/kg wet							
Hexachlorobutadiene	ND	0.0050	mg/kg wet							
Isopropylbenzene	ND	0.0050	mg/kg wet							
Methyl tert-Butyl Ether	ND	0.0050	mg/kg wet							
Methylene Chloride	ND	0.0100	mg/kg wet							
Naphthalene	ND	0.0050	mg/kg wet							
n-Butylbenzene	ND	0.0050	mg/kg wet							
n-Propylbenzene	ND	0.0050	mg/kg wet							
sec-Butylbenzene	ND	0.0050	mg/kg wet							
Styrene	ND	0.0050	mg/kg wet							
tert-Butylbenzene	ND	0.0050	mg/kg wet							
Tertiary-amyl methyl ether	ND	0.0050	mg/kg wet							
Tetrachloroethene	ND	0.0050	mg/kg wet							
Tetrahydrofuran	ND	0.0050	mg/kg wet							
Toluene	ND	0.0050	mg/kg wet							
trans-1,2-Dichloroethene	ND	0.0050	mg/kg wet							
trans-1,3-Dichloropropene	ND	0.0050	mg/kg wet							
Trichloroethene	ND	0.0050	mg/kg wet							
Trichlorofluoromethane	ND	0.0050	mg/kg wet							
Vinyl Chloride	ND	0.0100	mg/kg wet							
Xylene O	ND	0.0050	mg/kg wet							
Xylene P,M	ND	0.0100	mg/kg wet							
Surrogate: 1,2-Dichloroethane-d4	0.0552		mg/kg wet	0.05000		110	70-130			
Surrogate: 4-Bromofluorobenzene	0.0482		mg/kg wet	0.05000		96	70-130			
Surrogate: Dibromofluoromethane	0.0475		mg/kg wet	0.05000		95	70-130			
Surrogate: Toluene-d8	0.0489		mg/kg wet	0.05000		98	70-130			

LCS

1,1,1,2-Tetrachloroethane	0.0520	0.0050	mg/kg wet	0.05000		104	70-130
1,1,1-Trichloroethane	0.0559	0.0050	mg/kg wet	0.05000		112	70-130
1,1,2,2-Tetrachloroethane	0.0535	0.0020	mg/kg wet	0.05000		107	70-130
1,1,2-Trichloroethane	0.0534	0.0050	mg/kg wet	0.05000		107	70-130



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1408144

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

5035/8260B Volatile Organic Compounds / Low Level

Batch CH41425 - 5035

1,1-Dichloroethane	0.0570	0.0050	mg/kg wet	0.05000		114	70-130			
1,1-Dichloroethene	0.0546	0.0050	mg/kg wet	0.05000		109	70-130			
1,1-Dichloropropene	0.0600	0.0050	mg/kg wet	0.05000		120	70-130			
1,2,3-Trichlorobenzene	0.0527	0.0050	mg/kg wet	0.05000		105	70-130			
1,2,3-Trichloropropane	0.0564	0.0050	mg/kg wet	0.05000		113	70-130			
1,2,4-Trichlorobenzene	0.0526	0.0050	mg/kg wet	0.05000		105	70-130			
1,2,4-Trimethylbenzene	0.0543	0.0050	mg/kg wet	0.05000		109	70-130			
1,2-Dibromo-3-Chloropropane	0.0494	0.0050	mg/kg wet	0.05000		99	70-130			
1,2-Dibromoethane	0.0532	0.0050	mg/kg wet	0.05000		106	70-130			
1,2-Dichlorobenzene	0.0503	0.0050	mg/kg wet	0.05000		101	70-130			
1,2-Dichloroethane	0.0549	0.0050	mg/kg wet	0.05000		110	70-130			
1,2-Dichloropropane	0.0575	0.0050	mg/kg wet	0.05000		115	70-130			
1,3,5-Trimethylbenzene	0.0568	0.0050	mg/kg wet	0.05000		114	70-130			
1,3-Dichlorobenzene	0.0519	0.0050	mg/kg wet	0.05000		104	70-130			
1,3-Dichloropropane	0.0563	0.0050	mg/kg wet	0.05000		113	70-130			
1,4-Dichlorobenzene	0.0514	0.0050	mg/kg wet	0.05000		103	70-130			
1,4-Dioxane	1.02	0.100	mg/kg wet	1.000		102	70-130			
2,2-Dichloropropane	0.0563	0.0050	mg/kg wet	0.05000		113	70-130			
2-Butanone	0.322	0.0100	mg/kg wet	0.2500		129	70-130			
2-Chlorotoluene	0.0536	0.0050	mg/kg wet	0.05000		107	70-130			
2-Hexanone	0.301	0.0100	mg/kg wet	0.2500		121	70-130			
4-Chlorotoluene	0.0543	0.0050	mg/kg wet	0.05000		109	70-130			
4-Isopropyltoluene	0.0544	0.0050	mg/kg wet	0.05000		109	70-130			
4-Methyl-2-Pentanone	0.299	0.0100	mg/kg wet	0.2500		120	70-130			
Acetone	0.308	0.0100	mg/kg wet	0.2500		123	70-130			
Benzene	0.0573	0.0050	mg/kg wet	0.05000		115	70-130			
Bromobenzene	0.0525	0.0050	mg/kg wet	0.05000		105	70-130			
Bromochloromethane	0.0510	0.0050	mg/kg wet	0.05000		102	70-130			
Bromodichloromethane	0.0567	0.0050	mg/kg wet	0.05000		113	70-130			
Bromoform	0.0431	0.0050	mg/kg wet	0.05000		86	70-130			
Bromomethane	0.0633	0.0100	mg/kg wet	0.05000		127	70-130			
Carbon Disulfide	0.0574	0.0050	mg/kg wet	0.05000		115	70-130			
Carbon Tetrachloride	0.0515	0.0050	mg/kg wet	0.05000		103	70-130			
Chlorobenzene	0.0507	0.0050	mg/kg wet	0.05000		101	70-130			
Chloroethane	0.0517	0.0100	mg/kg wet	0.05000		103	70-130			
Chloroform	0.0555	0.0050	mg/kg wet	0.05000		111	70-130			
Chloromethane	0.0585	0.0100	mg/kg wet	0.05000		117	70-130			
cis-1,2-Dichloroethene	0.0539	0.0050	mg/kg wet	0.05000		108	70-130			
cis-1,3-Dichloropropene	0.0565	0.0050	mg/kg wet	0.05000		113	70-130			
Dibromochloromethane	0.0454	0.0020	mg/kg wet	0.05000		91	70-130			
Dibromomethane	0.0532	0.0050	mg/kg wet	0.05000		106	70-130			
Dichlorodifluoromethane	0.0410	0.0100	mg/kg wet	0.05000		82	70-130			
Diethyl Ether	0.0581	0.0050	mg/kg wet	0.05000		116	70-130			
Di-isopropyl ether	0.0615	0.0050	mg/kg wet	0.05000		123	70-130			
Ethyl tertiary-butyl ether	0.0573	0.0050	mg/kg wet	0.05000		115	70-130			



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1408144

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

5035/8260B Volatile Organic Compounds / Low Level

Batch CH41425 - 5035

Ethylbenzene	0.0548	0.0050	mg/kg wet	0.05000		110	70-130			
Hexachlorobutadiene	0.0559	0.0050	mg/kg wet	0.05000		112	70-130			
Isopropylbenzene	0.0521	0.0050	mg/kg wet	0.05000		104	70-130			
Methyl tert-Butyl Ether	0.0530	0.0050	mg/kg wet	0.05000		106	70-130			
Methylene Chloride	0.0574	0.0100	mg/kg wet	0.05000		115	70-130			
Naphthalene	0.0486	0.0050	mg/kg wet	0.05000		97	70-130			
n-Butylbenzene	0.0575	0.0050	mg/kg wet	0.05000		115	70-130			
n-Propylbenzene	0.0534	0.0050	mg/kg wet	0.05000		107	70-130			
sec-Butylbenzene	0.0535	0.0050	mg/kg wet	0.05000		107	70-130			
Styrene	0.0552	0.0050	mg/kg wet	0.05000		110	70-130			
tert-Butylbenzene	0.0532	0.0050	mg/kg wet	0.05000		106	70-130			
Tertiary-amyl methyl ether	0.0518	0.0050	mg/kg wet	0.05000		104	70-130			
Tetrachloroethene	0.0511	0.0050	mg/kg wet	0.05000		102	70-130			
Tetrahydrofuran	0.0586	0.0050	mg/kg wet	0.05000		117	70-130			
Toluene	0.0555	0.0050	mg/kg wet	0.05000		111	70-130			
trans-1,2-Dichloroethene	0.0547	0.0050	mg/kg wet	0.05000		109	70-130			
trans-1,3-Dichloropropene	0.0471	0.0050	mg/kg wet	0.05000		94	70-130			
Trichloroethene	0.0525	0.0050	mg/kg wet	0.05000		105	70-130			
Trichlorofluoromethane	0.0521	0.0050	mg/kg wet	0.05000		104	70-130			
Vinyl Chloride	0.0634	0.0100	mg/kg wet	0.05000		127	70-130			
Xylene O	0.0533	0.0050	mg/kg wet	0.05000		107	70-130			
Xylene P,M	0.104	0.0100	mg/kg wet	0.1000		104	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0601		mg/kg wet	0.05000		120	70-130			
Surrogate: 4-Bromofluorobenzene	0.0553		mg/kg wet	0.05000		111	70-130			
Surrogate: Dibromofluoromethane	0.0556		mg/kg wet	0.05000		111	70-130			
Surrogate: Toluene-d8	0.0536		mg/kg wet	0.05000		107	70-130			

LCS Dup

1,1,1,2-Tetrachloroethane	0.0528	0.0050	mg/kg wet	0.05000		106	70-130	2	25	
1,1,1-Trichloroethane	0.0563	0.0050	mg/kg wet	0.05000		113	70-130	0.7	25	
1,1,2,2-Tetrachloroethane	0.0556	0.0020	mg/kg wet	0.05000		111	70-130	4	25	
1,1,2-Trichloroethane	0.0550	0.0050	mg/kg wet	0.05000		110	70-130	3	25	
1,1-Dichloroethane	0.0591	0.0050	mg/kg wet	0.05000		118	70-130	4	25	
1,1-Dichloroethene	0.0552	0.0050	mg/kg wet	0.05000		110	70-130	1	25	
1,1-Dichloropropene	0.0598	0.0050	mg/kg wet	0.05000		120	70-130	0.3	25	
1,2,3-Trichlorobenzene	0.0542	0.0050	mg/kg wet	0.05000		108	70-130	3	25	
1,2,3-Trichloropropane	0.0578	0.0050	mg/kg wet	0.05000		116	70-130	3	25	
1,2,4-Trichlorobenzene	0.0544	0.0050	mg/kg wet	0.05000		109	70-130	4	25	
1,2,4-Trimethylbenzene	0.0560	0.0050	mg/kg wet	0.05000		112	70-130	3	25	
1,2-Dibromo-3-Chloropropane	0.0528	0.0050	mg/kg wet	0.05000		106	70-130	7	25	
1,2-Dibromoethane	0.0525	0.0050	mg/kg wet	0.05000		105	70-130	1	25	
1,2-Dichlorobenzene	0.0514	0.0050	mg/kg wet	0.05000		103	70-130	2	25	
1,2-Dichloroethane	0.0547	0.0050	mg/kg wet	0.05000		109	70-130	0.3	25	
1,2-Dichloropropane	0.0573	0.0050	mg/kg wet	0.05000		115	70-130	0.5	25	
1,3,5-Trimethylbenzene	0.0585	0.0050	mg/kg wet	0.05000		117	70-130	3	25	
1,3-Dichlorobenzene	0.0528	0.0050	mg/kg wet	0.05000		106	70-130	2	25	



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

5035/8260B Volatile Organic Compounds / Low Level

Batch CH41425 - 5035

1,3-Dichloropropane	0.0576	0.0050	mg/kg wet	0.05000		115	70-130	2	25	
1,4-Dichlorobenzene	0.0519	0.0050	mg/kg wet	0.05000		104	70-130	1	25	
1,4-Dioxane	1.09	0.100	mg/kg wet	1.000		109	70-130	7	20	
2,2-Dichloropropane	0.0573	0.0050	mg/kg wet	0.05000		115	70-130	2	25	
2-Butanone	0.298	0.0100	mg/kg wet	0.2500		119	70-130	8	25	
2-Chlorotoluene	0.0548	0.0050	mg/kg wet	0.05000		110	70-130	2	25	
2-Hexanone	0.305	0.0100	mg/kg wet	0.2500		122	70-130	1	25	
4-Chlorotoluene	0.0566	0.0050	mg/kg wet	0.05000		113	70-130	4	25	
4-Isopropyltoluene	0.0558	0.0050	mg/kg wet	0.05000		112	70-130	3	25	
4-Methyl-2-Pentanone	0.301	0.0100	mg/kg wet	0.2500		120	70-130	0.6	25	
Acetone	0.304	0.0100	mg/kg wet	0.2500		122	70-130	1	25	
Benzene	0.0579	0.0050	mg/kg wet	0.05000		116	70-130	1	25	
Bromobenzene	0.0541	0.0050	mg/kg wet	0.05000		108	70-130	3	25	
Bromochloromethane	0.0507	0.0050	mg/kg wet	0.05000		101	70-130	0.5	25	
Bromodichloromethane	0.0579	0.0050	mg/kg wet	0.05000		116	70-130	2	25	
Bromoform	0.0450	0.0050	mg/kg wet	0.05000		90	70-130	4	25	
Bromomethane	0.0634	0.0100	mg/kg wet	0.05000		127	70-130	0.2	25	
Carbon Disulfide	0.0574	0.0050	mg/kg wet	0.05000		115	70-130	0.1	25	
Carbon Tetrachloride	0.0513	0.0050	mg/kg wet	0.05000		103	70-130	0.4	25	
Chlorobenzene	0.0524	0.0050	mg/kg wet	0.05000		105	70-130	3	25	
Chloroethane	0.0513	0.0100	mg/kg wet	0.05000		103	70-130	0.8	25	
Chloroform	0.0563	0.0050	mg/kg wet	0.05000		113	70-130	1	25	
Chloromethane	0.0589	0.0100	mg/kg wet	0.05000		118	70-130	0.7	25	
cis-1,2-Dichloroethene	0.0549	0.0050	mg/kg wet	0.05000		110	70-130	2	25	
cis-1,3-Dichloropropene	0.0573	0.0050	mg/kg wet	0.05000		115	70-130	2	25	
Dibromochloromethane	0.0473	0.0020	mg/kg wet	0.05000		95	70-130	4	25	
Dibromomethane	0.0543	0.0050	mg/kg wet	0.05000		109	70-130	2	25	
Dichlorodifluoromethane	0.0407	0.0100	mg/kg wet	0.05000		81	70-130	0.7	25	
Diethyl Ether	0.0593	0.0050	mg/kg wet	0.05000		119	70-130	2	25	
Di-isopropyl ether	0.0618	0.0050	mg/kg wet	0.05000		124	70-130	0.5	25	
Ethyl tertiary-butyl ether	0.0578	0.0050	mg/kg wet	0.05000		116	70-130	0.9	25	
Ethylbenzene	0.0560	0.0050	mg/kg wet	0.05000		112	70-130	2	25	
Hexachlorobutadiene	0.0580	0.0050	mg/kg wet	0.05000		116	70-130	4	25	
Isopropylbenzene	0.0536	0.0050	mg/kg wet	0.05000		107	70-130	3	25	
Methyl tert-Butyl Ether	0.0540	0.0050	mg/kg wet	0.05000		108	70-130	2	25	
Methylene Chloride	0.0602	0.0100	mg/kg wet	0.05000		120	70-130	5	25	
Naphthalene	0.0509	0.0050	mg/kg wet	0.05000		102	70-130	5	25	
n-Butylbenzene	0.0586	0.0050	mg/kg wet	0.05000		117	70-130	2	25	
n-Propylbenzene	0.0556	0.0050	mg/kg wet	0.05000		111	70-130	4	25	
sec-Butylbenzene	0.0549	0.0050	mg/kg wet	0.05000		110	70-130	3	25	
Styrene	0.0568	0.0050	mg/kg wet	0.05000		114	70-130	3	25	
tert-Butylbenzene	0.0540	0.0050	mg/kg wet	0.05000		108	70-130	2	25	
Tertiary-amyl methyl ether	0.0536	0.0050	mg/kg wet	0.05000		107	70-130	3	25	
Tetrachloroethene	0.0507	0.0050	mg/kg wet	0.05000		101	70-130	0.7	25	
Tetrahydrofuran	0.0585	0.0050	mg/kg wet	0.05000		117	70-130	0.1	25	



CERTIFICATE OF ANALYSIS

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

5035/8260B Volatile Organic Compounds / Low Level

Batch CH41425 - 5035

Toluene	0.0564	0.0050	mg/kg wet	0.05000		113	70-130	2	25	
trans-1,2-Dichloroethene	0.0552	0.0050	mg/kg wet	0.05000		110	70-130	0.9	25	
trans-1,3-Dichloropropene	0.0483	0.0050	mg/kg wet	0.05000		97	70-130	3	25	
Trichloroethene	0.0531	0.0050	mg/kg wet	0.05000		106	70-130	1	25	
Trichlorofluoromethane	0.0516	0.0050	mg/kg wet	0.05000		103	70-130	1	25	
Vinyl Chloride	0.0623	0.0100	mg/kg wet	0.05000		125	70-130	2	25	
Xylene O	0.0538	0.0050	mg/kg wet	0.05000		108	70-130	1	25	
Xylene P,M	0.106	0.0100	mg/kg wet	0.1000		106	70-130	2	25	
Surrogate: 1,2-Dichloroethane-d4	0.0588		mg/kg wet	0.05000		118	70-130			
Surrogate: 4-Bromofluorobenzene	0.0548		mg/kg wet	0.05000		110	70-130			
Surrogate: Dibromofluoromethane	0.0569		mg/kg wet	0.05000		114	70-130			
Surrogate: Toluene-d8	0.0537		mg/kg wet	0.05000		107	70-130			

8082A Polychlorinated Biphenyls (PCB)

Batch CH40803 - 3540C

Blank

Aroclor 1016	ND	0.0500	mg/kg wet							
Aroclor 1221	ND	0.0500	mg/kg wet							
Aroclor 1232	ND	0.0500	mg/kg wet							
Aroclor 1242	ND	0.0500	mg/kg wet							
Aroclor 1248	ND	0.0500	mg/kg wet							
Aroclor 1254	ND	0.0500	mg/kg wet							
Aroclor 1260	ND	0.0500	mg/kg wet							
Aroclor 1262	ND	0.0500	mg/kg wet							
Aroclor 1268	ND	0.0500	mg/kg wet							

Surrogate: Decachlorobiphenyl	0.0202		mg/kg wet	0.02500		81	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0200		mg/kg wet	0.02500		80	30-150			
Surrogate: Tetrachloro-m-xylene	0.0227		mg/kg wet	0.02500		91	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0216		mg/kg wet	0.02500		86	30-150			

LCS

Aroclor 1016	0.530	0.0500	mg/kg wet	0.5000		106	40-140			
Aroclor 1260	0.490	0.0500	mg/kg wet	0.5000		98	40-140			

Surrogate: Decachlorobiphenyl	0.0221		mg/kg wet	0.02500		88	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0231		mg/kg wet	0.02500		92	30-150			
Surrogate: Tetrachloro-m-xylene	0.0244		mg/kg wet	0.02500		98	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0246		mg/kg wet	0.02500		99	30-150			

LCS Dup

Aroclor 1016	0.481	0.0500	mg/kg wet	0.5000		96	40-140	10	30	
Aroclor 1260	0.468	0.0500	mg/kg wet	0.5000		94	40-140	4	30	

Surrogate: Decachlorobiphenyl	0.0211		mg/kg wet	0.02500		85	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0209		mg/kg wet	0.02500		84	30-150			
Surrogate: Tetrachloro-m-xylene	0.0223		mg/kg wet	0.02500		89	30-150			



CERTIFICATE OF ANALYSIS

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ESS Laboratory Work Order: 1408144

Quality Control Data

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8082A Polychlorinated Biphenyls (PCB)

Batch CH40803 - 3540C

Surrogate: Tetrachloro-m-xylene [2C] 0.0230 mg/kg wet 0.02500 92 30-150

8270D Semi-Volatile Organic Compounds

Batch CH41206 - 3546

Blank

1,2,4-Trichlorobenzene	ND	0.333	mg/kg wet
1,2-Dichlorobenzene	ND	0.333	mg/kg wet
1,3-Dichlorobenzene	ND	0.333	mg/kg wet
1,4-Dichlorobenzene	ND	0.333	mg/kg wet
2,4,5-Trichlorophenol	ND	0.333	mg/kg wet
2,4,6-Trichlorophenol	ND	0.333	mg/kg wet
2,4-Dichlorophenol	ND	0.333	mg/kg wet
2,4-Dimethylphenol	ND	0.333	mg/kg wet
2,4-Dinitrophenol	ND	1.67	mg/kg wet
2,4-Dinitrotoluene	ND	0.333	mg/kg wet
2,6-Dinitrotoluene	ND	0.333	mg/kg wet
2-Chloronaphthalene	ND	0.333	mg/kg wet
2-Chlorophenol	ND	0.333	mg/kg wet
2-Methylnaphthalene	ND	0.333	mg/kg wet
2-Methylphenol	ND	0.333	mg/kg wet
2-Nitrophenol	ND	0.333	mg/kg wet
3,3'-Dichlorobenzidine	ND	0.667	mg/kg wet
3+4-Methylphenol	ND	0.667	mg/kg wet
4-Bromophenyl-phenylether	ND	0.333	mg/kg wet
4-Chloroaniline	ND	0.667	mg/kg wet
4-Nitrophenol	ND	1.67	mg/kg wet
Acenaphthene	ND	0.333	mg/kg wet
Acenaphthylene	ND	0.333	mg/kg wet
Acetophenone	ND	0.667	mg/kg wet
Aniline	ND	1.67	mg/kg wet
Anthracene	ND	0.333	mg/kg wet
Azobenzene	ND	0.333	mg/kg wet
Benzo(a)anthracene	ND	0.333	mg/kg wet
Benzo(a)pyrene	ND	0.167	mg/kg wet
Benzo(b)fluoranthene	ND	0.333	mg/kg wet
Benzo(g,h,i)perylene	ND	0.333	mg/kg wet
Benzo(k)fluoranthene	ND	0.333	mg/kg wet
bis(2-Chloroethoxy)methane	ND	0.333	mg/kg wet
bis(2-Chloroethyl)ether	ND	0.333	mg/kg wet
bis(2-chloroisopropyl)Ether	ND	0.333	mg/kg wet
bis(2-Ethylhexyl)phthalate	ND	0.333	mg/kg wet
Butylbenzylphthalate	ND	0.333	mg/kg wet
Chrysene	ND	0.167	mg/kg wet
Dibenzo(a,h)Anthracene	ND	0.167	mg/kg wet



CERTIFICATE OF ANALYSIS

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

8270D Semi-Volatile Organic Compounds

Batch CH41206 - 3546

Dibenzofuran	ND	0.333	mg/kg wet							
Diethylphthalate	ND	0.333	mg/kg wet							
Dimethylphthalate	ND	0.333	mg/kg wet							
Di-n-butylphthalate	ND	0.333	mg/kg wet							
Di-n-octylphthalate	ND	0.333	mg/kg wet							
Fluoranthene	ND	0.333	mg/kg wet							
Fluorene	ND	0.333	mg/kg wet							
Hexachlorobenzene	ND	0.333	mg/kg wet							
Hexachlorobutadiene	ND	0.333	mg/kg wet							
Hexachloroethane	ND	0.333	mg/kg wet							
Indeno(1,2,3-cd)Pyrene	ND	0.333	mg/kg wet							
Isophorone	ND	0.333	mg/kg wet							
Naphthalene	ND	0.333	mg/kg wet							
Nitrobenzene	ND	0.333	mg/kg wet							
N-Nitrosodimethylamine	ND	0.333	mg/kg wet							
Pentachlorophenol	ND	1.67	mg/kg wet							
Phenanthrene	ND	0.333	mg/kg wet							
Phenol	ND	0.333	mg/kg wet							
Pyrene	ND	0.333	mg/kg wet							
Surrogate: 1,2-Dichlorobenzene-d4	2.59		mg/kg wet	3.333		78	30-130			
Surrogate: 2,4,6-Tribromophenol	4.56		mg/kg wet	5.000		91	30-130			
Surrogate: 2-Chlorophenol-d4	3.77		mg/kg wet	5.000		75	30-130			
Surrogate: 2-Fluorobiphenyl	2.66		mg/kg wet	3.333		80	30-130			
Surrogate: 2-Fluorophenol	3.67		mg/kg wet	5.000		73	30-130			
Surrogate: Nitrobenzene-d5	2.61		mg/kg wet	3.333		78	30-130			
Surrogate: Phenol-d6	4.02		mg/kg wet	5.000		80	30-130			
Surrogate: p-Terphenyl-d14	3.48		mg/kg wet	3.333		104	30-130			

LCS

1,2,4-Trichlorobenzene	2.72	0.333	mg/kg wet	3.333		82	40-140			
1,2-Dichlorobenzene	2.65	0.333	mg/kg wet	3.333		80	40-140			
1,3-Dichlorobenzene	2.58	0.333	mg/kg wet	3.333		77	40-140			
1,4-Dichlorobenzene	2.61	0.333	mg/kg wet	3.333		78	40-140			
2,4,5-Trichlorophenol	3.22	0.333	mg/kg wet	3.333		97	30-130			
2,4,6-Trichlorophenol	3.30	0.333	mg/kg wet	3.333		99	30-130			
2,4-Dichlorophenol	2.96	0.333	mg/kg wet	3.333		89	30-130			
2,4-Dimethylphenol	2.98	0.333	mg/kg wet	3.333		89	30-130			
2,4-Dinitrophenol	3.10	1.67	mg/kg wet	3.333		93	30-130			
2,4-Dinitrotoluene	3.19	0.333	mg/kg wet	3.333		96	40-140			
2,6-Dinitrotoluene	3.09	0.333	mg/kg wet	3.333		93	40-140			
2-Chloronaphthalene	2.58	0.333	mg/kg wet	3.333		78	40-140			
2-Chlorophenol	2.82	0.333	mg/kg wet	3.333		85	30-130			
2-Methylnaphthalene	2.84	0.333	mg/kg wet	3.333		85	40-140			
2-Methylphenol	2.98	0.333	mg/kg wet	3.333		89	30-130			
2-Nitrophenol	3.23	0.333	mg/kg wet	3.333		97	30-130			
3,3'-Dichlorobenzidine	2.65	0.667	mg/kg wet	3.333		80	40-140			



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1408144

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

8270D Semi-Volatile Organic Compounds

Batch CH41206 - 3546

3+4-Methylphenol	5.91	0.667	mg/kg wet	6.667		89	30-130			
4-Bromophenyl-phenylether	2.69	0.333	mg/kg wet	3.333		81	40-140			
4-Chloroaniline	2.11	0.667	mg/kg wet	3.333		63	40-140			
4-Nitrophenol	2.97	1.67	mg/kg wet	3.333		89	30-130			
Acenaphthene	2.78	0.333	mg/kg wet	3.333		84	40-140			
Acenaphthylene	2.74	0.333	mg/kg wet	3.333		82	40-140			
Acetophenone	2.77	0.667	mg/kg wet	3.333		83	40-140			
Aniline	2.12	1.67	mg/kg wet	3.333		64	40-140			
Anthracene	2.69	0.333	mg/kg wet	3.333		81	40-140			
Azobenzene	2.70	0.333	mg/kg wet	3.333		81	40-140			
Benzo(a)anthracene	2.90	0.333	mg/kg wet	3.333		87	40-140			
Benzo(a)pyrene	2.60	0.167	mg/kg wet	3.333		78	40-140			
Benzo(b)fluoranthene	2.87	0.333	mg/kg wet	3.333		86	40-140			
Benzo(g,h,i)perylene	2.87	0.333	mg/kg wet	3.333		86	40-140			
Benzo(k)fluoranthene	2.78	0.333	mg/kg wet	3.333		83	40-140			
bis(2-Chloroethoxy)methane	2.81	0.333	mg/kg wet	3.333		84	40-140			
bis(2-Chloroethyl)ether	2.86	0.333	mg/kg wet	3.333		86	40-140			
bis(2-chloroisopropyl)Ether	2.76	0.333	mg/kg wet	3.333		83	40-140			
bis(2-Ethylhexyl)phthalate	3.33	0.333	mg/kg wet	3.333		100	40-140			
Butylbenzylphthalate	3.22	0.333	mg/kg wet	3.333		97	40-140			
Chrysene	2.89	0.167	mg/kg wet	3.333		87	40-140			
Dibenzo(a,h)Anthracene	2.96	0.167	mg/kg wet	3.333		89	40-140			
Dibenzofuran	2.87	0.333	mg/kg wet	3.333		86	40-140			
Diethylphthalate	3.02	0.333	mg/kg wet	3.333		91	40-140			
Dimethylphthalate	2.86	0.333	mg/kg wet	3.333		86	40-140			
Di-n-butylphthalate	2.81	0.333	mg/kg wet	3.333		84	40-140			
Di-n-octylphthalate	3.32	0.333	mg/kg wet	3.333		100	40-140			
Fluoranthene	2.91	0.333	mg/kg wet	3.333		87	40-140			
Fluorene	2.84	0.333	mg/kg wet	3.333		85	40-140			
Hexachlorobenzene	2.69	0.333	mg/kg wet	3.333		81	40-140			
Hexachlorobutadiene	2.60	0.333	mg/kg wet	3.333		78	40-140			
Hexachloroethane	2.82	0.333	mg/kg wet	3.333		85	40-140			
Indeno(1,2,3-cd)Pyrene	2.89	0.333	mg/kg wet	3.333		87	40-140			
Isophorone	2.65	0.333	mg/kg wet	3.333		80	40-140			
Naphthalene	2.83	0.333	mg/kg wet	3.333		85	40-140			
Nitrobenzene	2.76	0.333	mg/kg wet	3.333		83	40-140			
N-Nitrosodimethylamine	2.81	0.333	mg/kg wet	3.333		84	40-140			
Pentachlorophenol	2.99	1.67	mg/kg wet	3.333		90	30-130			
Phenanthrene	2.62	0.333	mg/kg wet	3.333		79	40-140			
Phenol	2.65	0.333	mg/kg wet	3.333		80	30-130			
Pyrene	2.84	0.333	mg/kg wet	3.333		85	40-140			
Surrogate: 1,2-Dichlorobenzene-d4	2.79		mg/kg wet	3.333		84	30-130			
Surrogate: 2,4,6-Tribromophenol	4.76		mg/kg wet	5.000		95	30-130			
Surrogate: 2-Chlorophenol-d4	4.02		mg/kg wet	5.000		80	30-130			
Surrogate: 2-Fluorobiphenyl	2.92		mg/kg wet	3.333		88	30-130			



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408144

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

8270D Semi-Volatile Organic Compounds

Batch CH41206 - 3546

Surrogate: 2-Fluorophenol	3.95		mg/kg wet	5.000		79	30-130			
Surrogate: Nitrobenzene-d5	2.81		mg/kg wet	3.333		84	30-130			
Surrogate: Phenol-d6	4.31		mg/kg wet	5.000		86	30-130			
Surrogate: p-Terphenyl-d14	3.14		mg/kg wet	3.333		94	30-130			
LCS Dup										
1,2,4-Trichlorobenzene	2.56	0.333	mg/kg wet	3.333		77	40-140	6	30	
1,2-Dichlorobenzene	2.44	0.333	mg/kg wet	3.333		73	40-140	8	30	
1,3-Dichlorobenzene	2.37	0.333	mg/kg wet	3.333		71	40-140	9	30	
1,4-Dichlorobenzene	2.40	0.333	mg/kg wet	3.333		72	40-140	8	30	
2,4,5-Trichlorophenol	2.99	0.333	mg/kg wet	3.333		90	30-130	7	30	
2,4,6-Trichlorophenol	3.01	0.333	mg/kg wet	3.333		90	30-130	9	30	
2,4-Dichlorophenol	2.72	0.333	mg/kg wet	3.333		82	30-130	8	30	
2,4-Dimethylphenol	2.76	0.333	mg/kg wet	3.333		83	30-130	8	30	
2,4-Dinitrophenol	3.06	1.67	mg/kg wet	3.333		92	30-130	1	30	
2,4-Dinitrotoluene	3.06	0.333	mg/kg wet	3.333		92	40-140	4	30	
2,6-Dinitrotoluene	2.90	0.333	mg/kg wet	3.333		87	40-140	6	30	
2-Chloronaphthalene	2.27	0.333	mg/kg wet	3.333		68	40-140	13	30	
2-Chlorophenol	2.61	0.333	mg/kg wet	3.333		78	30-130	8	30	
2-Methylnaphthalene	2.63	0.333	mg/kg wet	3.333		79	40-140	7	30	
2-Methylphenol	2.76	0.333	mg/kg wet	3.333		83	30-130	8	30	
2-Nitrophenol	2.92	0.333	mg/kg wet	3.333		88	30-130	10	30	
3,3'-Dichlorobenzidine	2.66	0.667	mg/kg wet	3.333		80	40-140	0.5	30	
3+4-Methylphenol	5.49	0.667	mg/kg wet	6.667		82	30-130	7	30	
4-Bromophenyl-phenylether	2.56	0.333	mg/kg wet	3.333		77	40-140	5	30	
4-Chloroaniline	2.00	0.667	mg/kg wet	3.333		60	40-140	6	30	
4-Nitrophenol	2.57	1.67	mg/kg wet	3.333		77	30-130	15	30	
Acenaphthene	2.54	0.333	mg/kg wet	3.333		76	40-140	9	30	
Acenaphthylene	2.50	0.333	mg/kg wet	3.333		75	40-140	9	30	
Acetophenone	2.59	0.667	mg/kg wet	3.333		78	40-140	7	30	
Aniline	1.99	1.67	mg/kg wet	3.333		60	40-140	6	30	
Anthracene	2.64	0.333	mg/kg wet	3.333		79	40-140	2	30	
Azobenzene	2.56	0.333	mg/kg wet	3.333		77	40-140	5	30	
Benzo(a)anthracene	2.85	0.333	mg/kg wet	3.333		85	40-140	2	30	
Benzo(a)pyrene	2.65	0.167	mg/kg wet	3.333		80	40-140	2	30	
Benzo(b)fluoranthene	2.99	0.333	mg/kg wet	3.333		90	40-140	4	30	
Benzo(g,h,i)perylene	2.94	0.333	mg/kg wet	3.333		88	40-140	3	30	
Benzo(k)fluoranthene	2.75	0.333	mg/kg wet	3.333		82	40-140	0.9	30	
bis(2-Chloroethoxy)methane	2.60	0.333	mg/kg wet	3.333		78	40-140	8	30	
bis(2-Chloroethyl)ether	2.66	0.333	mg/kg wet	3.333		80	40-140	7	30	
bis(2-chloroisopropyl)Ether	2.56	0.333	mg/kg wet	3.333		77	40-140	8	30	
bis(2-Ethylhexyl)phthalate	3.24	0.333	mg/kg wet	3.333		97	40-140	3	30	
Butylbenzylphthalate	3.14	0.333	mg/kg wet	3.333		94	40-140	2	30	
Chrysene	2.80	0.167	mg/kg wet	3.333		84	40-140	3	30	
Dibenzo(a,h)Anthracene	3.05	0.167	mg/kg wet	3.333		91	40-140	3	30	



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1408144

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

8270D Semi-Volatile Organic Compounds

Batch CH41206 - 3546

Dibenzofuran	2.64	0.333	mg/kg wet	3.333		79	40-140	8	30	
Diethylphthalate	2.90	0.333	mg/kg wet	3.333		87	40-140	4	30	
Dimethylphthalate	2.67	0.333	mg/kg wet	3.333		80	40-140	7	30	
Di-n-butylphthalate	2.78	0.333	mg/kg wet	3.333		83	40-140	1	30	
Di-n-octylphthalate	3.35	0.333	mg/kg wet	3.333		100	40-140	1	30	
Fluoranthene	2.85	0.333	mg/kg wet	3.333		85	40-140	2	30	
Fluorene	2.64	0.333	mg/kg wet	3.333		79	40-140	7	30	
Hexachlorobenzene	2.60	0.333	mg/kg wet	3.333		78	40-140	3	30	
Hexachlorobutadiene	2.36	0.333	mg/kg wet	3.333		71	40-140	10	30	
Hexachloroethane	2.60	0.333	mg/kg wet	3.333		78	40-140	8	30	
Indeno(1,2,3-cd)Pyrene	2.98	0.333	mg/kg wet	3.333		89	40-140	3	30	
Isophorone	2.46	0.333	mg/kg wet	3.333		74	40-140	8	30	
Naphthalene	2.57	0.333	mg/kg wet	3.333		77	40-140	10	30	
Nitrobenzene	2.48	0.333	mg/kg wet	3.333		75	40-140	10	30	
N-Nitrosodimethylamine	2.52	0.333	mg/kg wet	3.333		76	40-140	11	30	
Pentachlorophenol	3.07	1.67	mg/kg wet	3.333		92	30-130	3	30	
Phenanthrene	2.57	0.333	mg/kg wet	3.333		77	40-140	2	30	
Phenol	2.45	0.333	mg/kg wet	3.333		74	30-130	8	30	
Pyrene	2.83	0.333	mg/kg wet	3.333		85	40-140	0.4	30	
Surrogate: 1,2-Dichlorobenzene-d4	2.44		mg/kg wet	3.333		73	30-130			
Surrogate: 2,4,6-Tribromophenol	4.48		mg/kg wet	5.000		90	30-130			
Surrogate: 2-Chlorophenol-d4	3.59		mg/kg wet	5.000		72	30-130			
Surrogate: 2-Fluorobiphenyl	2.57		mg/kg wet	3.333		77	30-130			
Surrogate: 2-Fluorophenol	3.51		mg/kg wet	5.000		70	30-130			
Surrogate: Nitrobenzene-d5	2.47		mg/kg wet	3.333		74	30-130			
Surrogate: Phenol-d6	3.86		mg/kg wet	5.000		77	30-130			
Surrogate: p-Terphenyl-d14	2.99		mg/kg wet	3.333		90	30-130			

Classical Chemistry

Batch CH41416 - General Preparation

Blank

Conductivity	ND	5	umhos/cm							

LCS

Conductivity	1380		umhos/cm	1411		98	90-110			

MADEP-EPH Extractable Petroleum Hydrocarbons

Batch CH41105 - 3546

Blank

C19-C36 Aliphatics1	ND	15.0	mg/kg wet							
C9-C18 Aliphatics1	ND	15.0	mg/kg wet							
Decane (C10)	ND	0.5	mg/kg wet							
Docosane (C22)	ND	0.5	mg/kg wet							
Dodecane (C12)	ND	0.5	mg/kg wet							
Eicosane (C20)	ND	0.5	mg/kg wet							



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1408144

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

MADEP-EPH Extractable Petroleum Hydrocarbons

Batch CH41105 - 3546

Hexacosane (C26)	ND	0.5	mg/kg wet							
Hexadecane (C16)	ND	0.5	mg/kg wet							
Hexatriacontane (C36)	ND	0.5	mg/kg wet							
Nonadecane (C19)	ND	0.5	mg/kg wet							
Nonane (C9)	ND	0.5	mg/kg wet							
Octacosane (C28)	ND	0.5	mg/kg wet							
Octadecane (C18)	ND	0.5	mg/kg wet							
Tetracosane (C24)	ND	0.5	mg/kg wet							
Tetradecane (C14)	ND	0.5	mg/kg wet							
triacontane (C30)	ND	0.5	mg/kg wet							

<i>Surrogate: 1-Chlorooctadecane</i>	<i>1.68</i>		mg/kg wet	<i>2.000</i>		<i>84</i>	<i>40-140</i>

Blank

2-Methylnaphthalene	ND	0.20	mg/kg wet				
Acenaphthene	ND	0.40	mg/kg wet				
Acenaphthylene	ND	0.20	mg/kg wet				
Anthracene	ND	0.40	mg/kg wet				
Benzo(a)anthracene	ND	0.40	mg/kg wet				
Benzo(a)pyrene	ND	0.40	mg/kg wet				
Benzo(b)fluoranthene	ND	0.40	mg/kg wet				
Benzo(g,h,i)perylene	ND	0.40	mg/kg wet				
Benzo(k)fluoranthene	ND	0.40	mg/kg wet				
C11-C22 Unadjusted Aromatics1	ND	15.0	mg/kg wet				
Chrysene	ND	0.40	mg/kg wet				
Dibenzo(a,h)Anthracene	ND	0.20	mg/kg wet				
Fluoranthene	ND	0.40	mg/kg wet				
Fluorene	ND	0.40	mg/kg wet				
Indeno(1,2,3-cd)Pyrene	ND	0.40	mg/kg wet				
Naphthalene	ND	0.40	mg/kg wet				
Phenanthrene	ND	0.40	mg/kg wet				
Pyrene	ND	0.40	mg/kg wet				

<i>Surrogate: 2-Bromonaphthalene</i>	<i>1.74</i>		mg/kg wet	<i>2.000</i>		<i>87</i>	<i>40-140</i>

<i>Surrogate: 2-Fluorobiphenyl</i>	<i>1.62</i>		mg/kg wet	<i>2.000</i>		<i>81</i>	<i>40-140</i>

<i>Surrogate: O-Terphenyl</i>	<i>1.45</i>		mg/kg wet	<i>2.000</i>		<i>73</i>	<i>40-140</i>

LCS

C19-C36 Aliphatics1	13.0	15.0	mg/kg wet	16.00		81	40-140
C9-C18 Aliphatics1	7.9	15.0	mg/kg wet	12.00		66	40-140
Decane (C10)	0.9	0.5	mg/kg wet	2.000		45	40-140
Docosane (C22)	1.4	0.5	mg/kg wet	2.000		72	40-140
Dodecane (C12)	0.9	0.5	mg/kg wet	2.000		47	40-140
Eicosane (C20)	1.4	0.5	mg/kg wet	2.000		70	40-140
Hexacosane (C26)	1.4	0.5	mg/kg wet	2.000		70	40-140
Hexadecane (C16)	1.2	0.5	mg/kg wet	2.000		62	40-140
Hexatriacontane (C36)	1.5	0.5	mg/kg wet	2.000		74	40-140
Nonadecane (C19)	1.4	0.5	mg/kg wet	2.000		69	40-140



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408144

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

MADEP-EPH Extractable Petroleum Hydrocarbons

Batch CH41105 - 3546

Nonane (C9)	0.7	0.5	mg/kg wet	2.000		35	30-140			
Octacosane (C28)	1.4	0.5	mg/kg wet	2.000		69	40-140			
Octadecane (C18)	1.3	0.5	mg/kg wet	2.000		67	40-140			
Tetracosane (C24)	1.4	0.5	mg/kg wet	2.000		72	40-140			
Tetradecane (C14)	1.1	0.5	mg/kg wet	2.000		54	40-140			
Triacotane (C30)	1.4	0.5	mg/kg wet	2.000		69	40-140			

<i>Surrogate: 1-Chlorooctadecane</i>	<i>1.12</i>		mg/kg wet	<i>2.000</i>		<i>56</i>	<i>40-140</i>			

LCS

2-Methylnaphthalene	1.27	0.20	mg/kg wet	2.000		64	40-140			
Acenaphthene	1.33	0.40	mg/kg wet	2.000		67	40-140			
Acenaphthylene	1.34	0.20	mg/kg wet	2.000		67	40-140			
Anthracene	1.35	0.40	mg/kg wet	2.000		68	40-140			
Benzo(a)anthracene	1.43	0.40	mg/kg wet	2.000		71	40-140			
Benzo(a)pyrene	1.58	0.40	mg/kg wet	2.000		79	40-140			
Benzo(b)fluoranthene	1.41	0.40	mg/kg wet	2.000		71	40-140			
Benzo(g,h,i)perylene	1.48	0.40	mg/kg wet	2.000		74	40-140			
Benzo(k)fluoranthene	1.37	0.40	mg/kg wet	2.000		69	40-140			
C11-C22 Unadjusted Aromatics1	30.6	15.0	mg/kg wet	34.00		90	40-140			
Chrysene	1.36	0.40	mg/kg wet	2.000		68	40-140			
Dibenzo(a,h)Anthracene	1.42	0.20	mg/kg wet	2.000		71	40-140			
Fluoranthene	1.40	0.40	mg/kg wet	2.000		70	40-140			
Fluorene	1.44	0.40	mg/kg wet	2.000		72	40-140			
Indeno(1,2,3-cd)Pyrene	1.50	0.40	mg/kg wet	2.000		75	40-140			
Naphthalene	1.20	0.40	mg/kg wet	2.000		60	40-140			
Phenanthrene	1.42	0.40	mg/kg wet	2.000		71	40-140			
Pyrene	1.41	0.40	mg/kg wet	2.000		71	40-140			

<i>Surrogate: 2-Bromonaphthalene</i>	<i>1.90</i>		mg/kg wet	<i>2.000</i>		<i>95</i>	<i>40-140</i>			

<i>Surrogate: 2-Fluorobiphenyl</i>	<i>1.88</i>		mg/kg wet	<i>2.000</i>		<i>94</i>	<i>40-140</i>			

<i>Surrogate: O-Terphenyl</i>	<i>1.29</i>		mg/kg wet	<i>2.000</i>		<i>65</i>	<i>40-140</i>			

LCS

2-Methylnaphthalene Breakthrough	0.0		%				0-5			
Naphthalene Breakthrough	0.0		%				0-5			

LCS Dup

C19-C36 Aliphatics1	16.8	15.0	mg/kg wet	16.00		105	40-140	25	25	
C9-C18 Aliphatics1	9.7	15.0	mg/kg wet	12.00		81	40-140	21	25	
Decane (C10)	1.0	0.5	mg/kg wet	2.000		49	40-140	9	25	
Docosane (C22)	1.7	0.5	mg/kg wet	2.000		84	40-140	14	25	
Dodecane (C12)	1.1	0.5	mg/kg wet	2.000		54	40-140	14	25	
Eicosane (C20)	1.6	0.5	mg/kg wet	2.000		81	40-140	14	25	
Hexacosane (C26)	1.6	0.5	mg/kg wet	2.000		80	40-140	14	25	
Hexadecane (C16)	1.4	0.5	mg/kg wet	2.000		72	40-140	14	25	
Hexatriacontane (C36)	1.7	0.5	mg/kg wet	2.000		84	40-140	12	25	
Nonadecane (C19)	1.6	0.5	mg/kg wet	2.000		80	40-140	15	25	



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408144

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

MADEP-EPH Extractable Petroleum Hydrocarbons

Batch CH41105 - 3546

Nonane (C9)	0.8	0.5	mg/kg wet	2.000		38	30-140	7	25	
Octacosane (C28)	1.6	0.5	mg/kg wet	2.000		78	40-140	12	25	
Octadecane (C18)	1.6	0.5	mg/kg wet	2.000		78	40-140	14	25	
Tetracosane (C24)	1.7	0.5	mg/kg wet	2.000		84	40-140	15	25	
Tetradecane (C14)	1.2	0.5	mg/kg wet	2.000		62	40-140	14	25	
Triacontane (C30)	1.6	0.5	mg/kg wet	2.000		78	40-140	12	25	

<i>Surrogate: 1-Chlorooctadecane</i>	<i>1.37</i>		mg/kg wet	<i>2.000</i>		<i>68</i>	<i>40-140</i>			

LCS Dup

2-Methylnaphthalene	1.27	0.20	mg/kg wet	2.000		63	40-140	0.3	20	
Acenaphthene	1.35	0.40	mg/kg wet	2.000		67	40-140	1	20	
Acenaphthylene	1.36	0.20	mg/kg wet	2.000		68	40-140	1	20	
Anthracene	1.36	0.40	mg/kg wet	2.000		68	40-140	0.6	20	
Benzo(a)anthracene	1.44	0.40	mg/kg wet	2.000		72	40-140	0.7	20	
Benzo(a)pyrene	1.61	0.40	mg/kg wet	2.000		80	40-140	2	20	
Benzo(b)fluoranthene	1.42	0.40	mg/kg wet	2.000		71	40-140	0.3	20	
Benzo(g,h,i)perylene	1.48	0.40	mg/kg wet	2.000		74	40-140	0.3	20	
Benzo(k)fluoranthene	1.38	0.40	mg/kg wet	2.000		69	40-140	0.4	20	
C11-C22 Unadjusted Aromatics1	31.2	15.0	mg/kg wet	34.00		92	40-140	2	25	
Chrysene	1.37	0.40	mg/kg wet	2.000		68	40-140	0.8	20	
Dibenzo(a,h)Anthracene	1.44	0.20	mg/kg wet	2.000		72	40-140	1	20	
Fluoranthene	1.44	0.40	mg/kg wet	2.000		72	40-140	3	20	
Fluorene	1.44	0.40	mg/kg wet	2.000		72	40-140	0.03	20	
Indeno(1,2,3-cd)Pyrene	1.50	0.40	mg/kg wet	2.000		75	40-140	0.4	20	
Naphthalene	1.20	0.40	mg/kg wet	2.000		60	40-140	0.4	20	
Phenanthrene	1.45	0.40	mg/kg wet	2.000		73	40-140	2	20	
Pyrene	1.46	0.40	mg/kg wet	2.000		73	40-140	3	20	

<i>Surrogate: 2-Bromonaphthalene</i>	<i>1.97</i>		mg/kg wet	<i>2.000</i>		<i>98</i>	<i>40-140</i>			

<i>Surrogate: 2-Fluorobiphenyl</i>	<i>1.92</i>		mg/kg wet	<i>2.000</i>		<i>96</i>	<i>40-140</i>			

<i>Surrogate: O-Terphenyl</i>	<i>1.27</i>		mg/kg wet	<i>2.000</i>		<i>63</i>	<i>40-140</i>			

LCS Dup

2-Methylnaphthalene Breakthrough	0.0		%				0-5		200	
Naphthalene Breakthrough	0.0		%				0-5		200	

MADEP-VPH Volatile Petroleum Hydrocarbon

Batch CH41601 - 5035

Blank

1,2,4-Trimethylbenzene	ND	0.20	mg/kg wet							
2,2,4-Trimethylpentane	ND	5.00	mg/kg wet							
2-Methylpentane	ND	5.00	mg/kg wet							
Benzene	ND	0.20	mg/kg wet							
C5-C8 Unadjusted Aliphatics	ND	10.0	mg/kg wet							
C9-C10 Aromatics	ND	10.0	mg/kg wet							
C9-C12 Unadjusted Aliphatics	ND	10.0	mg/kg wet							



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1408144

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

MADEP-VPH Volatile Petroleum Hydrocarbon

Batch CH41601 - 5035

Ethylbenzene	ND	0.20	mg/kg wet							
Methyl tert-Butyl Ether	ND	0.05	mg/kg wet							
Naphthalene	ND	0.20	mg/kg wet							
n-Butylcyclohexane	ND	5.00	mg/kg wet							
n-Decane	ND	5.00	mg/kg wet							
Nonane (C9)	ND	5.00	mg/kg wet							
Pentane	ND	5.00	mg/kg wet							
Toluene	ND	0.20	mg/kg wet							
Xylene O	ND	0.20	mg/kg wet							
Xylene P,M	ND	0.40	mg/kg wet							

Surrogate: 2,5-Dibromotoluene - FID	6.26		mg/kg wet	5.000		125	70-130
Surrogate: 2,5-Dibromotoluene - PID	6.33		mg/kg wet	5.000		127	70-130
Surrogate: Trifluorotoluene - FID	4.69		mg/kg wet	5.333		88	70-130
Surrogate: Trifluorotoluene - PID	4.77		mg/kg wet	5.333		89	70-130

LCS

1,2,4-Trimethylbenzene	10.0	0.20	mg/kg wet	10.00		100	70-130
2,2,4-Trimethylpentane	14.1	5.00	mg/kg wet	15.00		94	70-130
2-Methylpentane	16.4	5.00	mg/kg wet	15.00		109	70-130
Benzene	4.84	0.20	mg/kg wet	5.000		97	70-130
C5-C8 Unadjusted Aliphatics	44.3	10.0	mg/kg wet	40.00		111	70-130
C9-C10 Aromatics	9.47	10.0	mg/kg wet	10.00		95	70-130
C9-C12 Unadjusted Aliphatics	24.1	10.0	mg/kg wet	30.00		80	70-130
Ethylbenzene	4.91	0.20	mg/kg wet	5.000		98	70-130
Methyl tert-Butyl Ether	14.8	0.05	mg/kg wet	15.00		99	70-130
Naphthalene	9.06	0.20	mg/kg wet	10.00		91	70-130
n-Butylcyclohexane	7.30	5.00	mg/kg wet	10.00		73	70-130
n-Decane	8.29	5.00	mg/kg wet	10.00		83	70-130
Nonane (C9)	7.58	5.00	mg/kg wet	10.00		76	30-130
Pentane	12.2	5.00	mg/kg wet	10.00		122	70-130
Toluene	14.9	0.20	mg/kg wet	15.00		99	70-130
Xylene O	9.89	0.20	mg/kg wet	10.00		99	70-130
Xylene P,M	20.1	0.40	mg/kg wet	20.00		100	70-130

Surrogate: 2,5-Dibromotoluene - FID	5.32		mg/kg wet	5.000		106	70-130
Surrogate: 2,5-Dibromotoluene - PID	5.37		mg/kg wet	5.000		107	70-130
Surrogate: Trifluorotoluene - FID	4.87		mg/kg wet	5.333		91	70-130
Surrogate: Trifluorotoluene - PID	4.94		mg/kg wet	5.333		93	70-130

LCS Dup

1,2,4-Trimethylbenzene	10.2	0.20	mg/kg wet	10.00		102	70-130	2	25
2,2,4-Trimethylpentane	16.7	5.00	mg/kg wet	15.00		111	70-130	17	25
2-Methylpentane	15.8	5.00	mg/kg wet	15.00		105	70-130	4	25
Benzene	4.83	0.20	mg/kg wet	5.000		97	70-130	0.3	25
C5-C8 Unadjusted Aliphatics	46.4	10.0	mg/kg wet	40.00		116	70-130	5	25
C9-C10 Aromatics	9.65	10.0	mg/kg wet	10.00		96	70-130	2	25
C9-C12 Unadjusted Aliphatics	24.7	10.0	mg/kg wet	30.00		82	70-130	3	25



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1408144

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

MADEP-VPH Volatile Petroleum Hydrocarbon

Batch CH41601 - 5035

Ethylbenzene	4.87	0.20	mg/kg wet	5.000		97	70-130	0.8	25	
Methyl tert-Butyl Ether	14.9	0.05	mg/kg wet	15.00		99	70-130	1	25	
Naphthalene	9.74	0.20	mg/kg wet	10.00		97	70-130	7	25	
n-Butylcyclohexane	7.43	5.00	mg/kg wet	10.00		74	70-130	2	25	
n-Decane	8.27	5.00	mg/kg wet	10.00		83	70-130	0.1	25	
Nonane (C9)	8.08	5.00	mg/kg wet	10.00		81	30-130	6	25	
Pentane	11.9	5.00	mg/kg wet	10.00		119	70-130	2	25	
Toluene	14.9	0.20	mg/kg wet	15.00		99	70-130	0.02	25	
Xylene O	9.85	0.20	mg/kg wet	10.00		99	70-130	0.4	25	
Xylene P,M	19.9	0.40	mg/kg wet	20.00		100	70-130	0.8	25	

Surrogate: 2,5-Dibromotoluene - FID	5.47		mg/kg wet	5.000		109	70-130			
Surrogate: 2,5-Dibromotoluene - PID	5.50		mg/kg wet	5.000		110	70-130			
Surrogate: Trifluorotoluene - FID	4.81		mg/kg wet	5.333		90	70-130			
Surrogate: Trifluorotoluene - PID	4.90		mg/kg wet	5.333		92	70-130			



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408144

Notes and Definitions

Z-04	MeOH - covered
WL	Results obtained from a deionized water leach of the sample.
U	Analyte included in the analysis, but not detected
Q	Calibration required quadratic regression (Q).
D	Diluted.
C+	Continuing Calibration recovery is above upper control limit (C+).
ND	Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MDL	Method Detection Limit
MRL	Method Reporting Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
DL	Detection Limit
I/V	Initial Volume
F/V	Final Volume
§	Subcontracted analysis; see attached report
1	Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
2	Range result excludes concentrations of target analytes eluting in that range.
3	Range result excludes the concentration of the C9-C10 aromatic range.
Avg	Results reported as a mathematical average.
NR	No Recovery
[CALC]	Calculated Analyte
SUB	Subcontracted analysis; see attached report



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408144

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Department of Defense (DoD) Environmental Laboratory Accreditation Program (ELAP)

A2LA Accredited: Testing Cert# 2864.01
<http://www.a2la.org/scopepdf/2864-01.pdf>

Rhode Island Potable and Non Potable Water: LAI00179
<http://www.health.ri.gov/find/labs/analytical/ESS.pdf>

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750
http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutofStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI0002
<http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/documents/AllLabs.xls>

Massachusetts Potable and Non Potable Water: M-RI002
<http://public.dep.state.ma.us/Labcert/Labcert.aspx>

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424
<http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm>

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313
<http://www.wadsworth.org/labcert/elap/comm.html>

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006
http://datamine2.state.nj.us/DEP_Opra/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752
http://www.depweb.state.pa.us/portal/server.pt/community/labs/13780/laboratory_accreditation_program/590095

CHEMISTRY

A2LA Accredited: Testing Cert # 2864.01
Lead in Paint, Phthalates, Lead in Children's Metals Products (Including Jewelry)
<http://www.A2LA.org/dirsearchnew/newsearch.cfm>

CPSC ID# 1141
Lead Paint, Lead in Children's Metals Jewelry
<http://www.cpsc.gov/cgi-bin/labapplist.aspx>

Sample and Cooler Receipt Checklist

Attachment B
SOP 10_0001

Client: PEER Consultants
Client Project ID: _____
Shipped/Delivered Via: ESS Courier

ESS Project ID: 14080144
Date Project Due: 8/14/2014
Days For Project: 5 Day

8/13/14 14 8/8/14

Items to be checked upon receipt:

1. Air Bill Manifest Present?

☒ * No

Air No.:

2. Were Custody Seals Present?

☐ No

3. Were Custody Seals Intact?

☐ N/A

4. Is Radiation count < 100 CPM?

☐ Yes

5. Is a cooler present?

☐ Yes

Cooler Temp: 4.8

Iced With: Ice

6. Was COC included with samples?

☐ Yes

7. Was COC signed and dated by client?

☐ Yes

8. Does the COC match the sample

☐ Yes

9. Is COC complete and correct?

☐ Yes

10. Are the samples properly preserved?

☐ Yes

11. Proper sample containers used?

☐ Yes

12. Any air bubbles in the VOA vials?

☐ N/A

13. Holding times exceeded?

☐ No

14. Sufficient sample volumes?

☐ Yes

15. Any Subcontracting needed?

☐ No

16. Are ESS labels on correct containers?

☒ Yes ☐ No

17. Were samples received intact?

☒ Yes ☐ No

ESS Sample IDs: _____

Sub Lab: _____

Analysis: _____

TAT: _____

18. Was there need to call project manager to discuss status? If yes, please explain.

Added sample for 90 solid on #1, 4+5. No additional sample for #2 PB-B like PSR states NY 8/11/14

Who was called?: _____

By whom? _____

Sample Number	Properly Preserved	Container Type	# of Containers	Preservative
1	Yes	40 ml - VOA	1	MeOH
1	Yes	40 ml - VOA	2	other
1	Yes	8 oz Soil Jar	1	NP
2	Yes	40 ml - VOA	1	MeOH
2	Yes	40 ml - VOA	2	other
3	Yes	40 ml - VOA	1	MeOH
3	Yes	8 oz Soil Jar	2	NP
4	Yes	40 ml - VOA	1	MeOH
4	Yes	40 ml - VOA	2	other
4	Yes	8 oz Soil Jar	1	NP
5	Yes	40 ml - VOA	1	MeOH
5	Yes	40 ml - VOA	2	other
5	Yes	8 oz Soil Jar	1	NP

Completed By: [Signature]

Date/Time: 8/18/14 1807

Reviewed By: [Signature]

Date/Time: 8/8/14 1811

Sample and Cooler Receipt Checklist

Client: PEER Consultants

Client Project ID: _____

Shipped/Delivered Via: ESS Courier

ESS Project ID: 14080144

Date Project Due: 8/14/14

Days For Project: 5 Day

Items to be checked upon receipt:

1. Air Bill Manifest Present?

* No

Air No.:

2. Were Custody Seals Present?

No

3. Were Custody Seals Intact?

N/A

4. Is Radiation count < 100 CPM?

Yes

5. Is a cooler present?

Yes

Cooler Temp: 4.8Iced With: Ice

6. Was COC included with samples?

Yes

7. Was COC signed and dated by client?

Yes

8. Does the COC match the sample

Yes

9. Is COC complete and correct?

Yes

10. Are the samples properly preserved?

Yes

11. Proper sample containers used?

Yes

12. Any air bubbles in the VOA vials?

N/A

13. Holding times exceeded?

No

14. Sufficient sample volumes?

Yes

15. Any Subcontracting needed?

No

16. Are ESS labels on correct containers?

Yes/No

17. Were samples received intact?

Yes/No

ESS Sample IDs: _____

Sub Lab: _____

Analysis: _____

TAT: _____

18. Was there need to call project manager to discuss status? If yes, please explain.

COC = PB-5 8/7/14 1100

LL vials frozen @ 1512 rec'd 2-40ml MeOH PB-5 8/7/14 @ 1100

up
8/7/142-40ml H₂O

PB-5 8/7/14 @ 1100

1-40ml H₂O

PB-5 8/7/14 @ 1000

Who was called?: _____

By whom? _____

sample per
as PB-5 7/16

Sample Number	Properly Preserved	Container Type	# of Containers	Preservative
1	Yes	40 ml - VOA	1	MeOH
1	Yes	40 ml - VOA	2	other
2	Yes	40 ml - VOA	1	MeOH
2	Yes	40 ml - VOA	2	other
3	Yes	40 ml - VOA	1	MeOH
3	Yes	8 oz Soil Jar	2	NP
4	Yes	40 ml - VOA	1	MeOH
4	Yes	40 ml - VOA	2	other
5	Yes	40 ml - VOA	1	MeOH
5	Yes	40 ml - VOA	2	other

Completed By: HarrisDate/Time: 8/7/14 1553Reviewed By: [Signature]Date/Time: 8/7/14 1856

CHAIN OF CUSTODY

Page 1 of 1

Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston, RI 02910-2211
Tel. (401) 461-7181 Fax (401) 461-4486
www.csslaboratory.com

Turn Time	Standard	Other	Reporting Limits	ESS LAB PROJECT ID
If faster than 5 days, prior approval by laboratory is required # _____			Comm-97	1408144
Sease where samples were collected from:			and MCP 3-1	
(MA) RI CT NH NJ NY ME	Other		Electronic Deliverable	Yes ☒ No ☐
Is this project for any of the following:			Format: Excel ☒ Access _____	PDF ☒ Other _____
MA-MCP Navy			USACE	Other

[illegible]

1 (White) Lab Copy 2 (Yellow) Client Receipt 10/26/04 A

CHAIN OF CUSTODY

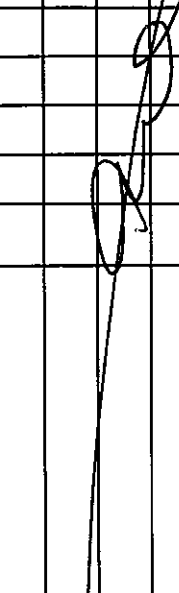
Division of Thielsch Engineering, Inc.

185 Frances Avenue, Cranston, RI 02910-2211

Tel. (401) 461-7181 Fax (401) 461-4486

www.esslaboratory.com

Turn Time	☒ Standard	Other _____		ESS LAB PROJECT ID
If faster than 5 days, prior approval by laboratory is required # _____				
State where samples were collected from:				
(MA) RI CT NH NJ NY ME	Other _____		Reporting Limits	com m-97 mcp ACS-1
Is this project for any of the following:		Electronic Deliverable	Yes ☒ No _____	
MA-MCP Navy	USACE	Format: Excel ☒ Access _____ PDF ☒ Other _____		

Co. Name		Project #		Project Name (20 Char. or less)		Write Required Analysis											
Contact Person		Address		PO#		Zip		Email Address		Sample Identification (20 Char. or less)		Pres Code		Number of Containers		Type of Containers	
ESS LAB Sample #	Date	Collection Time	COMP	GRAB	MATRIX	Sample Identification (20 Char. or less)		Pres Code		Number of Containers		Type of Containers					
1	8/7/14	1000		✓	S	PB-7		1		1		G		✓			
4	8/7/14	1200		✓	S	PB-10		1		1		G		✓			
5	8/7/14	1300		✓	S	PB-3		1		1		G		✓			
																	

	F-Filters
	O-Oil
	DW-Drinking Water
	SW-Surface Water
	GW-Ground Water
	WW-Waste Water
	D-Sludge
	SD-Solid
	S-Soil
	MATRIX:
Container Type:	V-VOA
	S-Sterile
	G-Glass
	P-Poly

	Yes	No	Internal Use Only
Cooler Present	☒	☐	

Seals Intact ☒ Yes ☐ No NA: ☐ Pickup

Cooler Temp 50.3
Technicians

Disinquired by: (Signature)	Date/Time	Received by: (Signature)

Relinquished by: (Signature)	Date/Time	Received by: (Signature)

Preservation Code 1-NP, 2-HCl, 3-H₂SO₄, 4-HNO₃, 5-NaOH, 6-MeOH, 7-Asorbic Acid, 8-ZnAct, 9-

Sampled by: dave gorden

Comments: * % solids for samples delivered to lab 8/17/14

Date/Time	Requisitioned by: Signature)

Date/Time	Relinquished by: (Signature)
10/1/2011	[Signature]

Date/Time	Received by: (Signature)

Date/Time	Received by: (Signature)

Date/Time

Date/Time

*By circling MA-MCP, client acknowledges samples were collected in accordance with MADEP CAM VII A

Please fax all changes to Chain of Custody in writing.

1 (White) Lab Copy 2 (Yellow) Client Receipt 10/26/04 A



CERTIFICATE OF ANALYSIS

David Gorden
PEER Consultants, P.C.
99 S. Bedford Street
Burlington, MA 01803

RE: Union Square (5559)
ESS Laboratory Work Order Number: 1408202

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

REVIEWED

By ESS Laboratory at 2:05 pm, Aug 19, 2014

Analytical Summary

The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with NELAC Standards, A2LA and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408202

SAMPLE RECEIPT

The following samples were received on August 12, 2014 for the analyses specified on the enclosed Chain of Custody Record.

To achieve CAM compliance for MCP data, ESS Laboratory has performed and reviewed all QA/QC Requirements and Performance Standards listed in each method. Holding times and preservation have also been reviewed. All CAM requirements have been achieved unless noted in the project narrative.

Each method has been set-up in the laboratory to reach required MCP standards. The methods for aqueous VOA and Soil Methanol VOA have known limitations for certain analytes. The regulatory standards may not be achieved due to these limitations. In addition, for all methods, matrix interferences, dilutions, and %Solids may elevate method reporting limits above regulatory standards. ESS Laboratory can provide, upon request, a Data Checker (regulatory standard comparison spreadsheet) electronic deliverable which will highlight these exceedances.

For EPH soil samples, the aromatic range results have been corrected for identified cartridge contaminant in accordance with the CAM protocol.

Percent solid for samples 1408202-03 was taken from sample 1408202-02 and 1408202-04 was taken from 1408202-05 per client's request.

The ending CCV for the Aromatic fraction of the EPH analysis associated with sample 1408202-02 exhibited compounds exceeding greater than 25% Difference. The sample was re-analyzed with similar results, and both sets of analyses are included in this report.

Lab Number	Sample Name	Matrix	Analysis
1408202-01	PB 7 1-13ft	Soil	6010C, 7010, 7471B, 8082A, 8270D, 9050A, EPH8270, MADEP-EPH, MADEP-VPH
1408202-02	PB 9 1-9ft	Soil	6010C, 7010, 7471B, 8082A, 8270D, 9050A, EPH8270, MADEP-EPH, MADEP-VPH
1408202-03	PB 9 5-7ft	Soil	8260B
1408202-04	PB 2 10-12ft	Soil	8260B Low
1408202-05	PB 2 2-14ft	Soil	6010C, 7010, 7471B, 8082A, 8270D, 9050A, EPH8270, MADEP-EPH, MADEP-VPH



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408202

PROJECT NARRATIVE

8270D Semi-Volatile Organic Compounds

CXH0123-CCV1 Calibration required quadratic regression (O).
2,4-Dinitrophenol (63% @ 80-120%), Pentachlorophenol (94% @ 80-120%)

CXH0123-CCV1 Continuing Calibration recovery is above upper control limit (C+).
Butylbenzylphthalate (122% @ 80-120%), Di-n-octylphthalate (121% @ 80-120%)

CXH0123-CCV1 Continuing Calibration recovery is below lower control limit (C-).
2,4-Dinitrophenol (63% @ 80-120%)

CXH0124-CCV1 Calibration required quadratic regression (O).
2,4-Dinitrophenol (85% @ 80-120%)

CXH0124-CCV1 Continuing Calibration recovery is below lower control limit (C-).
N-Nitrosodimethylamine (73% @ 80-120%)

CXH0128-CCV1 Calibration required quadratic regression (O).
2,4-Dinitrophenol (75% @ 80-120%), Pentachlorophenol (88% @ 80-120%)

CXH0128-CCV1 Continuing Calibration recovery is below lower control limit (C-).
2,4-Dinitrophenol (75% @ 80-120%)

MADEP-EPH Extractable Petroleum Hydrocarbons

CXH0165-CCV2 Continuing Calibration recovery is below lower control limit (C-).
Benzo(a)pyrene (69% @ 80-120%), Benzo(b)fluoranthene (79% @ 80-120%), Benzo(g,h,i)perylene (34% @ 80-120%), Benzo(k)fluoranthene (79% @ 80-120%), Dibenzo(a,h)Anthracene (42% @ 80-120%), Indeno(1,2,3-cd)Pyrene (40% @ 80-120%)

CXH0172-CCV2 Continuing Calibration recovery is below lower control limit (C-).
Benzo(a)pyrene (60% @ 80-120%), Benzo(b)fluoranthene (73% @ 80-120%), Benzo(g,h,i)perylene (24% @ 80-120%), Benzo(k)fluoranthene (72% @ 80-120%), Dibenzo(a,h)Anthracene (30% @ 80-120%), Indeno(1,2,3-cd)Pyrene (29% @ 80-120%)

Total Metals

CH41502-BS1 Blank Spike recovery is below lower control limit (B-).
Thallium (75% @ 79-121%)

No other observations noted.

End of Project Narrative.



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408202

DATA USABILITY LINKS

[Definitions of Quality Control Parameters](#)
[Semivolatile Organics Internal Standard Information](#)
[Semivolatile Organics Surrogate Information](#)
[Volatile Organics Internal Standard Information](#)
[Volatile Organics Surrogate Information](#)
[EPH and VPH Alkane Lists](#)

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

1010A - Flashpoint
6010C - ICP
6020A - ICP MS
7010 - Graphite Furnace
7196A - Hexavalent Chromium
7470A - Aqueous Mercury
7471B - Solid Mercury
8011 - EDB/DBCP/TCP
8015D - GRO/DRO
8081B - Pesticides
8082A - PCB
8100M - TPH
8151A - Herbicides
8260B - VOA
8270D - SVOA
8270D SIM - SVOA Low Level
9014 - Cyanide
9038 - Sulfate
9040C - Aqueous pH
9045D - Solid pH (Corrosivity)
9050A - Specific Conductance
9056A - Anions (IC)
9060A - TOC
9095B - Paint Filter
MADEP 04-1.1 - EPH / VPH

Prep Methods

3005A - Aqueous ICP Digestion
3020A - Aqueous Graphite Furnace / ICP MS Digestion
3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
3060A - Solid Hexavalent Chromium Digestion
3510C - Separatory Funnel Extraction
3520C - Liquid / Liquid Extraction
3540C - Manual Soxhlet Extraction
3541 - Automated Soxhlet Extraction
3546 - Microwave Extraction
3580A - Waste Dilution
5030B - Aqueous Purge and Trap
5030C - Aqueous Purge and Trap
5035 - Solid Purge and Trap



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408202

MassDEP Analytical Protocol Certification Form

MADEP RTN: _____

This form provides certification for the following data set: **1408202-01 through 1408202-05**

Matrices: ☐ Ground Water/Surface Water ☐ Soil/Sediment ☐ Drinking Water ☐ Air ☐ Other: _____

CAM Protocol (check all that apply below):

☐ 8260 VOC CAM II A	☐ 7470/7471 Hg CAM III B	☐ MassDEP VPH CAM IV A	☐ 8081 Pesticides CAM V B	☐ 7196 Hex Cr CAM VI B	☐ MassDEP APH CAM IX A
☐ 8270 SVOC CAM II B	☐ 7010 Metals CAM III C	☐ MassDEP EPH CAM IV B	☐ 8151 Herbicides CAM V C	☐ 8330 Explosives CAM VIII A	☐ TO-15 VOC CAM IX B
☐ 6010 Metals CAM III A	☐ 6020 Metals CAM III D	☐ 8082 PCB CAM V A	☐ 6860 Perchlorate CAM VIII B	☐ 9014 Total Cyanide/PAC CAM VI A	

Affirmative responses to questions A through F are required for Presumptive Certainty's status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	Yes ☐ No ☐
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	Yes ☐ No ☐
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	Yes ☐ No ☐
D	Does the laboratory report comply with all the reporting requirements specified in the CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	Yes ☐ No ☐
E	a. VPH, EPH, APH and TO-15 only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	Yes ☐ No ☐
	b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	Yes ☐ No ☐
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	Yes ☐ No ☐

Responses to Questions G, H and I below are required for Presumptive Certainty's status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocols(s)? <i>Data User Note: Data that achieve Presumptive Certainty's status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.</i>	Yes ☐ No ☐ *
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	Yes ☐ No ☐ *
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	Yes ☐ No ☐ *

****All negative responses must be addressed in an attached laboratory narrative.***

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: Laurel Stoddard
Printed Name: Laurel Stoddard

Date: August 19, 2014
Position: Laboratory Director



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB 7 1-13ft
Date Sampled: 08/08/14 12:05
Percent Solids: 92

ESS Laboratory Work Order: 1408202
ESS Laboratory Sample ID: 1408202-01
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Antimony	ND (4.7)		6010C		1	KJK	08/15/14 16:40	2.31	100	CH41502
Arsenic	3.2 (2.3)		6010C		1	KJK	08/15/14 16:40	2.31	100	CH41502
Barium	10.2 (2.3)		6010C		1	KJK	08/15/14 16:40	2.31	100	CH41502
Beryllium	0.18 (0.10)		6010C		1	KJK	08/15/14 16:40	2.31	100	CH41502
Cadmium	ND (0.47)		6010C		1	KJK	08/15/14 16:40	2.31	100	CH41502
Chromium	9.1 (0.9)		6010C		1	KJK	08/15/14 16:40	2.31	100	CH41502
Lead	ND (4.7)		6010C		1	KJK	08/15/14 16:40	2.31	100	CH41502
Mercury	ND (0.029)		7471B		1	NAR	08/15/14 13:31	0.75	40	CH41501
Nickel	7.2 (2.3)		6010C		1	KJK	08/15/14 16:40	2.31	100	CH41502
Selenium	ND (2.35)		7010		5	KJK	08/15/14 19:34	2.31	100	CH41502
Silver	ND (0.47)		6010C		1	KJK	08/15/14 16:40	2.31	100	CH41502
Thallium	ND (1.17)		7010		5	KJK	08/16/14 1:09	2.31	100	CH41502
Vanadium	13.7 (0.9)		6010C		1	KJK	08/15/14 16:40	2.31	100	CH41502
Zinc	14.8 (2.3)		6010C		1	KJK	08/15/14 16:40	2.31	100	CH41502



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB 7 1-13ft
Date Sampled: 08/08/14 12:05
Percent Solids: 92
Initial Volume: 20.6
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 1408202
ESS Laboratory Sample ID: 1408202-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: JXS
Prepared: 8/13/14 16:00
Cleanup Method: 3665A

8082A Polychlorinated Biphenyls (PCB)

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Aroclor 1016	ND (0.0527)		8082A		1	08/14/14 10:49		CH41205
Aroclor 1221	ND (0.0527)		8082A		1	08/14/14 10:49		CH41205
Aroclor 1232	ND (0.0527)		8082A		1	08/14/14 10:49		CH41205
Aroclor 1242	ND (0.0527)		8082A		1	08/14/14 10:49		CH41205
Aroclor 1248	ND (0.0527)		8082A		1	08/14/14 10:49		CH41205
Aroclor 1254	ND (0.0527)		8082A		1	08/14/14 10:49		CH41205
Aroclor 1260	ND (0.0527)		8082A		1	08/14/14 10:49		CH41205
Aroclor 1262	ND (0.0527)		8082A		1	08/14/14 10:49		CH41205
Aroclor 1268	ND (0.0527)		8082A		1	08/14/14 10:49		CH41205

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
Surrogate: Decachlorobiphenyl	86 %		30-150
Surrogate: Decachlorobiphenyl [2C]	77 %		30-150
Surrogate: Tetrachloro-m-xylene	91 %		30-150
Surrogate: Tetrachloro-m-xylene [2C]	88 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

Client Sample ID: PB 7 1-13ft

Date Sampled: 08/08/14 12:05

Percent Solids: 92

Initial Volume: 15.4

Final Volume: 0.5

Extraction Method: 3546

ESS Laboratory Work Order: 1408202

ESS Laboratory Sample ID: 1408202-01

Sample Matrix: Soil

Units: mg/kg dry

Analyst: IBM

Prepared: 8/13/14 11:56

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,2,4-Trichlorobenzene	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
1,2-Dichlorobenzene	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
1,3-Dichlorobenzene	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
1,4-Dichlorobenzene	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
2,4,5-Trichlorophenol	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
2,4,6-Trichlorophenol	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
2,4-Dichlorophenol	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
2,4-Dimethylphenol	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
2,4-Dinitrophenol	ND (1.76)		8270D		1	08/13/14 16:37	CXH0124	CH41207
2,4-Dinitrotoluene	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
2,6-Dinitrotoluene	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
2-Chloronaphthalene	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
2-Chlorophenol	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
2-Methylnaphthalene	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
2-Methylphenol	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
2-Nitrophenol	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
3,3'-Dichlorobenzidine	ND (0.705)		8270D		1	08/13/14 16:37	CXH0124	CH41207
3+4-Methylphenol	ND (0.705)		8270D		1	08/13/14 16:37	CXH0124	CH41207
4-Bromophenyl-phenylether	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
4-Chloroaniline	ND (0.705)		8270D		1	08/13/14 16:37	CXH0124	CH41207
4-Nitrophenol	ND (1.76)		8270D		1	08/13/14 16:37	CXH0124	CH41207
Acenaphthene	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
Acenaphthylene	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
Acetophenone	ND (0.705)		8270D		1	08/13/14 16:37	CXH0124	CH41207
Aniline	ND (1.76)		8270D		1	08/13/14 16:37	CXH0124	CH41207
Anthracene	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
Azobenzene	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
Benzo(a)anthracene	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
Benzo(a)pyrene	ND (0.176)		8270D		1	08/13/14 16:37	CXH0124	CH41207
Benzo(b)fluoranthene	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
Benzo(g,h,i)perylene	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
Benzo(k)fluoranthene	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB 7 1-13ft
Date Sampled: 08/08/14 12:05
Percent Solids: 92
Initial Volume: 15.4
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1408202
ESS Laboratory Sample ID: 1408202-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 8/13/14 11:56

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
bis(2-Chloroethoxy)methane	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
bis(2-Chloroethyl)ether	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
bis(2-chloroisopropyl)Ether	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
bis(2-Ethylhexyl)phthalate	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
Butylbenzylphthalate	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
Chrysene	ND (0.176)		8270D		1	08/13/14 16:37	CXH0124	CH41207
Dibenzo(a,h)Anthracene	ND (0.176)		8270D		1	08/13/14 16:37	CXH0124	CH41207
Dibenzofuran	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
Diethylphthalate	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
Dimethylphthalate	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
Di-n-butylphthalate	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
Di-n-octylphthalate	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
Fluoranthene	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
Fluorene	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
Hexachlorobenzene	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
Hexachlorobutadiene	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
Hexachloroethane	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
Indeno(1,2,3-cd)Pyrene	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
Isophorone	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
Naphthalene	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
Nitrobenzene	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
N-Nitrosodimethylamine	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
Pentachlorophenol	ND (1.76)		8270D		1	08/13/14 16:37	CXH0124	CH41207
Phenanthrene	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
Phenol	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207
Pyrene	ND (0.352)		8270D		1	08/13/14 16:37	CXH0124	CH41207

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	68 %		30-130
<i>Surrogate: 2,4,6-Tribromophenol</i>	83 %		30-130
<i>Surrogate: 2-Chlorophenol-d4</i>	70 %		30-130
<i>Surrogate: 2-Fluorobiphenyl</i>	79 %		30-130



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB 7 1-13ft
Date Sampled: 08/08/14 12:05
Percent Solids: 92
Initial Volume: 15.4
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1408202
ESS Laboratory Sample ID: 1408202-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 8/13/14 11:56

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Surrogate: 2-Fluorophenol		68 %		30-130				
Surrogate: Nitrobenzene-d5		73 %		30-130				
Surrogate: Phenol-d6		71 %		30-130				
Surrogate: p-Terphenyl-d14		86 %		30-130				



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB 7 1-13ft
Date Sampled: 08/08/14 12:05
Percent Solids: 92

ESS Laboratory Work Order: 1408202
ESS Laboratory Sample ID: 1408202-01
Sample Matrix: Soil

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Conductivity	WL 552 (5)		9050A		1	JLK	08/14/14 12:26	umhos/cm	CH41416



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB 7 1-13ft
Date Sampled: 08/08/14 12:05
Percent Solids: 92
Initial Volume: 24.6
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1408202
ESS Laboratory Sample ID: 1408202-01
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 8/14/14 14:15

MADEP-EPH Extractable Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C18 Aliphatics1	ND (16.5)		MADEP-EPH		1	DPS	08/15/14 17:01	CXH0145	CH41403
C19-C36 Aliphatics1	ND (16.5)		MADEP-EPH		1	DPS	08/15/14 17:01	CXH0145	CH41403
C11-C22 Unadjusted Aromatics1	ND (16.5)		EPH8270		1	VSC	08/14/14 23:16	CXH0198	CH41403
C11-C22 Aromatics1,2	ND (16.5)		EPH8270			VSC	08/14/14 23:16		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1-Chlorooctadecane</i>	85 %		40-140
<i>Surrogate: 2-Bromonaphthalene</i>	107 %		40-140
<i>Surrogate: 2-Fluorobiphenyl</i>	107 %		40-140
<i>Surrogate: O-Terphenyl</i>	88 %		40-140



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB 7 1-13ft
Date Sampled: 08/08/14 12:05
Percent Solids: 92
Initial Volume: 17.6
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1408202
ESS Laboratory Sample ID: 1408202-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

MADEP-VPH Volatile Petroleum Hydrocarbon

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C10 Aromatics	ND (10.1)		MADEP-VPH		1	08/16/14 2:38	CXH0188	CH41601
C5-C8 Aliphatics1,2	ND (10.1)		MADEP-VPH		1	08/16/14 2:38		[CALC]
C9-C12 Aliphatics2,3	ND (10.1)		MADEP-VPH		1	08/16/14 2:38		[CALC]
Benzene	ND (0.20)		MADEP-VPH		1	08/16/14 2:38	CXH0188	CH41601
Ethylbenzene	ND (0.20)		MADEP-VPH		1	08/16/14 2:38	CXH0188	CH41601
Methyl tert-Butyl Ether	ND (0.05)		MADEP-VPH		1	08/16/14 2:38	CXH0188	CH41601
Naphthalene	ND (0.20)		MADEP-VPH		1	08/16/14 2:38	CXH0188	CH41601
Toluene	ND (0.20)		MADEP-VPH		1	08/16/14 2:38	CXH0188	CH41601
Xylene O	ND (0.20)		MADEP-VPH		1	08/16/14 2:38	CXH0188	CH41601
Xylene P,M	ND (0.40)		MADEP-VPH		1	08/16/14 2:38	CXH0188	CH41601
1:1 Methanol/Soil Ratio %D	17 (N/A)		MADEP-VPH			08/16/14 0:00		CH41601
Preservative:	MeOH - covered		MADEP-VPH					CH41601

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
Surrogate: 2,5-Dibromotoluene - FID	120 %		70-130
Surrogate: 2,5-Dibromotoluene - PID	120 %		70-130
Surrogate: Trifluorotoluene - FID	88 %		70-130
Surrogate: Trifluorotoluene - PID	90 %		70-130



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB 9 1-9ft
Date Sampled: 08/11/14 13:00
Percent Solids: 88

ESS Laboratory Work Order: 1408202
ESS Laboratory Sample ID: 1408202-02
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Antimony	ND (4.7)		6010C		1	KJK	08/15/14 16:44	2.4	100	CH41502
Arsenic	4.6 (2.4)		6010C		1	KJK	08/15/14 16:44	2.4	100	CH41502
Barium	20.9 (2.4)		6010C		1	KJK	08/15/14 16:44	2.4	100	CH41502
Beryllium	0.25 (0.10)		6010C		1	KJK	08/15/14 16:44	2.4	100	CH41502
Cadmium	ND (0.47)		6010C		1	KJK	08/15/14 16:44	2.4	100	CH41502
Chromium	15.5 (0.9)		6010C		1	KJK	08/15/14 16:44	2.4	100	CH41502
Lead	15.0 (4.7)		6010C		1	KJK	08/15/14 16:44	2.4	100	CH41502
Mercury	0.044 (0.031)		7471B		1	NAR	08/15/14 13:34	0.73	40	CH41501
Nickel	12.3 (2.4)		6010C		1	KJK	08/15/14 16:44	2.4	100	CH41502
Selenium	ND (2.36)		7010		5	KJK	08/15/14 19:39	2.4	100	CH41502
Silver	ND (0.47)		6010C		1	KJK	08/15/14 16:44	2.4	100	CH41502
Thallium	ND (1.18)		7010		5	KJK	08/16/14 1:15	2.4	100	CH41502
Vanadium	30.6 (0.9)		6010C		1	KJK	08/15/14 16:44	2.4	100	CH41502
Zinc	126 (2.4)		6010C		1	KJK	08/15/14 16:44	2.4	100	CH41502



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB 9 1-9ft
Date Sampled: 08/11/14 13:00
Percent Solids: 88
Initial Volume: 20.8
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 1408202
ESS Laboratory Sample ID: 1408202-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: ML
Prepared: 8/12/14 18:00
Cleanup Method: 3665A

8082A Polychlorinated Biphenyls (PCB)

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Aroclor 1016	ND (0.0544)		8082A		1	08/15/14 18:43		CH41829
Aroclor 1221	ND (0.0544)		8082A		1	08/15/14 18:43		CH41829
Aroclor 1232	ND (0.0544)		8082A		1	08/15/14 18:43		CH41829
Aroclor 1242	ND (0.0544)		8082A		1	08/15/14 18:43		CH41829
Aroclor 1248	ND (0.0544)		8082A		1	08/15/14 18:43		CH41829
Aroclor 1254	ND (0.0544)		8082A		1	08/15/14 18:43		CH41829
Aroclor 1260	ND (0.0544)		8082A		1	08/15/14 18:43		CH41829
Aroclor 1262	ND (0.0544)		8082A		1	08/15/14 18:43		CH41829
Aroclor 1268	ND (0.0544)		8082A		1	08/15/14 18:43		CH41829

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
Surrogate: Decachlorobiphenyl	62 %		30-150
Surrogate: Decachlorobiphenyl [2C]	58 %		30-150
Surrogate: Tetrachloro-m-xylene	74 %		30-150
Surrogate: Tetrachloro-m-xylene [2C]	74 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB 9 1-9ft
Date Sampled: 08/11/14 13:00
Percent Solids: 88
Initial Volume: 15
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1408202
ESS Laboratory Sample ID: 1408202-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 8/13/14 11:56

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,2,4-Trichlorobenzene	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
1,2-Dichlorobenzene	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
1,3-Dichlorobenzene	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
1,4-Dichlorobenzene	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
2,4,5-Trichlorophenol	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
2,4,6-Trichlorophenol	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
2,4-Dichlorophenol	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
2,4-Dimethylphenol	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
2,4-Dinitrophenol	ND (1.89)		8270D		1	08/13/14 23:45	CXH0128	CH41207
2,4-Dinitrotoluene	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
2,6-Dinitrotoluene	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
2-Chloronaphthalene	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
2-Chlorophenol	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
2-Methylnaphthalene	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
2-Methylphenol	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
2-Nitrophenol	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
3,3'-Dichlorobenzidine	ND (0.755)		8270D		1	08/13/14 23:45	CXH0128	CH41207
3+4-Methylphenol	ND (0.755)		8270D		1	08/13/14 23:45	CXH0128	CH41207
4-Bromophenyl-phenylether	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
4-Chloroaniline	ND (0.755)		8270D		1	08/13/14 23:45	CXH0128	CH41207
4-Nitrophenol	ND (1.89)		8270D		1	08/13/14 23:45	CXH0128	CH41207
Acenaphthene	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
Acenaphthylene	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
Acetophenone	ND (0.755)		8270D		1	08/13/14 23:45	CXH0128	CH41207
Aniline	ND (1.89)		8270D		1	08/13/14 23:45	CXH0128	CH41207
Anthracene	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
Azobenzene	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
Benzo(a)anthracene	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
Benzo(a)pyrene	ND (0.189)		8270D		1	08/13/14 23:45	CXH0128	CH41207
Benzo(b)fluoranthene	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
Benzo(g,h,i)perylene	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
Benzo(k)fluoranthene	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB 9 1-9ft
Date Sampled: 08/11/14 13:00
Percent Solids: 88
Initial Volume: 15
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1408202
ESS Laboratory Sample ID: 1408202-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 8/13/14 11:56

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
bis(2-Chloroethoxy)methane	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
bis(2-Chloroethyl)ether	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
bis(2-chloroisopropyl)Ether	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
bis(2-Ethylhexyl)phthalate	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
Butylbenzylphthalate	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
Chrysene	0.203 (0.189)		8270D		1	08/13/14 23:45	CXH0128	CH41207
Dibenzo(a,h)Anthracene	ND (0.189)		8270D		1	08/13/14 23:45	CXH0128	CH41207
Dibenzofuran	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
Diethylphthalate	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
Dimethylphthalate	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
Di-n-butylphthalate	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
Di-n-octylphthalate	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
Fluoranthene	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
Fluorene	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
Hexachlorobenzene	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
Hexachlorobutadiene	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
Hexachloroethane	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
Indeno(1,2,3-cd)Pyrene	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
Isophorone	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
Naphthalene	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
Nitrobenzene	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
N-Nitrosodimethylamine	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
Pentachlorophenol	ND (1.89)		8270D		1	08/13/14 23:45	CXH0128	CH41207
Phenanthrene	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
Phenol	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207
Pyrene	ND (0.377)		8270D		1	08/13/14 23:45	CXH0128	CH41207

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	65 %		30-130
<i>Surrogate: 2,4,6-Tribromophenol</i>	90 %		30-130
<i>Surrogate: 2-Chlorophenol-d4</i>	65 %		30-130
<i>Surrogate: 2-Fluorobiphenyl</i>	65 %		30-130



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB 9 1-9ft
Date Sampled: 08/11/14 13:00
Percent Solids: 88
Initial Volume: 15
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1408202
ESS Laboratory Sample ID: 1408202-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 8/13/14 11:56

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Surrogate: 2-Fluorophenol		62 %		30-130				
Surrogate: Nitrobenzene-d5		64 %		30-130				
Surrogate: Phenol-d6		70 %		30-130				
Surrogate: p-Terphenyl-d14		78 %		30-130				



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB 9 1-9ft
Date Sampled: 08/11/14 13:00
Percent Solids: 88

ESS Laboratory Work Order: 1408202
ESS Laboratory Sample ID: 1408202-02
Sample Matrix: Soil

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Conductivity	WL 1000 (5)		9050A		1	JLK	08/14/14 12:26	umhos/cm	CH41416



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB 9 1-9ft
Date Sampled: 08/11/14 13:00
Percent Solids: 88
Initial Volume: 24.5
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1408202
ESS Laboratory Sample ID: 1408202-02
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 8/14/14 14:15

MADEP-EPH Extractable Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C18 Aliphatics1	42.2 (17.3)		MADEP-EPH		1	DPS	08/15/14 17:52	CXH0145	CH41403
C19-C36 Aliphatics1	173 (17.3)		MADEP-EPH		1	DPS	08/15/14 17:52	CXH0145	CH41403
C11-C22 Unadjusted Aromatics1	53.5 (17.3)		EPH8270		1	VSC	08/14/14 19:57	CXH0165	CH41403
C11-C22 Aromatics1,2	53.5 (17.3)		EPH8270			VSC	08/14/14 19:57		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
Surrogate: 1-Chlorooctadecane	73 %		40-140
Surrogate: 2-Bromonaphthalene	96 %		40-140
Surrogate: 2-Fluorobiphenyl	88 %		40-140
Surrogate: O-Terphenyl	67 %		40-140



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB 9 1-9ft
Date Sampled: 08/11/14 13:00
Percent Solids: 88
Initial Volume: 17.3
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1408202
ESS Laboratory Sample ID: 1408202-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

MADEP-VPH Volatile Petroleum Hydrocarbon

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C10 Aromatics	ND (11.1)		MADEP-VPH		1	08/16/14 3:12	CXH0188	CH41601
C5-C8 Aliphatics1,2	ND (11.1)		MADEP-VPH		1	08/16/14 3:12		[CALC]
C9-C12 Aliphatics2,3	ND (11.1)		MADEP-VPH		1	08/16/14 3:12		[CALC]
Benzene	1.01 (0.22)		MADEP-VPH		1	08/16/14 3:12	CXH0188	CH41601
Ethylbenzene	ND (0.22)		MADEP-VPH		1	08/16/14 3:12	CXH0188	CH41601
Methyl tert-Butyl Ether	ND (0.06)		MADEP-VPH		1	08/16/14 3:12	CXH0188	CH41601
Naphthalene	0.26 (0.22)		MADEP-VPH		1	08/16/14 3:12	CXH0188	CH41601
Toluene	0.41 (0.22)		MADEP-VPH		1	08/16/14 3:12	CXH0188	CH41601
Xylene O	ND (0.22)		MADEP-VPH		1	08/16/14 3:12	CXH0188	CH41601
Xylene P,M	ND (0.45)		MADEP-VPH		1	08/16/14 3:12	CXH0188	CH41601
1:1 Methanol/Soil Ratio %D	15 (N/A)		MADEP-VPH			08/16/14 0:00		CH41601
Preservative:	MeOH - covered		MADEP-VPH					CH41601

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
Surrogate: 2,5-Dibromotoluene - FID	121 %		70-130
Surrogate: 2,5-Dibromotoluene - PID	122 %		70-130
Surrogate: Trifluorotoluene - FID	89 %		70-130
Surrogate: Trifluorotoluene - PID	91 %		70-130



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB 9 1-9ft
Date Sampled: 08/11/14 13:00
Percent Solids: 88
Initial Volume: 24.5
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1408202
ESS Laboratory Sample ID: 1408202-02RE1
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 8/14/14 14:15

MADEP-EPH Extractable Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C11-C22 Unadjusted Aromatics1	59.2 (17.3)		EPH8270		1	VSC	08/15/14 16:18	CXH0172	CH41403
C11-C22 Aromatics1,2	59.2 (17.3)		EPH8270			VSC	08/15/14 16:18		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
Surrogate: 2-Bromonaphthalene	92 %		40-140
Surrogate: 2-Fluorobiphenyl	86 %		40-140
Surrogate: O-Terphenyl	67 %		40-140



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

Client Sample ID: PB 9 5-7ft

Date Sampled: 08/11/14 13:00

Percent Solids: 88

Initial Volume: 18.1

Final Volume: 15

Extraction Method: 5035

ESS Laboratory Work Order: 1408202

ESS Laboratory Sample ID: 1408202-03

Sample Matrix: Soil

Units: mg/kg dry

Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1,2-Tetrachloroethane	ND (0.108)		8260B		1	08/15/14 17:15	CXH0180	CH41530
1,1,1-Trichloroethane	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
1,1,2,2-Tetrachloroethane	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
1,1,2-Trichloroethane	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
1,1-Dichloroethane	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
1,1-Dichloroethene	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
1,1-Dichloropropene	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
1,2,3-Trichlorobenzene	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
1,2,3-Trichloropropane	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
1,2,4-Trichlorobenzene	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
1,2,4-Trimethylbenzene	0.241 (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
1,2-Dibromo-3-Chloropropane	ND (0.216)		8260B		1	08/15/14 17:15	CXH0180	CH41530
1,2-Dibromoethane	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
1,2-Dichlorobenzene	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
1,2-Dichloroethane	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
1,2-Dichloropropane	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
1,3,5-Trimethylbenzene	0.0658 (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
1,3-Dichlorobenzene	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
1,3-Dichloropropane	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
1,4-Dichlorobenzene	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
1,4-Dioxane - Screen	ND (5.39)		8260B		1	08/15/14 17:15	CXH0180	CH41530
2,2-Dichloropropane	ND (0.108)		8260B		1	08/15/14 17:15	CXH0180	CH41530
2-Butanone	ND (0.216)		8260B		1	08/15/14 17:15	CXH0180	CH41530
2-Chlorotoluene	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
2-Hexanone	ND (0.216)		8260B		1	08/15/14 17:15	CXH0180	CH41530
4-Chlorotoluene	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
4-Isopropyltoluene	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
4-Methyl-2-Pentanone	ND (0.216)		8260B		1	08/15/14 17:15	CXH0180	CH41530
Acetone	ND (0.216)		8260B		1	08/15/14 17:15	CXH0180	CH41530
Benzene	1.68 (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
Bromobenzene	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
Bromochloromethane	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB 9 5-7ft
Date Sampled: 08/11/14 13:00
Percent Solids: 88
Initial Volume: 18.1
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1408202
ESS Laboratory Sample ID: 1408202-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Bromodichloromethane	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
Bromoform	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
Bromomethane	ND (0.108)		8260B		1	08/15/14 17:15	CXH0180	CH41530
Carbon Disulfide	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
Carbon Tetrachloride	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
Chlorobenzene	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
Chloroethane	ND (0.108)		8260B		1	08/15/14 17:15	CXH0180	CH41530
Chloroform	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
Chloromethane	ND (0.108)		8260B		1	08/15/14 17:15	CXH0180	CH41530
cis-1,2-Dichloroethene	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
cis-1,3-Dichloropropene	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
Dibromochloromethane	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
Dibromomethane	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
Dichlorodifluoromethane	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
Diethyl Ether	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
Di-isopropyl ether	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
Ethyl tertiary-butyl ether	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
Ethylbenzene	0.123 (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
Hexachlorobutadiene	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
Isopropylbenzene	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
Methyl tert-Butyl Ether	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
Methylene Chloride	ND (0.216)		8260B		1	08/15/14 17:15	CXH0180	CH41530
Naphthalene	0.208 (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
n-Butylbenzene	0.0625 (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
n-Propylbenzene	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
sec-Butylbenzene	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
Styrene	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
tert-Butylbenzene	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
Tertiary-amyl methyl ether	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
Tetrachloroethene	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
Tetrahydrofuran	ND (0.216)		8260B		1	08/15/14 17:15	CXH0180	CH41530
Toluene	0.654 (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB 9 5-7ft
Date Sampled: 08/11/14 13:00
Percent Solids: 88
Initial Volume: 18.1
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1408202
ESS Laboratory Sample ID: 1408202-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
trans-1,2-Dichloroethene	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
trans-1,3-Dichloropropene	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
Trichloroethene	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
Trichlorofluoromethane	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
Vinyl Chloride	ND (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
Xylene O	0.109 (0.0539)		8260B		1	08/15/14 17:15	CXH0180	CH41530
Xylene P,M	0.339 (0.108)		8260B		1	08/15/14 17:15	CXH0180	CH41530
Xylenes (Total)	0.447 (0.108)		8260B		1	08/15/14 17:15		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>81 %</i>		<i>70-130</i>
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>86 %</i>		<i>70-130</i>
<i>Surrogate: Dibromofluoromethane</i>	<i>87 %</i>		<i>70-130</i>
<i>Surrogate: Toluene-d8</i>	<i>88 %</i>		<i>70-130</i>



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

Client Sample ID: PB 2 10-12ft

Date Sampled: 08/12/14 12:33

Percent Solids: 78

Initial Volume: 7.5

Final Volume: 10

Extraction Method: 5035

ESS Laboratory Work Order: 1408202

ESS Laboratory Sample ID: 1408202-04

Sample Matrix: Soil

Units: mg/kg dry

Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1,2-Tetrachloroethane	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
1,1,1-Trichloroethane	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
1,1,2,2-Tetrachloroethane	ND (0.0017)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
1,1,2-Trichloroethane	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
1,1-Dichloroethane	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
1,1-Dichloroethene	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
1,1-Dichloropropene	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
1,2,3-Trichlorobenzene	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
1,2,3-Trichloropropane	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
1,2,4-Trichlorobenzene	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
1,2,4-Trimethylbenzene	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
1,2-Dibromo-3-Chloropropane	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
1,2-Dibromoethane	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
1,2-Dichlorobenzene	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
1,2-Dichloroethane	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
1,2-Dichloropropane	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
1,3,5-Trimethylbenzene	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
1,3-Dichlorobenzene	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
1,3-Dichloropropane	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
1,4-Dichlorobenzene	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
1,4-Dioxane	ND (0.0855)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
2,2-Dichloropropane	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
2-Butanone	0.0093 (0.0085)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
2-Chlorotoluene	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
2-Hexanone	ND (0.0085)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
4-Chlorotoluene	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
4-Isopropyltoluene	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
4-Methyl-2-Pentanone	ND (0.0085)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
Acetone	0.0742 (0.0085)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
Benzene	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
Bromobenzene	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
Bromochloromethane	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB 2 10-12ft
Date Sampled: 08/12/14 12:33
Percent Solids: 78
Initial Volume: 7.5
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1408202
ESS Laboratory Sample ID: 1408202-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Bromodichloromethane	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
Bromoform	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
Bromomethane	ND (0.0085)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
Carbon Disulfide	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
Carbon Tetrachloride	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
Chlorobenzene	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
Chloroethane	ND (0.0085)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
Chloroform	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
Chloromethane	ND (0.0085)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
cis-1,2-Dichloroethene	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
cis-1,3-Dichloropropene	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
Dibromochloromethane	ND (0.0017)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
Dibromomethane	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
Dichlorodifluoromethane	ND (0.0085)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
Diethyl Ether	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
Di-isopropyl ether	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
Ethyl tertiary-butyl ether	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
Ethylbenzene	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
Hexachlorobutadiene	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
Isopropylbenzene	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
Methyl tert-Butyl Ether	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
Methylene Chloride	ND (0.0085)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
Naphthalene	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
n-Butylbenzene	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
n-Propylbenzene	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
sec-Butylbenzene	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
Styrene	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
tert-Butylbenzene	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
Tertiary-amyl methyl ether	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
Tetrachloroethene	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
Tetrahydrofuran	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
Toluene	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB 2 10-12ft
Date Sampled: 08/12/14 12:33
Percent Solids: 78
Initial Volume: 7.5
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1408202
ESS Laboratory Sample ID: 1408202-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
trans-1,2-Dichloroethene	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
trans-1,3-Dichloropropene	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
Trichloroethene	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
Trichlorofluoromethane	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
Vinyl Chloride	ND (0.0085)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
Xylene O	ND (0.0043)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
Xylene P,M	ND (0.0085)		8260B Low		1	08/14/14 20:46	CXH0151	CH41425
Xylenes (Total)	ND (0.0085)		8260B Low		1	08/14/14 20:46		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	113 %		70-130
<i>Surrogate: 4-Bromofluorobenzene</i>	85 %		70-130
<i>Surrogate: Dibromofluoromethane</i>	97 %		70-130
<i>Surrogate: Toluene-d8</i>	104 %		70-130



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

Client Sample ID: PB 2 2-14ft

Date Sampled: 08/12/14 12:33

Percent Solids: 78

ESS Laboratory Work Order: 1408202

ESS Laboratory Sample ID: 1408202-05

Sample Matrix: Soil

Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Antimony	ND (5.9)		6010C		1	KJK	08/15/14 16:48	2.19	100	CH41502
Arsenic	3.8 (2.9)		6010C		1	KJK	08/15/14 16:48	2.19	100	CH41502
Barium	13.3 (2.9)		6010C		1	KJK	08/15/14 16:48	2.19	100	CH41502
Beryllium	0.30 (0.13)		6010C		1	KJK	08/15/14 16:48	2.19	100	CH41502
Cadmium	ND (0.59)		6010C		1	KJK	08/15/14 16:48	2.19	100	CH41502
Chromium	11.2 (1.2)		6010C		1	KJK	08/15/14 16:48	2.19	100	CH41502
Lead	11.5 (5.9)		6010C		1	KJK	08/15/14 16:48	2.19	100	CH41502
Mercury	0.038 (0.033)		7471B		1	NAR	08/15/14 13:37	0.78	40	CH41501
Nickel	7.9 (2.9)		6010C		1	KJK	08/15/14 16:48	2.19	100	CH41502
Selenium	ND (2.94)		7010		5	KJK	08/15/14 19:45	2.19	100	CH41502
Silver	ND (0.59)		6010C		1	KJK	08/15/14 16:48	2.19	100	CH41502
Thallium	ND (1.47)		7010		5	KJK	08/16/14 1:21	2.19	100	CH41502
Vanadium	16.5 (1.2)		6010C		1	KJK	08/15/14 16:48	2.19	100	CH41502
Zinc	22.7 (2.9)		6010C		1	KJK	08/15/14 16:48	2.19	100	CH41502



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB 2 2-14ft
Date Sampled: 08/12/14 12:33
Percent Solids: 78
Initial Volume: 20.9
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 1408202
ESS Laboratory Sample ID: 1408202-05
Sample Matrix: Soil
Units: mg/kg dry
Analyst: JXS
Prepared: 8/13/14 16:00
Cleanup Method: 3665A

8082A Polychlorinated Biphenyls (PCB)

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Aroclor 1016	ND (0.0616)		8082A		1	08/14/14 11:27		CH41205
Aroclor 1221	ND (0.0616)		8082A		1	08/14/14 11:27		CH41205
Aroclor 1232	ND (0.0616)		8082A		1	08/14/14 11:27		CH41205
Aroclor 1242	ND (0.0616)		8082A		1	08/14/14 11:27		CH41205
Aroclor 1248	ND (0.0616)		8082A		1	08/14/14 11:27		CH41205
Aroclor 1254	ND (0.0616)		8082A		1	08/14/14 11:27		CH41205
Aroclor 1260	ND (0.0616)		8082A		1	08/14/14 11:27		CH41205
Aroclor 1262	ND (0.0616)		8082A		1	08/14/14 11:27		CH41205
Aroclor 1268	ND (0.0616)		8082A		1	08/14/14 11:27		CH41205

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: Decachlorobiphenyl</i>	80 %		30-150
<i>Surrogate: Decachlorobiphenyl [2C]</i>	76 %		30-150
<i>Surrogate: Tetrachloro-m-xylene</i>	96 %		30-150
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	92 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

Client Sample ID: PB 2 2-14ft

Date Sampled: 08/12/14 12:33

Percent Solids: 78

Initial Volume: 14.7

Final Volume: 0.5

Extraction Method: 3546

ESS Laboratory Work Order: 1408202

ESS Laboratory Sample ID: 1408202-05

Sample Matrix: Soil

Units: mg/kg dry

Analyst: IBM

Prepared: 8/13/14 11:56

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,2,4-Trichlorobenzene	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
1,2-Dichlorobenzene	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
1,3-Dichlorobenzene	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
1,4-Dichlorobenzene	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
2,4,5-Trichlorophenol	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
2,4,6-Trichlorophenol	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
2,4-Dichlorophenol	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
2,4-Dimethylphenol	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
2,4-Dinitrophenol	ND (2.19)		8270D		1	08/13/14 17:13	CXH0124	CH41207
2,4-Dinitrotoluene	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
2,6-Dinitrotoluene	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
2-Chloronaphthalene	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
2-Chlorophenol	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
2-Methylnaphthalene	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
2-Methylphenol	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
2-Nitrophenol	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
3,3'-Dichlorobenzidine	ND (0.876)		8270D		1	08/13/14 17:13	CXH0124	CH41207
3+4-Methylphenol	ND (0.876)		8270D		1	08/13/14 17:13	CXH0124	CH41207
4-Bromophenyl-phenylether	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
4-Chloroaniline	ND (0.876)		8270D		1	08/13/14 17:13	CXH0124	CH41207
4-Nitrophenol	ND (2.19)		8270D		1	08/13/14 17:13	CXH0124	CH41207
Acenaphthene	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
Acenaphthylene	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
Acetophenone	ND (0.876)		8270D		1	08/13/14 17:13	CXH0124	CH41207
Aniline	ND (2.19)		8270D		1	08/13/14 17:13	CXH0124	CH41207
Anthracene	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
Azobenzene	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
Benzo(a)anthracene	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
Benzo(a)pyrene	0.231 (0.219)		8270D		1	08/13/14 17:13	CXH0124	CH41207
Benzo(b)fluoranthene	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
Benzo(g,h,i)perylene	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
Benzo(k)fluoranthene	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB 2 2-14ft
Date Sampled: 08/12/14 12:33
Percent Solids: 78
Initial Volume: 14.7
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1408202
ESS Laboratory Sample ID: 1408202-05
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 8/13/14 11:56

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
bis(2-Chloroethoxy)methane	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
bis(2-Chloroethyl)ether	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
bis(2-chloroisopropyl)Ether	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
bis(2-Ethylhexyl)phthalate	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
Butylbenzylphthalate	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
Chrysene	0.219 (0.219)		8270D		1	08/13/14 17:13	CXH0124	CH41207
Dibenzo(a,h)Anthracene	ND (0.219)		8270D		1	08/13/14 17:13	CXH0124	CH41207
Dibenzofuran	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
Diethylphthalate	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
Dimethylphthalate	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
Di-n-butylphthalate	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
Di-n-octylphthalate	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
Fluoranthene	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
Fluorene	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
Hexachlorobenzene	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
Hexachlorobutadiene	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
Hexachloroethane	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
Indeno(1,2,3-cd)Pyrene	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
Isophorone	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
Naphthalene	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
Nitrobenzene	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
N-Nitrosodimethylamine	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
Pentachlorophenol	ND (2.19)		8270D		1	08/13/14 17:13	CXH0124	CH41207
Phenanthrene	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
Phenol	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207
Pyrene	ND (0.438)		8270D		1	08/13/14 17:13	CXH0124	CH41207

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>74 %</i>		<i>30-130</i>
<i>Surrogate: 2,4,6-Tribromophenol</i>	<i>87 %</i>		<i>30-130</i>
<i>Surrogate: 2-Chlorophenol-d4</i>	<i>77 %</i>		<i>30-130</i>
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>87 %</i>		<i>30-130</i>



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB 2 2-14ft
Date Sampled: 08/12/14 12:33
Percent Solids: 78
Initial Volume: 14.7
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1408202
ESS Laboratory Sample ID: 1408202-05
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 8/13/14 11:56

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Surrogate: 2-Fluorophenol		75 %		30-130				
Surrogate: Nitrobenzene-d5		76 %		30-130				
Surrogate: Phenol-d6		78 %		30-130				
Surrogate: p-Terphenyl-d14		84 %		30-130				



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB 2 2-14ft
Date Sampled: 08/12/14 12:33
Percent Solids: 78

ESS Laboratory Work Order: 1408202
ESS Laboratory Sample ID: 1408202-05
Sample Matrix: Soil

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Conductivity	WL 552 (5)		9050A		1	JLK	08/14/14 12:26	umhos/cm	CH41416



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB 2 2-14ft
Date Sampled: 08/12/14 12:33
Percent Solids: 78
Initial Volume: 24.6
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1408202
ESS Laboratory Sample ID: 1408202-05
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 8/14/14 14:15

MADEP-EPH Extractable Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C18 Aliphatics1	ND (19.6)		MADEP-EPH		1	DPS	08/15/14 18:43	CXH0145	CH41403
C19-C36 Aliphatics1	ND (19.6)		MADEP-EPH		1	DPS	08/15/14 18:43	CXH0145	CH41403
C11-C22 Unadjusted Aromatics1	ND (19.6)		EPH8270		1	VSC	08/15/14 14:43	CXH0171	CH41403
C11-C22 Aromatics1,2	ND (19.6)		EPH8270			VSC	08/15/14 14:43		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1-Chlorooctadecane</i>	80 %		40-140
<i>Surrogate: 2-Bromonaphthalene</i>	97 %		40-140
<i>Surrogate: 2-Fluorobiphenyl</i>	92 %		40-140
<i>Surrogate: O-Terphenyl</i>	78 %		40-140



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB 2 2-14ft
Date Sampled: 08/12/14 12:33
Percent Solids: 78
Initial Volume: 14.1
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1408202
ESS Laboratory Sample ID: 1408202-05
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

MADEP-VPH Volatile Petroleum Hydrocarbon

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C10 Aromatics	ND (16.6)		MADEP-VPH		1	08/16/14 3:46	CXH0188	CH41601
C5-C8 Aliphatics1,2	ND (16.6)		MADEP-VPH		1	08/16/14 3:46		[CALC]
C9-C12 Aliphatics2,3	ND (16.6)		MADEP-VPH		1	08/16/14 3:46		[CALC]
Benzene	ND (0.33)		MADEP-VPH		1	08/16/14 3:46	CXH0188	CH41601
Ethylbenzene	ND (0.33)		MADEP-VPH		1	08/16/14 3:46	CXH0188	CH41601
Methyl tert-Butyl Ether	ND (0.08)		MADEP-VPH		1	08/16/14 3:46	CXH0188	CH41601
Naphthalene	ND (0.33)		MADEP-VPH		1	08/16/14 3:46	CXH0188	CH41601
Toluene	ND (0.33)		MADEP-VPH		1	08/16/14 3:46	CXH0188	CH41601
Xylene O	ND (0.33)		MADEP-VPH		1	08/16/14 3:46	CXH0188	CH41601
Xylene P,M	ND (0.66)		MADEP-VPH		1	08/16/14 3:46	CXH0188	CH41601
1:1 Methanol/Soil Ratio %D	6 (N/A)		MADEP-VPH			08/16/14 0:00		CH41601
Preservative:	MeOH - covered		MADEP-VPH					CH41601

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
Surrogate: 2,5-Dibromotoluene - FID	97 %		70-130
Surrogate: 2,5-Dibromotoluene - PID	98 %		70-130
Surrogate: Trifluorotoluene - FID	82 %		70-130
Surrogate: Trifluorotoluene - PID	85 %		70-130



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408202

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

Total Metals

Batch CH41501 - 7471A

Blank

Mercury	ND	0.033	mg/kg wet							

LCS

Mercury	8.12	1.65	mg/kg wet	8.370		97	80-120			

LCS Dup

Mercury	8.30	1.50	mg/kg wet	8.370		99	80-120	2	20	

Reference

Mercury	9.33	1.60	mg/kg wet	8.370		111	71-128			

Reference

Mercury	8.28	1.43	mg/kg wet	8.370		99	71-128			

Reference

Mercury	8.34	1.48	mg/kg wet	8.370		100	71-128			

Reference

Mercury	7.87	1.55	mg/kg wet	8.370		94	71-128			

Batch CH41502 - 3050B

Blank

Antimony	ND	5.0	mg/kg wet							
Arsenic	ND	2.5	mg/kg wet							
Barium	ND	2.5	mg/kg wet							
Beryllium	ND	0.11	mg/kg wet							
Cadmium	ND	0.50	mg/kg wet							
Chromium	ND	1.0	mg/kg wet							
Lead	ND	5.0	mg/kg wet							
Nickel	ND	2.5	mg/kg wet							
Selenium	ND	0.50	mg/kg wet							
Silver	ND	0.50	mg/kg wet							
Thallium	ND	0.25	mg/kg wet							
Vanadium	ND	1.0	mg/kg wet							
Zinc	ND	2.5	mg/kg wet							

LCS

Antimony	102	14.3	mg/kg wet	94.00		108	5-212			
Arsenic	100	7.1	mg/kg wet	113.0		89	80-120			
Barium	136	7.1	mg/kg wet	155.0		88	80-120			
Beryllium	95.8	0.31	mg/kg wet	109.0		88	80-120			
Cadmium	57.3	1.43	mg/kg wet	67.50		85	80-120			
Chromium	151	2.9	mg/kg wet	164.0		92	80-120			
Lead	79.9	14.3	mg/kg wet	90.10		89	80-120			
Nickel	81.2	7.1	mg/kg wet	89.30		91	80-120			
Selenium	123	71.4	mg/kg wet	156.0		79	78-122			
Silver	47.2	1.43	mg/kg wet	52.60		90	80-120			
Thallium	87.0	35.7	mg/kg wet	116.0		75	79-121			B-
Vanadium	71.0	2.9	mg/kg wet	73.00		97	80-120			
Zinc	147	7.1	mg/kg wet	168.0		87	80-120			



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1408202

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

Total Metals

Batch CH41502 - 3050B

LCS Dup

Antimony	99.9	13.2	mg/kg wet	94.00		106	5-212	2	20	
Arsenic	102	6.6	mg/kg wet	113.0		91	80-120	2	20	
Barium	143	6.6	mg/kg wet	155.0		92	80-120	5	20	
Beryllium	96.2	0.29	mg/kg wet	109.0		88	80-120	0.4	20	
Cadmium	57.8	1.32	mg/kg wet	67.50		86	80-120	0.9	20	
Chromium	152	2.6	mg/kg wet	164.0		93	80-120	0.6	20	
Lead	81.7	13.2	mg/kg wet	90.10		91	80-120	2	20	
Nickel	81.8	6.6	mg/kg wet	89.30		92	80-120	0.8	20	
Selenium	123	65.8	mg/kg wet	156.0		79	78-122	0.3	20	
Silver	48.2	1.32	mg/kg wet	52.60		92	80-120	2	20	
Thallium	91.5	32.9	mg/kg wet	116.0		79	79-121	5	20	
Vanadium	73.3	2.6	mg/kg wet	73.00		100	80-120	3	20	
Zinc	152	6.6	mg/kg wet	168.0		90	80-120	4	20	

5035/8260B Volatile Organic Compounds / Low Level

Batch CH41425 - 5035

Blank

1,1,1,2-Tetrachloroethane	ND	0.0050	mg/kg wet							
1,1,1-Trichloroethane	ND	0.0050	mg/kg wet							
1,1,2,2-Tetrachloroethane	ND	0.0020	mg/kg wet							
1,1,2-Trichloroethane	ND	0.0050	mg/kg wet							
1,1-Dichloroethane	ND	0.0050	mg/kg wet							
1,1-Dichloroethene	ND	0.0050	mg/kg wet							
1,1-Dichloropropene	ND	0.0050	mg/kg wet							
1,2,3-Trichlorobenzene	ND	0.0050	mg/kg wet							
1,2,3-Trichloropropane	ND	0.0050	mg/kg wet							
1,2,4-Trichlorobenzene	ND	0.0050	mg/kg wet							
1,2,4-Trimethylbenzene	ND	0.0050	mg/kg wet							
1,2-Dibromo-3-Chloropropane	ND	0.0050	mg/kg wet							
1,2-Dibromoethane	ND	0.0050	mg/kg wet							
1,2-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,2-Dichloroethane	ND	0.0050	mg/kg wet							
1,2-Dichloropropane	ND	0.0050	mg/kg wet							
1,3,5-Trimethylbenzene	ND	0.0050	mg/kg wet							
1,3-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,3-Dichloropropane	ND	0.0050	mg/kg wet							
1,4-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,4-Dioxane	ND	0.100	mg/kg wet							
2,2-Dichloropropane	ND	0.0050	mg/kg wet							
2-Butanone	ND	0.0100	mg/kg wet							
2-Chlorotoluene	ND	0.0050	mg/kg wet							
2-Hexanone	ND	0.0100	mg/kg wet							
4-Chlorotoluene	ND	0.0050	mg/kg wet							
4-Isopropyltoluene	ND	0.0050	mg/kg wet							



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1408202

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

5035/8260B Volatile Organic Compounds / Low Level

Batch CH41425 - 5035

4-Methyl-2-Pentanone	ND	0.0100	mg/kg wet							
Acetone	ND	0.0100	mg/kg wet							
Benzene	ND	0.0050	mg/kg wet							
Bromobenzene	ND	0.0050	mg/kg wet							
Bromochloromethane	ND	0.0050	mg/kg wet							
Bromodichloromethane	ND	0.0050	mg/kg wet							
Bromoform	ND	0.0050	mg/kg wet							
Bromomethane	ND	0.0100	mg/kg wet							
Carbon Disulfide	ND	0.0050	mg/kg wet							
Carbon Tetrachloride	ND	0.0050	mg/kg wet							
Chlorobenzene	ND	0.0050	mg/kg wet							
Chloroethane	ND	0.0100	mg/kg wet							
Chloroform	ND	0.0050	mg/kg wet							
Chloromethane	ND	0.0100	mg/kg wet							
cis-1,2-Dichloroethene	ND	0.0050	mg/kg wet							
cis-1,3-Dichloropropene	ND	0.0050	mg/kg wet							
Dibromochloromethane	ND	0.0020	mg/kg wet							
Dibromomethane	ND	0.0050	mg/kg wet							
Dichlorodifluoromethane	ND	0.0100	mg/kg wet							
Diethyl Ether	ND	0.0050	mg/kg wet							
Di-isopropyl ether	ND	0.0050	mg/kg wet							
Ethyl tertiary-butyl ether	ND	0.0050	mg/kg wet							
Ethylbenzene	ND	0.0050	mg/kg wet							
Hexachlorobutadiene	ND	0.0050	mg/kg wet							
Isopropylbenzene	ND	0.0050	mg/kg wet							
Methyl tert-Butyl Ether	ND	0.0050	mg/kg wet							
Methylene Chloride	ND	0.0100	mg/kg wet							
Naphthalene	ND	0.0050	mg/kg wet							
n-Butylbenzene	ND	0.0050	mg/kg wet							
n-Propylbenzene	ND	0.0050	mg/kg wet							
sec-Butylbenzene	ND	0.0050	mg/kg wet							
Styrene	ND	0.0050	mg/kg wet							
tert-Butylbenzene	ND	0.0050	mg/kg wet							
Tertiary-amyl methyl ether	ND	0.0050	mg/kg wet							
Tetrachloroethene	ND	0.0050	mg/kg wet							
Tetrahydrofuran	ND	0.0050	mg/kg wet							
Toluene	ND	0.0050	mg/kg wet							
trans-1,2-Dichloroethene	ND	0.0050	mg/kg wet							
trans-1,3-Dichloropropene	ND	0.0050	mg/kg wet							
Trichloroethene	ND	0.0050	mg/kg wet							
Trichlorofluoromethane	ND	0.0050	mg/kg wet							
Vinyl Chloride	ND	0.0100	mg/kg wet							
Xylene O	ND	0.0050	mg/kg wet							
Xylene P,M	ND	0.0100	mg/kg wet							
Surrogate: 1,2-Dichloroethane-d4	0.0552		mg/kg wet	0.05000		110	70-130			



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1408202

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

5035/8260B Volatile Organic Compounds / Low Level

Batch CH41425 - 5035

Surrogate: 4-Bromofluorobenzene	0.0482		mg/kg wet	0.05000		96	70-130			
Surrogate: Dibromofluoromethane	0.0475		mg/kg wet	0.05000		95	70-130			
Surrogate: Toluene-d8	0.0489		mg/kg wet	0.05000		98	70-130			

LCS

1,1,1,2-Tetrachloroethane	0.0520	0.0050	mg/kg wet	0.05000		104	70-130			
1,1,1-Trichloroethane	0.0559	0.0050	mg/kg wet	0.05000		112	70-130			
1,1,2,2-Tetrachloroethane	0.0535	0.0020	mg/kg wet	0.05000		107	70-130			
1,1,2-Trichloroethane	0.0534	0.0050	mg/kg wet	0.05000		107	70-130			
1,1-Dichloroethane	0.0570	0.0050	mg/kg wet	0.05000		114	70-130			
1,1-Dichloroethene	0.0546	0.0050	mg/kg wet	0.05000		109	70-130			
1,1-Dichloropropene	0.0600	0.0050	mg/kg wet	0.05000		120	70-130			
1,2,3-Trichlorobenzene	0.0527	0.0050	mg/kg wet	0.05000		105	70-130			
1,2,3-Trichloropropane	0.0564	0.0050	mg/kg wet	0.05000		113	70-130			
1,2,4-Trichlorobenzene	0.0526	0.0050	mg/kg wet	0.05000		105	70-130			
1,2,4-Trimethylbenzene	0.0543	0.0050	mg/kg wet	0.05000		109	70-130			
1,2-Dibromo-3-Chloropropane	0.0494	0.0050	mg/kg wet	0.05000		99	70-130			
1,2-Dibromoethane	0.0532	0.0050	mg/kg wet	0.05000		106	70-130			
1,2-Dichlorobenzene	0.0503	0.0050	mg/kg wet	0.05000		101	70-130			
1,2-Dichloroethane	0.0549	0.0050	mg/kg wet	0.05000		110	70-130			
1,2-Dichloropropane	0.0575	0.0050	mg/kg wet	0.05000		115	70-130			
1,3,5-Trimethylbenzene	0.0568	0.0050	mg/kg wet	0.05000		114	70-130			
1,3-Dichlorobenzene	0.0519	0.0050	mg/kg wet	0.05000		104	70-130			
1,3-Dichloropropane	0.0563	0.0050	mg/kg wet	0.05000		113	70-130			
1,4-Dichlorobenzene	0.0514	0.0050	mg/kg wet	0.05000		103	70-130			
1,4-Dioxane	1.02	0.100	mg/kg wet	1.000		102	70-130			
2,2-Dichloropropane	0.0563	0.0050	mg/kg wet	0.05000		113	70-130			
2-Butanone	0.322	0.0100	mg/kg wet	0.2500		129	70-130			
2-Chlorotoluene	0.0536	0.0050	mg/kg wet	0.05000		107	70-130			
2-Hexanone	0.301	0.0100	mg/kg wet	0.2500		121	70-130			
4-Chlorotoluene	0.0543	0.0050	mg/kg wet	0.05000		109	70-130			
4-Isopropyltoluene	0.0544	0.0050	mg/kg wet	0.05000		109	70-130			
4-Methyl-2-Pentanone	0.299	0.0100	mg/kg wet	0.2500		120	70-130			
Acetone	0.308	0.0100	mg/kg wet	0.2500		123	70-130			
Benzene	0.0573	0.0050	mg/kg wet	0.05000		115	70-130			
Bromobenzene	0.0525	0.0050	mg/kg wet	0.05000		105	70-130			
Bromochloromethane	0.0510	0.0050	mg/kg wet	0.05000		102	70-130			
Bromodichloromethane	0.0567	0.0050	mg/kg wet	0.05000		113	70-130			
Bromoform	0.0431	0.0050	mg/kg wet	0.05000		86	70-130			
Bromomethane	0.0633	0.0100	mg/kg wet	0.05000		127	70-130			
Carbon Disulfide	0.0574	0.0050	mg/kg wet	0.05000		115	70-130			
Carbon Tetrachloride	0.0515	0.0050	mg/kg wet	0.05000		103	70-130			
Chlorobenzene	0.0507	0.0050	mg/kg wet	0.05000		101	70-130			
Chloroethane	0.0517	0.0100	mg/kg wet	0.05000		103	70-130			
Chloroform	0.0555	0.0050	mg/kg wet	0.05000		111	70-130			



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1408202

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

5035/8260B Volatile Organic Compounds / Low Level

Batch CH41425 - 5035

Chloromethane	0.0585	0.0100	mg/kg wet	0.05000		117	70-130			
cis-1,2-Dichloroethene	0.0539	0.0050	mg/kg wet	0.05000		108	70-130			
cis-1,3-Dichloropropene	0.0565	0.0050	mg/kg wet	0.05000		113	70-130			
Dibromochloromethane	0.0454	0.0020	mg/kg wet	0.05000		91	70-130			
Dibromomethane	0.0532	0.0050	mg/kg wet	0.05000		106	70-130			
Dichlorodifluoromethane	0.0410	0.0100	mg/kg wet	0.05000		82	70-130			
Diethyl Ether	0.0581	0.0050	mg/kg wet	0.05000		116	70-130			
Di-isopropyl ether	0.0615	0.0050	mg/kg wet	0.05000		123	70-130			
Ethyl tertiary-butyl ether	0.0573	0.0050	mg/kg wet	0.05000		115	70-130			
Ethylbenzene	0.0548	0.0050	mg/kg wet	0.05000		110	70-130			
Hexachlorobutadiene	0.0559	0.0050	mg/kg wet	0.05000		112	70-130			
Isopropylbenzene	0.0521	0.0050	mg/kg wet	0.05000		104	70-130			
Methyl tert-Butyl Ether	0.0530	0.0050	mg/kg wet	0.05000		106	70-130			
Methylene Chloride	0.0574	0.0100	mg/kg wet	0.05000		115	70-130			
Naphthalene	0.0486	0.0050	mg/kg wet	0.05000		97	70-130			
n-Butylbenzene	0.0575	0.0050	mg/kg wet	0.05000		115	70-130			
n-Propylbenzene	0.0534	0.0050	mg/kg wet	0.05000		107	70-130			
sec-Butylbenzene	0.0535	0.0050	mg/kg wet	0.05000		107	70-130			
Styrene	0.0552	0.0050	mg/kg wet	0.05000		110	70-130			
tert-Butylbenzene	0.0532	0.0050	mg/kg wet	0.05000		106	70-130			
Tertiary-amyl methyl ether	0.0518	0.0050	mg/kg wet	0.05000		104	70-130			
Tetrachloroethene	0.0511	0.0050	mg/kg wet	0.05000		102	70-130			
Tetrahydrofuran	0.0586	0.0050	mg/kg wet	0.05000		117	70-130			
Toluene	0.0555	0.0050	mg/kg wet	0.05000		111	70-130			
trans-1,2-Dichloroethene	0.0547	0.0050	mg/kg wet	0.05000		109	70-130			
trans-1,3-Dichloropropene	0.0471	0.0050	mg/kg wet	0.05000		94	70-130			
Trichloroethene	0.0525	0.0050	mg/kg wet	0.05000		105	70-130			
Trichlorofluoromethane	0.0521	0.0050	mg/kg wet	0.05000		104	70-130			
Vinyl Chloride	0.0634	0.0100	mg/kg wet	0.05000		127	70-130			
Xylene O	0.0533	0.0050	mg/kg wet	0.05000		107	70-130			
Xylene P,M	0.104	0.0100	mg/kg wet	0.1000		104	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0601		mg/kg wet	0.05000		120	70-130			
Surrogate: 4-Bromofluorobenzene	0.0553		mg/kg wet	0.05000		111	70-130			
Surrogate: Dibromofluoromethane	0.0556		mg/kg wet	0.05000		111	70-130			
Surrogate: Toluene-d8	0.0536		mg/kg wet	0.05000		107	70-130			

LCS Dup

1,1,1,2-Tetrachloroethane	0.0528	0.0050	mg/kg wet	0.05000		106	70-130	2	25	
1,1,1-Trichloroethane	0.0563	0.0050	mg/kg wet	0.05000		113	70-130	0.7	25	
1,1,2,2-Tetrachloroethane	0.0556	0.0020	mg/kg wet	0.05000		111	70-130	4	25	
1,1,2-Trichloroethane	0.0550	0.0050	mg/kg wet	0.05000		110	70-130	3	25	
1,1-Dichloroethane	0.0591	0.0050	mg/kg wet	0.05000		118	70-130	4	25	
1,1-Dichloroethene	0.0552	0.0050	mg/kg wet	0.05000		110	70-130	1	25	
1,1-Dichloropropene	0.0598	0.0050	mg/kg wet	0.05000		120	70-130	0.3	25	
1,2,3-Trichlorobenzene	0.0542	0.0050	mg/kg wet	0.05000		108	70-130	3	25	
1,2,3-Trichloropropane	0.0578	0.0050	mg/kg wet	0.05000		116	70-130	3	25	



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1408202

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

5035/8260B Volatile Organic Compounds / Low Level

Batch CH41425 - 5035

1,2,4-Trichlorobenzene	0.0544	0.0050	mg/kg wet	0.05000		109	70-130	4	25	
1,2,4-Trimethylbenzene	0.0560	0.0050	mg/kg wet	0.05000		112	70-130	3	25	
1,2-Dibromo-3-Chloropropane	0.0528	0.0050	mg/kg wet	0.05000		106	70-130	7	25	
1,2-Dibromoethane	0.0525	0.0050	mg/kg wet	0.05000		105	70-130	1	25	
1,2-Dichlorobenzene	0.0514	0.0050	mg/kg wet	0.05000		103	70-130	2	25	
1,2-Dichloroethane	0.0547	0.0050	mg/kg wet	0.05000		109	70-130	0.3	25	
1,2-Dichloropropane	0.0573	0.0050	mg/kg wet	0.05000		115	70-130	0.5	25	
1,3,5-Trimethylbenzene	0.0585	0.0050	mg/kg wet	0.05000		117	70-130	3	25	
1,3-Dichlorobenzene	0.0528	0.0050	mg/kg wet	0.05000		106	70-130	2	25	
1,3-Dichloropropane	0.0576	0.0050	mg/kg wet	0.05000		115	70-130	2	25	
1,4-Dichlorobenzene	0.0519	0.0050	mg/kg wet	0.05000		104	70-130	1	25	
1,4-Dioxane	1.09	0.100	mg/kg wet	1.000		109	70-130	7	20	
2,2-Dichloropropane	0.0573	0.0050	mg/kg wet	0.05000		115	70-130	2	25	
2-Butanone	0.298	0.0100	mg/kg wet	0.2500		119	70-130	8	25	
2-Chlorotoluene	0.0548	0.0050	mg/kg wet	0.05000		110	70-130	2	25	
2-Hexanone	0.305	0.0100	mg/kg wet	0.2500		122	70-130	1	25	
4-Chlorotoluene	0.0566	0.0050	mg/kg wet	0.05000		113	70-130	4	25	
4-Isopropyltoluene	0.0558	0.0050	mg/kg wet	0.05000		112	70-130	3	25	
4-Methyl-2-Pentanone	0.301	0.0100	mg/kg wet	0.2500		120	70-130	0.6	25	
Acetone	0.304	0.0100	mg/kg wet	0.2500		122	70-130	1	25	
Benzene	0.0579	0.0050	mg/kg wet	0.05000		116	70-130	1	25	
Bromobenzene	0.0541	0.0050	mg/kg wet	0.05000		108	70-130	3	25	
Bromochloromethane	0.0507	0.0050	mg/kg wet	0.05000		101	70-130	0.5	25	
Bromodichloromethane	0.0579	0.0050	mg/kg wet	0.05000		116	70-130	2	25	
Bromoform	0.0450	0.0050	mg/kg wet	0.05000		90	70-130	4	25	
Bromomethane	0.0634	0.0100	mg/kg wet	0.05000		127	70-130	0.2	25	
Carbon Disulfide	0.0574	0.0050	mg/kg wet	0.05000		115	70-130	0.1	25	
Carbon Tetrachloride	0.0513	0.0050	mg/kg wet	0.05000		103	70-130	0.4	25	
Chlorobenzene	0.0524	0.0050	mg/kg wet	0.05000		105	70-130	3	25	
Chloroethane	0.0513	0.0100	mg/kg wet	0.05000		103	70-130	0.8	25	
Chloroform	0.0563	0.0050	mg/kg wet	0.05000		113	70-130	1	25	
Chloromethane	0.0589	0.0100	mg/kg wet	0.05000		118	70-130	0.7	25	
cis-1,2-Dichloroethene	0.0549	0.0050	mg/kg wet	0.05000		110	70-130	2	25	
cis-1,3-Dichloropropene	0.0573	0.0050	mg/kg wet	0.05000		115	70-130	2	25	
Dibromochloromethane	0.0473	0.0020	mg/kg wet	0.05000		95	70-130	4	25	
Dibromomethane	0.0543	0.0050	mg/kg wet	0.05000		109	70-130	2	25	
Dichlorodifluoromethane	0.0407	0.0100	mg/kg wet	0.05000		81	70-130	0.7	25	
Diethyl Ether	0.0593	0.0050	mg/kg wet	0.05000		119	70-130	2	25	
Di-isopropyl ether	0.0618	0.0050	mg/kg wet	0.05000		124	70-130	0.5	25	
Ethyl tertiary-butyl ether	0.0578	0.0050	mg/kg wet	0.05000		116	70-130	0.9	25	
Ethylbenzene	0.0560	0.0050	mg/kg wet	0.05000		112	70-130	2	25	
Hexachlorobutadiene	0.0580	0.0050	mg/kg wet	0.05000		116	70-130	4	25	
Isopropylbenzene	0.0536	0.0050	mg/kg wet	0.05000		107	70-130	3	25	
Methyl tert-Butyl Ether	0.0540	0.0050	mg/kg wet	0.05000		108	70-130	2	25	
Methylene Chloride	0.0602	0.0100	mg/kg wet	0.05000		120	70-130	5	25	



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

5035/8260B Volatile Organic Compounds / Low Level

Batch CH41425 - 5035

Naphthalene	0.0509	0.0050	mg/kg wet	0.05000		102	70-130	5	25	
n-Butylbenzene	0.0586	0.0050	mg/kg wet	0.05000		117	70-130	2	25	
n-Propylbenzene	0.0556	0.0050	mg/kg wet	0.05000		111	70-130	4	25	
sec-Butylbenzene	0.0549	0.0050	mg/kg wet	0.05000		110	70-130	3	25	
Styrene	0.0568	0.0050	mg/kg wet	0.05000		114	70-130	3	25	
tert-Butylbenzene	0.0540	0.0050	mg/kg wet	0.05000		108	70-130	2	25	
Tertiary-amyl methyl ether	0.0536	0.0050	mg/kg wet	0.05000		107	70-130	3	25	
Tetrachloroethene	0.0507	0.0050	mg/kg wet	0.05000		101	70-130	0.7	25	
Tetrahydrofuran	0.0585	0.0050	mg/kg wet	0.05000		117	70-130	0.1	25	
Toluene	0.0564	0.0050	mg/kg wet	0.05000		113	70-130	2	25	
trans-1,2-Dichloroethene	0.0552	0.0050	mg/kg wet	0.05000		110	70-130	0.9	25	
trans-1,3-Dichloropropene	0.0483	0.0050	mg/kg wet	0.05000		97	70-130	3	25	
Trichloroethene	0.0531	0.0050	mg/kg wet	0.05000		106	70-130	1	25	
Trichlorofluoromethane	0.0516	0.0050	mg/kg wet	0.05000		103	70-130	1	25	
Vinyl Chloride	0.0623	0.0100	mg/kg wet	0.05000		125	70-130	2	25	
Xylene O	0.0538	0.0050	mg/kg wet	0.05000		108	70-130	1	25	
Xylene P,M	0.106	0.0100	mg/kg wet	0.1000		106	70-130	2	25	
Surrogate: 1,2-Dichloroethane-d4	0.0588		mg/kg wet	0.05000		118	70-130			
Surrogate: 4-Bromofluorobenzene	0.0548		mg/kg wet	0.05000		110	70-130			
Surrogate: Dibromofluoromethane	0.0569		mg/kg wet	0.05000		114	70-130			
Surrogate: Toluene-d8	0.0537		mg/kg wet	0.05000		107	70-130			

5035/8260B Volatile Organic Compounds / Methanol

Batch CH41530 - 5035

Blank

1,1,1,2-Tetrachloroethane	ND	0.100	mg/kg wet							
1,1,1-Trichloroethane	ND	0.0500	mg/kg wet							
1,1,2,2-Tetrachloroethane	ND	0.0500	mg/kg wet							
1,1,2-Trichloroethane	ND	0.0500	mg/kg wet							
1,1-Dichloroethane	ND	0.0500	mg/kg wet							
1,1-Dichloroethene	ND	0.0500	mg/kg wet							
1,1-Dichloropropene	ND	0.0500	mg/kg wet							
1,2,3-Trichlorobenzene	ND	0.0500	mg/kg wet							
1,2,3-Trichloropropane	ND	0.0500	mg/kg wet							
1,2,4-Trichlorobenzene	ND	0.0500	mg/kg wet							
1,2,4-Trimethylbenzene	ND	0.0500	mg/kg wet							
1,2-Dibromo-3-Chloropropane	ND	0.200	mg/kg wet							
1,2-Dibromoethane	ND	0.0500	mg/kg wet							
1,2-Dichlorobenzene	ND	0.0500	mg/kg wet							
1,2-Dichloroethane	ND	0.0500	mg/kg wet							
1,2-Dichloropropane	ND	0.0500	mg/kg wet							
1,3,5-Trimethylbenzene	ND	0.0500	mg/kg wet							
1,3-Dichlorobenzene	ND	0.0500	mg/kg wet							
1,3-Dichloropropane	ND	0.0500	mg/kg wet							
1,4-Dichlorobenzene	ND	0.0500	mg/kg wet							



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408202

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

5035/8260B Volatile Organic Compounds / Methanol

Batch CH41530 - 5035

1,4-Dioxane - Screen	ND	5.00	mg/kg wet
2,2-Dichloropropane	ND	0.100	mg/kg wet
2-Butanone	ND	0.200	mg/kg wet
2-Chlorotoluene	ND	0.0500	mg/kg wet
2-Hexanone	ND	0.200	mg/kg wet
4-Chlorotoluene	ND	0.0500	mg/kg wet
4-Isopropyltoluene	ND	0.0500	mg/kg wet
4-Methyl-2-Pentanone	ND	0.200	mg/kg wet
Acetone	0.228	0.200	mg/kg wet
Benzene	ND	0.0500	mg/kg wet
Bromobenzene	ND	0.0500	mg/kg wet
Bromochloromethane	ND	0.0500	mg/kg wet
Bromodichloromethane	ND	0.0500	mg/kg wet
Bromoform	ND	0.0500	mg/kg wet
Bromomethane	ND	0.100	mg/kg wet
Carbon Disulfide	ND	0.0500	mg/kg wet
Carbon Tetrachloride	ND	0.0500	mg/kg wet
Chlorobenzene	ND	0.0500	mg/kg wet
Chloroethane	ND	0.100	mg/kg wet
Chloroform	ND	0.0500	mg/kg wet
Chloromethane	ND	0.100	mg/kg wet
cis-1,2-Dichloroethene	ND	0.0500	mg/kg wet
cis-1,3-Dichloropropene	ND	0.0500	mg/kg wet
Dibromochloromethane	ND	0.0500	mg/kg wet
Dibromomethane	ND	0.0500	mg/kg wet
Dichlorodifluoromethane	ND	0.0500	mg/kg wet
Diethyl Ether	ND	0.0500	mg/kg wet
Di-isopropyl ether	ND	0.0500	mg/kg wet
Ethyl tertiary-butyl ether	ND	0.0500	mg/kg wet
Ethylbenzene	ND	0.0500	mg/kg wet
Hexachlorobutadiene	ND	0.0500	mg/kg wet
Isopropylbenzene	ND	0.0500	mg/kg wet
Methyl tert-Butyl Ether	ND	0.0500	mg/kg wet
Methylene Chloride	ND	0.200	mg/kg wet
Naphthalene	ND	0.0500	mg/kg wet
n-Butylbenzene	ND	0.0500	mg/kg wet
n-Propylbenzene	ND	0.0500	mg/kg wet
sec-Butylbenzene	ND	0.0500	mg/kg wet
Styrene	ND	0.0500	mg/kg wet
tert-Butylbenzene	ND	0.0500	mg/kg wet
Tertiary-amyl methyl ether	ND	0.0500	mg/kg wet
Tetrachloroethene	ND	0.0500	mg/kg wet
Tetrahydrofuran	ND	0.200	mg/kg wet
Toluene	ND	0.0500	mg/kg wet
trans-1,2-Dichloroethene	ND	0.0500	mg/kg wet



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1408202

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

5035/8260B Volatile Organic Compounds / Methanol

Batch CH41530 - 5035

trans-1,3-Dichloropropene	ND	0.0500	mg/kg wet							
Trichloroethene	ND	0.0500	mg/kg wet							
Trichlorofluoromethane	ND	0.0500	mg/kg wet							
Vinyl Chloride	ND	0.0500	mg/kg wet							
Xylene O	ND	0.0500	mg/kg wet							
Xylene P,M	ND	0.100	mg/kg wet							
Surrogate: 1,2-Dichloroethane-d4	2.46		mg/kg wet	2.500		98	70-130			
Surrogate: 4-Bromofluorobenzene	2.59		mg/kg wet	2.500		104	70-130			
Surrogate: Dibromofluoromethane	2.60		mg/kg wet	2.500		104	70-130			
Surrogate: Toluene-d8	2.60		mg/kg wet	2.500		104	70-130			

LCS

1,1,1,2-Tetrachloroethane	2.48	0.100	mg/kg wet	2.500		99	70-130			
1,1,1-Trichloroethane	2.42	0.0500	mg/kg wet	2.500		97	70-130			
1,1,2,2-Tetrachloroethane	2.50	0.0500	mg/kg wet	2.500		100	70-130			
1,1,2-Trichloroethane	2.34	0.0500	mg/kg wet	2.500		94	70-130			
1,1-Dichloroethane	2.38	0.0500	mg/kg wet	2.500		95	70-130			
1,1-Dichloroethene	2.44	0.0500	mg/kg wet	2.500		98	70-130			
1,1-Dichloropropene	2.54	0.0500	mg/kg wet	2.500		102	70-130			
1,2,3-Trichlorobenzene	2.51	0.0500	mg/kg wet	2.500		100	70-130			
1,2,3-Trichloropropane	2.56	0.0500	mg/kg wet	2.500		103	70-130			
1,2,4-Trichlorobenzene	2.55	0.0500	mg/kg wet	2.500		102	70-130			
1,2,4-Trimethylbenzene	2.48	0.0500	mg/kg wet	2.500		99	70-130			
1,2-Dibromo-3-Chloropropane	2.53	0.200	mg/kg wet	2.500		101	70-130			
1,2-Dibromoethane	2.53	0.0500	mg/kg wet	2.500		101	70-130			
1,2-Dichlorobenzene	2.41	0.0500	mg/kg wet	2.500		96	70-130			
1,2-Dichloroethane	2.40	0.0500	mg/kg wet	2.500		96	70-130			
1,2-Dichloropropane	2.41	0.0500	mg/kg wet	2.500		97	70-130			
1,3,5-Trimethylbenzene	2.57	0.0500	mg/kg wet	2.500		103	70-130			
1,3-Dichlorobenzene	2.47	0.0500	mg/kg wet	2.500		99	70-130			
1,3-Dichloropropane	2.56	0.0500	mg/kg wet	2.500		102	70-130			
1,4-Dichlorobenzene	2.46	0.0500	mg/kg wet	2.500		98	70-130			
1,4-Dioxane - Screen	59.3	5.00	mg/kg wet	50.00		119	44-241			
2,2-Dichloropropane	2.60	0.100	mg/kg wet	2.500		104	70-130			
2-Butanone	11.7	0.200	mg/kg wet	12.50		94	70-130			
2-Chlorotoluene	2.36	0.0500	mg/kg wet	2.500		94	70-130			
2-Hexanone	12.1	0.200	mg/kg wet	12.50		96	70-130			
4-Chlorotoluene	2.47	0.0500	mg/kg wet	2.500		99	70-130			
4-Isopropyltoluene	2.53	0.0500	mg/kg wet	2.500		101	70-130			
4-Methyl-2-Pentanone	12.0	0.200	mg/kg wet	12.50		96	70-130			
Acetone	11.8	0.200	mg/kg wet	12.50		94	70-130			
Benzene	2.51	0.0500	mg/kg wet	2.500		100	70-130			
Bromobenzene	2.54	0.0500	mg/kg wet	2.500		102	70-130			
Bromochloromethane	2.52	0.0500	mg/kg wet	2.500		101	70-130			
Bromodichloromethane	2.44	0.0500	mg/kg wet	2.500		97	70-130			
Bromoform	2.70	0.0500	mg/kg wet	2.500		108	70-130			



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1408202

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

5035/8260B Volatile Organic Compounds / Methanol

Batch CH41530 - 5035

Bromomethane	2.58	0.100	mg/kg wet	2.500		103	70-130			
Carbon Disulfide	2.51	0.0500	mg/kg wet	2.500		100	70-130			
Carbon Tetrachloride	2.45	0.0500	mg/kg wet	2.500		98	70-130			
Chlorobenzene	2.46	0.0500	mg/kg wet	2.500		98	70-130			
Chloroethane	2.11	0.100	mg/kg wet	2.500		85	70-130			
Chloroform	2.38	0.0500	mg/kg wet	2.500		95	70-130			
Chloromethane	2.11	0.100	mg/kg wet	2.500		84	70-130			
cis-1,2-Dichloroethene	2.44	0.0500	mg/kg wet	2.500		98	70-130			
cis-1,3-Dichloropropene	2.61	0.0500	mg/kg wet	2.500		105	70-130			
Dibromochloromethane	2.66	0.0500	mg/kg wet	2.500		106	70-130			
Dibromomethane	2.45	0.0500	mg/kg wet	2.500		98	70-130			
Dichlorodifluoromethane	1.88	0.0500	mg/kg wet	2.500		75	70-130			
Diethyl Ether	2.36	0.0500	mg/kg wet	2.500		94	70-130			
Di-isopropyl ether	2.41	0.0500	mg/kg wet	2.500		96	70-130			
Ethyl tertiary-butyl ether	2.52	0.0500	mg/kg wet	2.500		101	70-130			
Ethylbenzene	2.60	0.0500	mg/kg wet	2.500		104	70-130			
Hexachlorobutadiene	2.63	0.0500	mg/kg wet	2.500		105	70-130			
Isopropylbenzene	2.42	0.0500	mg/kg wet	2.500		97	70-130			
Methyl tert-Butyl Ether	2.48	0.0500	mg/kg wet	2.500		99	70-130			
Methylene Chloride	2.35	0.200	mg/kg wet	2.500		94	70-130			
Naphthalene	2.22	0.0500	mg/kg wet	2.500		89	70-130			
n-Butylbenzene	2.50	0.0500	mg/kg wet	2.500		100	70-130			
n-Propylbenzene	2.45	0.0500	mg/kg wet	2.500		98	70-130			
sec-Butylbenzene	2.46	0.0500	mg/kg wet	2.500		98	70-130			
Styrene	2.62	0.0500	mg/kg wet	2.500		105	70-130			
tert-Butylbenzene	2.57	0.0500	mg/kg wet	2.500		103	70-130			
Tertiary-amyl methyl ether	2.45	0.0500	mg/kg wet	2.500		98	70-130			
Tetrachloroethene	2.29	0.0500	mg/kg wet	2.500		92	70-130			
Tetrahydrofuran	2.44	0.200	mg/kg wet	2.500		98	70-130			
Toluene	2.58	0.0500	mg/kg wet	2.500		103	70-130			
trans-1,2-Dichloroethene	2.38	0.0500	mg/kg wet	2.500		95	70-130			
trans-1,3-Dichloropropene	2.37	0.0500	mg/kg wet	2.500		95	70-130			
Trichloroethene	2.53	0.0500	mg/kg wet	2.500		101	70-130			
Trichlorofluoromethane	2.06	0.0500	mg/kg wet	2.500		83	70-130			
Vinyl Chloride	2.53	0.0500	mg/kg wet	2.500		101	70-130			
Xylene O	2.52	0.0500	mg/kg wet	2.500		101	70-130			
Xylene P,M	5.10	0.100	mg/kg wet	5.000		102	70-130			
Surrogate: 1,2-Dichloroethane-d4	2.13		mg/kg wet	2.500		85	70-130			
Surrogate: 4-Bromofluorobenzene	2.28		mg/kg wet	2.500		91	70-130			
Surrogate: Dibromofluoromethane	2.22		mg/kg wet	2.500		89	70-130			
Surrogate: Toluene-d8	2.29		mg/kg wet	2.500		92	70-130			

LCS Dup

1,1,1,2-Tetrachloroethane	2.46	0.100	mg/kg wet	2.500		98	70-130	0.9	25	
1,1,1-Trichloroethane	2.43	0.0500	mg/kg wet	2.500		97	70-130	0.3	25	
1,1,2,2-Tetrachloroethane	2.48	0.0500	mg/kg wet	2.500		99	70-130	0.6	25	



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1408202

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

5035/8260B Volatile Organic Compounds / Methanol

Batch CH41530 - 5035

1,1,2-Trichloroethane	2.34	0.0500	mg/kg wet	2.500		94	70-130	0	25	
1,1-Dichloroethane	2.39	0.0500	mg/kg wet	2.500		96	70-130	0.5	25	
1,1-Dichloroethene	2.45	0.0500	mg/kg wet	2.500		98	70-130	0.3	25	
1,1-Dichloropropene	2.55	0.0500	mg/kg wet	2.500		102	70-130	0.2	25	
1,2,3-Trichlorobenzene	2.55	0.0500	mg/kg wet	2.500		102	70-130	2	25	
1,2,3-Trichloropropane	2.45	0.0500	mg/kg wet	2.500		98	70-130	4	25	
1,2,4-Trichlorobenzene	2.56	0.0500	mg/kg wet	2.500		103	70-130	0.5	25	
1,2,4-Trimethylbenzene	2.50	0.0500	mg/kg wet	2.500		100	70-130	1	25	
1,2-Dibromo-3-Chloropropane	2.56	0.200	mg/kg wet	2.500		103	70-130	1	25	
1,2-Dibromoethane	2.52	0.0500	mg/kg wet	2.500		101	70-130	0.4	25	
1,2-Dichlorobenzene	2.44	0.0500	mg/kg wet	2.500		98	70-130	1	25	
1,2-Dichloroethane	2.38	0.0500	mg/kg wet	2.500		95	70-130	0.8	25	
1,2-Dichloropropane	2.40	0.0500	mg/kg wet	2.500		96	70-130	0.5	25	
1,3,5-Trimethylbenzene	2.61	0.0500	mg/kg wet	2.500		104	70-130	1	25	
1,3-Dichlorobenzene	2.46	0.0500	mg/kg wet	2.500		98	70-130	0.5	25	
1,3-Dichloropropane	2.56	0.0500	mg/kg wet	2.500		102	70-130	0.08	25	
1,4-Dichlorobenzene	2.54	0.0500	mg/kg wet	2.500		101	70-130	3	25	
1,4-Dioxane - Screen	60.7	5.00	mg/kg wet	50.00		121	44-241	2	200	
2,2-Dichloropropane	2.59	0.100	mg/kg wet	2.500		104	70-130	0.5	25	
2-Butanone	11.9	0.200	mg/kg wet	12.50		95	70-130	1	25	
2-Chlorotoluene	2.62	0.0500	mg/kg wet	2.500		105	70-130	10	25	
2-Hexanone	12.1	0.200	mg/kg wet	12.50		97	70-130	0.7	25	
4-Chlorotoluene	2.48	0.0500	mg/kg wet	2.500		99	70-130	0.3	25	
4-Isopropyltoluene	2.55	0.0500	mg/kg wet	2.500		102	70-130	0.7	25	
4-Methyl-2-Pentanone	12.1	0.200	mg/kg wet	12.50		97	70-130	1	25	
Acetone	12.0	0.200	mg/kg wet	12.50		96	70-130	2	25	
Benzene	2.50	0.0500	mg/kg wet	2.500		100	70-130	0.5	25	
Bromobenzene	2.58	0.0500	mg/kg wet	2.500		103	70-130	1	25	
Bromochloromethane	2.51	0.0500	mg/kg wet	2.500		100	70-130	0.2	25	
Bromodichloromethane	2.44	0.0500	mg/kg wet	2.500		98	70-130	0.2	25	
Bromoform	2.72	0.0500	mg/kg wet	2.500		109	70-130	0.7	25	
Bromomethane	2.54	0.100	mg/kg wet	2.500		102	70-130	1	25	
Carbon Disulfide	2.53	0.0500	mg/kg wet	2.500		101	70-130	0.7	25	
Carbon Tetrachloride	2.46	0.0500	mg/kg wet	2.500		99	70-130	0.6	25	
Chlorobenzene	2.47	0.0500	mg/kg wet	2.500		99	70-130	0.4	25	
Chloroethane	2.03	0.100	mg/kg wet	2.500		81	70-130	4	25	
Chloroform	2.39	0.0500	mg/kg wet	2.500		96	70-130	0.3	25	
Chloromethane	2.12	0.100	mg/kg wet	2.500		85	70-130	0.5	25	
cis-1,2-Dichloroethene	2.46	0.0500	mg/kg wet	2.500		99	70-130	0.8	25	
cis-1,3-Dichloropropene	2.60	0.0500	mg/kg wet	2.500		104	70-130	0.3	25	
Dibromochloromethane	2.65	0.0500	mg/kg wet	2.500		106	70-130	0.4	25	
Dibromomethane	2.46	0.0500	mg/kg wet	2.500		98	70-130	0.2	25	
Dichlorodifluoromethane	1.89	0.0500	mg/kg wet	2.500		76	70-130	0.3	25	
Diethyl Ether	2.37	0.0500	mg/kg wet	2.500		95	70-130	0.4	25	
Di-isopropyl ether	2.40	0.0500	mg/kg wet	2.500		96	70-130	0.2	25	



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1408202

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

5035/8260B Volatile Organic Compounds / Methanol

Batch CH41530 - 5035

Ethyl tertiary-butyl ether	2.52	0.0500	mg/kg wet	2.500		101	70-130	0.04	25	
Ethylbenzene	2.59	0.0500	mg/kg wet	2.500		104	70-130	0.2	25	
Hexachlorobutadiene	2.75	0.0500	mg/kg wet	2.500		110	70-130	4	25	
Isopropylbenzene	2.45	0.0500	mg/kg wet	2.500		98	70-130	1	25	
Methyl tert-Butyl Ether	2.45	0.0500	mg/kg wet	2.500		98	70-130	0.9	25	
Methylene Chloride	2.36	0.200	mg/kg wet	2.500		94	70-130	0.6	25	
Naphthalene	2.28	0.0500	mg/kg wet	2.500		91	70-130	2	25	
n-Butylbenzene	2.52	0.0500	mg/kg wet	2.500		101	70-130	0.6	25	
n-Propylbenzene	2.33	0.0500	mg/kg wet	2.500		93	70-130	5	25	
sec-Butylbenzene	2.46	0.0500	mg/kg wet	2.500		98	70-130	0	25	
Styrene	2.58	0.0500	mg/kg wet	2.500		103	70-130	1	25	
tert-Butylbenzene	2.62	0.0500	mg/kg wet	2.500		105	70-130	2	25	
Tertiary-amyl methyl ether	2.45	0.0500	mg/kg wet	2.500		98	70-130	0.08	25	
Tetrachloroethene	2.29	0.0500	mg/kg wet	2.500		91	70-130	0.09	25	
Tetrahydrofuran	2.55	0.200	mg/kg wet	2.500		102	70-130	5	25	
Toluene	2.59	0.0500	mg/kg wet	2.500		104	70-130	0.5	25	
trans-1,2-Dichloroethene	2.39	0.0500	mg/kg wet	2.500		96	70-130	0.3	25	
trans-1,3-Dichloropropene	2.40	0.0500	mg/kg wet	2.500		96	70-130	1	25	
Trichloroethene	2.56	0.0500	mg/kg wet	2.500		103	70-130	1	25	
Trichlorofluoromethane	2.01	0.0500	mg/kg wet	2.500		80	70-130	3	25	
Vinyl Chloride	2.55	0.0500	mg/kg wet	2.500		102	70-130	0.9	25	
Xylene O	2.50	0.0500	mg/kg wet	2.500		100	70-130	0.8	25	
Xylene P,M	5.09	0.100	mg/kg wet	5.000		102	70-130	0.08	25	
Surrogate: 1,2-Dichloroethane-d4	2.14		mg/kg wet	2.500		86	70-130			
Surrogate: 4-Bromofluorobenzene	2.33		mg/kg wet	2.500		93	70-130			
Surrogate: Dibromofluoromethane	2.22		mg/kg wet	2.500		89	70-130			
Surrogate: Toluene-d8	2.29		mg/kg wet	2.500		92	70-130			

8082A Polychlorinated Biphenyls (PCB)

Batch CH41205 - 3540C

Blank

Aroclor 1016	ND	0.0500	mg/kg wet							
Aroclor 1221	ND	0.0500	mg/kg wet							
Aroclor 1232	ND	0.0500	mg/kg wet							
Aroclor 1242	ND	0.0500	mg/kg wet							
Aroclor 1248	ND	0.0500	mg/kg wet							
Aroclor 1254	ND	0.0500	mg/kg wet							
Aroclor 1260	ND	0.0500	mg/kg wet							
Aroclor 1262	ND	0.0500	mg/kg wet							
Aroclor 1268	ND	0.0500	mg/kg wet							
Surrogate: Decachlorobiphenyl	0.0216		mg/kg wet	0.02500		87	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0213		mg/kg wet	0.02500		85	30-150			
Surrogate: Tetrachloro-m-xylene	0.0190		mg/kg wet	0.02500		76	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0210		mg/kg wet	0.02500		84	30-150			



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408202

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

8082A Polychlorinated Biphenyls (PCB)

Batch CH41205 - 3540C

LCS

Aroclor 1016	0.517	0.0500	mg/kg wet	0.5000		103	40-140			
Aroclor 1260	0.496	0.0500	mg/kg wet	0.5000		99	40-140			
Surrogate: Decachlorobiphenyl	0.0215		mg/kg wet	0.02500		86	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0214		mg/kg wet	0.02500		86	30-150			
Surrogate: Tetrachloro-m-xylene	0.0217		mg/kg wet	0.02500		87	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0227		mg/kg wet	0.02500		91	30-150			

LCS Dup

Aroclor 1016	0.537	0.0500	mg/kg wet	0.5000		107	40-140	4	30	
Aroclor 1260	0.522	0.0500	mg/kg wet	0.5000		104	40-140	5	30	
Surrogate: Decachlorobiphenyl	0.0227		mg/kg wet	0.02500		91	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0221		mg/kg wet	0.02500		88	30-150			
Surrogate: Tetrachloro-m-xylene	0.0223		mg/kg wet	0.02500		89	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0232		mg/kg wet	0.02500		93	30-150			

Batch CH41829 - 3540C

Blank

Aroclor 1016	ND	0.0500	mg/kg wet							
Aroclor 1221	ND	0.0500	mg/kg wet							
Aroclor 1232	ND	0.0500	mg/kg wet							
Aroclor 1242	ND	0.0500	mg/kg wet							
Aroclor 1248	ND	0.0500	mg/kg wet							
Aroclor 1254	ND	0.0500	mg/kg wet							
Aroclor 1260	ND	0.0500	mg/kg wet							
Aroclor 1262	ND	0.0500	mg/kg wet							
Aroclor 1268	ND	0.0500	mg/kg wet							

Surrogate: Decachlorobiphenyl	0.0194		mg/kg wet	0.02500		78	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0186		mg/kg wet	0.02500		74	30-150			
Surrogate: Tetrachloro-m-xylene	0.0189		mg/kg wet	0.02500		76	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0201		mg/kg wet	0.02500		81	30-150			

LCS

Aroclor 1016	0.575	0.0500	mg/kg wet	0.5000		115	40-140			
Aroclor 1260	0.536	0.0500	mg/kg wet	0.5000		107	40-140			
Surrogate: Decachlorobiphenyl	0.0217		mg/kg wet	0.02500		87	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0218		mg/kg wet	0.02500		87	30-150			
Surrogate: Tetrachloro-m-xylene	0.0237		mg/kg wet	0.02500		95	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0245		mg/kg wet	0.02500		98	30-150			

LCS Dup

Aroclor 1016	0.566	0.0500	mg/kg wet	0.5000		113	40-140	2	30	
Aroclor 1260	0.533	0.0500	mg/kg wet	0.5000		107	40-140	0.5	30	
Surrogate: Decachlorobiphenyl	0.0219		mg/kg wet	0.02500		88	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0220		mg/kg wet	0.02500		88	30-150			



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408202

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

8082A Polychlorinated Biphenyls (PCB)

Batch CH41829 - 3540C

Surrogate: Tetrachloro-m-xylene	0.0230		mg/kg wet	0.02500		92	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0241		mg/kg wet	0.02500		96	30-150			

8270D Semi-Volatile Organic Compounds

Batch CH41207 - 3546

Blank

1,2,4-Trichlorobenzene	ND	0.333	mg/kg wet
1,2-Dichlorobenzene	ND	0.333	mg/kg wet
1,3-Dichlorobenzene	ND	0.333	mg/kg wet
1,4-Dichlorobenzene	ND	0.333	mg/kg wet
2,4,5-Trichlorophenol	ND	0.333	mg/kg wet
2,4,6-Trichlorophenol	ND	0.333	mg/kg wet
2,4-Dichlorophenol	ND	0.333	mg/kg wet
2,4-Dimethylphenol	ND	0.333	mg/kg wet
2,4-Dinitrophenol	ND	1.67	mg/kg wet
2,4-Dinitrotoluene	ND	0.333	mg/kg wet
2,6-Dinitrotoluene	ND	0.333	mg/kg wet
2-Chloronaphthalene	ND	0.333	mg/kg wet
2-Chlorophenol	ND	0.333	mg/kg wet
2-Methylnaphthalene	ND	0.333	mg/kg wet
2-Methylphenol	ND	0.333	mg/kg wet
2-Nitrophenol	ND	0.333	mg/kg wet
3,3'-Dichlorobenzidine	ND	0.667	mg/kg wet
3+4-Methylphenol	ND	0.667	mg/kg wet
4-Bromophenyl-phenylether	ND	0.333	mg/kg wet
4-Chloroaniline	ND	0.667	mg/kg wet
4-Nitrophenol	ND	1.67	mg/kg wet
Acenaphthene	ND	0.333	mg/kg wet
Acenaphthylene	ND	0.333	mg/kg wet
Acetophenone	ND	0.667	mg/kg wet
Aniline	ND	1.67	mg/kg wet
Anthracene	ND	0.333	mg/kg wet
Azobenzene	ND	0.333	mg/kg wet
Benzo(a)anthracene	ND	0.333	mg/kg wet
Benzo(a)pyrene	ND	0.167	mg/kg wet
Benzo(b)fluoranthene	ND	0.333	mg/kg wet
Benzo(g,h,i)perylene	ND	0.333	mg/kg wet
Benzo(k)fluoranthene	ND	0.333	mg/kg wet
bis(2-Chloroethoxy)methane	ND	0.333	mg/kg wet
bis(2-Chloroethyl)ether	ND	0.333	mg/kg wet
bis(2-chloroisopropyl)Ether	ND	0.333	mg/kg wet
bis(2-Ethylhexyl)phthalate	ND	0.333	mg/kg wet
Butylbenzylphthalate	ND	0.333	mg/kg wet
Chrysene	ND	0.167	mg/kg wet



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

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ESS Laboratory Work Order: 1408202

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

8270D Semi-Volatile Organic Compounds

Batch CH41207 - 3546

Dibenzo(a,h)Anthracene	ND	0.167	mg/kg wet							
Dibenzofuran	ND	0.333	mg/kg wet							
Diethylphthalate	ND	0.333	mg/kg wet							
Dimethylphthalate	ND	0.333	mg/kg wet							
Di-n-butylphthalate	ND	0.333	mg/kg wet							
Di-n-octylphthalate	ND	0.333	mg/kg wet							
Fluoranthene	ND	0.333	mg/kg wet							
Fluorene	ND	0.333	mg/kg wet							
Hexachlorobenzene	ND	0.333	mg/kg wet							
Hexachlorobutadiene	ND	0.333	mg/kg wet							
Hexachloroethane	ND	0.333	mg/kg wet							
Indeno(1,2,3-cd)Pyrene	ND	0.333	mg/kg wet							
Isophorone	ND	0.333	mg/kg wet							
Naphthalene	ND	0.333	mg/kg wet							
Nitrobenzene	ND	0.333	mg/kg wet							
N-Nitrosodimethylamine	ND	0.333	mg/kg wet							
Pentachlorophenol	ND	1.67	mg/kg wet							
Phenanthrene	ND	0.333	mg/kg wet							
Phenol	ND	0.333	mg/kg wet							
Pyrene	ND	0.333	mg/kg wet							
Surrogate: 1,2-Dichlorobenzene-d4	2.59		mg/kg wet	3.333		78	30-130			
Surrogate: 2,4,6-Tribromophenol	4.06		mg/kg wet	5.000		81	30-130			
Surrogate: 2-Chlorophenol-d4	3.74		mg/kg wet	5.000		75	30-130			
Surrogate: 2-Fluorobiphenyl	2.68		mg/kg wet	3.333		80	30-130			
Surrogate: 2-Fluorophenol	3.61		mg/kg wet	5.000		72	30-130			
Surrogate: Nitrobenzene-d5	2.49		mg/kg wet	3.333		75	30-130			
Surrogate: Phenol-d6	3.91		mg/kg wet	5.000		78	30-130			
Surrogate: p-Terphenyl-d14	3.43		mg/kg wet	3.333		103	30-130			

LCS

1,2,4-Trichlorobenzene	2.33	0.333	mg/kg wet	3.333		70	40-140			
1,2-Dichlorobenzene	2.28	0.333	mg/kg wet	3.333		68	40-140			
1,3-Dichlorobenzene	2.26	0.333	mg/kg wet	3.333		68	40-140			
1,4-Dichlorobenzene	2.28	0.333	mg/kg wet	3.333		68	40-140			
2,4,5-Trichlorophenol	2.68	0.333	mg/kg wet	3.333		80	30-130			
2,4,6-Trichlorophenol	2.72	0.333	mg/kg wet	3.333		81	30-130			
2,4-Dichlorophenol	2.52	0.333	mg/kg wet	3.333		75	30-130			
2,4-Dimethylphenol	2.55	0.333	mg/kg wet	3.333		77	30-130			
2,4-Dinitrophenol	1.88	1.67	mg/kg wet	3.333		56	30-130			
2,4-Dinitrotoluene	2.86	0.333	mg/kg wet	3.333		86	40-140			
2,6-Dinitrotoluene	2.65	0.333	mg/kg wet	3.333		80	40-140			
2-Chloronaphthalene	2.06	0.333	mg/kg wet	3.333		62	40-140			
2-Chlorophenol	2.36	0.333	mg/kg wet	3.333		71	30-130			
2-Methylnaphthalene	2.39	0.333	mg/kg wet	3.333		72	40-140			
2-Methylphenol	2.44	0.333	mg/kg wet	3.333		73	30-130			
2-Nitrophenol	2.76	0.333	mg/kg wet	3.333		83	30-130			



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

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ESS Laboratory Work Order: 1408202

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

8270D Semi-Volatile Organic Compounds

Batch CH41207 - 3546

3,3'-Dichlorobenzidine	2.71	0.667	mg/kg wet	3.333		81	40-140			
3+4-Methylphenol	4.86	0.667	mg/kg wet	6.667		73	30-130			
4-Bromophenyl-phenylether	2.48	0.333	mg/kg wet	3.333		75	40-140			
4-Chloroaniline	1.79	0.667	mg/kg wet	3.333		54	40-140			
4-Nitrophenol	2.13	1.67	mg/kg wet	3.333		64	30-130			
Acenaphthene	2.32	0.333	mg/kg wet	3.333		69	40-140			
Acenaphthylene	2.28	0.333	mg/kg wet	3.333		68	40-140			
Acetophenone	2.29	0.667	mg/kg wet	3.333		69	40-140			
Aniline	1.78	1.67	mg/kg wet	3.333		53	40-140			
Anthracene	2.56	0.333	mg/kg wet	3.333		77	40-140			
Azobenzene	2.49	0.333	mg/kg wet	3.333		75	40-140			
Benzo(a)anthracene	2.84	0.333	mg/kg wet	3.333		85	40-140			
Benzo(a)pyrene	2.55	0.167	mg/kg wet	3.333		76	40-140			
Benzo(b)fluoranthene	2.87	0.333	mg/kg wet	3.333		86	40-140			
Benzo(g,h,i)perylene	2.88	0.333	mg/kg wet	3.333		87	40-140			
Benzo(k)fluoranthene	2.74	0.333	mg/kg wet	3.333		82	40-140			
bis(2-Chloroethoxy)methane	2.36	0.333	mg/kg wet	3.333		71	40-140			
bis(2-Chloroethyl)ether	2.37	0.333	mg/kg wet	3.333		71	40-140			
bis(2-chloroisopropyl)Ether	2.28	0.333	mg/kg wet	3.333		68	40-140			
bis(2-Ethylhexyl)phthalate	3.25	0.333	mg/kg wet	3.333		97	40-140			
Butylbenzylphthalate	3.22	0.333	mg/kg wet	3.333		97	40-140			
Chrysene	2.84	0.167	mg/kg wet	3.333		85	40-140			
Dibenzo(a,h)Anthracene	2.97	0.167	mg/kg wet	3.333		89	40-140			
Dibenzofuran	2.40	0.333	mg/kg wet	3.333		72	40-140			
Diethylphthalate	2.58	0.333	mg/kg wet	3.333		77	40-140			
Dimethylphthalate	2.41	0.333	mg/kg wet	3.333		72	40-140			
Di-n-butylphthalate	2.73	0.333	mg/kg wet	3.333		82	40-140			
Di-n-octylphthalate	3.34	0.333	mg/kg wet	3.333		100	40-140			
Fluoranthene	2.78	0.333	mg/kg wet	3.333		83	40-140			
Fluorene	2.40	0.333	mg/kg wet	3.333		72	40-140			
Hexachlorobenzene	2.56	0.333	mg/kg wet	3.333		77	40-140			
Hexachlorobutadiene	2.24	0.333	mg/kg wet	3.333		67	40-140			
Hexachloroethane	2.43	0.333	mg/kg wet	3.333		73	40-140			
Indeno(1,2,3-cd)Pyrene	2.88	0.333	mg/kg wet	3.333		86	40-140			
Isophorone	2.25	0.333	mg/kg wet	3.333		68	40-140			
Naphthalene	2.38	0.333	mg/kg wet	3.333		72	40-140			
Nitrobenzene	2.30	0.333	mg/kg wet	3.333		69	40-140			
N-Nitrosodimethylamine	1.88	0.333	mg/kg wet	3.333		57	40-140			
Pentachlorophenol	2.78	1.67	mg/kg wet	3.333		83	30-130			
Phenanthrene	2.51	0.333	mg/kg wet	3.333		75	40-140			
Phenol	2.20	0.333	mg/kg wet	3.333		66	30-130			
Pyrene	2.93	0.333	mg/kg wet	3.333		88	40-140			
Surrogate: 1,2-Dichlorobenzene-d4	2.36		mg/kg wet	3.333		71	30-130			
Surrogate: 2,4,6-Tribromophenol	4.32		mg/kg wet	5.000		86	30-130			
Surrogate: 2-Chlorophenol-d4	3.28		mg/kg wet	5.000		66	30-130			



CERTIFICATE OF ANALYSIS

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ESS Laboratory Work Order: 1408202

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

8270D Semi-Volatile Organic Compounds

Batch CH41207 - 3546

Surrogate: 2-Fluorobiphenyl	2.41		mg/kg wet	3.333		72	30-130			
Surrogate: 2-Fluorophenol	3.28		mg/kg wet	5.000		66	30-130			
Surrogate: Nitrobenzene-d5	2.33		mg/kg wet	3.333		70	30-130			
Surrogate: Phenol-d6	3.55		mg/kg wet	5.000		71	30-130			
Surrogate: p-Terphenyl-d14	3.17		mg/kg wet	3.333		95	30-130			

LCS Dup

1,2,4-Trichlorobenzene	2.28	0.333	mg/kg wet	3.333		68	40-140	2	30	
1,2-Dichlorobenzene	2.17	0.333	mg/kg wet	3.333		65	40-140	5	30	
1,3-Dichlorobenzene	2.15	0.333	mg/kg wet	3.333		65	40-140	5	30	
1,4-Dichlorobenzene	2.16	0.333	mg/kg wet	3.333		65	40-140	5	30	
2,4,5-Trichlorophenol	2.47	0.333	mg/kg wet	3.333		74	30-130	8	30	
2,4,6-Trichlorophenol	2.52	0.333	mg/kg wet	3.333		76	30-130	7	30	
2,4-Dichlorophenol	2.38	0.333	mg/kg wet	3.333		72	30-130	5	30	
2,4-Dimethylphenol	2.42	0.333	mg/kg wet	3.333		73	30-130	5	30	
2,4-Dinitrophenol	1.74	1.67	mg/kg wet	3.333		52	30-130	7	30	
2,4-Dinitrotoluene	2.60	0.333	mg/kg wet	3.333		78	40-140	10	30	
2,6-Dinitrotoluene	2.46	0.333	mg/kg wet	3.333		74	40-140	8	30	
2-Chloronaphthalene	1.90	0.333	mg/kg wet	3.333		57	40-140	8	30	
2-Chlorophenol	2.21	0.333	mg/kg wet	3.333		66	30-130	7	30	
2-Methylnaphthalene	2.28	0.333	mg/kg wet	3.333		68	40-140	5	30	
2-Methylphenol	2.32	0.333	mg/kg wet	3.333		70	30-130	5	30	
2-Nitrophenol	2.53	0.333	mg/kg wet	3.333		76	30-130	9	30	
3,3'-Dichlorobenzidine	2.61	0.667	mg/kg wet	3.333		78	40-140	4	30	
3+4-Methylphenol	4.65	0.667	mg/kg wet	6.667		70	30-130	4	30	
4-Bromophenyl-phenylether	2.42	0.333	mg/kg wet	3.333		73	40-140	2	30	
4-Chloroaniline	1.70	0.667	mg/kg wet	3.333		51	40-140	5	30	
4-Nitrophenol	1.95	1.67	mg/kg wet	3.333		59	30-130	9	30	
Acenaphthene	2.15	0.333	mg/kg wet	3.333		65	40-140	7	30	
Acenaphthylene	2.12	0.333	mg/kg wet	3.333		64	40-140	7	30	
Acetophenone	2.19	0.667	mg/kg wet	3.333		66	40-140	5	30	
Aniline	1.70	1.67	mg/kg wet	3.333		51	40-140	4	30	
Anthracene	2.48	0.333	mg/kg wet	3.333		75	40-140	3	30	
Azobenzene	2.44	0.333	mg/kg wet	3.333		73	40-140	2	30	
Benzo(a)anthracene	2.68	0.333	mg/kg wet	3.333		81	40-140	6	30	
Benzo(a)pyrene	2.43	0.167	mg/kg wet	3.333		73	40-140	5	30	
Benzo(b)fluoranthene	2.68	0.333	mg/kg wet	3.333		80	40-140	7	30	
Benzo(g,h,i)perylene	2.72	0.333	mg/kg wet	3.333		82	40-140	6	30	
Benzo(k)fluoranthene	2.61	0.333	mg/kg wet	3.333		78	40-140	5	30	
bis(2-Chloroethoxy)methane	2.26	0.333	mg/kg wet	3.333		68	40-140	5	30	
bis(2-Chloroethyl)ether	2.24	0.333	mg/kg wet	3.333		67	40-140	6	30	
bis(2-chloroisopropyl)Ether	2.18	0.333	mg/kg wet	3.333		65	40-140	5	30	
bis(2-Ethylhexyl)phthalate	3.04	0.333	mg/kg wet	3.333		91	40-140	6	30	
Butylbenzylphthalate	3.04	0.333	mg/kg wet	3.333		91	40-140	6	30	
Chrysene	2.70	0.167	mg/kg wet	3.333		81	40-140	5	30	
Dibenzo(a,h)Anthracene	2.80	0.167	mg/kg wet	3.333		84	40-140	6	30	



CERTIFICATE OF ANALYSIS

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ESS Laboratory Work Order: 1408202

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

8270D Semi-Volatile Organic Compounds

Batch CH41207 - 3546

Dibenzofuran	2.22	0.333	mg/kg wet	3.333		66	40-140	8	30	
Diethylphthalate	2.47	0.333	mg/kg wet	3.333		74	40-140	4	30	
Dimethylphthalate	2.24	0.333	mg/kg wet	3.333		67	40-140	7	30	
Di-n-butylphthalate	2.58	0.333	mg/kg wet	3.333		77	40-140	5	30	
Di-n-octylphthalate	3.09	0.333	mg/kg wet	3.333		93	40-140	8	30	
Fluoranthene	2.60	0.333	mg/kg wet	3.333		78	40-140	7	30	
Fluorene	2.22	0.333	mg/kg wet	3.333		67	40-140	8	30	
Hexachlorobenzene	2.49	0.333	mg/kg wet	3.333		75	40-140	3	30	
Hexachlorobutadiene	2.14	0.333	mg/kg wet	3.333		64	40-140	5	30	
Hexachloroethane	2.31	0.333	mg/kg wet	3.333		69	40-140	5	30	
Indeno(1,2,3-cd)Pyrene	2.72	0.333	mg/kg wet	3.333		82	40-140	6	30	
Isophorone	2.13	0.333	mg/kg wet	3.333		64	40-140	6	30	
Naphthalene	2.28	0.333	mg/kg wet	3.333		69	40-140	4	30	
Nitrobenzene	2.19	0.333	mg/kg wet	3.333		66	40-140	5	30	
N-Nitrosodimethylamine	2.36	0.333	mg/kg wet	3.333		71	40-140	22	30	
Pentachlorophenol	2.51	1.67	mg/kg wet	3.333		75	30-130	10	30	
Phenanthrene	2.41	0.333	mg/kg wet	3.333		72	40-140	4	30	
Phenol	2.08	0.333	mg/kg wet	3.333		63	30-130	5	30	
Pyrene	2.80	0.333	mg/kg wet	3.333		84	40-140	5	30	
Surrogate: 1,2-Dichlorobenzene-d4	2.32		mg/kg wet	3.333		70	30-130			
Surrogate: 2,4,6-Tribromophenol	4.30		mg/kg wet	5.000		86	30-130			
Surrogate: 2-Chlorophenol-d4	3.22		mg/kg wet	5.000		64	30-130			
Surrogate: 2-Fluorobiphenyl	2.33		mg/kg wet	3.333		70	30-130			
Surrogate: 2-Fluorophenol	3.22		mg/kg wet	5.000		64	30-130			
Surrogate: Nitrobenzene-d5	2.29		mg/kg wet	3.333		69	30-130			
Surrogate: Phenol-d6	3.47		mg/kg wet	5.000		69	30-130			
Surrogate: p-Terphenyl-d14	3.14		mg/kg wet	3.333		94	30-130			

Classical Chemistry

Batch CH41416 - General Preparation

Blank

Conductivity	ND	5	umhos/cm							

LCS

Conductivity	1380		umhos/cm	1411		98	90-110			

MADEP-EPH Extractable Petroleum Hydrocarbons

Batch CH41403 - 3546

Blank

C19-C36 Aliphatics1	ND	15.0	mg/kg wet							
C9-C18 Aliphatics1	ND	15.0	mg/kg wet							
Decane (C10)	ND	0.5	mg/kg wet							
Docosane (C22)	ND	0.5	mg/kg wet							
Dodecane (C12)	ND	0.5	mg/kg wet							
Eicosane (C20)	ND	0.5	mg/kg wet							



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1408202

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

MADEP-EPH Extractable Petroleum Hydrocarbons

Batch CH41403 - 3546

Hexacosane (C26)	ND	0.5	mg/kg wet							
Hexadecane (C16)	ND	0.5	mg/kg wet							
Hexatriacontane (C36)	ND	0.5	mg/kg wet							
Nonadecane (C19)	ND	0.5	mg/kg wet							
Nonane (C9)	ND	0.5	mg/kg wet							
Octacosane (C28)	ND	0.5	mg/kg wet							
Octadecane (C18)	ND	0.5	mg/kg wet							
Tetracosane (C24)	ND	0.5	mg/kg wet							
Tetradecane (C14)	ND	0.5	mg/kg wet							
Triacontane (C30)	ND	0.5	mg/kg wet							

<i>Surrogate: 1-Chlorooctadecane</i>	<i>1.64</i>		mg/kg wet	<i>2.000</i>		<i>82</i>	<i>40-140</i>

Blank

2-Methylnaphthalene	ND	0.20	mg/kg wet				
Acenaphthene	ND	0.40	mg/kg wet				
Acenaphthylene	ND	0.20	mg/kg wet				
Anthracene	ND	0.40	mg/kg wet				
Benzo(a)anthracene	ND	0.40	mg/kg wet				
Benzo(a)pyrene	ND	0.40	mg/kg wet				
Benzo(b)fluoranthene	ND	0.40	mg/kg wet				
Benzo(g,h,i)perylene	ND	0.40	mg/kg wet				
Benzo(k)fluoranthene	ND	0.40	mg/kg wet				
C11-C22 Unadjusted Aromatics1	ND	15.0	mg/kg wet				
Chrysene	ND	0.40	mg/kg wet				
Dibenzo(a,h)Anthracene	ND	0.20	mg/kg wet				
Fluoranthene	ND	0.40	mg/kg wet				
Fluorene	ND	0.40	mg/kg wet				
Indeno(1,2,3-cd)Pyrene	ND	0.40	mg/kg wet				
Naphthalene	ND	0.40	mg/kg wet				
Phenanthrene	ND	0.40	mg/kg wet				
Pyrene	ND	0.40	mg/kg wet				

<i>Surrogate: 2-Bromonaphthalene</i>	<i>2.05</i>		mg/kg wet	<i>2.000</i>		<i>102</i>	<i>40-140</i>

<i>Surrogate: 2-Fluorobiphenyl</i>	<i>2.01</i>		mg/kg wet	<i>2.000</i>		<i>101</i>	<i>40-140</i>

<i>Surrogate: O-Terphenyl</i>	<i>1.54</i>		mg/kg wet	<i>2.000</i>		<i>77</i>	<i>40-140</i>

LCS

C19-C36 Aliphatics1	19.2	15.0	mg/kg wet	16.00		120	40-140
C9-C18 Aliphatics1	12.0	15.0	mg/kg wet	12.00		100	40-140
Decane (C10)	1.2	0.5	mg/kg wet	2.000		61	40-140
Docosane (C22)	1.9	0.5	mg/kg wet	2.000		93	40-140
Dodecane (C12)	1.3	0.5	mg/kg wet	2.000		67	40-140
Eicosane (C20)	1.8	0.5	mg/kg wet	2.000		90	40-140
Hexacosane (C26)	1.8	0.5	mg/kg wet	2.000		89	40-140
Hexadecane (C16)	1.7	0.5	mg/kg wet	2.000		85	40-140
Hexatriacontane (C36)	1.8	0.5	mg/kg wet	2.000		92	40-140
Nonadecane (C19)	1.8	0.5	mg/kg wet	2.000		90	40-140



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408202

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

MADEP-EPH Extractable Petroleum Hydrocarbons

Batch CH41403 - 3546

Nonane (C9)	0.9	0.5	mg/kg wet	2.000		46	30-140			
Octacosane (C28)	1.7	0.5	mg/kg wet	2.000		86	40-140			
Octadecane (C18)	1.8	0.5	mg/kg wet	2.000		89	40-140			
Tetracosane (C24)	1.9	0.5	mg/kg wet	2.000		93	40-140			
Tetradecane (C14)	1.5	0.5	mg/kg wet	2.000		76	40-140			
Triacontane (C30)	1.7	0.5	mg/kg wet	2.000		86	40-140			

<i>Surrogate: 1-Chlorooctadecane</i>	<i>1.61</i>		mg/kg wet	<i>2.000</i>		<i>81</i>	<i>40-140</i>			

LCS

2-Methylnaphthalene	1.61	0.20	mg/kg wet	2.000		81	40-140			
Acenaphthene	1.56	0.40	mg/kg wet	2.000		78	40-140			
Acenaphthylene	1.65	0.20	mg/kg wet	2.000		83	40-140			
Anthracene	1.71	0.40	mg/kg wet	2.000		85	40-140			
Benzo(a)anthracene	1.91	0.40	mg/kg wet	2.000		96	40-140			
Benzo(a)pyrene	2.15	0.40	mg/kg wet	2.000		108	40-140			
Benzo(b)fluoranthene	1.96	0.40	mg/kg wet	2.000		98	40-140			
Benzo(g,h,i)perylene	2.11	0.40	mg/kg wet	2.000		106	40-140			
Benzo(k)fluoranthene	1.86	0.40	mg/kg wet	2.000		93	40-140			
C11-C22 Unadjusted Aromatics1	39.5	15.0	mg/kg wet	34.00		116	40-140			
Chrysene	1.87	0.40	mg/kg wet	2.000		94	40-140			
Dibenzo(a,h)Anthracene	2.10	0.20	mg/kg wet	2.000		105	40-140			
Fluoranthene	1.88	0.40	mg/kg wet	2.000		94	40-140			
Fluorene	1.68	0.40	mg/kg wet	2.000		84	40-140			
Indeno(1,2,3-cd)Pyrene	2.19	0.40	mg/kg wet	2.000		110	40-140			
Naphthalene	1.55	0.40	mg/kg wet	2.000		77	40-140			
Phenanthrene	1.73	0.40	mg/kg wet	2.000		87	40-140			
Pyrene	1.88	0.40	mg/kg wet	2.000		94	40-140			

<i>Surrogate: 2-Bromonaphthalene</i>	<i>1.86</i>		mg/kg wet	<i>2.000</i>		<i>93</i>	<i>40-140</i>			

<i>Surrogate: 2-Fluorobiphenyl</i>	<i>2.05</i>		mg/kg wet	<i>2.000</i>		<i>103</i>	<i>40-140</i>			

<i>Surrogate: O-Terphenyl</i>	<i>1.63</i>		mg/kg wet	<i>2.000</i>		<i>81</i>	<i>40-140</i>			

LCS

2-Methylnaphthalene Breakthrough	0.0		%				0-5			
Naphthalene Breakthrough	0.0		%				0-5			

LCS Dup

C19-C36 Aliphatics1	18.9	15.0	mg/kg wet	16.00		118	40-140	2	25	
C9-C18 Aliphatics1	11.9	15.0	mg/kg wet	12.00		99	40-140	0.7	25	
Decane (C10)	1.2	0.5	mg/kg wet	2.000		62	40-140	0.2	25	
Docosane (C22)	1.9	0.5	mg/kg wet	2.000		95	40-140	2	25	
Dodecane (C12)	1.4	0.5	mg/kg wet	2.000		68	40-140	1	25	
Eicosane (C20)	1.8	0.5	mg/kg wet	2.000		92	40-140	3	25	
Hexacosane (C26)	1.8	0.5	mg/kg wet	2.000		91	40-140	3	25	
Hexadecane (C16)	1.8	0.5	mg/kg wet	2.000		88	40-140	3	25	
Hexatriacontane (C36)	1.9	0.5	mg/kg wet	2.000		95	40-140	2	25	
Nonadecane (C19)	1.8	0.5	mg/kg wet	2.000		92	40-140	2	25	



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1408202

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

MADEP-EPH Extractable Petroleum Hydrocarbons

Batch CH41403 - 3546

Nonane (C9)	0.9	0.5	mg/kg wet	2.000		46	30-140	0.3	25	
Octacosane (C28)	1.8	0.5	mg/kg wet	2.000		89	40-140	3	25	
Octadecane (C18)	1.8	0.5	mg/kg wet	2.000		91	40-140	2	25	
Tetracosane (C24)	1.9	0.5	mg/kg wet	2.000		94	40-140	0.3	25	
Tetradecane (C14)	1.6	0.5	mg/kg wet	2.000		78	40-140	3	25	
Triacotane (C30)	1.8	0.5	mg/kg wet	2.000		88	40-140	3	25	

<i>Surrogate: 1-Chlorooctadecane</i>	<i>1.64</i>		mg/kg wet	<i>2.000</i>		<i>82</i>	<i>40-140</i>			

LCS Dup

2-Methylnaphthalene	1.73	0.20	mg/kg wet	2.000		87	40-140	7	20	
Acenaphthene	1.62	0.40	mg/kg wet	2.000		81	40-140	4	20	
Acenaphthylene	1.73	0.20	mg/kg wet	2.000		87	40-140	5	20	
Anthracene	1.76	0.40	mg/kg wet	2.000		88	40-140	3	20	
Benzo(a)anthracene	1.97	0.40	mg/kg wet	2.000		98	40-140	3	20	
Benzo(a)pyrene	2.20	0.40	mg/kg wet	2.000		110	40-140	2	20	
Benzo(b)fluoranthene	2.03	0.40	mg/kg wet	2.000		102	40-140	4	20	
Benzo(g,h,i)perylene	2.12	0.40	mg/kg wet	2.000		106	40-140	0.3	20	
Benzo(k)fluoranthene	1.93	0.40	mg/kg wet	2.000		97	40-140	4	20	
C11-C22 Unadjusted Aromatics1	41.3	15.0	mg/kg wet	34.00		122	40-140	4	25	
Chrysene	1.92	0.40	mg/kg wet	2.000		96	40-140	2	20	
Dibenzo(a,h)Anthracene	2.10	0.20	mg/kg wet	2.000		105	40-140	0.08	20	
Fluoranthene	1.91	0.40	mg/kg wet	2.000		96	40-140	2	20	
Fluorene	1.71	0.40	mg/kg wet	2.000		86	40-140	2	20	
Indeno(1,2,3-cd)Pyrene	2.19	0.40	mg/kg wet	2.000		109	40-140	0.3	20	
Naphthalene	1.65	0.40	mg/kg wet	2.000		82	40-140	6	20	
Phenanthrene	1.80	0.40	mg/kg wet	2.000		90	40-140	4	20	
Pyrene	1.92	0.40	mg/kg wet	2.000		96	40-140	2	20	

<i>Surrogate: 2-Bromonaphthalene</i>	<i>1.94</i>		mg/kg wet	<i>2.000</i>		<i>97</i>	<i>40-140</i>			

<i>Surrogate: 2-Fluorobiphenyl</i>	<i>2.10</i>		mg/kg wet	<i>2.000</i>		<i>105</i>	<i>40-140</i>			

<i>Surrogate: O-Terphenyl</i>	<i>1.65</i>		mg/kg wet	<i>2.000</i>		<i>82</i>	<i>40-140</i>			

LCS Dup

2-Methylnaphthalene Breakthrough	0.0		%				0-5		200	
Naphthalene Breakthrough	0.0		%				0-5		200	

MADEP-VPH Volatile Petroleum Hydrocarbon

Batch CH41601 - 5035

Blank

1,2,4-Trimethylbenzene	ND	0.20	mg/kg wet							
2,2,4-Trimethylpentane	ND	5.00	mg/kg wet							
2-Methylpentane	ND	5.00	mg/kg wet							
Benzene	ND	0.20	mg/kg wet							
C5-C8 Unadjusted Aliphatics	ND	10.0	mg/kg wet							
C9-C10 Aromatics	ND	10.0	mg/kg wet							
C9-C12 Unadjusted Aliphatics	ND	10.0	mg/kg wet							



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1408202

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

MADEP-VPH Volatile Petroleum Hydrocarbon

Batch CH41601 - 5035

Ethylbenzene	ND	0.20	mg/kg wet							
Methyl tert-Butyl Ether	ND	0.05	mg/kg wet							
Naphthalene	ND	0.20	mg/kg wet							
n-Butylcyclohexane	ND	5.00	mg/kg wet							
n-Decane	ND	5.00	mg/kg wet							
Nonane (C9)	ND	5.00	mg/kg wet							
Pentane	ND	5.00	mg/kg wet							
Toluene	ND	0.20	mg/kg wet							
Xylene O	ND	0.20	mg/kg wet							
Xylene P,M	ND	0.40	mg/kg wet							

Surrogate: 2,5-Dibromotoluene - FID	6.26		mg/kg wet	5.000		125	70-130
Surrogate: 2,5-Dibromotoluene - PID	6.33		mg/kg wet	5.000		127	70-130
Surrogate: Trifluorotoluene - FID	4.69		mg/kg wet	5.333		88	70-130
Surrogate: Trifluorotoluene - PID	4.77		mg/kg wet	5.333		89	70-130

LCS

1,2,4-Trimethylbenzene	10.0	0.20	mg/kg wet	10.00		100	70-130
2,2,4-Trimethylpentane	14.1	5.00	mg/kg wet	15.00		94	70-130
2-Methylpentane	16.4	5.00	mg/kg wet	15.00		109	70-130
Benzene	4.84	0.20	mg/kg wet	5.000		97	70-130
C5-C8 Unadjusted Aliphatics	44.3	10.0	mg/kg wet	40.00		111	70-130
C9-C10 Aromatics	9.47	10.0	mg/kg wet	10.00		95	70-130
C9-C12 Unadjusted Aliphatics	24.1	10.0	mg/kg wet	30.00		80	70-130
Ethylbenzene	4.91	0.20	mg/kg wet	5.000		98	70-130
Methyl tert-Butyl Ether	14.8	0.05	mg/kg wet	15.00		99	70-130
Naphthalene	9.06	0.20	mg/kg wet	10.00		91	70-130
n-Butylcyclohexane	7.30	5.00	mg/kg wet	10.00		73	70-130
n-Decane	8.29	5.00	mg/kg wet	10.00		83	70-130
Nonane (C9)	7.58	5.00	mg/kg wet	10.00		76	30-130
Pentane	12.2	5.00	mg/kg wet	10.00		122	70-130
Toluene	14.9	0.20	mg/kg wet	15.00		99	70-130
Xylene O	9.89	0.20	mg/kg wet	10.00		99	70-130
Xylene P,M	20.1	0.40	mg/kg wet	20.00		100	70-130

Surrogate: 2,5-Dibromotoluene - FID	5.32		mg/kg wet	5.000		106	70-130
Surrogate: 2,5-Dibromotoluene - PID	5.37		mg/kg wet	5.000		107	70-130
Surrogate: Trifluorotoluene - FID	4.87		mg/kg wet	5.333		91	70-130
Surrogate: Trifluorotoluene - PID	4.94		mg/kg wet	5.333		93	70-130

LCS Dup

1,2,4-Trimethylbenzene	10.2	0.20	mg/kg wet	10.00		102	70-130	2	25
2,2,4-Trimethylpentane	16.7	5.00	mg/kg wet	15.00		111	70-130	17	25
2-Methylpentane	15.8	5.00	mg/kg wet	15.00		105	70-130	4	25
Benzene	4.83	0.20	mg/kg wet	5.000		97	70-130	0.3	25
C5-C8 Unadjusted Aliphatics	46.4	10.0	mg/kg wet	40.00		116	70-130	5	25
C9-C10 Aromatics	9.65	10.0	mg/kg wet	10.00		96	70-130	2	25
C9-C12 Unadjusted Aliphatics	24.7	10.0	mg/kg wet	30.00		82	70-130	3	25



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1408202

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-VPH Volatile Petroleum Hydrocarbon										
Batch CH41601 - 5035										
Ethylbenzene	4.87	0.20	mg/kg wet	5.000		97	70-130	0.8	25	
Methyl tert-Butyl Ether	14.9	0.05	mg/kg wet	15.00		99	70-130	1	25	
Naphthalene	9.74	0.20	mg/kg wet	10.00		97	70-130	7	25	
n-Butylcyclohexane	7.43	5.00	mg/kg wet	10.00		74	70-130	2	25	
n-Decane	8.27	5.00	mg/kg wet	10.00		83	70-130	0.1	25	
Nonane (C9)	8.08	5.00	mg/kg wet	10.00		81	30-130	6	25	
Pentane	11.9	5.00	mg/kg wet	10.00		119	70-130	2	25	
Toluene	14.9	0.20	mg/kg wet	15.00		99	70-130	0.02	25	
Xylene O	9.85	0.20	mg/kg wet	10.00		99	70-130	0.4	25	
Xylene P,M	19.9	0.40	mg/kg wet	20.00		100	70-130	0.8	25	
Surrogate: 2,5-Dibromotoluene - FID	5.47		mg/kg wet	5.000		109	70-130			
Surrogate: 2,5-Dibromotoluene - PID	5.50		mg/kg wet	5.000		110	70-130			
Surrogate: Trifluorotoluene - FID	4.81		mg/kg wet	5.333		90	70-130			
Surrogate: Trifluorotoluene - PID	4.90		mg/kg wet	5.333		92	70-130			



CERTIFICATE OF ANALYSIS

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Client Project ID: Union Square

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Notes and Definitions

Z-04	MeOH - covered
WL	Results obtained from a deionized water leach of the sample.
U	Analyte included in the analysis, but not detected
Q	Calibration required quadratic regression (Q).
D	Diluted.
C+	Continuing Calibration recovery is above upper control limit (C+).
C-	Continuing Calibration recovery is below lower control limit (C-).
B-	Blank Spike recovery is below lower control limit (B-).
ND	Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MDL	Method Detection Limit
MRL	Method Reporting Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
DL	Detection Limit
I/V	Initial Volume
F/V	Final Volume
§	Subcontracted analysis; see attached report
1	Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
2	Range result excludes concentrations of target analytes eluting in that range.
3	Range result excludes the concentration of the C9-C10 aromatic range.
Avg	Results reported as a mathematical average.
NR	No Recovery
[CALC]	Calculated Analyte
SUB	Subcontracted analysis; see attached report



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
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ESS Laboratory Work Order: 1408202

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Department of Defense (DoD) Environmental Laboratory Accreditation Program (ELAP)

A2LA Accredited: Testing Cert# 2864.01

<http://www.a2la.org/scopepdf/2864-01.pdf>

Rhode Island Potable and Non Potable Water: LAI00179

<http://www.health.ri.gov/find/labs/analytical/ESS.pdf>

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750

http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutOfStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI0002

<http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/documents/AllLabs.xls>

Massachusetts Potable and Non Potable Water: M-RI002

<http://public.dep.state.ma.us/Labcert/Labcert.aspx>

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424

<http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm>

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313

<http://www.wadsworth.org/labcert/elap/comm.html>

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006

http://datamine2.state.nj.us/DEP_Opra/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752

http://www.depweb.state.pa.us/portal/server.pt/community/labs/13780/laboratory_accreditation_program/590095

CHEMISTRY

A2LA Accredited: Testing Cert # 2864.01

Lead in Paint, Phthalates, Lead in Children's Metals Products (Including Jewelry)

<http://www.A2LA.org/dirsearchnew/newsearch.cfm>

CPSC ID# 1141

Lead Paint, Lead in Children's Metals Jewelry

<http://www.cpsc.gov/cgi-bin/labapplist.aspx>

Sample and Cooler Receipt ChecklistClient: PEER ConsultantsESS Project ID: 14080202

Client Project ID: _____

Date Project Due: 8/19/2014Shipped/Delivered Via: ESS CourierDays For Project: 5 Day**Items to be checked upon receipt:**

1. Air Bill Manifest Present?

☒ **No**

Air No.:

2. Were Custody Seals Present?

☐ **No**

3. Were Custody Seals Intact?

☐ **N/A**

4. Is Radiation count < 100 CPM?

☐ **Yes**

5. Is a cooler present?

☐ **Yes**Cooler Temp: 1.3Iced With: Ice

6. Was COC included with samples?

☐ **Yes**

7. Was COC signed and dated by client?

☐ **Yes**

8. Does the COC match the sample

☐ **Yes**

9. Is COC complete and correct?

☐ **Yes**

10. Are the samples properly preserved?

☐ **Yes**

11. Proper sample containers used?

☐ **Yes**

12. Any air bubbles in the VOA vials?

☐ **N/A**

13. Holding times exceeded?

☐ **No**

14. Sufficient sample volumes?

☐ **Yes**

15. Any Subcontracting needed?

☐ **No**16. Are ESS labels on correct containers? ☒ **Yes** ☐ **No**17. Were samples received intact? ☒ **Yes** ☐ **No**

ESS Sample IDs: _____

Sub Lab: _____

Analysis: _____

TAT: _____

18. Was there need to call project manager to discuss status? If yes, please explain.

U vials frozen @ 1827 AUG 8/12/14
DID NOT receive % Solids jars for PB 9 5-7' and PB 2 10-12' w/ 8/12/14

Who was called?: _____

By whom? _____

Sample Number	Properly Preserved	Container Type	# of Containers	Preservative
1	Yes	40 ml - VOA	1	MeOH
1	Yes	8 oz Soil Jar	2	NP
2	Yes	40 ml - VOA	1	MeOH
2	Yes	8 oz Soil Jar	2	NP
3	Yes	40 ml - VOA	1	MeOH
3	Yes	40 ml - VOA	2	other
4	Yes	40 ml - VOA	1	MeOH
4	Yes	40 ml - VOA	2	other
5	Yes	40 ml - VOA	1	MeOH
5	Yes	8 oz Soil Jar	2	NP

Completed By: [Signature]Date/Time: 8/12/14 1818Reviewed By: [Signature]Date/Time: 8/12/14 1824

ESS Laboratory

Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston, RI 02910-2211
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

CHAIN OF CUSTODY

Page 1 of 1

Turn Time If faster than 5 days, prior approval by laboratory is required #	Standard	Other
State where samples were collected from:	MA RI CT NH NJ NY ME	Other
Is this project for any of the following:	USACE	Other
MA-MCP	Navy	

Reporting Limits Common-97/ MCP 8-1	ESS LAB PROJECT ID 1408202
Electronic Deliverable	Yes ☒ No ☐
Format: Excel ☒ Access ☐ PDF ☒ Other ☐	

Co. Name	Project #	Project Name (20 Char. or less)	Write Required Analysis							
PEER Consultants	5559	Union Square								
Contact Person	Address									
DAVE GORDEN	99 S Bedford St Suite 200									
City	State	Zip	PO#							
Burlington	MA	01803	5559							
Telephone #	Fax #	Email Address								
7812388880	7812388884	gordend@peerconsultants.com								
ESS LAB Sample #	Date	Collection Time	COMP	GRAB	MATRIX	Sample Identification (20 Char. or less)	Pres Code	Number of Containers	Type of Containers	Analysis
1	8/8/14	1205		☒	S	PB 7 1-13'	6/1 3	6/1	3	✓
2	8/11/14	1300		☒	S	PB 9 1-9'	6/1 3	6/1	3	✓
3	8/11/14	1300		☒	S	PB 9 5-7'	6/9 3	6/9	3	✓
4	8/12/14	1233		☒	S	PB 2 10-12'	6/9 3	6/9	3	✓
5	8/12/14	1233		☒	S	PB 2 2-14'	6/1 3	6/1	3	✓

Container Type: P-Poly Glass S-Sterile V-VOA	Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters
Cooler Present ☐ Yes ☐ No	Internal Use Only
Seals Intact ☐ Yes ☐ No NA: ☒ Pickup	
Cooler Temp: 43 DEE KLT	
Relinquished by: (Signature)	Date/Time
<i>[Signature]</i>	8/12/14 1409
Relinquished by: (Signature)	Date/Time
<i>[Signature]</i>	8/12/14 1650
Relinquished by: (Signature)	Date/Time
<i>[Signature]</i>	8/12/14 1815

*By circling MA-MCP, client acknowledges samples were collected in accordance with MADEP CAM VII A

Please fax all changes to Chain of Custody in writing.



CERTIFICATE OF ANALYSIS

David Gorden
PEER Consultants, P.C.
99 S. Bedford Street
Burlington, MA 01803

RE: Union Square (5559)
ESS Laboratory Work Order Number: 1408317

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

REVIEWED

By ESS Laboratory at 12:56 pm, Aug 22, 2014

Analytical Summary

The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with NELAC Standards, A2LA and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408317

SAMPLE RECEIPT

The following samples were received on August 14, 2014 for the analyses specified on the enclosed Chain of Custody Record.

To achieve CAM compliance for MCP data, ESS Laboratory has performed and reviewed all QA/QC Requirements and Performance Standards listed in each method. Holding times and preservation have also been reviewed. All CAM requirements have been achieved unless noted in the project narrative.

Each method has been set-up in the laboratory to reach required MCP standards. The methods for aqueous VOA and Soil Methanol VOA have known limitations for certain analytes. The regulatory standards may not be achieved due to these limitations. In addition, for all methods, matrix interferences, dilutions, and %Solids may elevate method reporting limits above regulatory standards. ESS Laboratory can provide, upon request, a Data Checker (regulatory standard comparison spreadsheet) electronic deliverable which will highlight these exceedances.

For EPH soil samples, the aromatic range results have been corrected for identified cartridge contaminant in accordance with the CAM protocol.

Lab Number	Sample Name	Matrix	Analysis
1408317-01	PB4 8.5-9.5ft	Soil	8260B
1408317-02	PB4 1.5-13.5ft	Soil	6010C, 6020A, 7471B, 8082A, 8270D, 9050A, EPH8270, MADEP-EPH, MADEP-VPH
1408317-03	PB8 2-6ft	Soil	6010C, 6020A, 7471B, 8082A, 8270D, 9050A, EPH8270, MADEP-EPH, MADEP-VPH
1408317-04	PB8 4-6ft	Soil	8260B Low



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408317

PROJECT NARRATIVE

5035/8260B Volatile Organic Compounds / Low Level

CH42130-BS1 **Blank Spike recovery is above upper control limit (B+).**

Tetrahydrofuran (141% @ 70-130%)

CH42130-BSD1 **Blank Spike recovery is above upper control limit (B+).**

Acetone (132% @ 70-130%), Tetrahydrofuran (136% @ 70-130%)

5035/8260B Volatile Organic Compounds / Methanol

1408317-01 **Present in Method Blank (B).**

Acetone

8270D Semi-Volatile Organic Compounds

CXH0201-CCV1 **Calibration required quadratic regression (Q).**

2,4-Dinitrophenol (92% @ 80-120%), bis(2-Ethylhexyl)phthalate (88% @ 80-120%)

CXH0201-CCV1 **Continuing Calibration recovery is below lower control limit (C-).**

3,3'-Dichlorobenzidine (79% @ 80-120%)

MADEP-VPH Volatile Petroleum Hydrocarbon

1408317-02 **Surrogate recovery(ies) outside of criteria due to matrix (UCM/coelution/matrix is present) (SM).**

2,5-Dibromotoluene - FID (164% @ 70-130%), 2,5-Dibromotoluene - PID (145% @ 70-130%),

Trifluorotoluene - FID (132% @ 70-130%), Trifluorotoluene - PID (136% @ 70-130%)

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

[Definitions of Quality Control Parameters](#)

[Semivolatile Organics Internal Standard Information](#)

[Semivolatile Organics Surrogate Information](#)

[Volatile Organics Internal Standard Information](#)

[Volatile Organics Surrogate Information](#)

[EPH and VPH Alkane Lists](#)



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408317

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

1010A - Flashpoint
6010C - ICP
6020A - ICP MS
7010 - Graphite Furnace
7196A - Hexavalent Chromium
7470A - Aqueous Mercury
7471B - Solid Mercury
8011 - EDB/DBCP/TCP
8015D - GRO/DRO
8081B - Pesticides
8082A - PCB
8100M - TPH
8151A - Herbicides
8260B - VOA
8270D - SVOA
8270D SIM - SVOA Low Level
9014 - Cyanide
9038 - Sulfate
9040C - Aqueous pH
9045D - Solid pH (Corrosivity)
9050A - Specific Conductance
9056A - Anions (IC)
9060A - TOC
9095B - Paint Filter
MADEP 04-1.1 - EPH / VPH

Prep Methods

3005A - Aqueous ICP Digestion
3020A - Aqueous Graphite Furnace / ICP MS Digestion
3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
3060A - Solid Hexavalent Chromium Digestion
3510C - Separatory Funnel Extraction
3520C - Liquid / Liquid Extraction
3540C - Manual Soxhlet Extraction
3541 - Automated Soxhlet Extraction
3546 - Microwave Extraction
3580A - Waste Dilution
5030B - Aqueous Purge and Trap
5030C - Aqueous Purge and Trap
5035 - Solid Purge and Trap



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408317

MassDEP Analytical Protocol Certification Form

MADEP RTN: _____

This form provides certification for the following data set: **1408317-01 through 1408317-04**

Matrices: () Ground Water/Surface Water (X) Soil/Sediment () Drinking Water () Air () Other: _____

CAM Protocol (check all that apply below):

(X) 8260 VOC CAM II A	(X) 7470/7471 Hg CAM III B	(X) MassDEP VPH CAM IV A	() 8081 Pesticides CAM V B	() 7196 Hex Cr CAM VI B	() MassDEP APH CAM IX A
(X) 8270 SVOC CAM II B	() 7010 Metals CAM III C	(X) MassDEP EPH CAM IV B	() 8151 Herbicides CAM V C	() 8330 Explosives CAM VIII A	() TO-15 VOC CAM IX B
(X) 6010 Metals CAM III A	(X) 6020 Metals CAM III D	(X) 8082 PCB CAM V A	() 6860 Perchlorate CAM VIII B	() 9014 Total Cyanide/PAC CAM VI A	

Affirmative responses to questions A through F are required for Presumptive Certainty's status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	Yes (X) No ()
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	Yes (X) No ()
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	Yes (X) No ()
D	Does the laboratory report comply with all the reporting requirements specified in the CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	Yes (X) No ()
E	a. VPH, EPH, APH and TO-15 only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	Yes (X) No ()
	b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	Yes () No ()
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	Yes (X) No ()

Responses to Questions G, H and I below are required for Presumptive Certainty's status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocols(s)? Data User Note: Data that achieve Presumptive Certainty's status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.	Yes (X) No ()*
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	Yes () No (X)*
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	Yes (X) No ()*

***All negative responses must be addressed in an attached laboratory narrative.**

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: Laurel Stoddard
Printed Name: Laurel Stoddard

Date: August 22, 2014
Position: Laboratory Director



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

Client Sample ID: PB4 8.5-9.5ft

Date Sampled: 08/13/14 13:00

Percent Solids: 87

Initial Volume: 16.1

Final Volume: 15

Extraction Method: 5035

ESS Laboratory Work Order: 1408317

ESS Laboratory Sample ID: 1408317-01

Sample Matrix: Soil

Units: mg/kg dry

Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1,2-Tetrachloroethane	ND (0.122)		8260B		1	08/21/14 15:07	CXH0251	CH42135
1,1,1-Trichloroethane	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
1,1,2,2-Tetrachloroethane	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
1,1,2-Trichloroethane	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
1,1-Dichloroethane	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
1,1-Dichloroethene	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
1,1-Dichloropropene	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
1,2,3-Trichlorobenzene	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
1,2,3-Trichloropropane	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
1,2,4-Trichlorobenzene	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
1,2,4-Trimethylbenzene	0.0696 (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
1,2-Dibromo-3-Chloropropane	ND (0.244)		8260B		1	08/21/14 15:07	CXH0251	CH42135
1,2-Dibromoethane	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
1,2-Dichlorobenzene	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
1,2-Dichloroethane	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
1,2-Dichloropropane	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
1,3,5-Trimethylbenzene	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
1,3-Dichlorobenzene	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
1,3-Dichloropropane	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
1,4-Dichlorobenzene	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
1,4-Dioxane - Screen	ND (6.10)		8260B		1	08/21/14 15:07	CXH0251	CH42135
2,2-Dichloropropane	ND (0.122)		8260B		1	08/21/14 15:07	CXH0251	CH42135
2-Butanone	ND (0.244)		8260B		1	08/21/14 15:07	CXH0251	CH42135
2-Chlorotoluene	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
2-Hexanone	ND (0.244)		8260B		1	08/21/14 15:07	CXH0251	CH42135
4-Chlorotoluene	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
4-Isopropyltoluene	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
4-Methyl-2-Pentanone	ND (0.244)		8260B		1	08/21/14 15:07	CXH0251	CH42135
Acetone	B 0.298 (0.244)		8260B		1	08/21/14 15:07	CXH0251	CH42135
Benzene	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
Bromobenzene	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
Bromochloromethane	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

Client Sample ID: PB4 8.5-9.5ft

Date Sampled: 08/13/14 13:00

Percent Solids: 87

Initial Volume: 16.1

Final Volume: 15

Extraction Method: 5035

ESS Laboratory Work Order: 1408317

ESS Laboratory Sample ID: 1408317-01

Sample Matrix: Soil

Units: mg/kg dry

Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Bromodichloromethane	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
Bromoform	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
Bromomethane	ND (0.122)		8260B		1	08/21/14 15:07	CXH0251	CH42135
Carbon Disulfide	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
Carbon Tetrachloride	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
Chlorobenzene	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
Chloroethane	ND (0.122)		8260B		1	08/21/14 15:07	CXH0251	CH42135
Chloroform	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
Chloromethane	ND (0.122)		8260B		1	08/21/14 15:07	CXH0251	CH42135
cis-1,2-Dichloroethene	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
cis-1,3-Dichloropropene	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
Dibromochloromethane	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
Dibromomethane	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
Dichlorodifluoromethane	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
Diethyl Ether	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
Di-isopropyl ether	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
Ethyl tertiary-butyl ether	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
Ethylbenzene	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
Hexachlorobutadiene	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
Isopropylbenzene	0.139 (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
Methyl tert-Butyl Ether	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
Methylene Chloride	ND (0.244)		8260B		1	08/21/14 15:07	CXH0251	CH42135
Naphthalene	1.48 (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
n-Butylbenzene	3.80 (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
n-Propylbenzene	0.351 (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
sec-Butylbenzene	2.88 (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
Styrene	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
tert-Butylbenzene	0.315 (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
Tertiary-amyl methyl ether	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
Tetrachloroethene	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
Tetrahydrofuran	ND (0.244)		8260B		1	08/21/14 15:07	CXH0251	CH42135
Toluene	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB4 8.5-9.5ft
Date Sampled: 08/13/14 13:00
Percent Solids: 87
Initial Volume: 16.1
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1408317
ESS Laboratory Sample ID: 1408317-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
trans-1,2-Dichloroethene	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
trans-1,3-Dichloropropene	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
Trichloroethene	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
Trichlorofluoromethane	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
Vinyl Chloride	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
Xylene O	ND (0.0610)		8260B		1	08/21/14 15:07	CXH0251	CH42135
Xylene P,M	ND (0.122)		8260B		1	08/21/14 15:07	CXH0251	CH42135
Xylenes (Total)	ND (0.122)		8260B		1	08/21/14 15:07		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>98 %</i>		<i>70-130</i>
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>94 %</i>		<i>70-130</i>
<i>Surrogate: Dibromofluoromethane</i>	<i>103 %</i>		<i>70-130</i>
<i>Surrogate: Toluene-d8</i>	<i>100 %</i>		<i>70-130</i>



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB4 1.5-13.5ft
Date Sampled: 08/13/14 13:00
Percent Solids: 87

ESS Laboratory Work Order: 1408317
ESS Laboratory Sample ID: 1408317-02
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Antimony	ND (5.3)		6010C		1	KJK	08/19/14 16:01	2.15	100	CH41904
Arsenic	3.4 (2.7)		6010C		1	KJK	08/19/14 16:01	2.15	100	CH41904
Barium	12.1 (2.7)		6010C		1	KJK	08/19/14 16:01	2.15	100	CH41904
Beryllium	0.23 (0.12)		6010C		1	KJK	08/19/14 16:01	2.15	100	CH41904
Cadmium	ND (0.53)		6010C		1	KJK	08/19/14 16:01	2.15	100	CH41904
Chromium	8.5 (1.1)		6010C		1	KJK	08/19/14 16:01	2.15	100	CH41904
Lead	6.7 (5.3)		6010C		1	KJK	08/19/14 16:01	2.15	100	CH41904
Mercury	ND (0.028)		7471B		1	BJV	08/19/14 13:19	0.81	40	CH41905
Nickel	7.6 (2.7)		6010C		1	KJK	08/19/14 16:01	2.15	100	CH41904
Selenium	ND (0.53)		6020A		50	JP	08/20/14 23:02	2.15	100	CH41904
Silver	ND (0.53)		6010C		1	KJK	08/19/14 16:01	2.15	100	CH41904
Thallium	ND (0.53)		6020A		50	JP	08/20/14 23:02	2.15	100	CH41904
Vanadium	12.9 (1.1)		6010C		1	KJK	08/19/14 16:01	2.15	100	CH41904
Zinc	19.3 (2.7)		6010C		1	KJK	08/19/14 16:01	2.15	100	CH41904



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB4 1.5-13.5ft
Date Sampled: 08/13/14 13:00
Percent Solids: 87
Initial Volume: 20.2
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 1408317
ESS Laboratory Sample ID: 1408317-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: JXS
Prepared: 8/15/14 11:15
Cleanup Method: 3665A

8082A Polychlorinated Biphenyls (PCB)

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Aroclor 1016	ND (0.0569)		8082A		1	08/18/14 23:21		CH41504
Aroclor 1221	ND (0.0569)		8082A		1	08/18/14 23:21		CH41504
Aroclor 1232	ND (0.0569)		8082A		1	08/18/14 23:21		CH41504
Aroclor 1242	ND (0.0569)		8082A		1	08/18/14 23:21		CH41504
Aroclor 1248	ND (0.0569)		8082A		1	08/18/14 23:21		CH41504
Aroclor 1254	ND (0.0569)		8082A		1	08/18/14 23:21		CH41504
Aroclor 1260	ND (0.0569)		8082A		1	08/18/14 23:21		CH41504
Aroclor 1262	ND (0.0569)		8082A		1	08/18/14 23:21		CH41504
Aroclor 1268	ND (0.0569)		8082A		1	08/18/14 23:21		CH41504

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
Surrogate: Decachlorobiphenyl	83 %		30-150
Surrogate: Decachlorobiphenyl [2C]	86 %		30-150
Surrogate: Tetrachloro-m-xylene	83 %		30-150
Surrogate: Tetrachloro-m-xylene [2C]	80 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB4 1.5-13.5ft
Date Sampled: 08/13/14 13:00
Percent Solids: 87
Initial Volume: 15.2
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1408317
ESS Laboratory Sample ID: 1408317-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 8/15/14 11:25

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,2,4-Trichlorobenzene	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
1,2-Dichlorobenzene	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
1,3-Dichlorobenzene	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
1,4-Dichlorobenzene	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
2,4,5-Trichlorophenol	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
2,4,6-Trichlorophenol	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
2,4-Dichlorophenol	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
2,4-Dimethylphenol	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
2,4-Dinitrophenol	ND (1.89)		8270D		1	08/15/14 23:06	CXH0182	CH41405
2,4-Dinitrotoluene	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
2,6-Dinitrotoluene	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
2-Chloronaphthalene	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
2-Chlorophenol	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
2-Methylnaphthalene	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
2-Methylphenol	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
2-Nitrophenol	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
3,3'-Dichlorobenzidine	ND (0.757)		8270D		1	08/15/14 23:06	CXH0182	CH41405
3+4-Methylphenol	ND (0.757)		8270D		1	08/15/14 23:06	CXH0182	CH41405
4-Bromophenyl-phenylether	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
4-Chloroaniline	ND (0.757)		8270D		1	08/15/14 23:06	CXH0182	CH41405
4-Nitrophenol	ND (1.89)		8270D		1	08/15/14 23:06	CXH0182	CH41405
Acenaphthene	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
Acenaphthylene	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
Acetophenone	ND (0.757)		8270D		1	08/15/14 23:06	CXH0182	CH41405
Aniline	ND (1.89)		8270D		1	08/15/14 23:06	CXH0182	CH41405
Anthracene	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
Azobenzene	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
Benzo(a)anthracene	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
Benzo(a)pyrene	ND (0.189)		8270D		1	08/15/14 23:06	CXH0182	CH41405
Benzo(b)fluoranthene	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
Benzo(g,h,i)perylene	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
Benzo(k)fluoranthene	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB4 1.5-13.5ft
Date Sampled: 08/13/14 13:00
Percent Solids: 87
Initial Volume: 15.2
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1408317
ESS Laboratory Sample ID: 1408317-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 8/15/14 11:25

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
bis(2-Chloroethoxy)methane	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
bis(2-Chloroethyl)ether	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
bis(2-chloroisopropyl)Ether	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
bis(2-Ethylhexyl)phthalate	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
Butylbenzylphthalate	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
Chrysene	ND (0.189)		8270D		1	08/15/14 23:06	CXH0182	CH41405
Dibenzo(a,h)Anthracene	ND (0.189)		8270D		1	08/15/14 23:06	CXH0182	CH41405
Dibenzofuran	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
Diethylphthalate	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
Dimethylphthalate	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
Di-n-butylphthalate	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
Di-n-octylphthalate	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
Fluoranthene	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
Fluorene	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
Hexachlorobenzene	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
Hexachlorobutadiene	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
Hexachloroethane	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
Indeno(1,2,3-cd)Pyrene	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
Isophorone	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
Naphthalene	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
Nitrobenzene	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
N-Nitrosodimethylamine	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
Pentachlorophenol	ND (1.89)		8270D		1	08/15/14 23:06	CXH0182	CH41405
Phenanthrene	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
Phenol	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405
Pyrene	ND (0.378)		8270D		1	08/15/14 23:06	CXH0182	CH41405

	<u>%Recovery</u>	<u>Qualifier</u>	<u>Limits</u>
Surrogate: 1,2-Dichlorobenzene-d4	58 %		30-130
Surrogate: 2,4,6-Tribromophenol	82 %		30-130
Surrogate: 2-Chlorophenol-d4	55 %		30-130
Surrogate: 2-Fluorobiphenyl	70 %		30-130



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB4 1.5-13.5ft
Date Sampled: 08/13/14 13:00
Percent Solids: 87
Initial Volume: 15.2
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1408317
ESS Laboratory Sample ID: 1408317-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 8/15/14 11:25

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Surrogate: 2-Fluorophenol		56 %		30-130				
Surrogate: Nitrobenzene-d5		97 %		30-130				
Surrogate: Phenol-d6		57 %		30-130				
Surrogate: p-Terphenyl-d14		79 %		30-130				



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB4 1.5-13.5ft
Date Sampled: 08/13/14 13:00
Percent Solids: 87

ESS Laboratory Work Order: 1408317
ESS Laboratory Sample ID: 1408317-02
Sample Matrix: Soil

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Conductivity	WL 1320 (5)		9050A		1	EEM	08/18/14 10:35	umhos/cm	CH41805



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB4 1.5-13.5ft
Date Sampled: 08/13/14 13:00
Percent Solids: 87
Initial Volume: 25.5
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1408317
ESS Laboratory Sample ID: 1408317-02
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 8/15/14 11:25

MADEP-EPH Extractable Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C18 Aliphatics1	468 (16.9)		MADEP-EPH		1	DPS	08/18/14 13:09	CXH0192	CH41403
C19-C36 Aliphatics1	ND (16.9)		MADEP-EPH		1	DPS	08/18/14 13:09	CXH0192	CH41403
C11-C22 Unadjusted Aromatics1	85.3 (16.9)		EPH8270		1	VSC	08/15/14 16:32	CXH0171	CH41403
C11-C22 Aromatics1,2	85.3 (16.9)		EPH8270			VSC	08/15/14 16:32		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
Surrogate: 1-Chlorooctadecane	70 %		40-140
Surrogate: 2-Bromonaphthalene	80 %		40-140
Surrogate: 2-Fluorobiphenyl	91 %		40-140
Surrogate: O-Terphenyl	76 %		40-140



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB4 1.5-13.5ft
Date Sampled: 08/13/14 13:00
Percent Solids: 87
Initial Volume: 22.6
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1408317
ESS Laboratory Sample ID: 1408317-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: NMS

MADEP-VPH Volatile Petroleum Hydrocarbon

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C10 Aromatics	100 (9.13)		MADEP-VPH		1	08/19/14 19:36	CXH0223	CH42029
C5-C8 Aliphatics _{1,2}	ND (9.13)		MADEP-VPH		1	08/19/14 19:36		[CALC]
C9-C12 Aliphatics_{2,3}	163 (9.13)		MADEP-VPH		1	08/19/14 19:36		[CALC]
Benzene	ND (0.18)		MADEP-VPH		1	08/19/14 19:36	CXH0223	CH42029
Ethylbenzene	ND (0.18)		MADEP-VPH		1	08/19/14 19:36	CXH0223	CH42029
Methyl tert-Butyl Ether	ND (0.05)		MADEP-VPH		1	08/19/14 19:36	CXH0223	CH42029
Naphthalene	2.04 (0.18)		MADEP-VPH		1	08/19/14 19:36	CXH0223	CH42029
Toluene	ND (0.18)		MADEP-VPH		1	08/19/14 19:36	CXH0223	CH42029
Xylene O	ND (0.18)		MADEP-VPH		1	08/19/14 19:36	CXH0223	CH42029
Xylene P,M	ND (0.37)		MADEP-VPH		1	08/19/14 19:36	CXH0223	CH42029
1:1 Methanol/Soil Ratio %D	51 (N/A)		MADEP-VPH			08/19/14 0:00		CH42029
Preservative:	MeOH - covered		MADEP-VPH					CH42029

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
Surrogate: 2,5-Dibromotoluene - FID	164 %	SM	70-130
Surrogate: 2,5-Dibromotoluene - PID	145 %	SM	70-130
Surrogate: Trifluorotoluene - FID	132 %	SM	70-130
Surrogate: Trifluorotoluene - PID	136 %	SM	70-130



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB8 2-6ft
Date Sampled: 08/14/14 12:11
Percent Solids: 92

ESS Laboratory Work Order: 1408317
ESS Laboratory Sample ID: 1408317-03
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Antimony	ND (4.7)		6010C		1	KJK	08/19/14 16:20	2.31	100	CH41904
Arsenic	3.6 (2.3)		6010C		1	KJK	08/19/14 16:20	2.31	100	CH41904
Barium	12.1 (2.3)		6010C		1	KJK	08/19/14 16:20	2.31	100	CH41904
Beryllium	0.26 (0.10)		6010C		1	KJK	08/19/14 16:20	2.31	100	CH41904
Cadmium	ND (0.47)		6010C		1	KJK	08/19/14 16:20	2.31	100	CH41904
Chromium	8.0 (0.9)		6010C		1	KJK	08/19/14 16:20	2.31	100	CH41904
Lead	7.1 (4.7)		6010C		1	KJK	08/19/14 16:20	2.31	100	CH41904
Mercury	ND (0.035)		7471B		1	BJV	08/19/14 13:38	0.62	40	CH41905
Nickel	6.8 (2.3)		6010C		1	KJK	08/19/14 16:20	2.31	100	CH41904
Selenium	ND (0.47)		6020A		50	JP	08/20/14 23:43	2.31	100	CH41904
Silver	ND (0.47)		6010C		1	KJK	08/19/14 16:20	2.31	100	CH41904
Thallium	ND (0.47)		6020A		50	JP	08/20/14 23:43	2.31	100	CH41904
Vanadium	14.0 (0.9)		6010C		1	KJK	08/19/14 16:20	2.31	100	CH41904
Zinc	18.9 (2.3)		6010C		1	KJK	08/19/14 16:20	2.31	100	CH41904



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB8 2-6ft
Date Sampled: 08/14/14 12:11
Percent Solids: 92
Initial Volume: 20.1
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 1408317
ESS Laboratory Sample ID: 1408317-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: JXS
Prepared: 8/15/14 11:15
Cleanup Method: 3665A

8082A Polychlorinated Biphenyls (PCB)

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Aroclor 1016	ND (0.0538)		8082A		1	08/18/14 23:40		CH41504
Aroclor 1221	ND (0.0538)		8082A		1	08/18/14 23:40		CH41504
Aroclor 1232	ND (0.0538)		8082A		1	08/18/14 23:40		CH41504
Aroclor 1242	ND (0.0538)		8082A		1	08/18/14 23:40		CH41504
Aroclor 1248	ND (0.0538)		8082A		1	08/18/14 23:40		CH41504
Aroclor 1254	ND (0.0538)		8082A		1	08/18/14 23:40		CH41504
Aroclor 1260	ND (0.0538)		8082A		1	08/18/14 23:40		CH41504
Aroclor 1262	ND (0.0538)		8082A		1	08/18/14 23:40		CH41504
Aroclor 1268	ND (0.0538)		8082A		1	08/18/14 23:40		CH41504

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
Surrogate: Decachlorobiphenyl	84 %		30-150
Surrogate: Decachlorobiphenyl [2C]	85 %		30-150
Surrogate: Tetrachloro-m-xylene	104 %		30-150
Surrogate: Tetrachloro-m-xylene [2C]	107 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB8 2-6ft
Date Sampled: 08/14/14 12:11
Percent Solids: 92
Initial Volume: 15.1
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1408317
ESS Laboratory Sample ID: 1408317-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 8/15/14 11:25

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,2,4-Trichlorobenzene	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
1,2-Dichlorobenzene	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
1,3-Dichlorobenzene	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
1,4-Dichlorobenzene	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
2,4,5-Trichlorophenol	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
2,4,6-Trichlorophenol	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
2,4-Dichlorophenol	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
2,4-Dimethylphenol	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
2,4-Dinitrophenol	ND (1.79)		8270D		1	08/15/14 23:38	CXH0182	CH41405
2,4-Dinitrotoluene	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
2,6-Dinitrotoluene	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
2-Chloronaphthalene	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
2-Chlorophenol	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
2-Methylnaphthalene	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
2-Methylphenol	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
2-Nitrophenol	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
3,3'-Dichlorobenzidine	ND (0.717)		8270D		1	08/15/14 23:38	CXH0182	CH41405
3+4-Methylphenol	ND (0.717)		8270D		1	08/15/14 23:38	CXH0182	CH41405
4-Bromophenyl-phenylether	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
4-Chloroaniline	ND (0.717)		8270D		1	08/15/14 23:38	CXH0182	CH41405
4-Nitrophenol	ND (1.79)		8270D		1	08/15/14 23:38	CXH0182	CH41405
Acenaphthene	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
Acenaphthylene	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
Acetophenone	ND (0.717)		8270D		1	08/15/14 23:38	CXH0182	CH41405
Aniline	ND (1.79)		8270D		1	08/15/14 23:38	CXH0182	CH41405
Anthracene	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
Azobenzene	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
Benzo(a)anthracene	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
Benzo(a)pyrene	ND (0.179)		8270D		1	08/15/14 23:38	CXH0182	CH41405
Benzo(b)fluoranthene	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
Benzo(g,h,i)perylene	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
Benzo(k)fluoranthene	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB8 2-6ft
Date Sampled: 08/14/14 12:11
Percent Solids: 92
Initial Volume: 15.1
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1408317
ESS Laboratory Sample ID: 1408317-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 8/15/14 11:25

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
bis(2-Chloroethoxy)methane	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
bis(2-Chloroethyl)ether	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
bis(2-chloroisopropyl)Ether	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
bis(2-Ethylhexyl)phthalate	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
Butylbenzylphthalate	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
Chrysene	ND (0.179)		8270D		1	08/15/14 23:38	CXH0182	CH41405
Dibenzo(a,h)Anthracene	ND (0.179)		8270D		1	08/15/14 23:38	CXH0182	CH41405
Dibenzofuran	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
Diethylphthalate	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
Dimethylphthalate	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
Di-n-butylphthalate	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
Di-n-octylphthalate	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
Fluoranthene	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
Fluorene	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
Hexachlorobenzene	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
Hexachlorobutadiene	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
Hexachloroethane	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
Indeno(1,2,3-cd)Pyrene	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
Isophorone	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
Naphthalene	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
Nitrobenzene	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
N-Nitrosodimethylamine	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
Pentachlorophenol	ND (1.79)		8270D		1	08/15/14 23:38	CXH0182	CH41405
Phenanthrene	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
Phenol	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405
Pyrene	ND (0.358)		8270D		1	08/15/14 23:38	CXH0182	CH41405

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	69 %		30-130
<i>Surrogate: 2,4,6-Tribromophenol</i>	93 %		30-130
<i>Surrogate: 2-Chlorophenol-d4</i>	64 %		30-130
<i>Surrogate: 2-Fluorobiphenyl</i>	70 %		30-130



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB8 2-6ft
Date Sampled: 08/14/14 12:11
Percent Solids: 92
Initial Volume: 15.1
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1408317
ESS Laboratory Sample ID: 1408317-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 8/15/14 11:25

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Surrogate: 2-Fluorophenol		65 %		30-130				
Surrogate: Nitrobenzene-d5		62 %		30-130				
Surrogate: Phenol-d6		68 %		30-130				
Surrogate: p-Terphenyl-d14		82 %		30-130				



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB8 2-6ft
Date Sampled: 08/14/14 12:11
Percent Solids: 92

ESS Laboratory Work Order: 1408317
ESS Laboratory Sample ID: 1408317-03
Sample Matrix: Soil

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Conductivity	WL 1360 (5)		9050A		1	EEM	08/18/14 10:35	umhos/cm	CH41805



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB8 2-6ft
Date Sampled: 08/14/14 12:11
Percent Solids: 92
Initial Volume: 25.3
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1408317
ESS Laboratory Sample ID: 1408317-03
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 8/15/14 11:25

MADEP-EPH Extractable Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C18 Aliphatics1	ND (16.0)		MADEP-EPH		1	DPS	08/18/14 14:00	CXH0192	CH41403
C19-C36 Aliphatics1	ND (16.0)		MADEP-EPH		1	DPS	08/18/14 14:00	CXH0192	CH41403
C11-C22 Unadjusted Aromatics1	ND (16.0)		EPH8270		1	VSC	08/15/14 17:09	CXH0171	CH41403
C11-C22 Aromatics1,2	ND (16.0)		EPH8270			VSC	08/15/14 17:09		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1-Chlorooctadecane</i>	71 %		40-140
<i>Surrogate: 2-Bromonaphthalene</i>	93 %		40-140
<i>Surrogate: 2-Fluorobiphenyl</i>	87 %		40-140
<i>Surrogate: O-Terphenyl</i>	66 %		40-140



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB8 2-6ft
Date Sampled: 08/14/14 12:11
Percent Solids: 92
Initial Volume: 16.2
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1408317
ESS Laboratory Sample ID: 1408317-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: NMS

MADEP-VPH Volatile Petroleum Hydrocarbon

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C10 Aromatics	ND (10.8)		MADEP-VPH		1	08/19/14 19:02	CXH0223	CH42029
C5-C8 Aliphatics1,2	ND (10.8)		MADEP-VPH		1	08/19/14 19:02		[CALC]
C9-C12 Aliphatics2,3	ND (10.8)		MADEP-VPH		1	08/19/14 19:02		[CALC]
Benzene	ND (0.22)		MADEP-VPH		1	08/19/14 19:02	CXH0223	CH42029
Ethylbenzene	ND (0.22)		MADEP-VPH		1	08/19/14 19:02	CXH0223	CH42029
Methyl tert-Butyl Ether	ND (0.05)		MADEP-VPH		1	08/19/14 19:02	CXH0223	CH42029
Naphthalene	ND (0.22)		MADEP-VPH		1	08/19/14 19:02	CXH0223	CH42029
Toluene	ND (0.22)		MADEP-VPH		1	08/19/14 19:02	CXH0223	CH42029
Xylene O	ND (0.22)		MADEP-VPH		1	08/19/14 19:02	CXH0223	CH42029
Xylene P,M	ND (0.43)		MADEP-VPH		1	08/19/14 19:02	CXH0223	CH42029
1:1 Methanol/Soil Ratio %D	8 (N/A)		MADEP-VPH			08/19/14 0:00		CH42029
Preservative:	MeOH - covered		MADEP-VPH					CH42029

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
Surrogate: 2,5-Dibromotoluene - FID	112 %		70-130
Surrogate: 2,5-Dibromotoluene - PID	113 %		70-130
Surrogate: Trifluorotoluene - FID	105 %		70-130
Surrogate: Trifluorotoluene - PID	107 %		70-130



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

Client Sample ID: PB8 4-6ft

Date Sampled: 08/14/14 12:11

Percent Solids: 92

Initial Volume: 6

Final Volume: 10

Extraction Method: 5035

ESS Laboratory Work Order: 1408317

ESS Laboratory Sample ID: 1408317-04

Sample Matrix: Soil

Units: mg/kg dry

Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1,2-Tetrachloroethane	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
1,1,1-Trichloroethane	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
1,1,2,2-Tetrachloroethane	ND (0.0018)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
1,1,2-Trichloroethane	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
1,1-Dichloroethane	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
1,1-Dichloroethene	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
1,1-Dichloropropene	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
1,2,3-Trichlorobenzene	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
1,2,3-Trichloropropane	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
1,2,4-Trichlorobenzene	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
1,2,4-Trimethylbenzene	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
1,2-Dibromo-3-Chloropropane	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
1,2-Dibromoethane	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
1,2-Dichlorobenzene	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
1,2-Dichloroethane	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
1,2-Dichloropropane	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
1,3,5-Trimethylbenzene	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
1,3-Dichlorobenzene	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
1,3-Dichloropropane	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
1,4-Dichlorobenzene	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
1,4-Dioxane	ND (0.0906)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
2,2-Dichloropropane	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
2-Butanone	ND (0.0091)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
2-Chlorotoluene	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
2-Hexanone	ND (0.0091)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
4-Chlorotoluene	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
4-Isopropyltoluene	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
4-Methyl-2-Pentanone	ND (0.0091)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
Acetone	0.0359 (0.0091)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
Benzene	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
Bromobenzene	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
Bromochloromethane	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB8 4-6ft
Date Sampled: 08/14/14 12:11
Percent Solids: 92
Initial Volume: 6
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1408317
ESS Laboratory Sample ID: 1408317-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Bromodichloromethane	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
Bromoform	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
Bromomethane	ND (0.0091)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
Carbon Disulfide	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
Carbon Tetrachloride	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
Chlorobenzene	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
Chloroethane	ND (0.0091)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
Chloroform	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
Chloromethane	ND (0.0091)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
cis-1,2-Dichloroethene	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
cis-1,3-Dichloropropene	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
Dibromochloromethane	ND (0.0018)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
Dibromomethane	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
Dichlorodifluoromethane	ND (0.0091)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
Diethyl Ether	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
Di-isopropyl ether	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
Ethyl tertiary-butyl ether	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
Ethylbenzene	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
Hexachlorobutadiene	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
Isopropylbenzene	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
Methyl tert-Butyl Ether	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
Methylene Chloride	ND (0.0091)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
Naphthalene	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
n-Butylbenzene	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
n-Propylbenzene	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
sec-Butylbenzene	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
Styrene	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
tert-Butylbenzene	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
Tertiary-amyl methyl ether	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
Tetrachloroethene	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
Tetrahydrofuran	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
Toluene	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB8 4-6ft
Date Sampled: 08/14/14 12:11
Percent Solids: 92
Initial Volume: 6
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1408317
ESS Laboratory Sample ID: 1408317-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
trans-1,2-Dichloroethene	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
trans-1,3-Dichloropropene	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
Trichloroethene	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
Trichlorofluoromethane	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
Vinyl Chloride	ND (0.0091)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
Xylene O	ND (0.0045)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
Xylene P,M	ND (0.0091)		8260B Low		1	08/21/14 13:11	CXH0248	CH42130
Xylenes (Total)	ND (0.0091)		8260B Low		1	08/21/14 13:11		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>109 %</i>		<i>70-130</i>
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>111 %</i>		<i>70-130</i>
<i>Surrogate: Dibromofluoromethane</i>	<i>104 %</i>		<i>70-130</i>
<i>Surrogate: Toluene-d8</i>	<i>112 %</i>		<i>70-130</i>



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408317

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

Total Metals

Batch CH41904 - 3050B

Blank

Antimony	ND	5.0	mg/kg wet
Arsenic	ND	2.5	mg/kg wet
Barium	ND	2.5	mg/kg wet
Beryllium	ND	0.11	mg/kg wet
Cadmium	ND	0.50	mg/kg wet
Chromium	ND	1.0	mg/kg wet
Lead	ND	5.0	mg/kg wet
Nickel	ND	2.5	mg/kg wet
Selenium	ND	0.50	mg/kg wet
Silver	ND	0.50	mg/kg wet
Thallium	ND	0.50	mg/kg wet
Vanadium	ND	1.0	mg/kg wet
Zinc	ND	2.5	mg/kg wet

LCS

Antimony	82.0	15.9	mg/kg wet	94.00	87	80-120
Arsenic	106	7.9	mg/kg wet	113.0	94	80-120
Barium	143	7.9	mg/kg wet	155.0	93	80-120
Beryllium	101	0.35	mg/kg wet	109.0	93	80-120
Cadmium	59.8	1.59	mg/kg wet	67.50	89	80-120
Chromium	150	3.2	mg/kg wet	164.0	91	80-120
Lead	83.7	15.9	mg/kg wet	90.10	93	80-120
Nickel	84.2	7.9	mg/kg wet	89.30	94	80-120
Selenium	135	1.59	mg/kg wet	156.0	86	80-120
Silver	50.0	1.59	mg/kg wet	52.60	95	80-120
Thallium	109	1.59	mg/kg wet	116.0	94	80-120
Vanadium	65.0	3.2	mg/kg wet	73.00	89	80-120
Zinc	153	7.9	mg/kg wet	168.0	91	80-120

LCS Dup

Antimony	82.7	14.3	mg/kg wet	94.00	88	80-120	0.8	20
Arsenic	95.8	7.1	mg/kg wet	113.0	85	80-120	10	20
Barium	130	7.1	mg/kg wet	155.0	84	80-120	9	20
Beryllium	92.3	0.31	mg/kg wet	109.0	85	80-120	9	20
Cadmium	55.3	1.43	mg/kg wet	67.50	82	80-120	8	20
Chromium	140	2.9	mg/kg wet	164.0	86	80-120	6	20
Lead	75.5	14.3	mg/kg wet	90.10	84	80-120	10	20
Nickel	80.3	7.1	mg/kg wet	89.30	90	80-120	5	20
Selenium	129	1.43	mg/kg wet	156.0	83	80-120	4	30
Silver	45.1	1.43	mg/kg wet	52.60	86	80-120	10	20
Thallium	106	1.43	mg/kg wet	116.0	91	80-120	3	30
Vanadium	60.1	2.9	mg/kg wet	73.00	82	80-120	8	20
Zinc	140	7.1	mg/kg wet	168.0	83	80-120	9	20

Batch CH41905 - 7471A

Blank



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408317

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

Total Metals

Batch CH41905 - 7471A

Mercury	ND	0.033	mg/kg wet							

LCS

Mercury	6.98	1.46	mg/kg wet	8.370		83	80-120			

LCS Dup

Mercury	7.38	1.46	mg/kg wet	8.370		88	80-120	6	20	

5035/8260B Volatile Organic Compounds / Low Level

Batch CH42130 - 5035

Blank

1,1,1,2-Tetrachloroethane	ND	0.0050	mg/kg wet
1,1,1-Trichloroethane	ND	0.0050	mg/kg wet
1,1,2,2-Tetrachloroethane	ND	0.0020	mg/kg wet
1,1,2-Trichloroethane	ND	0.0050	mg/kg wet
1,1-Dichloroethane	ND	0.0050	mg/kg wet
1,1-Dichloroethene	ND	0.0050	mg/kg wet
1,1-Dichloropropene	ND	0.0050	mg/kg wet
1,2,3-Trichlorobenzene	ND	0.0050	mg/kg wet
1,2,3-Trichloropropane	ND	0.0050	mg/kg wet
1,2,4-Trichlorobenzene	ND	0.0050	mg/kg wet
1,2,4-Trimethylbenzene	ND	0.0050	mg/kg wet
1,2-Dibromo-3-Chloropropane	ND	0.0050	mg/kg wet
1,2-Dibromoethane	ND	0.0050	mg/kg wet
1,2-Dichlorobenzene	ND	0.0050	mg/kg wet
1,2-Dichloroethane	ND	0.0050	mg/kg wet
1,2-Dichloropropane	ND	0.0050	mg/kg wet
1,3,5-Trimethylbenzene	ND	0.0050	mg/kg wet
1,3-Dichlorobenzene	ND	0.0050	mg/kg wet
1,3-Dichloropropane	ND	0.0050	mg/kg wet
1,4-Dichlorobenzene	ND	0.0050	mg/kg wet
1,4-Dioxane	ND	0.100	mg/kg wet
2,2-Dichloropropane	ND	0.0050	mg/kg wet
2-Butanone	ND	0.0100	mg/kg wet
2-Chlorotoluene	ND	0.0050	mg/kg wet
2-Hexanone	ND	0.0100	mg/kg wet
4-Chlorotoluene	ND	0.0050	mg/kg wet
4-Isopropyltoluene	ND	0.0050	mg/kg wet
4-Methyl-2-Pentanone	ND	0.0100	mg/kg wet
Acetone	ND	0.0100	mg/kg wet
Benzene	ND	0.0050	mg/kg wet
Bromobenzene	ND	0.0050	mg/kg wet
Bromochloromethane	ND	0.0050	mg/kg wet
Bromodichloromethane	ND	0.0050	mg/kg wet
Bromoform	ND	0.0050	mg/kg wet
Bromomethane	ND	0.0100	mg/kg wet



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1408317

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

5035/8260B Volatile Organic Compounds / Low Level

Batch CH42130 - 5035

Carbon Disulfide	ND	0.0050	mg/kg wet							
Carbon Tetrachloride	ND	0.0050	mg/kg wet							
Chlorobenzene	ND	0.0050	mg/kg wet							
Chloroethane	ND	0.0100	mg/kg wet							
Chloroform	ND	0.0050	mg/kg wet							
Chloromethane	ND	0.0100	mg/kg wet							
cis-1,2-Dichloroethene	ND	0.0050	mg/kg wet							
cis-1,3-Dichloropropene	ND	0.0050	mg/kg wet							
Dibromochloromethane	ND	0.0020	mg/kg wet							
Dibromomethane	ND	0.0050	mg/kg wet							
Dichlorodifluoromethane	ND	0.0100	mg/kg wet							
Diethyl Ether	ND	0.0050	mg/kg wet							
Di-isopropyl ether	ND	0.0050	mg/kg wet							
Ethyl tertiary-butyl ether	ND	0.0050	mg/kg wet							
Ethylbenzene	ND	0.0050	mg/kg wet							
Hexachlorobutadiene	ND	0.0050	mg/kg wet							
Isopropylbenzene	ND	0.0050	mg/kg wet							
Methyl tert-Butyl Ether	ND	0.0050	mg/kg wet							
Methylene Chloride	ND	0.0100	mg/kg wet							
Naphthalene	ND	0.0050	mg/kg wet							
n-Butylbenzene	ND	0.0050	mg/kg wet							
n-Propylbenzene	ND	0.0050	mg/kg wet							
sec-Butylbenzene	ND	0.0050	mg/kg wet							
Styrene	ND	0.0050	mg/kg wet							
tert-Butylbenzene	ND	0.0050	mg/kg wet							
Tertiary-amyl methyl ether	ND	0.0050	mg/kg wet							
Tetrachloroethene	ND	0.0050	mg/kg wet							
Tetrahydrofuran	ND	0.0050	mg/kg wet							
Toluene	ND	0.0050	mg/kg wet							
trans-1,2-Dichloroethene	ND	0.0050	mg/kg wet							
trans-1,3-Dichloropropene	ND	0.0050	mg/kg wet							
Trichloroethene	ND	0.0050	mg/kg wet							
Trichlorofluoromethane	ND	0.0050	mg/kg wet							
Vinyl Chloride	ND	0.0100	mg/kg wet							
Xylene O	ND	0.0050	mg/kg wet							
Xylene P,M	ND	0.0100	mg/kg wet							
Surrogate: 1,2-Dichloroethane-d4	0.0516		mg/kg wet	0.05000		103	70-130			
Surrogate: 4-Bromofluorobenzene	0.0544		mg/kg wet	0.05000		109	70-130			
Surrogate: Dibromofluoromethane	0.0533		mg/kg wet	0.05000		107	70-130			
Surrogate: Toluene-d8	0.0548		mg/kg wet	0.05000		110	70-130			

LCS

1,1,1,2-Tetrachloroethane	0.0455	0.0050	mg/kg wet	0.05000		91	70-130			
1,1,1-Trichloroethane	0.0519	0.0050	mg/kg wet	0.05000		104	70-130			
1,1,2,2-Tetrachloroethane	0.0568	0.0020	mg/kg wet	0.05000		114	70-130			
1,1,2-Trichloroethane	0.0505	0.0050	mg/kg wet	0.05000		101	70-130			



CERTIFICATE OF ANALYSIS

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

5035/8260B Volatile Organic Compounds / Low Level

Batch CH42130 - 5035

1,1-Dichloroethane	0.0517	0.0050	mg/kg wet	0.05000		103	70-130			
1,1-Dichloroethene	0.0525	0.0050	mg/kg wet	0.05000		105	70-130			
1,1-Dichloropropene	0.0502	0.0050	mg/kg wet	0.05000		100	70-130			
1,2,3-Trichlorobenzene	0.0521	0.0050	mg/kg wet	0.05000		104	70-130			
1,2,3-Trichloropropane	0.0536	0.0050	mg/kg wet	0.05000		107	70-130			
1,2,4-Trichlorobenzene	0.0513	0.0050	mg/kg wet	0.05000		103	70-130			
1,2,4-Trimethylbenzene	0.0568	0.0050	mg/kg wet	0.05000		114	70-130			
1,2-Dibromo-3-Chloropropane	0.0627	0.0050	mg/kg wet	0.05000		125	70-130			
1,2-Dibromoethane	0.0489	0.0050	mg/kg wet	0.05000		98	70-130			
1,2-Dichlorobenzene	0.0506	0.0050	mg/kg wet	0.05000		101	70-130			
1,2-Dichloroethane	0.0523	0.0050	mg/kg wet	0.05000		105	70-130			
1,2-Dichloropropane	0.0480	0.0050	mg/kg wet	0.05000		96	70-130			
1,3,5-Trimethylbenzene	0.0604	0.0050	mg/kg wet	0.05000		121	70-130			
1,3-Dichlorobenzene	0.0527	0.0050	mg/kg wet	0.05000		105	70-130			
1,3-Dichloropropane	0.0463	0.0050	mg/kg wet	0.05000		93	70-130			
1,4-Dichlorobenzene	0.0490	0.0050	mg/kg wet	0.05000		98	70-130			
1,4-Dioxane	1.25	0.100	mg/kg wet	1.000		125	70-130			
2,2-Dichloropropane	0.0540	0.0050	mg/kg wet	0.05000		108	70-130			
2-Butanone	0.214	0.0100	mg/kg wet	0.2500		85	70-130			
2-Chlorotoluene	0.0538	0.0050	mg/kg wet	0.05000		108	70-130			
2-Hexanone	0.288	0.0100	mg/kg wet	0.2500		115	70-130			
4-Chlorotoluene	0.0615	0.0050	mg/kg wet	0.05000		123	70-130			
4-Isopropyltoluene	0.0571	0.0050	mg/kg wet	0.05000		114	70-130			
4-Methyl-2-Pentanone	0.301	0.0100	mg/kg wet	0.2500		120	70-130			
Acetone	0.320	0.0100	mg/kg wet	0.2500		128	70-130			
Benzene	0.0525	0.0050	mg/kg wet	0.05000		105	70-130			
Bromobenzene	0.0527	0.0050	mg/kg wet	0.05000		105	70-130			
Bromochloromethane	0.0545	0.0050	mg/kg wet	0.05000		109	70-130			
Bromodichloromethane	0.0467	0.0050	mg/kg wet	0.05000		93	70-130			
Bromoform	0.0479	0.0050	mg/kg wet	0.05000		96	70-130			
Bromomethane	0.0548	0.0100	mg/kg wet	0.05000		110	70-130			
Carbon Disulfide	0.0632	0.0050	mg/kg wet	0.05000		126	70-130			
Carbon Tetrachloride	0.0538	0.0050	mg/kg wet	0.05000		108	70-130			
Chlorobenzene	0.0495	0.0050	mg/kg wet	0.05000		99	70-130			
Chloroethane	0.0537	0.0100	mg/kg wet	0.05000		107	70-130			
Chloroform	0.0525	0.0050	mg/kg wet	0.05000		105	70-130			
Chloromethane	0.0618	0.0100	mg/kg wet	0.05000		124	70-130			
cis-1,2-Dichloroethene	0.0499	0.0050	mg/kg wet	0.05000		100	70-130			
cis-1,3-Dichloropropene	0.0467	0.0050	mg/kg wet	0.05000		93	70-130			
Dibromochloromethane	0.0467	0.0020	mg/kg wet	0.05000		93	70-130			
Dibromomethane	0.0595	0.0050	mg/kg wet	0.05000		119	70-130			
Dichlorodifluoromethane	0.0644	0.0100	mg/kg wet	0.05000		129	70-130			
Diethyl Ether	0.0527	0.0050	mg/kg wet	0.05000		105	70-130			
Di-isopropyl ether	0.0533	0.0050	mg/kg wet	0.05000		107	70-130			
Ethyl tertiary-butyl ether	0.0451	0.0050	mg/kg wet	0.05000		90	70-130			



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1408317

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

5035/8260B Volatile Organic Compounds / Low Level

Batch CH42130 - 5035

Ethylbenzene	0.0553	0.0050	mg/kg wet	0.05000		111	70-130			
Hexachlorobutadiene	0.0521	0.0050	mg/kg wet	0.05000		104	70-130			
Isopropylbenzene	0.0564	0.0050	mg/kg wet	0.05000		113	70-130			
Methyl tert-Butyl Ether	0.0488	0.0050	mg/kg wet	0.05000		98	70-130			
Methylene Chloride	0.0586	0.0100	mg/kg wet	0.05000		117	70-130			
Naphthalene	0.0458	0.0050	mg/kg wet	0.05000		92	70-130			
n-Butylbenzene	0.0573	0.0050	mg/kg wet	0.05000		115	70-130			
n-Propylbenzene	0.0567	0.0050	mg/kg wet	0.05000		113	70-130			
sec-Butylbenzene	0.0559	0.0050	mg/kg wet	0.05000		112	70-130			
Styrene	0.0540	0.0050	mg/kg wet	0.05000		108	70-130			
tert-Butylbenzene	0.0551	0.0050	mg/kg wet	0.05000		110	70-130			
Tertiary-amyl methyl ether	0.0490	0.0050	mg/kg wet	0.05000		98	70-130			
Tetrachloroethene	0.0436	0.0050	mg/kg wet	0.05000		87	70-130			
Tetrahydrofuran	0.0703	0.0050	mg/kg wet	0.05000		141	70-130			B+
Toluene	0.0588	0.0050	mg/kg wet	0.05000		118	70-130			
trans-1,2-Dichloroethene	0.0521	0.0050	mg/kg wet	0.05000		104	70-130			
trans-1,3-Dichloropropene	0.0465	0.0050	mg/kg wet	0.05000		93	70-130			
Trichloroethene	0.0491	0.0050	mg/kg wet	0.05000		98	70-130			
Trichlorofluoromethane	0.0492	0.0050	mg/kg wet	0.05000		98	70-130			
Vinyl Chloride	0.0626	0.0100	mg/kg wet	0.05000		125	70-130			
Xylene O	0.0521	0.0050	mg/kg wet	0.05000		104	70-130			
Xylene P,M	0.105	0.0100	mg/kg wet	0.1000		105	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0561		mg/kg wet	0.05000		112	70-130			
Surrogate: 4-Bromofluorobenzene	0.0596		mg/kg wet	0.05000		119	70-130			
Surrogate: Dibromofluoromethane	0.0568		mg/kg wet	0.05000		114	70-130			
Surrogate: Toluene-d8	0.0525		mg/kg wet	0.05000		105	70-130			

LCS Dup

1,1,1,2-Tetrachloroethane	0.0517	0.0050	mg/kg wet	0.05000		103	70-130	13	25	
1,1,1-Trichloroethane	0.0566	0.0050	mg/kg wet	0.05000		113	70-130	9	25	
1,1,2,2-Tetrachloroethane	0.0607	0.0020	mg/kg wet	0.05000		121	70-130	7	25	
1,1,2-Trichloroethane	0.0550	0.0050	mg/kg wet	0.05000		110	70-130	8	25	
1,1-Dichloroethane	0.0568	0.0050	mg/kg wet	0.05000		114	70-130	9	25	
1,1-Dichloroethene	0.0554	0.0050	mg/kg wet	0.05000		111	70-130	6	25	
1,1-Dichloropropene	0.0585	0.0050	mg/kg wet	0.05000		117	70-130	15	25	
1,2,3-Trichlorobenzene	0.0545	0.0050	mg/kg wet	0.05000		109	70-130	5	25	
1,2,3-Trichloropropane	0.0574	0.0050	mg/kg wet	0.05000		115	70-130	7	25	
1,2,4-Trichlorobenzene	0.0551	0.0050	mg/kg wet	0.05000		110	70-130	7	25	
1,2,4-Trimethylbenzene	0.0595	0.0050	mg/kg wet	0.05000		119	70-130	5	25	
1,2-Dibromo-3-Chloropropane	0.0608	0.0050	mg/kg wet	0.05000		122	70-130	3	25	
1,2-Dibromoethane	0.0547	0.0050	mg/kg wet	0.05000		109	70-130	11	25	
1,2-Dichlorobenzene	0.0529	0.0050	mg/kg wet	0.05000		106	70-130	4	25	
1,2-Dichloroethane	0.0573	0.0050	mg/kg wet	0.05000		115	70-130	9	25	
1,2-Dichloropropane	0.0534	0.0050	mg/kg wet	0.05000		107	70-130	11	25	
1,3,5-Trimethylbenzene	0.0625	0.0050	mg/kg wet	0.05000		125	70-130	3	25	
1,3-Dichlorobenzene	0.0569	0.0050	mg/kg wet	0.05000		114	70-130	8	25	



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1408317

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
5035/8260B Volatile Organic Compounds / Low Level										
Batch CH42130 - 5035										
1,3-Dichloropropane	0.0536	0.0050	mg/kg wet	0.05000		107	70-130	15	25	
1,4-Dichlorobenzene	0.0506	0.0050	mg/kg wet	0.05000		101	70-130	3	25	
1,4-Dioxane	1.22	0.100	mg/kg wet	1.000		122	70-130	3	20	
2,2-Dichloropropane	0.0582	0.0050	mg/kg wet	0.05000		116	70-130	8	25	
2-Butanone	0.257	0.0100	mg/kg wet	0.2500		103	70-130	18	25	
2-Chlorotoluene	0.0568	0.0050	mg/kg wet	0.05000		114	70-130	5	25	
2-Hexanone	0.286	0.0100	mg/kg wet	0.2500		114	70-130	0.5	25	
4-Chlorotoluene	0.0626	0.0050	mg/kg wet	0.05000		125	70-130	2	25	
4-Isopropyltoluene	0.0587	0.0050	mg/kg wet	0.05000		117	70-130	3	25	
4-Methyl-2-Pentanone	0.298	0.0100	mg/kg wet	0.2500		119	70-130	1	25	
Acetone	0.329	0.0100	mg/kg wet	0.2500		132	70-130	3	25	B+
Benzene	0.0590	0.0050	mg/kg wet	0.05000		118	70-130	12	25	
Bromobenzene	0.0553	0.0050	mg/kg wet	0.05000		111	70-130	5	25	
Bromochloromethane	0.0554	0.0050	mg/kg wet	0.05000		111	70-130	2	25	
Bromodichloromethane	0.0535	0.0050	mg/kg wet	0.05000		107	70-130	14	25	
Bromoform	0.0559	0.0050	mg/kg wet	0.05000		112	70-130	15	25	
Bromomethane	0.0598	0.0100	mg/kg wet	0.05000		120	70-130	9	25	
Carbon Disulfide	0.0622	0.0050	mg/kg wet	0.05000		124	70-130	2	25	
Carbon Tetrachloride	0.0603	0.0050	mg/kg wet	0.05000		121	70-130	11	25	
Chlorobenzene	0.0513	0.0050	mg/kg wet	0.05000		103	70-130	4	25	
Chloroethane	0.0512	0.0100	mg/kg wet	0.05000		102	70-130	5	25	
Chloroform	0.0584	0.0050	mg/kg wet	0.05000		117	70-130	11	25	
Chloromethane	0.0603	0.0100	mg/kg wet	0.05000		121	70-130	2	25	
cis-1,2-Dichloroethene	0.0549	0.0050	mg/kg wet	0.05000		110	70-130	10	25	
cis-1,3-Dichloropropene	0.0532	0.0050	mg/kg wet	0.05000		106	70-130	13	25	
Dibromochloromethane	0.0538	0.0020	mg/kg wet	0.05000		108	70-130	14	25	
Dibromomethane	0.0645	0.0050	mg/kg wet	0.05000		129	70-130	8	25	
Dichlorodifluoromethane	0.0634	0.0100	mg/kg wet	0.05000		127	70-130	2	25	
Diethyl Ether	0.0558	0.0050	mg/kg wet	0.05000		112	70-130	6	25	
Di-isopropyl ether	0.0580	0.0050	mg/kg wet	0.05000		116	70-130	8	25	
Ethyl tertiary-butyl ether	0.0542	0.0050	mg/kg wet	0.05000		108	70-130	18	25	
Ethylbenzene	0.0577	0.0050	mg/kg wet	0.05000		115	70-130	4	25	
Hexachlorobutadiene	0.0557	0.0050	mg/kg wet	0.05000		111	70-130	7	25	
Isopropylbenzene	0.0594	0.0050	mg/kg wet	0.05000		119	70-130	5	25	
Methyl tert-Butyl Ether	0.0546	0.0050	mg/kg wet	0.05000		109	70-130	11	25	
Methylene Chloride	0.0600	0.0100	mg/kg wet	0.05000		120	70-130	2	25	
Naphthalene	0.0467	0.0050	mg/kg wet	0.05000		93	70-130	2	25	
n-Butylbenzene	0.0603	0.0050	mg/kg wet	0.05000		121	70-130	5	25	
n-Propylbenzene	0.0592	0.0050	mg/kg wet	0.05000		118	70-130	4	25	
sec-Butylbenzene	0.0586	0.0050	mg/kg wet	0.05000		117	70-130	5	25	
Styrene	0.0550	0.0050	mg/kg wet	0.05000		110	70-130	2	25	
tert-Butylbenzene	0.0588	0.0050	mg/kg wet	0.05000		118	70-130	7	25	
Tertiary-amyl methyl ether	0.0542	0.0050	mg/kg wet	0.05000		108	70-130	10	25	
Tetrachloroethene	0.0466	0.0050	mg/kg wet	0.05000		93	70-130	7	25	
Tetrahydrofuran	0.0681	0.0050	mg/kg wet	0.05000		136	70-130	3	25	B+



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408317

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

5035/8260B Volatile Organic Compounds / Low Level

Batch CH42130 - 5035

Toluene	0.0610	0.0050	mg/kg wet	0.05000		122	70-130	4	25	
trans-1,2-Dichloroethene	0.0586	0.0050	mg/kg wet	0.05000		117	70-130	12	25	
trans-1,3-Dichloropropene	0.0525	0.0050	mg/kg wet	0.05000		105	70-130	12	25	
Trichloroethene	0.0540	0.0050	mg/kg wet	0.05000		108	70-130	9	25	
Trichlorofluoromethane	0.0542	0.0050	mg/kg wet	0.05000		108	70-130	10	25	
Vinyl Chloride	0.0600	0.0100	mg/kg wet	0.05000		120	70-130	4	25	
Xylene O	0.0536	0.0050	mg/kg wet	0.05000		107	70-130	3	25	
Xylene P,M	0.110	0.0100	mg/kg wet	0.1000		110	70-130	4	25	
Surrogate: 1,2-Dichloroethane-d4	0.0588		mg/kg wet	0.05000		118	70-130			
Surrogate: 4-Bromofluorobenzene	0.0580		mg/kg wet	0.05000		116	70-130			
Surrogate: Dibromofluoromethane	0.0583		mg/kg wet	0.05000		117	70-130			
Surrogate: Toluene-d8	0.0536		mg/kg wet	0.05000		107	70-130			

5035/8260B Volatile Organic Compounds / Methanol

Batch CH42135 - 5035

Blank

1,1,1,2-Tetrachloroethane	ND	0.100	mg/kg wet							
1,1,1-Trichloroethane	ND	0.0500	mg/kg wet							
1,1,2,2-Tetrachloroethane	ND	0.0500	mg/kg wet							
1,1,2-Trichloroethane	ND	0.0500	mg/kg wet							
1,1-Dichloroethane	ND	0.0500	mg/kg wet							
1,1-Dichloroethene	ND	0.0500	mg/kg wet							
1,1-Dichloropropene	ND	0.0500	mg/kg wet							
1,2,3-Trichlorobenzene	ND	0.0500	mg/kg wet							
1,2,3-Trichloropropane	ND	0.0500	mg/kg wet							
1,2,4-Trichlorobenzene	ND	0.0500	mg/kg wet							
1,2,4-Trimethylbenzene	ND	0.0500	mg/kg wet							
1,2-Dibromo-3-Chloropropane	ND	0.200	mg/kg wet							
1,2-Dibromoethane	ND	0.0500	mg/kg wet							
1,2-Dichlorobenzene	ND	0.0500	mg/kg wet							
1,2-Dichloroethane	ND	0.0500	mg/kg wet							
1,2-Dichloropropane	ND	0.0500	mg/kg wet							
1,3,5-Trimethylbenzene	ND	0.0500	mg/kg wet							
1,3-Dichlorobenzene	ND	0.0500	mg/kg wet							
1,3-Dichloropropane	ND	0.0500	mg/kg wet							
1,4-Dichlorobenzene	ND	0.0500	mg/kg wet							
1,4-Dioxane - Screen	ND	5.00	mg/kg wet							
2,2-Dichloropropane	ND	0.100	mg/kg wet							
2-Butanone	ND	0.200	mg/kg wet							
2-Chlorotoluene	ND	0.0500	mg/kg wet							
2-Hexanone	ND	0.200	mg/kg wet							
4-Chlorotoluene	ND	0.0500	mg/kg wet							
4-Isopropyltoluene	ND	0.0500	mg/kg wet							
4-Methyl-2-Pentanone	ND	0.200	mg/kg wet							
Acetone	0.418	0.200	mg/kg wet							



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1408317

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

5035/8260B Volatile Organic Compounds / Methanol

Batch CH42135 - 5035

Benzene	ND	0.0500	mg/kg wet							
Bromobenzene	ND	0.0500	mg/kg wet							
Bromochloromethane	ND	0.0500	mg/kg wet							
Bromodichloromethane	ND	0.0500	mg/kg wet							
Bromoform	ND	0.0500	mg/kg wet							
Bromomethane	ND	0.100	mg/kg wet							
Carbon Disulfide	ND	0.0500	mg/kg wet							
Carbon Tetrachloride	ND	0.0500	mg/kg wet							
Chlorobenzene	ND	0.0500	mg/kg wet							
Chloroethane	ND	0.100	mg/kg wet							
Chloroform	ND	0.0500	mg/kg wet							
Chloromethane	ND	0.100	mg/kg wet							
cis-1,2-Dichloroethene	ND	0.0500	mg/kg wet							
cis-1,3-Dichloropropene	ND	0.0500	mg/kg wet							
Dibromochloromethane	ND	0.0500	mg/kg wet							
Dibromomethane	ND	0.0500	mg/kg wet							
Dichlorodifluoromethane	ND	0.0500	mg/kg wet							
Diethyl Ether	ND	0.0500	mg/kg wet							
Di-isopropyl ether	ND	0.0500	mg/kg wet							
Ethyl tertiary-butyl ether	ND	0.0500	mg/kg wet							
Ethylbenzene	ND	0.0500	mg/kg wet							
Hexachlorobutadiene	ND	0.0500	mg/kg wet							
Isopropylbenzene	ND	0.0500	mg/kg wet							
Methyl tert-Butyl Ether	ND	0.0500	mg/kg wet							
Methylene Chloride	ND	0.200	mg/kg wet							
Naphthalene	ND	0.0500	mg/kg wet							
n-Butylbenzene	ND	0.0500	mg/kg wet							
n-Propylbenzene	ND	0.0500	mg/kg wet							
sec-Butylbenzene	ND	0.0500	mg/kg wet							
Styrene	ND	0.0500	mg/kg wet							
tert-Butylbenzene	ND	0.0500	mg/kg wet							
Tertiary-amyl methyl ether	ND	0.0500	mg/kg wet							
Tetrachloroethene	ND	0.0500	mg/kg wet							
Tetrahydrofuran	ND	0.200	mg/kg wet							
Toluene	ND	0.0500	mg/kg wet							
trans-1,2-Dichloroethene	ND	0.0500	mg/kg wet							
trans-1,3-Dichloropropene	ND	0.0500	mg/kg wet							
Trichloroethene	ND	0.0500	mg/kg wet							
Trichlorofluoromethane	ND	0.0500	mg/kg wet							
Vinyl Chloride	ND	0.0500	mg/kg wet							
Xylene O	ND	0.0500	mg/kg wet							
Xylene P,M	ND	0.100	mg/kg wet							
Surrogate: 1,2-Dichloroethane-d4	2.28		mg/kg wet	2.500		91	70-130			
Surrogate: 4-Bromofluorobenzene	2.45		mg/kg wet	2.500		98	70-130			
Surrogate: Dibromofluoromethane	2.36		mg/kg wet	2.500		94	70-130			



CERTIFICATE OF ANALYSIS

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Client Project ID: Union Square

ESS Laboratory Work Order: 1408317

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

5035/8260B Volatile Organic Compounds / Methanol

Batch CH42135 - 5035

<i>Surrogate: Toluene-d8</i>	2.45		mg/kg wet	2.500		98	70-130			
LCS										
1,1,1,2-Tetrachloroethane	2.66	0.100	mg/kg wet	2.500		106	70-130			
1,1,1-Trichloroethane	2.58	0.0500	mg/kg wet	2.500		103	70-130			
1,1,2,2-Tetrachloroethane	2.45	0.0500	mg/kg wet	2.500		98	70-130			
1,1,2-Trichloroethane	2.59	0.0500	mg/kg wet	2.500		104	70-130			
1,1-Dichloroethane	2.18	0.0500	mg/kg wet	2.500		87	70-130			
1,1-Dichloroethene	2.46	0.0500	mg/kg wet	2.500		98	70-130			
1,1-Dichloropropene	2.43	0.0500	mg/kg wet	2.500		97	70-130			
1,2,3-Trichlorobenzene	2.63	0.0500	mg/kg wet	2.500		105	70-130			
1,2,3-Trichloropropane	2.42	0.0500	mg/kg wet	2.500		97	70-130			
1,2,4-Trichlorobenzene	2.64	0.0500	mg/kg wet	2.500		106	70-130			
1,2,4-Trimethylbenzene	2.52	0.0500	mg/kg wet	2.500		101	70-130			
1,2-Dibromo-3-Chloropropane	2.48	0.200	mg/kg wet	2.500		99	70-130			
1,2-Dibromoethane	2.63	0.0500	mg/kg wet	2.500		105	70-130			
1,2-Dichlorobenzene	2.57	0.0500	mg/kg wet	2.500		103	70-130			
1,2-Dichloroethane	2.52	0.0500	mg/kg wet	2.500		101	70-130			
1,2-Dichloropropane	2.25	0.0500	mg/kg wet	2.500		90	70-130			
1,3,5-Trimethylbenzene	2.67	0.0500	mg/kg wet	2.500		107	70-130			
1,3-Dichlorobenzene	2.62	0.0500	mg/kg wet	2.500		105	70-130			
1,3-Dichloropropane	2.58	0.0500	mg/kg wet	2.500		103	70-130			
1,4-Dichlorobenzene	2.65	0.0500	mg/kg wet	2.500		106	70-130			
1,4-Dioxane - Screen	53.1	5.00	mg/kg wet	50.00		106	44-241			
2,2-Dichloropropane	2.71	0.100	mg/kg wet	2.500		108	70-130			
2-Butanone	9.20	0.200	mg/kg wet	12.50		74	70-130			
2-Chlorotoluene	2.59	0.0500	mg/kg wet	2.500		104	70-130			
2-Hexanone	11.1	0.200	mg/kg wet	12.50		89	70-130			
4-Chlorotoluene	2.55	0.0500	mg/kg wet	2.500		102	70-130			
4-Isopropyltoluene	2.63	0.0500	mg/kg wet	2.500		105	70-130			
4-Methyl-2-Pentanone	12.2	0.200	mg/kg wet	12.50		97	70-130			
Acetone	10.7	0.200	mg/kg wet	12.50		86	70-130			
Benzene	2.31	0.0500	mg/kg wet	2.500		92	70-130			
Bromobenzene	2.75	0.0500	mg/kg wet	2.500		110	70-130			
Bromochloromethane	2.61	0.0500	mg/kg wet	2.500		104	70-130			
Bromodichloromethane	2.59	0.0500	mg/kg wet	2.500		103	70-130			
Bromoform	2.90	0.0500	mg/kg wet	2.500		116	70-130			
Bromomethane	2.74	0.100	mg/kg wet	2.500		110	70-130			
Carbon Disulfide	2.31	0.0500	mg/kg wet	2.500		92	70-130			
Carbon Tetrachloride	2.57	0.0500	mg/kg wet	2.500		103	70-130			
Chlorobenzene	2.65	0.0500	mg/kg wet	2.500		106	70-130			
Chloroethane	2.41	0.100	mg/kg wet	2.500		96	70-130			
Chloroform	2.44	0.0500	mg/kg wet	2.500		98	70-130			
Chloromethane	2.60	0.100	mg/kg wet	2.500		104	70-130			
cis-1,2-Dichloroethene	2.43	0.0500	mg/kg wet	2.500		97	70-130			



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408317

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

5035/8260B Volatile Organic Compounds / Methanol

Batch CH42135 - 5035

cis-1,3-Dichloropropene	2.73	0.0500	mg/kg wet	2.500		109	70-130			
Dibromochloromethane	2.84	0.0500	mg/kg wet	2.500		113	70-130			
Dibromomethane	2.58	0.0500	mg/kg wet	2.500		103	70-130			
Dichlorodifluoromethane	3.00	0.0500	mg/kg wet	2.500		120	70-130			
Diethyl Ether	2.15	0.0500	mg/kg wet	2.500		86	70-130			
Di-isopropyl ether	1.99	0.0500	mg/kg wet	2.500		80	70-130			
Ethyl tertiary-butyl ether	2.24	0.0500	mg/kg wet	2.500		89	70-130			
Ethylbenzene	2.72	0.0500	mg/kg wet	2.500		109	70-130			
Hexachlorobutadiene	2.94	0.0500	mg/kg wet	2.500		117	70-130			
Isopropylbenzene	2.53	0.0500	mg/kg wet	2.500		101	70-130			
Methyl tert-Butyl Ether	2.35	0.0500	mg/kg wet	2.500		94	70-130			
Methylene Chloride	2.27	0.200	mg/kg wet	2.500		91	70-130			
Naphthalene	2.17	0.0500	mg/kg wet	2.500		87	70-130			
n-Butylbenzene	2.51	0.0500	mg/kg wet	2.500		101	70-130			
n-Propylbenzene	2.44	0.0500	mg/kg wet	2.500		98	70-130			
sec-Butylbenzene	2.52	0.0500	mg/kg wet	2.500		101	70-130			
Styrene	2.72	0.0500	mg/kg wet	2.500		109	70-130			
tert-Butylbenzene	2.71	0.0500	mg/kg wet	2.500		109	70-130			
Tertiary-amyl methyl ether	2.22	0.0500	mg/kg wet	2.500		89	70-130			
Tetrachloroethene	2.52	0.0500	mg/kg wet	2.500		101	70-130			
Tetrahydrofuran	1.87	0.200	mg/kg wet	2.500		75	70-130			
Toluene	2.93	0.0500	mg/kg wet	2.500		117	70-130			
trans-1,2-Dichloroethene	2.41	0.0500	mg/kg wet	2.500		97	70-130			
trans-1,3-Dichloropropene	2.66	0.0500	mg/kg wet	2.500		106	70-130			
Trichloroethene	2.60	0.0500	mg/kg wet	2.500		104	70-130			
Trichlorofluoromethane	2.46	0.0500	mg/kg wet	2.500		98	70-130			
Vinyl Chloride	3.01	0.0500	mg/kg wet	2.500		121	70-130			
Xylene O	2.63	0.0500	mg/kg wet	2.500		105	70-130			
Xylene P,M	5.38	0.100	mg/kg wet	5.000		108	70-130			
Surrogate: 1,2-Dichloroethane-d4	2.44		mg/kg wet	2.500		98	70-130			
Surrogate: 4-Bromofluorobenzene	2.66		mg/kg wet	2.500		107	70-130			
Surrogate: Dibromofluoromethane	2.51		mg/kg wet	2.500		100	70-130			
Surrogate: Toluene-d8	2.67		mg/kg wet	2.500		107	70-130			

LCS Dup

1,1,1,2-Tetrachloroethane	2.50	0.100	mg/kg wet	2.500		100	70-130	6	25	
1,1,1-Trichloroethane	2.43	0.0500	mg/kg wet	2.500		97	70-130	6	25	
1,1,2,2-Tetrachloroethane	2.33	0.0500	mg/kg wet	2.500		93	70-130	5	25	
1,1,2-Trichloroethane	2.33	0.0500	mg/kg wet	2.500		93	70-130	11	25	
1,1-Dichloroethane	2.16	0.0500	mg/kg wet	2.500		86	70-130	1	25	
1,1-Dichloroethene	2.33	0.0500	mg/kg wet	2.500		93	70-130	5	25	
1,1-Dichloropropene	2.43	0.0500	mg/kg wet	2.500		97	70-130	0.08	25	
1,2,3-Trichlorobenzene	2.54	0.0500	mg/kg wet	2.500		102	70-130	3	25	
1,2,3-Trichloropropane	2.29	0.0500	mg/kg wet	2.500		92	70-130	5	25	
1,2,4-Trichlorobenzene	2.55	0.0500	mg/kg wet	2.500		102	70-130	4	25	
1,2,4-Trimethylbenzene	2.41	0.0500	mg/kg wet	2.500		96	70-130	5	25	



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

5035/8260B Volatile Organic Compounds / Methanol

Batch CH42135 - 5035

1,2-Dibromo-3-Chloropropane	2.34	0.200	mg/kg wet	2.500		94	70-130	6	25	
1,2-Dibromoethane	2.50	0.0500	mg/kg wet	2.500		100	70-130	5	25	
1,2-Dichlorobenzene	2.42	0.0500	mg/kg wet	2.500		97	70-130	6	25	
1,2-Dichloroethane	2.29	0.0500	mg/kg wet	2.500		92	70-130	10	25	
1,2-Dichloropropane	2.28	0.0500	mg/kg wet	2.500		91	70-130	1	25	
1,3,5-Trimethylbenzene	2.54	0.0500	mg/kg wet	2.500		101	70-130	5	25	
1,3-Dichlorobenzene	2.46	0.0500	mg/kg wet	2.500		98	70-130	6	25	
1,3-Dichloropropane	2.45	0.0500	mg/kg wet	2.500		98	70-130	5	25	
1,4-Dichlorobenzene	2.49	0.0500	mg/kg wet	2.500		100	70-130	6	25	
1,4-Dioxane - Screen	56.3	5.00	mg/kg wet	50.00		113	44-241	6	200	
2,2-Dichloropropane	2.51	0.100	mg/kg wet	2.500		101	70-130	7	25	
2-Butanone	9.52	0.200	mg/kg wet	12.50		76	70-130	3	25	
2-Chlorotoluene	2.43	0.0500	mg/kg wet	2.500		97	70-130	6	25	
2-Hexanone	10.7	0.200	mg/kg wet	12.50		86	70-130	3	25	
4-Chlorotoluene	2.41	0.0500	mg/kg wet	2.500		96	70-130	6	25	
4-Isopropyltoluene	2.49	0.0500	mg/kg wet	2.500		100	70-130	5	25	
4-Methyl-2-Pentanone	11.1	0.200	mg/kg wet	12.50		89	70-130	9	25	
Acetone	10.3	0.200	mg/kg wet	12.50		82	70-130	4	25	
Benzene	2.26	0.0500	mg/kg wet	2.500		91	70-130	2	25	
Bromobenzene	2.59	0.0500	mg/kg wet	2.500		104	70-130	6	25	
Bromochloromethane	2.52	0.0500	mg/kg wet	2.500		101	70-130	3	25	
Bromodichloromethane	2.50	0.0500	mg/kg wet	2.500		100	70-130	4	25	
Bromoform	2.74	0.0500	mg/kg wet	2.500		110	70-130	5	25	
Bromomethane	2.61	0.100	mg/kg wet	2.500		104	70-130	5	25	
Carbon Disulfide	2.22	0.0500	mg/kg wet	2.500		89	70-130	4	25	
Carbon Tetrachloride	2.45	0.0500	mg/kg wet	2.500		98	70-130	5	25	
Chlorobenzene	2.47	0.0500	mg/kg wet	2.500		99	70-130	7	25	
Chloroethane	2.24	0.100	mg/kg wet	2.500		89	70-130	7	25	
Chloroform	2.35	0.0500	mg/kg wet	2.500		94	70-130	4	25	
Chloromethane	2.28	0.100	mg/kg wet	2.500		91	70-130	13	25	
cis-1,2-Dichloroethene	2.34	0.0500	mg/kg wet	2.500		93	70-130	4	25	
cis-1,3-Dichloropropene	2.56	0.0500	mg/kg wet	2.500		102	70-130	7	25	
Dibromochloromethane	2.68	0.0500	mg/kg wet	2.500		107	70-130	6	25	
Dibromomethane	2.50	0.0500	mg/kg wet	2.500		100	70-130	3	25	
Dichlorodifluoromethane	2.62	0.0500	mg/kg wet	2.500		105	70-130	13	25	
Diethyl Ether	2.06	0.0500	mg/kg wet	2.500		82	70-130	4	25	
Di-isopropyl ether	2.02	0.0500	mg/kg wet	2.500		81	70-130	2	25	
Ethyl tertiary-butyl ether	2.17	0.0500	mg/kg wet	2.500		87	70-130	3	25	
Ethylbenzene	2.55	0.0500	mg/kg wet	2.500		102	70-130	7	25	
Hexachlorobutadiene	2.83	0.0500	mg/kg wet	2.500		113	70-130	4	25	
Isopropylbenzene	2.38	0.0500	mg/kg wet	2.500		95	70-130	6	25	
Methyl tert-Butyl Ether	2.20	0.0500	mg/kg wet	2.500		88	70-130	6	25	
Methylene Chloride	2.17	0.200	mg/kg wet	2.500		87	70-130	5	25	
Naphthalene	2.08	0.0500	mg/kg wet	2.500		83	70-130	4	25	
n-Butylbenzene	2.37	0.0500	mg/kg wet	2.500		95	70-130	6	25	



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408317

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

5035/8260B Volatile Organic Compounds / Methanol

Batch CH42135 - 5035

n-Propylbenzene	2.29	0.0500	mg/kg wet	2.500		92	70-130	6	25	
sec-Butylbenzene	2.40	0.0500	mg/kg wet	2.500		96	70-130	5	25	
Styrene	2.56	0.0500	mg/kg wet	2.500		103	70-130	6	25	
tert-Butylbenzene	2.56	0.0500	mg/kg wet	2.500		102	70-130	6	25	
Tertiary-amyl methyl ether	2.06	0.0500	mg/kg wet	2.500		82	70-130	7	25	
Tetrachloroethene	2.35	0.0500	mg/kg wet	2.500		94	70-130	7	25	
Tetrahydrofuran	2.04	0.200	mg/kg wet	2.500		82	70-130	9	25	
Toluene	2.60	0.0500	mg/kg wet	2.500		104	70-130	12	25	
trans-1,2-Dichloroethene	2.23	0.0500	mg/kg wet	2.500		89	70-130	8	25	
trans-1,3-Dichloropropene	2.36	0.0500	mg/kg wet	2.500		95	70-130	12	25	
Trichloroethene	2.44	0.0500	mg/kg wet	2.500		98	70-130	6	25	
Trichlorofluoromethane	2.16	0.0500	mg/kg wet	2.500		87	70-130	13	25	
Vinyl Chloride	2.68	0.0500	mg/kg wet	2.500		107	70-130	12	25	
Xylene O	2.48	0.0500	mg/kg wet	2.500		99	70-130	6	25	
Xylene P,M	5.07	0.100	mg/kg wet	5.000		101	70-130	6	25	
Surrogate: 1,2-Dichloroethane-d4	2.29		mg/kg wet	2.500		92	70-130			
Surrogate: 4-Bromofluorobenzene	2.49		mg/kg wet	2.500		100	70-130			
Surrogate: Dibromofluoromethane	2.44		mg/kg wet	2.500		98	70-130			
Surrogate: Toluene-d8	2.48		mg/kg wet	2.500		99	70-130			

8082A Polychlorinated Biphenyls (PCB)

Batch CH41504 - 3540C

Blank										
Aroclor 1016	ND	0.0500	mg/kg wet							
Aroclor 1221	ND	0.0500	mg/kg wet							
Aroclor 1232	ND	0.0500	mg/kg wet							
Aroclor 1242	ND	0.0500	mg/kg wet							
Aroclor 1248	ND	0.0500	mg/kg wet							
Aroclor 1254	ND	0.0500	mg/kg wet							
Aroclor 1260	ND	0.0500	mg/kg wet							
Aroclor 1262	ND	0.0500	mg/kg wet							
Aroclor 1268	ND	0.0500	mg/kg wet							
Surrogate: Decachlorobiphenyl	0.0201		mg/kg wet	0.02500		81	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0205		mg/kg wet	0.02500		82	30-150			
Surrogate: Tetrachloro-m-xylene	0.0222		mg/kg wet	0.02500		89	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0255		mg/kg wet	0.02500		102	30-150			
LCS										
Aroclor 1016	0.575	0.0500	mg/kg wet	0.5000		115	40-140			
Aroclor 1260	0.518	0.0500	mg/kg wet	0.5000		104	40-140			
Surrogate: Decachlorobiphenyl	0.0200		mg/kg wet	0.02500		80	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0205		mg/kg wet	0.02500		82	30-150			
Surrogate: Tetrachloro-m-xylene	0.0228		mg/kg wet	0.02500		91	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0243		mg/kg wet	0.02500		97	30-150			



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408317

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

8082A Polychlorinated Biphenyls (PCB)

Batch CH41504 - 3540C

LCS Dup

Aroclor 1016	0.575	0.0500	mg/kg wet	0.5000		115	40-140	0.03	30	
Aroclor 1260	0.527	0.0500	mg/kg wet	0.5000		105	40-140	2	30	

Surrogate: Decachlorobiphenyl	0.0206		mg/kg wet	0.02500		82	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0212		mg/kg wet	0.02500		85	30-150			
Surrogate: Tetrachloro-m-xylene	0.0236		mg/kg wet	0.02500		94	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0253		mg/kg wet	0.02500		101	30-150			

8270D Semi-Volatile Organic Compounds

Batch CH41405 - 3546

Blank

1,2,4-Trichlorobenzene	ND	0.333	mg/kg wet
1,2-Dichlorobenzene	ND	0.333	mg/kg wet
1,3-Dichlorobenzene	ND	0.333	mg/kg wet
1,4-Dichlorobenzene	ND	0.333	mg/kg wet
2,4,5-Trichlorophenol	ND	0.333	mg/kg wet
2,4,6-Trichlorophenol	ND	0.333	mg/kg wet
2,4-Dichlorophenol	ND	0.333	mg/kg wet
2,4-Dimethylphenol	ND	0.333	mg/kg wet
2,4-Dinitrophenol	ND	1.67	mg/kg wet
2,4-Dinitrotoluene	ND	0.333	mg/kg wet
2,6-Dinitrotoluene	ND	0.333	mg/kg wet
2-Chloronaphthalene	ND	0.333	mg/kg wet
2-Chlorophenol	ND	0.333	mg/kg wet
2-Methylnaphthalene	ND	0.333	mg/kg wet
2-Methylphenol	ND	0.333	mg/kg wet
2-Nitrophenol	ND	0.333	mg/kg wet
3,3'-Dichlorobenzidine	ND	0.667	mg/kg wet
3+4-Methylphenol	ND	0.667	mg/kg wet
4-Bromophenyl-phenylether	ND	0.333	mg/kg wet
4-Chloroaniline	ND	0.667	mg/kg wet
4-Nitrophenol	ND	1.67	mg/kg wet
Acenaphthene	ND	0.333	mg/kg wet
Acenaphthylene	ND	0.333	mg/kg wet
Acetophenone	ND	0.667	mg/kg wet
Aniline	ND	1.67	mg/kg wet
Anthracene	ND	0.333	mg/kg wet
Azobenzene	ND	0.333	mg/kg wet
Benzo(a)anthracene	ND	0.333	mg/kg wet
Benzo(a)pyrene	ND	0.167	mg/kg wet
Benzo(b)fluoranthene	ND	0.333	mg/kg wet
Benzo(g,h,i)perylene	ND	0.333	mg/kg wet
Benzo(k)fluoranthene	ND	0.333	mg/kg wet
bis(2-Chloroethoxy)methane	ND	0.333	mg/kg wet



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1408317

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

8270D Semi-Volatile Organic Compounds

Batch CH41405 - 3546

bis(2-Chloroethyl)ether	ND	0.333	mg/kg wet							
bis(2-chloroisopropyl)Ether	ND	0.333	mg/kg wet							
bis(2-Ethylhexyl)phthalate	ND	0.333	mg/kg wet							
Butylbenzylphthalate	ND	0.333	mg/kg wet							
Chrysene	ND	0.167	mg/kg wet							
Dibenzo(a,h)Anthracene	ND	0.167	mg/kg wet							
Dibenzofuran	ND	0.333	mg/kg wet							
Diethylphthalate	ND	0.333	mg/kg wet							
Dimethylphthalate	ND	0.333	mg/kg wet							
Di-n-butylphthalate	ND	0.333	mg/kg wet							
Di-n-octylphthalate	ND	0.333	mg/kg wet							
Fluoranthene	ND	0.333	mg/kg wet							
Fluorene	ND	0.333	mg/kg wet							
Hexachlorobenzene	ND	0.333	mg/kg wet							
Hexachlorobutadiene	ND	0.333	mg/kg wet							
Hexachloroethane	ND	0.333	mg/kg wet							
Indeno(1,2,3-cd)Pyrene	ND	0.333	mg/kg wet							
Isophorone	ND	0.333	mg/kg wet							
Naphthalene	ND	0.333	mg/kg wet							
Nitrobenzene	ND	0.333	mg/kg wet							
N-Nitrosodimethylamine	ND	0.333	mg/kg wet							
Pentachlorophenol	ND	1.67	mg/kg wet							
Phenanthrene	ND	0.333	mg/kg wet							
Phenol	ND	0.333	mg/kg wet							
Pyrene	ND	0.333	mg/kg wet							
Surrogate: 1,2-Dichlorobenzene-d4	2.27		mg/kg wet	3.333		68	30-130			
Surrogate: 2,4,6-Tribromophenol	3.84		mg/kg wet	5.000		77	30-130			
Surrogate: 2-Chlorophenol-d4	3.19		mg/kg wet	5.000		64	30-130			
Surrogate: 2-Fluorobiphenyl	2.51		mg/kg wet	3.333		75	30-130			
Surrogate: 2-Fluorophenol	3.16		mg/kg wet	5.000		63	30-130			
Surrogate: Nitrobenzene-d5	2.13		mg/kg wet	3.333		64	30-130			
Surrogate: Phenol-d6	3.42		mg/kg wet	5.000		68	30-130			
Surrogate: p-Terphenyl-d14	2.67		mg/kg wet	3.333		80	30-130			

LCS

1,2,4-Trichlorobenzene	2.15	0.333	mg/kg wet	3.333		65	40-140			
1,2-Dichlorobenzene	2.03	0.333	mg/kg wet	3.333		61	40-140			
1,3-Dichlorobenzene	1.99	0.333	mg/kg wet	3.333		60	40-140			
1,4-Dichlorobenzene	1.99	0.333	mg/kg wet	3.333		60	40-140			
2,4,5-Trichlorophenol	2.62	0.333	mg/kg wet	3.333		79	30-130			
2,4,6-Trichlorophenol	2.48	0.333	mg/kg wet	3.333		74	30-130			
2,4-Dichlorophenol	2.39	0.333	mg/kg wet	3.333		72	30-130			
2,4-Dimethylphenol	2.27	0.333	mg/kg wet	3.333		68	30-130			
2,4-Dinitrophenol	2.46	1.67	mg/kg wet	3.333		74	30-130			
2,4-Dinitrotoluene	2.74	0.333	mg/kg wet	3.333		82	40-140			
2,6-Dinitrotoluene	2.55	0.333	mg/kg wet	3.333		76	40-140			



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

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ESS Laboratory Work Order: 1408317

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

8270D Semi-Volatile Organic Compounds

Batch CH41405 - 3546

2-Chloronaphthalene	2.08	0.333	mg/kg wet	3.333		62	40-140			
2-Chlorophenol	1.97	0.333	mg/kg wet	3.333		59	30-130			
2-Methylnaphthalene	2.41	0.333	mg/kg wet	3.333		72	40-140			
2-Methylphenol	2.22	0.333	mg/kg wet	3.333		67	30-130			
2-Nitrophenol	2.31	0.333	mg/kg wet	3.333		69	30-130			
3,3'-Dichlorobenzidine	2.27	0.667	mg/kg wet	3.333		68	40-140			
3+4-Methylphenol	4.52	0.667	mg/kg wet	6.667		68	30-130			
4-Bromophenyl-phenylether	2.73	0.333	mg/kg wet	3.333		82	40-140			
4-Chloroaniline	1.60	0.667	mg/kg wet	3.333		48	40-140			
4-Nitrophenol	2.73	1.67	mg/kg wet	3.333		82	30-130			
Acenaphthene	2.25	0.333	mg/kg wet	3.333		67	40-140			
Acenaphthylene	2.21	0.333	mg/kg wet	3.333		66	40-140			
Acetophenone	1.97	0.667	mg/kg wet	3.333		59	40-140			
Aniline	1.97	1.67	mg/kg wet	3.333		59	40-140			
Anthracene	2.61	0.333	mg/kg wet	3.333		78	40-140			
Azobenzene	2.51	0.333	mg/kg wet	3.333		75	40-140			
Benzo(a)anthracene	2.40	0.333	mg/kg wet	3.333		72	40-140			
Benzo(a)pyrene	2.36	0.167	mg/kg wet	3.333		71	40-140			
Benzo(b)fluoranthene	2.47	0.333	mg/kg wet	3.333		74	40-140			
Benzo(g,h,i)perylene	2.68	0.333	mg/kg wet	3.333		80	40-140			
Benzo(k)fluoranthene	2.71	0.333	mg/kg wet	3.333		81	40-140			
bis(2-Chloroethoxy)methane	2.19	0.333	mg/kg wet	3.333		66	40-140			
bis(2-Chloroethyl)ether	2.03	0.333	mg/kg wet	3.333		61	40-140			
bis(2-chloroisopropyl)Ether	2.06	0.333	mg/kg wet	3.333		62	40-140			
bis(2-Ethylhexyl)phthalate	2.79	0.333	mg/kg wet	3.333		84	40-140			
Butylbenzylphthalate	2.73	0.333	mg/kg wet	3.333		82	40-140			
Chrysene	2.56	0.167	mg/kg wet	3.333		77	40-140			
Dibenzo(a,h)Anthracene	2.71	0.167	mg/kg wet	3.333		81	40-140			
Dibenzofuran	2.34	0.333	mg/kg wet	3.333		70	40-140			
Diethylphthalate	2.61	0.333	mg/kg wet	3.333		78	40-140			
Dimethylphthalate	2.47	0.333	mg/kg wet	3.333		74	40-140			
Di-n-butylphthalate	2.77	0.333	mg/kg wet	3.333		83	40-140			
Di-n-octylphthalate	2.98	0.333	mg/kg wet	3.333		89	40-140			
Fluoranthene	2.83	0.333	mg/kg wet	3.333		85	40-140			
Fluorene	2.43	0.333	mg/kg wet	3.333		73	40-140			
Hexachlorobenzene	2.63	0.333	mg/kg wet	3.333		79	40-140			
Hexachlorobutadiene	2.06	0.333	mg/kg wet	3.333		62	40-140			
Hexachloroethane	2.07	0.333	mg/kg wet	3.333		62	40-140			
Indeno(1,2,3-cd)Pyrene	2.77	0.333	mg/kg wet	3.333		83	40-140			
Isophorone	2.10	0.333	mg/kg wet	3.333		63	40-140			
Naphthalene	2.15	0.333	mg/kg wet	3.333		65	40-140			
Nitrobenzene	2.07	0.333	mg/kg wet	3.333		62	40-140			
N-Nitrosodimethylamine	1.97	0.333	mg/kg wet	3.333		59	40-140			
Pentachlorophenol	2.98	1.67	mg/kg wet	3.333		89	30-130			
Phenanthrene	2.63	0.333	mg/kg wet	3.333		79	40-140			



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

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ESS Laboratory Work Order: 1408317

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

8270D Semi-Volatile Organic Compounds

Batch CH41405 - 3546

Phenol	2.43	0.333	mg/kg wet	3.333		73	30-130			
Pyrene	2.69	0.333	mg/kg wet	3.333		81	40-140			
Surrogate: 1,2-Dichlorobenzene-d4	2.22		mg/kg wet	3.333		67	30-130			
Surrogate: 2,4,6-Tribromophenol	4.70		mg/kg wet	5.000		94	30-130			
Surrogate: 2-Chlorophenol-d4	3.33		mg/kg wet	5.000		67	30-130			
Surrogate: 2-Fluorobiphenyl	2.58		mg/kg wet	3.333		77	30-130			
Surrogate: 2-Fluorophenol	3.23		mg/kg wet	5.000		65	30-130			
Surrogate: Nitrobenzene-d5	2.38		mg/kg wet	3.333		71	30-130			
Surrogate: Phenol-d6	3.32		mg/kg wet	5.000		66	30-130			
Surrogate: p-Terphenyl-d14	2.91		mg/kg wet	3.333		87	30-130			

LCS Dup

1,2,4-Trichlorobenzene	2.34	0.333	mg/kg wet	3.333		70	40-140	8	30	
1,2-Dichlorobenzene	2.27	0.333	mg/kg wet	3.333		68	40-140	11	30	
1,3-Dichlorobenzene	2.21	0.333	mg/kg wet	3.333		66	40-140	11	30	
1,4-Dichlorobenzene	2.28	0.333	mg/kg wet	3.333		68	40-140	14	30	
2,4,5-Trichlorophenol	2.64	0.333	mg/kg wet	3.333		79	30-130	0.8	30	
2,4,6-Trichlorophenol	2.65	0.333	mg/kg wet	3.333		79	30-130	7	30	
2,4-Dichlorophenol	2.54	0.333	mg/kg wet	3.333		76	30-130	6	30	
2,4-Dimethylphenol	2.44	0.333	mg/kg wet	3.333		73	30-130	8	30	
2,4-Dinitrophenol	2.47	1.67	mg/kg wet	3.333		74	30-130	0.2	30	
2,4-Dinitrotoluene	2.79	0.333	mg/kg wet	3.333		84	40-140	2	30	
2,6-Dinitrotoluene	2.61	0.333	mg/kg wet	3.333		78	40-140	3	30	
2-Chloronaphthalene	2.22	0.333	mg/kg wet	3.333		67	40-140	7	30	
2-Chlorophenol	2.32	0.333	mg/kg wet	3.333		70	30-130	16	30	
2-Methylnaphthalene	2.65	0.333	mg/kg wet	3.333		80	40-140	9	30	
2-Methylphenol	2.45	0.333	mg/kg wet	3.333		74	30-130	10	30	
2-Nitrophenol	2.65	0.333	mg/kg wet	3.333		80	30-130	14	30	
3,3'-Dichlorobenzidine	2.32	0.667	mg/kg wet	3.333		70	40-140	2	30	
3+4-Methylphenol	4.87	0.667	mg/kg wet	6.667		73	30-130	7	30	
4-Bromophenyl-phenylether	2.65	0.333	mg/kg wet	3.333		79	40-140	3	30	
4-Chloroaniline	1.87	0.667	mg/kg wet	3.333		56	40-140	16	30	
4-Nitrophenol	2.78	1.67	mg/kg wet	3.333		84	30-130	2	30	
Acenaphthene	2.36	0.333	mg/kg wet	3.333		71	40-140	5	30	
Acenaphthylene	2.29	0.333	mg/kg wet	3.333		69	40-140	4	30	
Acetophenone	2.21	0.667	mg/kg wet	3.333		66	40-140	11	30	
Aniline	2.34	1.67	mg/kg wet	3.333		70	40-140	18	30	
Anthracene	2.66	0.333	mg/kg wet	3.333		80	40-140	2	30	
Azobenzene	2.56	0.333	mg/kg wet	3.333		77	40-140	2	30	
Benzo(a)anthracene	2.48	0.333	mg/kg wet	3.333		74	40-140	3	30	
Benzo(a)pyrene	2.48	0.167	mg/kg wet	3.333		74	40-140	5	30	
Benzo(b)fluoranthene	2.71	0.333	mg/kg wet	3.333		81	40-140	9	30	
Benzo(g,h,i)perylene	2.86	0.333	mg/kg wet	3.333		86	40-140	6	30	
Benzo(k)fluoranthene	2.66	0.333	mg/kg wet	3.333		80	40-140	2	30	
bis(2-Chloroethoxy)methane	2.42	0.333	mg/kg wet	3.333		72	40-140	10	30	
bis(2-Chloroethyl)ether	2.34	0.333	mg/kg wet	3.333		70	40-140	14	30	



CERTIFICATE OF ANALYSIS

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ESS Laboratory Work Order: 1408317

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

8270D Semi-Volatile Organic Compounds

Batch CH41405 - 3546

bis(2-chloroisopropyl)Ether	2.32	0.333	mg/kg wet	3.333		70	40-140	12	30	
bis(2-Ethylhexyl)phthalate	2.98	0.333	mg/kg wet	3.333		89	40-140	7	30	
Butylbenzylphthalate	2.89	0.333	mg/kg wet	3.333		87	40-140	6	30	
Chrysene	2.70	0.167	mg/kg wet	3.333		81	40-140	5	30	
Dibenzo(a,h)Anthracene	2.88	0.167	mg/kg wet	3.333		86	40-140	6	30	
Dibenzofuran	2.43	0.333	mg/kg wet	3.333		73	40-140	4	30	
Diethylphthalate	2.68	0.333	mg/kg wet	3.333		80	40-140	3	30	
Dimethylphthalate	2.54	0.333	mg/kg wet	3.333		76	40-140	3	30	
Di-n-butylphthalate	2.80	0.333	mg/kg wet	3.333		84	40-140	0.8	30	
Di-n-octylphthalate	3.11	0.333	mg/kg wet	3.333		93	40-140	5	30	
Fluoranthene	2.88	0.333	mg/kg wet	3.333		86	40-140	2	30	
Fluorene	2.47	0.333	mg/kg wet	3.333		74	40-140	2	30	
Hexachlorobenzene	2.67	0.333	mg/kg wet	3.333		80	40-140	1	30	
Hexachlorobutadiene	2.29	0.333	mg/kg wet	3.333		69	40-140	11	30	
Hexachloroethane	2.33	0.333	mg/kg wet	3.333		70	40-140	12	30	
Indeno(1,2,3-cd)Pyrene	2.92	0.333	mg/kg wet	3.333		88	40-140	5	30	
Isophorone	2.25	0.333	mg/kg wet	3.333		68	40-140	7	30	
Naphthalene	2.45	0.333	mg/kg wet	3.333		73	40-140	13	30	
Nitrobenzene	2.42	0.333	mg/kg wet	3.333		73	40-140	15	30	
N-Nitrosodimethylamine	2.18	0.333	mg/kg wet	3.333		65	40-140	10	30	
Pentachlorophenol	3.02	1.67	mg/kg wet	3.333		91	30-130	1	30	
Phenanthrene	2.69	0.333	mg/kg wet	3.333		81	40-140	2	30	
Phenol	2.33	0.333	mg/kg wet	3.333		70	30-130	4	30	
Pyrene	2.84	0.333	mg/kg wet	3.333		85	40-140	5	30	
Surrogate: 1,2-Dichlorobenzene-d4	2.36		mg/kg wet	3.333		71	30-130			
Surrogate: 2,4,6-Tribromophenol	4.57		mg/kg wet	5.000		91	30-130			
Surrogate: 2-Chlorophenol-d4	3.40		mg/kg wet	5.000		68	30-130			
Surrogate: 2-Fluorobiphenyl	2.57		mg/kg wet	3.333		77	30-130			
Surrogate: 2-Fluorophenol	3.47		mg/kg wet	5.000		69	30-130			
Surrogate: Nitrobenzene-d5	2.58		mg/kg wet	3.333		77	30-130			
Surrogate: Phenol-d6	3.46		mg/kg wet	5.000		69	30-130			
Surrogate: p-Terphenyl-d14	2.91		mg/kg wet	3.333		87	30-130			

Classical Chemistry

Batch CH41805 - General Preparation

Blank

Conductivity	ND	5	umhos/cm							

LCS

Conductivity	1390		umhos/cm	1411		98	90-110			

MADEP-EPH Extractable Petroleum Hydrocarbons

Batch CH41403 - 3546

Blank

C19-C36 Aliphatics1	ND	15.0	mg/kg wet							



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408317

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

MADEP-EPH Extractable Petroleum Hydrocarbons

Batch CH41403 - 3546

C9-C18 Aliphatics1	ND	15.0	mg/kg wet							
Decane (C10)	ND	0.5	mg/kg wet							
Docosane (C22)	ND	0.5	mg/kg wet							
Dodecane (C12)	ND	0.5	mg/kg wet							
Eicosane (C20)	ND	0.5	mg/kg wet							
Hexacosane (C26)	ND	0.5	mg/kg wet							
Hexadecane (C16)	ND	0.5	mg/kg wet							
Hexatriacontane (C36)	ND	0.5	mg/kg wet							
Nonadecane (C19)	ND	0.5	mg/kg wet							
Nonane (C9)	ND	0.5	mg/kg wet							
Octacosane (C28)	ND	0.5	mg/kg wet							
Octadecane (C18)	ND	0.5	mg/kg wet							
Tetracosane (C24)	ND	0.5	mg/kg wet							
Tetradecane (C14)	ND	0.5	mg/kg wet							
Triacontane (C30)	ND	0.5	mg/kg wet							

<i>Surrogate: 1-Chlorooctadecane</i>	<i>1.64</i>		mg/kg wet	<i>2.000</i>		<i>82</i>	<i>40-140</i>			

Blank

2-Methylnaphthalene	ND	0.20	mg/kg wet							
Acenaphthene	ND	0.40	mg/kg wet							
Acenaphthylene	ND	0.20	mg/kg wet							
Anthracene	ND	0.40	mg/kg wet							
Benzo(a)anthracene	ND	0.40	mg/kg wet							
Benzo(a)pyrene	ND	0.40	mg/kg wet							
Benzo(b)fluoranthene	ND	0.40	mg/kg wet							
Benzo(g,h,i)perylene	ND	0.40	mg/kg wet							
Benzo(k)fluoranthene	ND	0.40	mg/kg wet							
C11-C22 Unadjusted Aromatics1	ND	15.0	mg/kg wet							
Chrysene	ND	0.40	mg/kg wet							
Dibenzo(a,h)Anthracene	ND	0.20	mg/kg wet							
Fluoranthene	ND	0.40	mg/kg wet							
Fluorene	ND	0.40	mg/kg wet							
Indeno(1,2,3-cd)Pyrene	ND	0.40	mg/kg wet							
Naphthalene	ND	0.40	mg/kg wet							
Phenanthrene	ND	0.40	mg/kg wet							
Pyrene	ND	0.40	mg/kg wet							

<i>Surrogate: 2-Bromonaphthalene</i>	<i>2.05</i>		mg/kg wet	<i>2.000</i>		<i>102</i>	<i>40-140</i>			
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>2.01</i>		mg/kg wet	<i>2.000</i>		<i>101</i>	<i>40-140</i>			
<i>Surrogate: O-Terphenyl</i>	<i>1.54</i>		mg/kg wet	<i>2.000</i>		<i>77</i>	<i>40-140</i>			

LCS

C19-C36 Aliphatics1	19.2	15.0	mg/kg wet	16.00		120	40-140			
C9-C18 Aliphatics1	12.0	15.0	mg/kg wet	12.00		100	40-140			
Decane (C10)	1.2	0.5	mg/kg wet	2.000		61	40-140			
Docosane (C22)	1.9	0.5	mg/kg wet	2.000		93	40-140			
Dodecane (C12)	1.3	0.5	mg/kg wet	2.000		67	40-140			



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Quality Control Data

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MADEP-EPH Extractable Petroleum Hydrocarbons

Batch CH41403 - 3546

Eicosane (C20)	1.8	0.5	mg/kg wet	2.000		90	40-140			
Hexacosane (C26)	1.8	0.5	mg/kg wet	2.000		89	40-140			
Hexadecane (C16)	1.7	0.5	mg/kg wet	2.000		85	40-140			
Hexatriacontane (C36)	1.8	0.5	mg/kg wet	2.000		92	40-140			
Nonadecane (C19)	1.8	0.5	mg/kg wet	2.000		90	40-140			
Nonane (C9)	0.9	0.5	mg/kg wet	2.000		46	30-140			
Octacosane (C28)	1.7	0.5	mg/kg wet	2.000		86	40-140			
Octadecane (C18)	1.8	0.5	mg/kg wet	2.000		89	40-140			
Tetracosane (C24)	1.9	0.5	mg/kg wet	2.000		93	40-140			
Tetradecane (C14)	1.5	0.5	mg/kg wet	2.000		76	40-140			
Triacontane (C30)	1.7	0.5	mg/kg wet	2.000		86	40-140			

Surrogate: 1-Chlorooctadecane

1.61 mg/kg wet 2.000 81 40-140

LCS

2-Methylnaphthalene	1.61	0.20	mg/kg wet	2.000		81	40-140			
Acenaphthene	1.56	0.40	mg/kg wet	2.000		78	40-140			
Acenaphthylene	1.65	0.20	mg/kg wet	2.000		83	40-140			
Anthracene	1.71	0.40	mg/kg wet	2.000		85	40-140			
Benzo(a)anthracene	1.91	0.40	mg/kg wet	2.000		96	40-140			
Benzo(a)pyrene	2.15	0.40	mg/kg wet	2.000		108	40-140			
Benzo(b)fluoranthene	1.96	0.40	mg/kg wet	2.000		98	40-140			
Benzo(g,h,i)perylene	2.11	0.40	mg/kg wet	2.000		106	40-140			
Benzo(k)fluoranthene	1.86	0.40	mg/kg wet	2.000		93	40-140			
C11-C22 Unadjusted Aromatics1	39.5	15.0	mg/kg wet	34.00		116	40-140			
Chrysene	1.87	0.40	mg/kg wet	2.000		94	40-140			
Dibenzo(a,h)Anthracene	2.10	0.20	mg/kg wet	2.000		105	40-140			
Fluoranthene	1.88	0.40	mg/kg wet	2.000		94	40-140			
Fluorene	1.68	0.40	mg/kg wet	2.000		84	40-140			
Indeno(1,2,3-cd)Pyrene	2.19	0.40	mg/kg wet	2.000		110	40-140			
Naphthalene	1.55	0.40	mg/kg wet	2.000		77	40-140			
Phenanthrene	1.73	0.40	mg/kg wet	2.000		87	40-140			
Pyrene	1.88	0.40	mg/kg wet	2.000		94	40-140			

Surrogate: 2-Bromonaphthalene

1.86 mg/kg wet 2.000 93 40-140

Surrogate: 2-Fluorobiphenyl

2.05 mg/kg wet 2.000 103 40-140

Surrogate: O-Terphenyl

1.63 mg/kg wet 2.000 81 40-140

LCS

2-Methylnaphthalene Breakthrough	0.0		%				0-5			
Naphthalene Breakthrough	0.0		%				0-5			

LCS Dup

C19-C36 Aliphatics1	18.9	15.0	mg/kg wet	16.00		118	40-140	2	25	
C9-C18 Aliphatics1	11.9	15.0	mg/kg wet	12.00		99	40-140	0.7	25	
Decane (C10)	1.2	0.5	mg/kg wet	2.000		62	40-140	0.2	25	
Docosane (C22)	1.9	0.5	mg/kg wet	2.000		95	40-140	2	25	
Dodecane (C12)	1.4	0.5	mg/kg wet	2.000		68	40-140	1	25	



CERTIFICATE OF ANALYSIS

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Client Project ID: Union Square

ESS Laboratory Work Order: 1408317

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

MADEP-EPH Extractable Petroleum Hydrocarbons

Batch CH41403 - 3546

Eicosane (C20)	1.8	0.5	mg/kg wet	2.000		92	40-140	3	25	
Hexacosane (C26)	1.8	0.5	mg/kg wet	2.000		91	40-140	3	25	
Hexadecane (C16)	1.8	0.5	mg/kg wet	2.000		88	40-140	3	25	
Hexatriacontane (C36)	1.9	0.5	mg/kg wet	2.000		95	40-140	2	25	
Nonadecane (C19)	1.8	0.5	mg/kg wet	2.000		92	40-140	2	25	
Nonane (C9)	0.9	0.5	mg/kg wet	2.000		46	30-140	0.3	25	
Octacosane (C28)	1.8	0.5	mg/kg wet	2.000		89	40-140	3	25	
Octadecane (C18)	1.8	0.5	mg/kg wet	2.000		91	40-140	2	25	
Tetracosane (C24)	1.9	0.5	mg/kg wet	2.000		94	40-140	0.3	25	
Tetradecane (C14)	1.6	0.5	mg/kg wet	2.000		78	40-140	3	25	
Triacontane (C30)	1.8	0.5	mg/kg wet	2.000		88	40-140	3	25	

Surrogate: 1-Chlorooctadecane

1.64

mg/kg wet

2.000

82

40-140

LCS Dup

2-Methylnaphthalene	1.73	0.20	mg/kg wet	2.000		87	40-140	7	20	
Acenaphthene	1.62	0.40	mg/kg wet	2.000		81	40-140	4	20	
Acenaphthylene	1.73	0.20	mg/kg wet	2.000		87	40-140	5	20	
Anthracene	1.76	0.40	mg/kg wet	2.000		88	40-140	3	20	
Benzo(a)anthracene	1.97	0.40	mg/kg wet	2.000		98	40-140	3	20	
Benzo(a)pyrene	2.20	0.40	mg/kg wet	2.000		110	40-140	2	20	
Benzo(b)fluoranthene	2.03	0.40	mg/kg wet	2.000		102	40-140	4	20	
Benzo(g,h,i)perylene	2.12	0.40	mg/kg wet	2.000		106	40-140	0.3	20	
Benzo(k)fluoranthene	1.93	0.40	mg/kg wet	2.000		97	40-140	4	20	
C11-C22 Unadjusted Aromatics1	41.3	15.0	mg/kg wet	34.00		122	40-140	4	25	
Chrysene	1.92	0.40	mg/kg wet	2.000		96	40-140	2	20	
Dibenzo(a,h)Anthracene	2.10	0.20	mg/kg wet	2.000		105	40-140	0.08	20	
Fluoranthene	1.91	0.40	mg/kg wet	2.000		96	40-140	2	20	
Fluorene	1.71	0.40	mg/kg wet	2.000		86	40-140	2	20	
Indeno(1,2,3-cd)Pyrene	2.19	0.40	mg/kg wet	2.000		109	40-140	0.3	20	
Naphthalene	1.65	0.40	mg/kg wet	2.000		82	40-140	6	20	
Phenanthrene	1.80	0.40	mg/kg wet	2.000		90	40-140	4	20	
Pyrene	1.92	0.40	mg/kg wet	2.000		96	40-140	2	20	

Surrogate: 2-Bromonaphthalene

1.94

mg/kg wet

2.000

97

40-140

Surrogate: 2-Fluorobiphenyl

2.10

mg/kg wet

2.000

105

40-140

Surrogate: O-Terphenyl

1.65

mg/kg wet

2.000

82

40-140

LCS Dup

2-Methylnaphthalene Breakthrough	0.0		%				0-5		200	
Naphthalene Breakthrough	0.0		%				0-5		200	

MADEP-VPH Volatile Petroleum Hydrocarbon

Batch CH42029 - 5035

Blank

1,2,4-Trimethylbenzene	ND	0.20	mg/kg wet							
2,2,4-Trimethylpentane	ND	5.00	mg/kg wet							



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408317

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

MADEP-VPH Volatile Petroleum Hydrocarbon

Batch CH42029 - 5035

2-Methylpentane	ND	5.00	mg/kg wet							
Benzene	ND	0.20	mg/kg wet							
C5-C8 Unadjusted Aliphatics	ND	10.0	mg/kg wet							
C9-C10 Aromatics	ND	10.0	mg/kg wet							
C9-C12 Unadjusted Aliphatics	ND	10.0	mg/kg wet							
Ethylbenzene	ND	0.20	mg/kg wet							
Methyl tert-Butyl Ether	ND	0.05	mg/kg wet							
Naphthalene	ND	0.20	mg/kg wet							
n-Butylcyclohexane	ND	5.00	mg/kg wet							
n-Decane	ND	5.00	mg/kg wet							
Nonane (C9)	ND	5.00	mg/kg wet							
Pentane	ND	5.00	mg/kg wet							
Toluene	ND	0.20	mg/kg wet							
Xylene O	ND	0.20	mg/kg wet							
Xylene P,M	ND	0.40	mg/kg wet							
Surrogate: 2,5-Dibromotoluene - FID	5.68		mg/kg wet	5.000		114	70-130			
Surrogate: 2,5-Dibromotoluene - PID	5.72		mg/kg wet	5.000		114	70-130			
Surrogate: Trifluorotoluene - FID	4.31		mg/kg wet	5.333		81	70-130			
Surrogate: Trifluorotoluene - PID	4.34		mg/kg wet	5.333		81	70-130			

LCS

1,2,4-Trimethylbenzene	10.0	0.20	mg/kg wet	10.00		100	70-130			
2,2,4-Trimethylpentane	14.7	5.00	mg/kg wet	15.00		98	70-130			
2-Methylpentane	16.8	5.00	mg/kg wet	15.00		112	70-130			
Benzene	4.96	0.20	mg/kg wet	5.000		99	70-130			
C5-C8 Unadjusted Aliphatics	42.7	10.0	mg/kg wet	40.00		107	70-130			
C9-C10 Aromatics	9.83	10.0	mg/kg wet	10.00		98	70-130			
C9-C12 Unadjusted Aliphatics	25.7	10.0	mg/kg wet	30.00		86	70-130			
Ethylbenzene	5.00	0.20	mg/kg wet	5.000		100	70-130			
Methyl tert-Butyl Ether	15.8	0.05	mg/kg wet	15.00		106	70-130			
Naphthalene	8.88	0.20	mg/kg wet	10.00		89	70-130			
n-Butylcyclohexane	7.75	5.00	mg/kg wet	10.00		77	70-130			
n-Decane	8.84	5.00	mg/kg wet	10.00		88	70-130			
Nonane (C9)	8.09	5.00	mg/kg wet	10.00		81	30-130			
Pentane	11.6	5.00	mg/kg wet	10.00		116	70-130			
Toluene	15.2	0.20	mg/kg wet	15.00		101	70-130			
Xylene O	10.1	0.20	mg/kg wet	10.00		101	70-130			
Xylene P,M	20.5	0.40	mg/kg wet	20.00		102	70-130			
Surrogate: 2,5-Dibromotoluene - FID	4.94		mg/kg wet	5.000		99	70-130			
Surrogate: 2,5-Dibromotoluene - PID	5.07		mg/kg wet	5.000		101	70-130			
Surrogate: Trifluorotoluene - FID	4.78		mg/kg wet	5.333		90	70-130			
Surrogate: Trifluorotoluene - PID	4.96		mg/kg wet	5.333		93	70-130			

LCS Dup

1,2,4-Trimethylbenzene	10.4	0.20	mg/kg wet	10.00		104	70-130	4	25	
2,2,4-Trimethylpentane	18.6	5.00	mg/kg wet	15.00		124	70-130	24	25	



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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-VPH Volatile Petroleum Hydrocarbon										
Batch CH42029 - 5035										
2-Methylpentane	17.4	5.00	mg/kg wet	15.00		116	70-130	3	25	
Benzene	5.12	0.20	mg/kg wet	5.000		102	70-130	3	25	
C5-C8 Unadjusted Aliphatics	47.2	10.0	mg/kg wet	40.00		118	70-130	10	25	
C9-C10 Aromatics	10.3	10.0	mg/kg wet	10.00		103	70-130	5	25	
C9-C12 Unadjusted Aliphatics	28.5	10.0	mg/kg wet	30.00		95	70-130	10	25	
Ethylbenzene	5.12	0.20	mg/kg wet	5.000		102	70-130	2	25	
Methyl tert-Butyl Ether	16.2	0.05	mg/kg wet	15.00		108	70-130	2	25	
Naphthalene	9.79	0.20	mg/kg wet	10.00		98	70-130	10	25	
n-Butylcyclohexane	8.60	5.00	mg/kg wet	10.00		86	70-130	10	25	
n-Decane	9.67	5.00	mg/kg wet	10.00		97	70-130	9	25	
Nonane (C9)	9.31	5.00	mg/kg wet	10.00		93	30-130	14	25	
Pentane	11.9	5.00	mg/kg wet	10.00		119	70-130	2	25	
Toluene	15.7	0.20	mg/kg wet	15.00		104	70-130	3	25	
Xylene O	10.2	0.20	mg/kg wet	10.00		102	70-130	1	25	
Xylene P,M	20.8	0.40	mg/kg wet	20.00		104	70-130	2	25	
Surrogate: 2,5-Dibromotoluene - FID	5.32		mg/kg wet	5.000		106	70-130			
Surrogate: 2,5-Dibromotoluene - PID	5.39		mg/kg wet	5.000		108	70-130			
Surrogate: Trifluorotoluene - FID	4.69		mg/kg wet	5.333		88	70-130			
Surrogate: Trifluorotoluene - PID	4.84		mg/kg wet	5.333		91	70-130			



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Notes and Definitions

Z-04	MeOH - covered
WL	Results obtained from a deionized water leach of the sample.
U	Analyte included in the analysis, but not detected
SM	Surrogate recovery(ies) outside of criteria due to matrix (UCM/coelution/matrix is present) (SM).
Q	Calibration required quadratic regression (Q).
D	Diluted.
C-	Continuing Calibration recovery is below lower control limit (C-).
B+	Blank Spike recovery is above upper control limit (B+).
B	Present in Method Blank (B).
ND	Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MDL	Method Detection Limit
MRL	Method Reporting Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
DL	Detection Limit
I/V	Initial Volume
F/V	Final Volume
§	Subcontracted analysis; see attached report
1	Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
2	Range result excludes concentrations of target analytes eluting in that range.
3	Range result excludes the concentration of the C9-C10 aromatic range.
Avg	Results reported as a mathematical average.
NR	No Recovery
[CALC]	Calculated Analyte
SUB	Subcontracted analysis; see attached report



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ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Department of Defense (DoD) Environmental Laboratory Accreditation Program (ELAP)

A2LA Accredited: Testing Cert# 2864.01
<http://www.a2la.org/scopepdf/2864-01.pdf>

Rhode Island Potable and Non Potable Water: LAI00179
<http://www.health.ri.gov/find/labs/analytical/ESS.pdf>

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750
http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutOfStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI0002
<http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/documents/AllLabs.xls>

Massachusetts Potable and Non Potable Water: M-RI002
<http://public.dep.state.ma.us/Labcert/Labcert.aspx>

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424
<http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm>

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313
<http://www.wadsworth.org/labcert/elap/comm.html>

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006
http://datamine2.state.nj.us/DEP_Opra/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752
http://www.depweb.state.pa.us/portal/server.pt/community/labs/13780/laboratory_accreditation_program/590095

CHEMISTRY

A2LA Accredited: Testing Cert # 2864.01
Lead in Paint, Phthalates, Lead in Children's Metals Products (Including Jewelry)
<http://www.A2LA.org/dirsearchnew/newsearch.cfm>

CPSC ID# 1141
Lead Paint, Lead in Children's Metals Jewelry
<http://www.cpsc.gov/cgi-bin/labapplist.aspx>

Sample and Cooler Receipt Checklist

Client: PEER Consultants

Client Project ID: _____

Shipped/Delivered Via: ESS CourierESS Project ID: 14080317Date Project Due: 8/21/2014Days For Project: 5 Day

Items to be checked upon receipt:

1. Air Bill Manifest Present?

☒ * No

Air No.:

2. Were Custody Seals Present?

☐ No

3. Were Custody Seals Intact?

☐ N/A

4. Is Radiation count < 100 CPM?

☐ Yes

5. Is a cooler present?

☐ YesCooler Temp: 1.9Iced With: Ice

6. Was COC included with samples?

☐ Yes

7. Was COC signed and dated by client?

☐ Yes

8. Does the COC match the sample

☐ Yes

9. Is COC complete and correct?

☐ Yes

10. Are the samples properly preserved?

☐ Yes

11. Proper sample containers used?

☐ Yes

12. Any air bubbles in the VOA vials?

☐ N/A

13. Holding times exceeded?

☐ No

14. Sufficient sample volumes?

☐ Yes

15. Any Subcontracting needed?

☐ No

16. Are ESS labels on correct containers?

☒ Yes ☐ No

17. Were samples received intact?

☒ Yes ☐ No

ESS Sample IDs: _____

Sub Lab: _____

Analysis: _____

TAT: _____

18. Was there need to call project manager to discuss status? If yes, please explain.

U vials frozen @ 1914 NB 8/14/14

Who was called?: _____

By whom? _____

Sample Number	Properly Preserved	Container Type	# of Containers	Preservative
1	Yes	40 ml - VOA	1	MeOH
1	Yes	40 ml - VOA	2	other
2	Yes	40 ml - VOA	1	MeOH
2	Yes	8 oz Soil Jar	2	NP
3	Yes	40 ml - VOA	1	MeOH
3	Yes	8 oz Soil Jar	2	NP
4	Yes	40 ml - VOA	1	MeOH
4	Yes	40 ml - VOA	2	other

Completed By: [Signature]Date/Time: 8/14/14 1914Reviewed By: [Signature]Date/Time: 8/15/14 0818

ESS Laboratory

Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston, RI 02910-2211
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

CHAIN OF CUSTODY

Page 1 of 1

Turn Time If faster than 5 days, prior approval by laboratory is required #		Other		Reporting Limits		ESS LAB PROJECT ID	
(MA) RI CT NH NJ NY ME		USACE Other		Comm 97		1408317	
Is this project for any of the following:		Navy		Electronic Deliverable		Yes No	
MA-MCP		USACE		Format: Excel Access PDF Other		Yes No	

Co. Name		Project #		Project Name (20 Char. or less)	
PEER Consultants		5559		Union Square	
Contact Person		Address		State	
Dave Gorden		99 S. Bedford St Suite 200		MA	
City		Zip		PO#	
Burlington MA		01803		5559	
Telephone #		Fax #		Email Address	
7812388880		7812388884		gorden@peerpc.com	

ESS LAB Sample #	Date	Collection Time	COMP	GRAB	MATRIX	Sample Identification (20 Char. or less)	Pres Code	Number of Containers	Type of Containers	Write Required Analysis
1	8-13-14	1300		✓	S	PB4 8.5-9.5'	6/9	3	✓	VOC H VOC B Metal and % soil
2	8-13-14	1300		✓	S	PB4 1.5-13.5'	6/1	3	GM	✓
3	8-14-14	1211		✓	S	PB8 2-6'	6/1	3	GM	✓
4	8-14-14	1211		✓	S	PB8 4-6'	6/4	3	✓	✓

Container Type: P-Poly G-Glass S-Sterile V-VOA		Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters	
Cooler Present	Yes No	Internal Use Only	
Seals Intact	Yes No NA: ✓	Pickup	
Cooler Temp: 1.9	Temperature	Technicians	
Preservation Code 1- NP, 2- HCl, 3- H ₂ SO ₄ , 4- HNO ₃ , 5- NaOH, 6- MeOH, 7- Asorbic Acid, 8- Zn Act, 9- _____			
Sampled by: DAVE GORDEN			
Comments: * Use soil from amber jars for % solids from the specific sample #.			

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
<i>[Signature]</i>	8/14/14 11400	<i>[Signature]</i>	8/14/14 1615
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
<i>[Signature]</i>	8/14/14 1800	<i>[Signature]</i>	8/14/14 1909

*By circling MA-MCP, client acknowledges samples were collected in accordance with MADEP CAM/VII A

Please fax all changes to Chain of Custody in writing.

1 (White) Lab Copy 2 (Yellow) Client Receipt
10/26/04 A



CERTIFICATE OF ANALYSIS

David Gorden
PEER Consultants, P.C.
99 S. Bedford Street
Burlington, MA 01803

RE: Union Square (5559)
ESS Laboratory Work Order Number: 1408349

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

REVIEWED

By ESS Laboratory at 4:32 pm, Aug 25, 2014

Analytical Summary

The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with NELAC Standards, A2LA and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408349

SAMPLE RECEIPT

The following samples were received on August 18, 2014 for the analyses specified on the enclosed Chain of Custody Record.

To achieve CAM compliance for MCP data, ESS Laboratory has performed and reviewed all QA/QC Requirements and Performance Standards listed in each method. Holding times and preservation have also been reviewed. All CAM requirements have been achieved unless noted in the project narrative.

Each method has been set-up in the laboratory to reach required MCP standards. The methods for aqueous VOA and Soil Methanol VOA have known limitations for certain analytes. The regulatory standards may not be achieved due to these limitations. In addition, for all methods, matrix interferences, dilutions, and %Solids may elevate method reporting limits above regulatory standards. ESS Laboratory can provide, upon request, a Data Checker (regulatory standard comparison spreadsheet) electronic deliverable which will highlight these exceedances.

For EPH soil samples, the aromatic range results have been corrected for identified cartridge contaminant in accordance with the CAM protocol.

Lab Number	Sample Name	Matrix	Analysis
1408349-01	PB10 1-9ft	Soil	6010C, 7010, 7471A, 8082A, 8270D, 9050A, EPH8270, MADEP-EPH, MADEP-VPH



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408349

PROJECT NARRATIVE

8270D Semi-Volatile Organic Compounds

CXH0191-CCV1 [Continuing Calibration recovery is below lower control limit \(C-\).](#)
2,4-Dinitrophenol (75% @ 80-120%), 2-Methylnaphthalene (65% @ 80-120%)

MADEP-EPH Extractable Petroleum Hydrocarbons

CH41908-BSD1 [Blank Spike recovery is above upper control limit \(B+\).](#)
C19-C36 Aliphatics1 (144% @ 40-140%)
CH41908-BSD1 [Relative percent difference for duplicate is outside of criteria \(D+\).](#)
C19-C36 Aliphatics1 (57%), C9-C18 Aliphatics1 (31%), Docosane (C22) (29%), Eicosane (C20) (27%),
Hexacosane (C26) (31%), Hexatriacontane (C36) (28%), Nonadecane (C19) (27%), Octacosane (C28)
(29%), Tetracosane (C24) (29%), Triacontane (C30) (29%)
CH41908-BSD2 [Relative percent difference for duplicate is outside of criteria \(D+\).](#)
2-Methylnaphthalene (39%), Acenaphthene (29%), Acenaphthylene (30%), Benzo(g,h,i)perylene (54%),
C11-C22 Unadjusted Aromatics1 (37%), Dibenzo(a,h)Anthracene (41%), Fluorene (23%),
Indeno(1,2,3-cd)Pyrene (42%), Naphthalene (47%)
CXH0227-CCV2 [Continuing Calibration recovery is below lower control limit \(C-\).](#)
Benzo(g,h,i)perylene (68% @ 80-120%), Dibenzo(a,h)Anthracene (79% @ 80-120%)

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

[Definitions of Quality Control Parameters](#)
[Semivolatile Organics Internal Standard Information](#)
[Semivolatile Organics Surrogate Information](#)
[Volatile Organics Internal Standard Information](#)
[Volatile Organics Surrogate Information](#)
[EPH and VPH Alkane Lists](#)



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408349

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

1010A - Flashpoint
6010C - ICP
6020A - ICP MS
7010 - Graphite Furnace
7196A - Hexavalent Chromium
7470A - Aqueous Mercury
7471B - Solid Mercury
8011 - EDB/DBCP/TCP
8015D - GRO/DRO
8081B - Pesticides
8082A - PCB
8100M - TPH
8151A - Herbicides
8260B - VOA
8270D - SVOA
8270D SIM - SVOA Low Level
9014 - Cyanide
9038 - Sulfate
9040C - Aqueous pH
9045D - Solid pH (Corrosivity)
9050A - Specific Conductance
9056A - Anions (IC)
9060A - TOC
9095B - Paint Filter
MADEP 04-1.1 - EPH / VPH

Prep Methods

3005A - Aqueous ICP Digestion
3020A - Aqueous Graphite Furnace / ICP MS Digestion
3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
3060A - Solid Hexavalent Chromium Digestion
3510C - Separatory Funnel Extraction
3520C - Liquid / Liquid Extraction
3540C - Manual Soxhlet Extraction
3541 - Automated Soxhlet Extraction
3546 - Microwave Extraction
3580A - Waste Dilution
5030B - Aqueous Purge and Trap
5030C - Aqueous Purge and Trap
5035 - Solid Purge and Trap



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408349

MassDEP Analytical Protocol Certification Form

MADEP RTN: _____

This form provides certification for the following data set: **1408349-01**

Matrices: ☐ Ground Water/Surface Water ☒ Soil/Sediment ☐ Drinking Water ☐ Air ☐ Other: _____

CAM Protocol (check all that apply below):

☐ 8260 VOC CAM II A	☒ 7470/7471 Hg CAM III B	☒ MassDEP VPH CAM IV A	☐ 8081 Pesticides CAM V B	☐ 7196 Hex Cr CAM VI B	☐ MassDEP APH CAM IX A
☒ 8270 SVOC CAM II B	☒ 7010 Metals CAM III C	☒ MassDEP EPH CAM IV B	☐ 8151 Herbicides CAM V C	☐ 8330 Explosives CAM VIII A	☐ TO-15 VOC CAM IX B
☒ 6010 Metals CAM III A	☐ 6020 Metals CAM III D	☒ 8082 PCB CAM V A	☐ 6860 Perchlorate CAM VIII B	☐ 9014 Total Cyanide/PAC CAM VI A	

Affirmative responses to questions A through F are required for Presumptive Certainty's status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	Yes ☒ No ☐
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	Yes ☒ No ☐
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	Yes ☒ No ☐
D	Does the laboratory report comply with all the reporting requirements specified in the CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	Yes ☒ No ☐
E	a. VPH, EPH, APH and TO-15 only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	Yes ☒ No ☐
	b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	Yes ☐ No ☐
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	Yes ☒ No ☐

Responses to Questions G, H and I below are required for Presumptive Certainty's status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocols(s)? Data User Note: Data that achieve Presumptive Certainty's status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.	Yes ☒ No ☐ *
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	Yes ☐ No ☒ *
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	Yes ☒ No ☐ *

***All negative responses must be addressed in an attached laboratory narrative.**

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: Laurel Stoddard
Printed Name: Laurel Stoddard

Date: August 25, 2014
Position: Laboratory Director



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB10 1-9ft
Date Sampled: 08/15/14 14:00
Percent Solids: 94

ESS Laboratory Work Order: 1408349
ESS Laboratory Sample ID: 1408349-01
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Antimony	ND (4.9)		6010C		1	KJK	08/22/14 20:41	2.2	100	CH42203
Arsenic	3.1 (2.4)		6010C		1	KJK	08/22/14 20:41	2.2	100	CH42203
Barium	13.3 (2.4)		6010C		1	KJK	08/22/14 20:41	2.2	100	CH42203
Beryllium	0.16 (0.11)		6010C		1	KJK	08/22/14 20:41	2.2	100	CH42203
Cadmium	ND (0.49)		6010C		1	KJK	08/22/14 20:41	2.2	100	CH42203
Chromium	8.0 (1.0)		6010C		1	KJK	08/22/14 20:41	2.2	100	CH42203
Lead	ND (4.9)		6010C		1	KJK	08/22/14 20:41	2.2	100	CH42203
Mercury	ND (0.027)		7471A		1	NAR	08/21/14 16:08	0.79	40	CH42008
Nickel	6.7 (2.4)		6010C		1	KJK	08/22/14 20:41	2.2	100	CH42203
Selenium	ND (2.43)		7010		5	KJK	08/22/14 21:15	2.2	100	CH42203
Silver	ND (0.49)		6010C		1	KJK	08/22/14 20:41	2.2	100	CH42203
Thallium	ND (1.21)		7010		5	SVD	08/25/14 14:44	2.2	100	CH42203
Vanadium	10.6 (1.0)		6010C		1	KJK	08/22/14 20:41	2.2	100	CH42203
Zinc	12.8 (2.4)		6010C		1	KJK	08/22/14 20:41	2.2	100	CH42203



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB10 1-9ft
Date Sampled: 08/15/14 14:00
Percent Solids: 94
Initial Volume: 19.8
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 1408349
ESS Laboratory Sample ID: 1408349-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: ML
Prepared: 8/18/14 18:02
Cleanup Method: 3665A

8082A Polychlorinated Biphenyls (PCB)

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Aroclor 1016	ND (0.0540)		8082A		1	08/19/14 14:54		CH41818
Aroclor 1221	ND (0.0540)		8082A		1	08/19/14 14:54		CH41818
Aroclor 1232	ND (0.0540)		8082A		1	08/19/14 14:54		CH41818
Aroclor 1242	ND (0.0540)		8082A		1	08/19/14 14:54		CH41818
Aroclor 1248	ND (0.0540)		8082A		1	08/19/14 14:54		CH41818
Aroclor 1254	ND (0.0540)		8082A		1	08/19/14 14:54		CH41818
Aroclor 1260	ND (0.0540)		8082A		1	08/19/14 14:54		CH41818
Aroclor 1262	ND (0.0540)		8082A		1	08/19/14 14:54		CH41818
Aroclor 1268	ND (0.0540)		8082A		1	08/19/14 14:54		CH41818

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
Surrogate: Decachlorobiphenyl	79 %		30-150
Surrogate: Decachlorobiphenyl [2C]	87 %		30-150
Surrogate: Tetrachloro-m-xylene	94 %		30-150
Surrogate: Tetrachloro-m-xylene [2C]	100 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

Client Sample ID: PB10 1-9ft

Date Sampled: 08/15/14 14:00

Percent Solids: 94

Initial Volume: 14.7

Final Volume: 0.5

Extraction Method: 3546

ESS Laboratory Work Order: 1408349

ESS Laboratory Sample ID: 1408349-01

Sample Matrix: Soil

Units: mg/kg dry

Analyst: IBM

Prepared: 8/18/14 14:07

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,2,4-Trichlorobenzene	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
1,2-Dichlorobenzene	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
1,3-Dichlorobenzene	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
1,4-Dichlorobenzene	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
2,4,5-Trichlorophenol	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
2,4,6-Trichlorophenol	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
2,4-Dichlorophenol	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
2,4-Dimethylphenol	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
2,4-Dinitrophenol	ND (1.82)		8270D		1	08/19/14 15:59	CXH0205	CH41819
2,4-Dinitrotoluene	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
2,6-Dinitrotoluene	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
2-Chloronaphthalene	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
2-Chlorophenol	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
2-Methylnaphthalene	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
2-Methylphenol	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
2-Nitrophenol	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
3,3'-Dichlorobenzidine	ND (0.727)		8270D		1	08/19/14 15:59	CXH0205	CH41819
3+4-Methylphenol	ND (0.727)		8270D		1	08/19/14 15:59	CXH0205	CH41819
4-Bromophenyl-phenylether	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
4-Chloroaniline	ND (0.727)		8270D		1	08/19/14 15:59	CXH0205	CH41819
4-Nitrophenol	ND (1.82)		8270D		1	08/19/14 15:59	CXH0205	CH41819
Acenaphthene	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
Acenaphthylene	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
Acetophenone	ND (0.727)		8270D		1	08/19/14 15:59	CXH0205	CH41819
Aniline	ND (1.82)		8270D		1	08/19/14 15:59	CXH0205	CH41819
Anthracene	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
Azobenzene	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
Benzo(a)anthracene	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
Benzo(a)pyrene	ND (0.182)		8270D		1	08/19/14 15:59	CXH0205	CH41819
Benzo(b)fluoranthene	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
Benzo(g,h,i)perylene	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
Benzo(k)fluoranthene	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB10 1-9ft
Date Sampled: 08/15/14 14:00
Percent Solids: 94
Initial Volume: 14.7
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1408349
ESS Laboratory Sample ID: 1408349-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 8/18/14 14:07

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
bis(2-Chloroethoxy)methane	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
bis(2-Chloroethyl)ether	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
bis(2-chloroisopropyl)Ether	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
bis(2-Ethylhexyl)phthalate	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
Butylbenzylphthalate	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
Chrysene	ND (0.182)		8270D		1	08/19/14 15:59	CXH0205	CH41819
Dibenzo(a,h)Anthracene	ND (0.182)		8270D		1	08/19/14 15:59	CXH0205	CH41819
Dibenzofuran	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
Diethylphthalate	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
Dimethylphthalate	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
Di-n-butylphthalate	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
Di-n-octylphthalate	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
Fluoranthene	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
Fluorene	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
Hexachlorobenzene	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
Hexachlorobutadiene	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
Hexachloroethane	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
Indeno(1,2,3-cd)Pyrene	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
Isophorone	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
Naphthalene	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
Nitrobenzene	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
N-Nitrosodimethylamine	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
Pentachlorophenol	ND (1.82)		8270D		1	08/19/14 15:59	CXH0205	CH41819
Phenanthrene	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
Phenol	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819
Pyrene	ND (0.363)		8270D		1	08/19/14 15:59	CXH0205	CH41819

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
Surrogate: 1,2-Dichlorobenzene-d4	72 %		30-130
Surrogate: 2,4,6-Tribromophenol	100 %		30-130
Surrogate: 2-Chlorophenol-d4	70 %		30-130
Surrogate: 2-Fluorobiphenyl	84 %		30-130



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB10 1-9ft
Date Sampled: 08/15/14 14:00
Percent Solids: 94
Initial Volume: 14.7
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1408349
ESS Laboratory Sample ID: 1408349-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 8/18/14 14:07

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Surrogate: 2-Fluorophenol		70 %		30-130				
Surrogate: Nitrobenzene-d5		71 %		30-130				
Surrogate: Phenol-d6		78 %		30-130				
Surrogate: p-Terphenyl-d14		95 %		30-130				



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB10 1-9ft
Date Sampled: 08/15/14 14:00
Percent Solids: 94

ESS Laboratory Work Order: 1408349
ESS Laboratory Sample ID: 1408349-01
Sample Matrix: Soil

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Conductivity	WL 312 (5)		9050A		1	JLK	08/20/14 15:39	umhos/cm	CH42024



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB10 1-9ft
Date Sampled: 08/15/14 14:00
Percent Solids: 94
Initial Volume: 24.2
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1408349
ESS Laboratory Sample ID: 1408349-01
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 8/19/14 17:29

MADEP-EPH Extractable Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C18 Aliphatics1	ND (16.6)		MADEP-EPH		1	VSC	08/20/14 17:27	CXH0226	CH41908
C19-C36 Aliphatics1	ND (16.6)		MADEP-EPH		1	VSC	08/20/14 17:27	CXH0226	CH41908
C11-C22 Unadjusted Aromatics1	ND (16.6)		EPH8270		1	VSC	08/20/14 16:42	CXH0227	CH41908
C11-C22 Aromatics1,2	ND (16.6)		EPH8270			VSC	08/20/14 16:42		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1-Chlorooctadecane</i>	51 %		40-140
<i>Surrogate: 2-Bromonaphthalene</i>	98 %		40-140
<i>Surrogate: 2-Fluorobiphenyl</i>	91 %		40-140
<i>Surrogate: O-Terphenyl</i>	73 %		40-140



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB10 1-9ft
Date Sampled: 08/15/14 14:00
Percent Solids: 94
Initial Volume: 17.7
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1408349
ESS Laboratory Sample ID: 1408349-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: NMS

MADEP-VPH Volatile Petroleum Hydrocarbon

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C10 Aromatics	ND (9.74)		MADEP-VPH		1	08/19/14 18:27	CXH0223	CH42029
C5-C8 Aliphatics1,2	ND (9.74)		MADEP-VPH		1	08/19/14 18:27		[CALC]
C9-C12 Aliphatics2,3	ND (9.74)		MADEP-VPH		1	08/19/14 18:27		[CALC]
Benzene	ND (0.19)		MADEP-VPH		1	08/19/14 18:27	CXH0223	CH42029
Ethylbenzene	ND (0.19)		MADEP-VPH		1	08/19/14 18:27	CXH0223	CH42029
Methyl tert-Butyl Ether	ND (0.05)		MADEP-VPH		1	08/19/14 18:27	CXH0223	CH42029
Naphthalene	ND (0.19)		MADEP-VPH		1	08/19/14 18:27	CXH0223	CH42029
Toluene	ND (0.19)		MADEP-VPH		1	08/19/14 18:27	CXH0223	CH42029
Xylene O	ND (0.19)		MADEP-VPH		1	08/19/14 18:27	CXH0223	CH42029
Xylene P,M	ND (0.39)		MADEP-VPH		1	08/19/14 18:27	CXH0223	CH42029
1:1 Methanol/Soil Ratio %D	18 (N/A)		MADEP-VPH			08/19/14 0:00		CH42029
Preservative:	MeOH - covered		MADEP-VPH					CH42029

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
Surrogate: 2,5-Dibromotoluene - FID	113 %		70-130
Surrogate: 2,5-Dibromotoluene - PID	114 %		70-130
Surrogate: Trifluorotoluene - FID	101 %		70-130
Surrogate: Trifluorotoluene - PID	102 %		70-130



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408349

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

Total Metals

Batch CH42008 - 7471A

Blank

Mercury	ND	0.033	mg/kg wet

LCS

Mercury	7.86	1.34	mg/kg wet	8.370	94	80-120

LCS Dup

Mercury	7.44	1.48	mg/kg wet	8.370	89	80-120	5	20

Batch CH42203 - 3050B

Blank

Antimony	ND	5.0	mg/kg wet
Arsenic	ND	2.5	mg/kg wet
Barium	ND	2.5	mg/kg wet
Beryllium	ND	0.11	mg/kg wet
Cadmium	ND	0.50	mg/kg wet
Chromium	ND	1.0	mg/kg wet
Lead	ND	5.0	mg/kg wet
Nickel	ND	2.5	mg/kg wet
Selenium	ND	0.50	mg/kg wet
Silver	ND	0.50	mg/kg wet
Thallium	ND	0.25	mg/kg wet
Vanadium	ND	1.0	mg/kg wet
Zinc	ND	2.5	mg/kg wet

LCS

Antimony	76.6	13.3	mg/kg wet	94.00	81	80-120
Arsenic	89.9	6.7	mg/kg wet	113.0	80	80-120
Barium	124	6.7	mg/kg wet	155.0	80	73-127
Beryllium	86.1	0.29	mg/kg wet	109.0	79	75-125
Cadmium	50.4	1.33	mg/kg wet	67.50	75	73-127
Chromium	133	2.7	mg/kg wet	164.0	81	80-120
Lead	75.2	13.3	mg/kg wet	90.10	83	80-120
Nickel	73.0	6.7	mg/kg wet	89.30	82	80-120
Selenium	147	66.7	mg/kg wet	156.0	94	80-120
Silver	43.0	1.33	mg/kg wet	52.60	82	80-120
Thallium	96.8	33.3	mg/kg wet	116.0	83	80-120
Vanadium	57.5	2.7	mg/kg wet	73.00	79	60-140
Zinc	131	6.7	mg/kg wet	168.0	78	69-132

LCS Dup

Antimony	78.1	14.9	mg/kg wet	94.00	83	80-120	2	20
Arsenic	91.6	7.5	mg/kg wet	113.0	81	80-120	2	20
Barium	122	7.5	mg/kg wet	155.0	79	73-127	2	20
Beryllium	87.5	0.33	mg/kg wet	109.0	80	75-125	2	20
Cadmium	51.6	1.49	mg/kg wet	67.50	77	73-127	2	20
Chromium	132	3.0	mg/kg wet	164.0	81	80-120	0.3	20
Lead	75.6	14.9	mg/kg wet	90.10	84	80-120	0.5	20
Nickel	74.7	7.5	mg/kg wet	89.30	84	80-120	2	20



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408349

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

Total Metals

Batch CH42203 - 3050B

Selenium	145	74.6	mg/kg wet	156.0		93	80-120	2	20	
Silver	42.2	1.49	mg/kg wet	52.60		80	80-120	2	20	
Thallium	96.3	37.3	mg/kg wet	116.0		83	80-120	0.6	20	
Vanadium	56.8	3.0	mg/kg wet	73.00		78	60-140	1	20	
Zinc	133	7.5	mg/kg wet	168.0		79	69-132	2	20	

8082A Polychlorinated Biphenyls (PCB)

Batch CH41818 - 3540C

Blank

Aroclor 1016	ND	0.0250	mg/kg wet							
Aroclor 1221	ND	0.0250	mg/kg wet							
Aroclor 1232	ND	0.0250	mg/kg wet							
Aroclor 1242	ND	0.0250	mg/kg wet							
Aroclor 1248	ND	0.0250	mg/kg wet							
Aroclor 1254	ND	0.0250	mg/kg wet							
Aroclor 1260	ND	0.0250	mg/kg wet							
Aroclor 1262	ND	0.0250	mg/kg wet							
Aroclor 1268	ND	0.0250	mg/kg wet							

Surrogate: Decachlorobiphenyl	0.0180		mg/kg wet	0.02500		72	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0189		mg/kg wet	0.02500		76	30-150			
Surrogate: Tetrachloro-m-xylene	0.0201		mg/kg wet	0.02500		80	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0238		mg/kg wet	0.02500		95	30-150			

LCS

Aroclor 1016	0.604	0.0250	mg/kg wet	0.5000		121	40-140			
Aroclor 1260	0.551	0.0250	mg/kg wet	0.5000		110	40-140			

Surrogate: Decachlorobiphenyl	0.0216		mg/kg wet	0.02500		87	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0223		mg/kg wet	0.02500		89	30-150			
Surrogate: Tetrachloro-m-xylene	0.0239		mg/kg wet	0.02500		96	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0256		mg/kg wet	0.02500		103	30-150			

LCS Dup

Aroclor 1016	0.572	0.0250	mg/kg wet	0.5000		114	40-140	6	30	
Aroclor 1260	0.529	0.0250	mg/kg wet	0.5000		106	40-140	4	30	

Surrogate: Decachlorobiphenyl	0.0202		mg/kg wet	0.02500		81	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0209		mg/kg wet	0.02500		83	30-150			
Surrogate: Tetrachloro-m-xylene	0.0221		mg/kg wet	0.02500		88	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0235		mg/kg wet	0.02500		94	30-150			

8270D Semi-Volatile Organic Compounds

Batch CH41819 - 3546

Blank

1,2,4-Trichlorobenzene	ND	0.333	mg/kg wet							
1,2-Dichlorobenzene	ND	0.333	mg/kg wet							



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1408349

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

8270D Semi-Volatile Organic Compounds

Batch CH41819 - 3546

1,3-Dichlorobenzene	ND	0.333	mg/kg wet
1,4-Dichlorobenzene	ND	0.333	mg/kg wet
2,4,5-Trichlorophenol	ND	0.333	mg/kg wet
2,4,6-Trichlorophenol	ND	0.333	mg/kg wet
2,4-Dichlorophenol	ND	0.333	mg/kg wet
2,4-Dimethylphenol	ND	0.333	mg/kg wet
2,4-Dinitrophenol	ND	1.67	mg/kg wet
2,4-Dinitrotoluene	ND	0.333	mg/kg wet
2,6-Dinitrotoluene	ND	0.333	mg/kg wet
2-Chloronaphthalene	ND	0.333	mg/kg wet
2-Chlorophenol	ND	0.333	mg/kg wet
2-Methylnaphthalene	ND	0.333	mg/kg wet
2-Methylphenol	ND	0.333	mg/kg wet
2-Nitrophenol	ND	0.333	mg/kg wet
3,3'-Dichlorobenzidine	ND	0.667	mg/kg wet
3+4-Methylphenol	ND	0.667	mg/kg wet
4-Bromophenyl-phenylether	ND	0.333	mg/kg wet
4-Chloroaniline	ND	0.667	mg/kg wet
4-Nitrophenol	ND	1.67	mg/kg wet
Acenaphthene	ND	0.333	mg/kg wet
Acenaphthylene	ND	0.333	mg/kg wet
Acetophenone	ND	0.667	mg/kg wet
Aniline	ND	1.67	mg/kg wet
Anthracene	ND	0.333	mg/kg wet
Azobenzene	ND	0.333	mg/kg wet
Benzo(a)anthracene	ND	0.333	mg/kg wet
Benzo(a)pyrene	ND	0.167	mg/kg wet
Benzo(b)fluoranthene	ND	0.333	mg/kg wet
Benzo(g,h,i)perylene	ND	0.333	mg/kg wet
Benzo(k)fluoranthene	ND	0.333	mg/kg wet
bis(2-Chloroethoxy)methane	ND	0.333	mg/kg wet
bis(2-Chloroethyl)ether	ND	0.333	mg/kg wet
bis(2-chloroisopropyl)Ether	ND	0.333	mg/kg wet
bis(2-Ethylhexyl)phthalate	ND	0.333	mg/kg wet
Butylbenzylphthalate	ND	0.333	mg/kg wet
Chrysene	ND	0.167	mg/kg wet
Dibenzo(a,h)Anthracene	ND	0.167	mg/kg wet
Dibenzofuran	ND	0.333	mg/kg wet
Diethylphthalate	ND	0.333	mg/kg wet
Dimethylphthalate	ND	0.333	mg/kg wet
Di-n-butylphthalate	ND	0.333	mg/kg wet
Di-n-octylphthalate	ND	0.333	mg/kg wet
Fluoranthene	ND	0.333	mg/kg wet
Fluorene	ND	0.333	mg/kg wet
Hexachlorobenzene	ND	0.333	mg/kg wet



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1408349

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

8270D Semi-Volatile Organic Compounds

Batch CH41819 - 3546

Hexachlorobutadiene	ND	0.333	mg/kg wet							
Hexachloroethane	ND	0.333	mg/kg wet							
Indeno(1,2,3-cd)Pyrene	ND	0.333	mg/kg wet							
Isophorone	ND	0.333	mg/kg wet							
Naphthalene	ND	0.333	mg/kg wet							
Nitrobenzene	ND	0.333	mg/kg wet							
N-Nitrosodimethylamine	ND	0.333	mg/kg wet							
Pentachlorophenol	ND	1.67	mg/kg wet							
Phenanthrene	ND	0.333	mg/kg wet							
Phenol	ND	0.333	mg/kg wet							
Pyrene	ND	0.333	mg/kg wet							
Surrogate: 1,2-Dichlorobenzene-d4	2.98		mg/kg wet	3.333		89	30-130			
Surrogate: 2,4,6-Tribromophenol	5.05		mg/kg wet	5.000		101	30-130			
Surrogate: 2-Chlorophenol-d4	4.17		mg/kg wet	5.000		83	30-130			
Surrogate: 2-Fluorobiphenyl	3.23		mg/kg wet	3.333		97	30-130			
Surrogate: 2-Fluorophenol	4.27		mg/kg wet	5.000		85	30-130			
Surrogate: Nitrobenzene-d5	2.82		mg/kg wet	3.333		85	30-130			
Surrogate: Phenol-d6	4.33		mg/kg wet	5.000		87	30-130			
Surrogate: p-Terphenyl-d14	3.31		mg/kg wet	3.333		99	30-130			

LCS

1,2,4-Trichlorobenzene	2.89	0.333	mg/kg wet	3.333		87	40-140			
1,2-Dichlorobenzene	2.85	0.333	mg/kg wet	3.333		86	40-140			
1,3-Dichlorobenzene	2.79	0.333	mg/kg wet	3.333		84	40-140			
1,4-Dichlorobenzene	2.69	0.333	mg/kg wet	3.333		81	40-140			
2,4,5-Trichlorophenol	3.13	0.333	mg/kg wet	3.333		94	30-130			
2,4,6-Trichlorophenol	3.17	0.333	mg/kg wet	3.333		95	30-130			
2,4-Dichlorophenol	3.09	0.333	mg/kg wet	3.333		93	30-130			
2,4-Dimethylphenol	2.97	0.333	mg/kg wet	3.333		89	30-130			
2,4-Dinitrophenol	2.46	1.67	mg/kg wet	3.333		74	30-130			
2,4-Dinitrotoluene	2.98	0.333	mg/kg wet	3.333		90	40-140			
2,6-Dinitrotoluene	2.98	0.333	mg/kg wet	3.333		89	40-140			
2-Chloronaphthalene	2.67	0.333	mg/kg wet	3.333		80	40-140			
2-Chlorophenol	2.92	0.333	mg/kg wet	3.333		88	30-130			
2-Methylnaphthalene	3.13	0.333	mg/kg wet	3.333		94	40-140			
2-Methylphenol	3.05	0.333	mg/kg wet	3.333		91	30-130			
2-Nitrophenol	3.19	0.333	mg/kg wet	3.333		96	30-130			
3,3'-Dichlorobenzidine	2.40	0.667	mg/kg wet	3.333		72	40-140			
3+4-Methylphenol	5.19	0.667	mg/kg wet	6.667		78	30-130			
4-Bromophenyl-phenylether	3.06	0.333	mg/kg wet	3.333		92	40-140			
4-Chloroaniline	2.02	0.667	mg/kg wet	3.333		61	40-140			
4-Nitrophenol	3.10	1.67	mg/kg wet	3.333		93	30-130			
Acenaphthene	2.82	0.333	mg/kg wet	3.333		85	40-140			
Acenaphthylene	2.69	0.333	mg/kg wet	3.333		81	40-140			
Acetophenone	2.59	0.667	mg/kg wet	3.333		78	40-140			
Aniline	2.66	1.67	mg/kg wet	3.333		80	40-140			



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1408349

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

8270D Semi-Volatile Organic Compounds

Batch CH41819 - 3546

Anthracene	2.99	0.333	mg/kg wet	3.333		90	40-140			
Azobenzene	3.04	0.333	mg/kg wet	3.333		91	40-140			
Benzo(a)anthracene	2.93	0.333	mg/kg wet	3.333		88	40-140			
Benzo(a)pyrene	2.81	0.167	mg/kg wet	3.333		84	40-140			
Benzo(b)fluoranthene	2.81	0.333	mg/kg wet	3.333		84	40-140			
Benzo(g,h,i)perylene	3.39	0.333	mg/kg wet	3.333		102	40-140			
Benzo(k)fluoranthene	3.02	0.333	mg/kg wet	3.333		91	40-140			
bis(2-Chloroethoxy)methane	2.93	0.333	mg/kg wet	3.333		88	40-140			
bis(2-Chloroethyl)ether	2.77	0.333	mg/kg wet	3.333		83	40-140			
bis(2-chloroisopropyl)Ether	2.79	0.333	mg/kg wet	3.333		84	40-140			
bis(2-Ethylhexyl)phthalate	3.30	0.333	mg/kg wet	3.333		99	40-140			
Butylbenzylphthalate	3.22	0.333	mg/kg wet	3.333		97	40-140			
Chrysene	2.95	0.167	mg/kg wet	3.333		89	40-140			
Dibenzo(a,h)Anthracene	3.31	0.167	mg/kg wet	3.333		99	40-140			
Dibenzofuran	2.83	0.333	mg/kg wet	3.333		85	40-140			
Diethylphthalate	2.94	0.333	mg/kg wet	3.333		88	40-140			
Dimethylphthalate	2.91	0.333	mg/kg wet	3.333		87	40-140			
Di-n-butylphthalate	3.08	0.333	mg/kg wet	3.333		92	40-140			
Di-n-octylphthalate	3.39	0.333	mg/kg wet	3.333		102	40-140			
Fluoranthene	2.98	0.333	mg/kg wet	3.333		89	40-140			
Fluorene	2.87	0.333	mg/kg wet	3.333		86	40-140			
Hexachlorobenzene	3.04	0.333	mg/kg wet	3.333		91	40-140			
Hexachlorobutadiene	2.76	0.333	mg/kg wet	3.333		83	40-140			
Hexachloroethane	2.88	0.333	mg/kg wet	3.333		86	40-140			
Indeno(1,2,3-cd)Pyrene	3.43	0.333	mg/kg wet	3.333		103	40-140			
Isophorone	2.81	0.333	mg/kg wet	3.333		84	40-140			
Naphthalene	2.93	0.333	mg/kg wet	3.333		88	40-140			
Nitrobenzene	2.92	0.333	mg/kg wet	3.333		88	40-140			
N-Nitrosodimethylamine	2.72	0.333	mg/kg wet	3.333		82	40-140			
Pentachlorophenol	3.25	1.67	mg/kg wet	3.333		98	30-130			
Phenanthrene	2.96	0.333	mg/kg wet	3.333		89	40-140			
Phenol	3.17	0.333	mg/kg wet	3.333		95	30-130			
Pyrene	2.95	0.333	mg/kg wet	3.333		89	40-140			
Surrogate: 1,2-Dichlorobenzene-d4	3.12		mg/kg wet	3.333		94	30-130			
Surrogate: 2,4,6-Tribromophenol	5.50		mg/kg wet	5.000		110	30-130			
Surrogate: 2-Chlorophenol-d4	4.33		mg/kg wet	5.000		87	30-130			
Surrogate: 2-Fluorobiphenyl	3.39		mg/kg wet	3.333		102	30-130			
Surrogate: 2-Fluorophenol	4.47		mg/kg wet	5.000		89	30-130			
Surrogate: Nitrobenzene-d5	3.38		mg/kg wet	3.333		102	30-130			
Surrogate: Phenol-d6	4.38		mg/kg wet	5.000		88	30-130			
Surrogate: p-Terphenyl-d14	3.32		mg/kg wet	3.333		100	30-130			

LCS Dup

1,2,4-Trichlorobenzene	2.93	0.333	mg/kg wet	3.333		88	40-140	1	30	
1,2-Dichlorobenzene	2.78	0.333	mg/kg wet	3.333		83	40-140	3	30	
1,3-Dichlorobenzene	2.73	0.333	mg/kg wet	3.333		82	40-140	2	30	



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1408349

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

8270D Semi-Volatile Organic Compounds

Batch CH41819 - 3546

1,4-Dichlorobenzene	2.79	0.333	mg/kg wet	3.333		84	40-140	4	30	
2,4,5-Trichlorophenol	3.28	0.333	mg/kg wet	3.333		98	30-130	5	30	
2,4,6-Trichlorophenol	3.16	0.333	mg/kg wet	3.333		95	30-130	0.2	30	
2,4-Dichlorophenol	3.10	0.333	mg/kg wet	3.333		93	30-130	0.2	30	
2,4-Dimethylphenol	3.18	0.333	mg/kg wet	3.333		95	30-130	7	30	
2,4-Dinitrophenol	2.64	1.67	mg/kg wet	3.333		79	30-130	7	30	
2,4-Dinitrotoluene	3.22	0.333	mg/kg wet	3.333		97	40-140	8	30	
2,6-Dinitrotoluene	3.11	0.333	mg/kg wet	3.333		93	40-140	5	30	
2-Chloronaphthalene	2.71	0.333	mg/kg wet	3.333		81	40-140	1	30	
2-Chlorophenol	2.85	0.333	mg/kg wet	3.333		86	30-130	2	30	
2-Methylnaphthalene	3.19	0.333	mg/kg wet	3.333		96	40-140	2	30	
2-Methylphenol	3.04	0.333	mg/kg wet	3.333		91	30-130	0.2	30	
2-Nitrophenol	3.22	0.333	mg/kg wet	3.333		97	30-130	0.8	30	
3,3'-Dichlorobenzidine	2.51	0.667	mg/kg wet	3.333		75	40-140	5	30	
3+4-Methylphenol	5.92	0.667	mg/kg wet	6.667		89	30-130	13	30	
4-Bromophenyl-phenylether	3.18	0.333	mg/kg wet	3.333		96	40-140	4	30	
4-Chloroaniline	2.12	0.667	mg/kg wet	3.333		64	40-140	5	30	
4-Nitrophenol	3.26	1.67	mg/kg wet	3.333		98	30-130	5	30	
Acenaphthene	2.90	0.333	mg/kg wet	3.333		87	40-140	3	30	
Acenaphthylene	2.78	0.333	mg/kg wet	3.333		83	40-140	4	30	
Acetophenone	2.58	0.667	mg/kg wet	3.333		77	40-140	0.3	30	
Aniline	2.51	1.67	mg/kg wet	3.333		75	40-140	6	30	
Anthracene	3.02	0.333	mg/kg wet	3.333		91	40-140	1	30	
Azobenzene	3.08	0.333	mg/kg wet	3.333		92	40-140	1	30	
Benzo(a)anthracene	2.90	0.333	mg/kg wet	3.333		87	40-140	0.9	30	
Benzo(a)pyrene	2.82	0.167	mg/kg wet	3.333		85	40-140	0.5	30	
Benzo(b)fluoranthene	3.16	0.333	mg/kg wet	3.333		95	40-140	12	30	
Benzo(g,h,i)perylene	3.35	0.333	mg/kg wet	3.333		101	40-140	1	30	
Benzo(k)fluoranthene	2.92	0.333	mg/kg wet	3.333		88	40-140	4	30	
bis(2-Chloroethoxy)methane	2.95	0.333	mg/kg wet	3.333		89	40-140	0.8	30	
bis(2-Chloroethyl)ether	2.84	0.333	mg/kg wet	3.333		85	40-140	3	30	
bis(2-chloroisopropyl)Ether	2.84	0.333	mg/kg wet	3.333		85	40-140	2	30	
bis(2-Ethylhexyl)phthalate	3.36	0.333	mg/kg wet	3.333		101	40-140	2	30	
Butylbenzylphthalate	3.22	0.333	mg/kg wet	3.333		97	40-140	0.05	30	
Chrysene	2.93	0.167	mg/kg wet	3.333		88	40-140	0.7	30	
Dibenzo(a,h)Anthracene	3.36	0.167	mg/kg wet	3.333		101	40-140	1	30	
Dibenzofuran	2.98	0.333	mg/kg wet	3.333		89	40-140	5	30	
Diethylphthalate	3.14	0.333	mg/kg wet	3.333		94	40-140	6	30	
Dimethylphthalate	3.04	0.333	mg/kg wet	3.333		91	40-140	4	30	
Di-n-butylphthalate	3.18	0.333	mg/kg wet	3.333		96	40-140	3	30	
Di-n-octylphthalate	3.57	0.333	mg/kg wet	3.333		107	40-140	5	30	
Fluoranthene	3.26	0.333	mg/kg wet	3.333		98	40-140	9	30	
Fluorene	2.94	0.333	mg/kg wet	3.333		88	40-140	3	30	
Hexachlorobenzene	3.09	0.333	mg/kg wet	3.333		93	40-140	2	30	
Hexachlorobutadiene	2.85	0.333	mg/kg wet	3.333		86	40-140	3	30	



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408349

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

8270D Semi-Volatile Organic Compounds

Batch CH41819 - 3546

Hexachloroethane	2.91	0.333	mg/kg wet	3.333		87	40-140	1	30	
Indeno(1,2,3-cd)Pyrene	3.47	0.333	mg/kg wet	3.333		104	40-140	1	30	
Isophorone	2.84	0.333	mg/kg wet	3.333		85	40-140	1	30	
Naphthalene	3.01	0.333	mg/kg wet	3.333		90	40-140	3	30	
Nitrobenzene	2.95	0.333	mg/kg wet	3.333		88	40-140	0.9	30	
N-Nitrosodimethylamine	2.73	0.333	mg/kg wet	3.333		82	40-140	0.4	30	
Pentachlorophenol	3.39	1.67	mg/kg wet	3.333		102	30-130	4	30	
Phenanthrene	3.04	0.333	mg/kg wet	3.333		91	40-140	3	30	
Phenol	2.99	0.333	mg/kg wet	3.333		90	30-130	6	30	
Pyrene	3.13	0.333	mg/kg wet	3.333		94	40-140	6	30	
Surrogate: 1,2-Dichlorobenzene-d4	2.98		mg/kg wet	3.333		89	30-130			
Surrogate: 2,4,6-Tribromophenol	5.43		mg/kg wet	5.000		109	30-130			
Surrogate: 2-Chlorophenol-d4	4.28		mg/kg wet	5.000		86	30-130			
Surrogate: 2-Fluorobiphenyl	3.37		mg/kg wet	3.333		101	30-130			
Surrogate: 2-Fluorophenol	4.30		mg/kg wet	5.000		86	30-130			
Surrogate: Nitrobenzene-d5	3.33		mg/kg wet	3.333		100	30-130			
Surrogate: Phenol-d6	4.25		mg/kg wet	5.000		85	30-130			
Surrogate: p-Terphenyl-d14	3.33		mg/kg wet	3.333		100	30-130			

Classical Chemistry

Batch CH42024 - General Preparation

Blank

Conductivity	ND	5	umhos/cm							

LCS

Conductivity	1400		umhos/cm	1411		99	90-110			

MADEP-EPH Extractable Petroleum Hydrocarbons

Batch CH41908 - 3546

Blank

C19-C36 Aliphatics1	ND	15.0	mg/kg wet							
C9-C18 Aliphatics1	ND	15.0	mg/kg wet							
Decane (C10)	ND	0.5	mg/kg wet							
Docosane (C22)	ND	0.5	mg/kg wet							
Dodecane (C12)	ND	0.5	mg/kg wet							
Eicosane (C20)	ND	0.5	mg/kg wet							
Hexacosane (C26)	ND	0.5	mg/kg wet							
Hexadecane (C16)	ND	0.5	mg/kg wet							
Hexatriacontane (C36)	ND	0.5	mg/kg wet							
Nonadecane (C19)	ND	0.5	mg/kg wet							
Nonane (C9)	ND	0.5	mg/kg wet							
Octacosane (C28)	ND	0.5	mg/kg wet							
Octadecane (C18)	ND	0.5	mg/kg wet							
Tetracosane (C24)	ND	0.5	mg/kg wet							
Tetradecane (C14)	ND	0.5	mg/kg wet							



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ESS Laboratory Work Order: 1408349

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch CH41908 - 3546										
Triacotane (C30)	ND	0.5	mg/kg wet							
<i>Surrogate: 1-Chlorooctadecane</i>	<i>0.916</i>		mg/kg wet	<i>2.000</i>		<i>46</i>	<i>40-140</i>			
Blank										
2-Methylnaphthalene	ND	0.20	mg/kg wet							
Acenaphthene	ND	0.40	mg/kg wet							
Acenaphthylene	ND	0.20	mg/kg wet							
Anthracene	ND	0.40	mg/kg wet							
Benzo(a)anthracene	ND	0.40	mg/kg wet							
Benzo(a)pyrene	ND	0.40	mg/kg wet							
Benzo(b)fluoranthene	ND	0.40	mg/kg wet							
Benzo(g,h,i)perylene	ND	0.40	mg/kg wet							
Benzo(k)fluoranthene	ND	0.40	mg/kg wet							
C11-C22 Unadjusted Aromatics1	ND	15.0	mg/kg wet							
Chrysene	ND	0.40	mg/kg wet							
Dibenzo(a,h)Anthracene	ND	0.20	mg/kg wet							
Fluoranthene	ND	0.40	mg/kg wet							
Fluorene	ND	0.40	mg/kg wet							
Indeno(1,2,3-cd)Pyrene	ND	0.40	mg/kg wet							
Naphthalene	ND	0.40	mg/kg wet							
Phenanthrene	ND	0.40	mg/kg wet							
Pyrene	ND	0.40	mg/kg wet							
<i>Surrogate: 2-Bromonaphthalene</i>	<i>2.16</i>		mg/kg wet	<i>2.000</i>		<i>108</i>	<i>40-140</i>			
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>2.03</i>		mg/kg wet	<i>2.000</i>		<i>102</i>	<i>40-140</i>			
<i>Surrogate: O-Terphenyl</i>	<i>1.53</i>		mg/kg wet	<i>2.000</i>		<i>77</i>	<i>40-140</i>			
LCS										
C19-C36 Aliphatics1	12.8	15.0	mg/kg wet	16.00		80	40-140			
C9-C18 Aliphatics1	8.1	15.0	mg/kg wet	12.00		67	40-140			
Decane (C10)	0.9	0.5	mg/kg wet	2.000		46	40-140			
Docosane (C22)	1.4	0.5	mg/kg wet	2.000		70	40-140			
Dodecane (C12)	1.0	0.5	mg/kg wet	2.000		50	40-140			
Eicosane (C20)	1.3	0.5	mg/kg wet	2.000		67	40-140			
Hexacosane (C26)	1.3	0.5	mg/kg wet	2.000		67	40-140			
Hexadecane (C16)	1.3	0.5	mg/kg wet	2.000		64	40-140			
Hexatriacontane (C36)	1.4	0.5	mg/kg wet	2.000		69	40-140			
Nonadecane (C19)	1.4	0.5	mg/kg wet	2.000		68	40-140			
Nonane (C9)	0.7	0.5	mg/kg wet	2.000		34	30-140			
Octacosane (C28)	1.3	0.5	mg/kg wet	2.000		66	40-140			
Octadecane (C18)	1.3	0.5	mg/kg wet	2.000		66	40-140			
Tetracosane (C24)	1.4	0.5	mg/kg wet	2.000		70	40-140			
Tetradecane (C14)	1.1	0.5	mg/kg wet	2.000		57	40-140			
Triacotane (C30)	1.3	0.5	mg/kg wet	2.000		65	40-140			
<i>Surrogate: 1-Chlorooctadecane</i>	<i>0.917</i>		mg/kg wet	<i>2.000</i>		<i>46</i>	<i>40-140</i>			
LCS										



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1408349

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

MADEP-EPH Extractable Petroleum Hydrocarbons

Batch CH41908 - 3546

2-Methylnaphthalene	1.68	0.20	mg/kg wet	2.000		84	40-140			
Acenaphthene	1.72	0.40	mg/kg wet	2.000		86	40-140			
Acenaphthylene	1.71	0.20	mg/kg wet	2.000		86	40-140			
Anthracene	1.86	0.40	mg/kg wet	2.000		93	40-140			
Benzo(a)anthracene	1.92	0.40	mg/kg wet	2.000		96	40-140			
Benzo(a)pyrene	2.28	0.40	mg/kg wet	2.000		114	40-140			
Benzo(b)fluoranthene	2.07	0.40	mg/kg wet	2.000		104	40-140			
Benzo(g,h,i)perylene	2.16	0.40	mg/kg wet	2.000		108	40-140			
Benzo(k)fluoranthene	2.16	0.40	mg/kg wet	2.000		108	40-140			
C11-C22 Unadjusted Aromatics1	37.3	15.0	mg/kg wet	34.00		110	40-140			
Chrysene	1.95	0.40	mg/kg wet	2.000		98	40-140			
Dibenzo(a,h)Anthracene	2.20	0.20	mg/kg wet	2.000		110	40-140			
Fluoranthene	1.87	0.40	mg/kg wet	2.000		94	40-140			
Fluorene	1.81	0.40	mg/kg wet	2.000		91	40-140			
Indeno(1,2,3-cd)Pyrene	2.25	0.40	mg/kg wet	2.000		112	40-140			
Naphthalene	1.60	0.40	mg/kg wet	2.000		80	40-140			
Phenanthrene	1.89	0.40	mg/kg wet	2.000		94	40-140			
Pyrene	1.92	0.40	mg/kg wet	2.000		96	40-140			

Surrogate: 2-Bromonaphthalene	2.29		mg/kg wet	2.000		115	40-140			
Surrogate: 2-Fluorobiphenyl	2.22		mg/kg wet	2.000		111	40-140			
Surrogate: O-Terphenyl	1.60		mg/kg wet	2.000		80	40-140			

LCS

2-Methylnaphthalene Breakthrough	0.0		%				0-5			
Naphthalene Breakthrough	0.0		%				0-5			

LCS Dup

C19-C36 Aliphatics1	23.1	15.0	mg/kg wet	16.00		144	40-140	57	25	B+, D+
C9-C18 Aliphatics1	11.0	15.0	mg/kg wet	12.00		92	40-140	31	25	D+
Decane (C10)	0.9	0.5	mg/kg wet	2.000		47	40-140	2	25	
Docosane (C22)	1.9	0.5	mg/kg wet	2.000		93	40-140	29	25	D+
Dodecane (C12)	1.1	0.5	mg/kg wet	2.000		54	40-140	7	25	
Eicosane (C20)	1.8	0.5	mg/kg wet	2.000		89	40-140	27	25	D+
Hexacosane (C26)	1.8	0.5	mg/kg wet	2.000		91	40-140	31	25	D+
Hexadecane (C16)	1.6	0.5	mg/kg wet	2.000		79	40-140	21	25	
Hexatriacontane (C36)	1.8	0.5	mg/kg wet	2.000		92	40-140	28	25	D+
Nonadecane (C19)	1.8	0.5	mg/kg wet	2.000		89	40-140	27	25	D+
Nonane (C9)	0.6	0.5	mg/kg wet	2.000		31	30-140	10	25	
Octacosane (C28)	1.8	0.5	mg/kg wet	2.000		88	40-140	29	25	D+
Octadecane (C18)	1.7	0.5	mg/kg wet	2.000		86	40-140	25	25	
Tetracosane (C24)	1.9	0.5	mg/kg wet	2.000		93	40-140	29	25	D+
Tetradecane (C14)	1.3	0.5	mg/kg wet	2.000		65	40-140	14	25	
Triacontane (C30)	1.7	0.5	mg/kg wet	2.000		87	40-140	29	25	D+

Surrogate: 1-Chlorooctadecane	1.55		mg/kg wet	2.000		77	40-140			

LCS Dup



CERTIFICATE OF ANALYSIS

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Client Project ID: Union Square

ESS Laboratory Work Order: 1408349

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

MADEP-EPH Extractable Petroleum Hydrocarbons

Batch CH41908 - 3546

2-Methylnaphthalene	1.14	0.20	mg/kg wet	2.000		57	40-140	39	20	D+
Acenaphthene	1.29	0.40	mg/kg wet	2.000		65	40-140	29	20	D+
Acenaphthylene	1.27	0.20	mg/kg wet	2.000		63	40-140	30	20	D+
Anthracene	1.59	0.40	mg/kg wet	2.000		80	40-140	15	20	
Benzo(a)anthracene	1.76	0.40	mg/kg wet	2.000		88	40-140	9	20	
Benzo(a)pyrene	2.03	0.40	mg/kg wet	2.000		102	40-140	11	20	
Benzo(b)fluoranthene	1.85	0.40	mg/kg wet	2.000		93	40-140	11	20	
Benzo(g,h,i)perylene	1.24	0.40	mg/kg wet	2.000		62	40-140	54	20	D+
Benzo(k)fluoranthene	1.86	0.40	mg/kg wet	2.000		93	40-140	15	20	
C11-C22 Unadjusted Aromatics1	25.7	15.0	mg/kg wet	34.00		75	40-140	37	25	D+
Chrysene	1.75	0.40	mg/kg wet	2.000		87	40-140	11	20	
Dibenzo(a,h)Anthracene	1.45	0.20	mg/kg wet	2.000		73	40-140	41	20	D+
Fluoranthene	1.70	0.40	mg/kg wet	2.000		85	40-140	10	20	
Fluorene	1.44	0.40	mg/kg wet	2.000		72	40-140	23	20	D+
Indeno(1,2,3-cd)Pyrene	1.46	0.40	mg/kg wet	2.000		73	40-140	42	20	D+
Naphthalene	0.99	0.40	mg/kg wet	2.000		50	40-140	47	20	D+
Phenanthrene	1.61	0.40	mg/kg wet	2.000		81	40-140	16	20	
Pyrene	1.73	0.40	mg/kg wet	2.000		87	40-140	10	20	

Surrogate: 2-Bromonaphthalene

1.56

mg/kg wet

2.000

78

40-140

Surrogate: 2-Fluorobiphenyl

1.41

mg/kg wet

2.000

70

40-140

Surrogate: O-Terphenyl

1.35

mg/kg wet

2.000

68

40-140

LCS Dup

2-Methylnaphthalene Breakthrough	0.0		%				0-5		200	
Naphthalene Breakthrough	0.0		%				0-5		200	

MADEP-VPH Volatile Petroleum Hydrocarbon

Batch CH42029 - 5035

Blank

1,2,4-Trimethylbenzene	ND	0.20	mg/kg wet							
2,2,4-Trimethylpentane	ND	5.00	mg/kg wet							
2-Methylpentane	ND	5.00	mg/kg wet							
Benzene	ND	0.20	mg/kg wet							
C5-C8 Unadjusted Aliphatics	ND	10.0	mg/kg wet							
C9-C10 Aromatics	ND	10.0	mg/kg wet							
C9-C12 Unadjusted Aliphatics	ND	10.0	mg/kg wet							
Ethylbenzene	ND	0.20	mg/kg wet							
Methyl tert-Butyl Ether	ND	0.05	mg/kg wet							
Naphthalene	ND	0.20	mg/kg wet							
n-Butylcyclohexane	ND	5.00	mg/kg wet							
n-Decane	ND	5.00	mg/kg wet							
Nonane (C9)	ND	5.00	mg/kg wet							
Pentane	ND	5.00	mg/kg wet							
Toluene	ND	0.20	mg/kg wet							
Xylene O	ND	0.20	mg/kg wet							



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408349

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

MADEP-VPH Volatile Petroleum Hydrocarbon

Batch CH42029 - 5035

Xylene P,M	ND	0.40	mg/kg wet							
Surrogate: 2,5-Dibromotoluene - FID	5.68		mg/kg wet	5.000		114	70-130			
Surrogate: 2,5-Dibromotoluene - PID	5.72		mg/kg wet	5.000		114	70-130			
Surrogate: Trifluorotoluene - FID	4.31		mg/kg wet	5.333		81	70-130			
Surrogate: Trifluorotoluene - PID	4.34		mg/kg wet	5.333		81	70-130			

LCS

1,2,4-Trimethylbenzene	10.0	0.20	mg/kg wet	10.00		100	70-130			
2,2,4-Trimethylpentane	14.7	5.00	mg/kg wet	15.00		98	70-130			
2-Methylpentane	16.8	5.00	mg/kg wet	15.00		112	70-130			
Benzene	4.96	0.20	mg/kg wet	5.000		99	70-130			
C5-C8 Unadjusted Aliphatics	42.7	10.0	mg/kg wet	40.00		107	70-130			
C9-C10 Aromatics	9.83	10.0	mg/kg wet	10.00		98	70-130			
C9-C12 Unadjusted Aliphatics	25.7	10.0	mg/kg wet	30.00		86	70-130			
Ethylbenzene	5.00	0.20	mg/kg wet	5.000		100	70-130			
Methyl tert-Butyl Ether	15.8	0.05	mg/kg wet	15.00		106	70-130			
Naphthalene	8.88	0.20	mg/kg wet	10.00		89	70-130			
n-Butylcyclohexane	7.75	5.00	mg/kg wet	10.00		77	70-130			
n-Decane	8.84	5.00	mg/kg wet	10.00		88	70-130			
Nonane (C9)	8.09	5.00	mg/kg wet	10.00		81	30-130			
Pentane	11.6	5.00	mg/kg wet	10.00		116	70-130			
Toluene	15.2	0.20	mg/kg wet	15.00		101	70-130			
Xylene O	10.1	0.20	mg/kg wet	10.00		101	70-130			
Xylene P,M	20.5	0.40	mg/kg wet	20.00		102	70-130			
Surrogate: 2,5-Dibromotoluene - FID	4.94		mg/kg wet	5.000		99	70-130			
Surrogate: 2,5-Dibromotoluene - PID	5.07		mg/kg wet	5.000		101	70-130			
Surrogate: Trifluorotoluene - FID	4.78		mg/kg wet	5.333		90	70-130			
Surrogate: Trifluorotoluene - PID	4.96		mg/kg wet	5.333		93	70-130			

LCS Dup

1,2,4-Trimethylbenzene	10.4	0.20	mg/kg wet	10.00		104	70-130	4	25	
2,2,4-Trimethylpentane	18.6	5.00	mg/kg wet	15.00		124	70-130	24	25	
2-Methylpentane	17.4	5.00	mg/kg wet	15.00		116	70-130	3	25	
Benzene	5.12	0.20	mg/kg wet	5.000		102	70-130	3	25	
C5-C8 Unadjusted Aliphatics	47.2	10.0	mg/kg wet	40.00		118	70-130	10	25	
C9-C10 Aromatics	10.3	10.0	mg/kg wet	10.00		103	70-130	5	25	
C9-C12 Unadjusted Aliphatics	28.5	10.0	mg/kg wet	30.00		95	70-130	10	25	
Ethylbenzene	5.12	0.20	mg/kg wet	5.000		102	70-130	2	25	
Methyl tert-Butyl Ether	16.2	0.05	mg/kg wet	15.00		108	70-130	2	25	
Naphthalene	9.79	0.20	mg/kg wet	10.00		98	70-130	10	25	
n-Butylcyclohexane	8.60	5.00	mg/kg wet	10.00		86	70-130	10	25	
n-Decane	9.67	5.00	mg/kg wet	10.00		97	70-130	9	25	
Nonane (C9)	9.31	5.00	mg/kg wet	10.00		93	30-130	14	25	
Pentane	11.9	5.00	mg/kg wet	10.00		119	70-130	2	25	
Toluene	15.7	0.20	mg/kg wet	15.00		104	70-130	3	25	
Xylene O	10.2	0.20	mg/kg wet	10.00		102	70-130	1	25	



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408349

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-VPH Volatile Petroleum Hydrocarbon										
Batch CH42029 - 5035										
Xylene P,M	20.8	0.40	mg/kg wet	20.00		104	70-130	2	25	
Surrogate: 2,5-Dibromotoluene - FID	5.32		mg/kg wet	5.000		106	70-130			
Surrogate: 2,5-Dibromotoluene - PID	5.39		mg/kg wet	5.000		108	70-130			
Surrogate: Trifluorotoluene - FID	4.69		mg/kg wet	5.333		88	70-130			
Surrogate: Trifluorotoluene - PID	4.84		mg/kg wet	5.333		91	70-130			



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408349

Notes and Definitions

Z-04	MeOH - covered
WL	Results obtained from a deionized water leach of the sample.
U	Analyte included in the analysis, but not detected
D+	Relative percent difference for duplicate is outside of criteria (D+).
D	Diluted.
C-	Continuing Calibration recovery is below lower control limit (C-).
B+	Blank Spike recovery is above upper control limit (B+).
ND	Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MDL	Method Detection Limit
MRL	Method Reporting Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
DL	Detection Limit
I/V	Initial Volume
F/V	Final Volume
§	Subcontracted analysis; see attached report
1	Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
2	Range result excludes concentrations of target analytes eluting in that range.
3	Range result excludes the concentration of the C9-C10 aromatic range.
Avg	Results reported as a mathematical average.
NR	No Recovery
[CALC]	Calculated Analyte
SUB	Subcontracted analysis; see attached report



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408349

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Department of Defense (DoD) Environmental Laboratory Accreditation Program (ELAP)

A2LA Accredited: Testing Cert# 2864.01

<http://www.a2la.org/scopepdf/2864-01.pdf>

Rhode Island Potable and Non Potable Water: LAI00179

<http://www.health.ri.gov/find/labs/analytical/ESS.pdf>

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750

http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutOfStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI0002

<http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/documents/AllLabs.xls>

Massachusetts Potable and Non Potable Water: M-RI002

<http://public.dep.state.ma.us/Labcert/Labcert.aspx>

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424

<http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm>

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313

<http://www.wadsworth.org/labcert/elap/comm.html>

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006

http://datamine2.state.nj.us/DEP_Opra/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752

http://www.depweb.state.pa.us/portal/server.pt/community/labs/13780/laboratory_accreditation_program/590095

CHEMISTRY

A2LA Accredited: Testing Cert # 2864.01

Lead in Paint, Phthalates, Lead in Children's Metals Products (Including Jewelry)

<http://www.A2LA.org/dirsearchnew/newsearch.cfm>

CPSC ID# 1141

Lead Paint, Lead in Children's Metals Jewelry

<http://www.cpsc.gov/cgi-bin/labapplist.aspx>

Sample and Cooler Receipt ChecklistClient: PEER Consultants
Client Project ID: _____
Shipped/Delivered Via: ESS CourierESS Project ID: 14080349
Date Project Due: 8/25/14
Days For Project: 5 Day**Items to be checked upon receipt:**

1. Air Bill Manifest Present?

☒ No

Air No.:

2. Were Custody Seals Present?

☐ No

3. Were Custody Seals Intact?

☐ N/A

4. Is Radiation count < 100 CPM?

☐ Yes

5. Is a cooler present?

☐ YesCooler Temp: 2.5Iced With: Ice

6. Was COC included with samples?

☐ Yes

7. Was COC signed and dated by client?

☐ Yes

8. Does the COC match the sample

☐ Yes

9. Is COC complete and correct?

☐ Yes

10. Are the samples properly preserved?

☐ Yes

11. Proper sample containers used?

☐ Yes

12. Any air bubbles in the VOA vials?

☐ N/A

13. Holding times exceeded?

☐ No

14. Sufficient sample volumes?

☐ Yes

15. Any Subcontracting needed?

☐ No

16. Are ESS labels on correct containers?

☒ Yes ☐ No

17. Were samples received intact?

☒ Yes ☐ No

ESS Sample IDs: _____

Sub Lab: _____

Analysis: _____

TAT: _____

18. Was there need to call project manager to discuss status? If yes, please explain.

Who was called?: _____

By whom? _____

Sample Number	Properly Preserved	Container Type	# of Containers	Preservative
1	Yes	40 ml - VOA	1	MeOH
1	Yes	8 oz Soil Jar	2	NP

Completed By: [Signature]Date/Time: 8/18/14 1712Reviewed By: [Signature]Date/Time: 8/18/14 1716



CERTIFICATE OF ANALYSIS

David Gorden
PEER Consultants, P.C.
99 S. Bedford Street
Burlington, MA 01803

RE: Union Square (5559)
ESS Laboratory Work Order Number: 1408387

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

REVIEWED

By ESS Laboratory at 2:57 pm, Aug 26, 2014

Analytical Summary

The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with NELAC Standards, A2LA and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408387

SAMPLE RECEIPT

The following samples were received on August 19, 2014 for the analyses specified on the enclosed Chain of Custody Record.

To achieve CAM compliance for MCP data, ESS Laboratory has performed and reviewed all QA/QC Requirements and Performance Standards listed in each method. Holding times and preservation have also been reviewed. All CAM requirements have been achieved unless noted in the project narrative.

Each method has been set-up in the laboratory to reach required MCP standards. The methods for aqueous VOA and Soil Methanol VOA have known limitations for certain analytes. The regulatory standards may not be achieved due to these limitations. In addition, for all methods, matrix interferences, dilutions, and %Solids may elevate method reporting limits above regulatory standards. ESS Laboratory can provide, upon request, a Data Checker (regulatory standard comparison spreadsheet) electronic deliverable which will highlight these exceedances.

For EPH soil samples, the aromatic range results have been corrected for identified cartridge contaminant in accordance with the CAM protocol.

Lab Number	Sample Name	Matrix	Analysis
1408387-01	PB1 6.5-8.5ft	Soil	8260B Low
1408387-02	PB1 0.5-12.5ft	Soil	6010C, 7010, 7471A, 8082A, 8270D, 9050A, EPH8270, MADEP-EPH, MADEP-VPH
1408387-03	PB3 1-13ft	Soil	6010C, 7010, 7471A, 8082A, 8270D, 9050A, EPH8270, MADEP-EPH, MADEP-VPH



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408387

PROJECT NARRATIVE

5035/8260B Volatile Organic Compounds / Low Level

CH42130-BS1 Blank Spike recovery is above upper control limit (B+).
Tetrahydrofuran (141% @ 70-130%)
CH42130-BSD1 Blank Spike recovery is above upper control limit (B+).
Acetone (132% @ 70-130%), Tetrahydrofuran (136% @ 70-130%)

8082A Polychlorinated Biphenyls (PCB)

CH42010-BSD1 Relative percent difference for duplicate is outside of criteria (D+).
Aroclor 1260 (31%)

8270D Semi-Volatile Organic Compounds

CXH0219-CCV1 Calibration required quadratic regression (Q).
2,4-Dinitrophenol (86% @ 80-120%), bis(2-Ethylhexyl)phthalate (104% @ 80-120%)
CXH0219-CCV1 Continuing Calibration recovery is below lower control limit (C-).
Pentachlorophenol (74% @ 80-120%)
CXH0239-CCV1 Calibration required quadratic regression (Q).
2,4-Dinitrophenol (111% @ 80-120%), bis(2-Ethylhexyl)phthalate (99% @ 80-120%)
CXH0239-CCV1 Continuing Calibration recovery is below lower control limit (C-).
Pentachlorophenol (79% @ 80-120%)

MADEP-EPH Extractable Petroleum Hydrocarbons

CH41908-BSD1 Blank Spike recovery is above upper control limit (B+).
C19-C36 Aliphatics1 (125% @ 40-140%)
CH41908-BSD1 Relative percent difference for duplicate is outside of criteria (D+).
C19-C36 Aliphatics1 (44%), C9-C18 Aliphatics1 (28%), Docosane (C22) (26%), Eicosane (C20) (24%), Hexacosane (C26) (27%), Hexatriacontane (C36) (24%), Nonadecane (C19) (23%), Octacosane (C28) (27%), Tetracosane (C24) (24%), Triacontane (C30) (24%)
CH41908-BSD2 Relative percent difference for duplicate is outside of criteria (D+).
2-Methylnaphthalene (39%), Acenaphthene (29%), Acenaphthylene (30%), Benzo(g,h,i)perylene (54%), C11-C22 Unadjusted Aromatics1 (37%), Dibenzo(a,h)Anthracene (41%), Fluorene (23%), Indeno(1,2,3-cd)Pyrene (42%), Naphthalene (47%)
CXH0227-CCV2 Continuing Calibration recovery is below lower control limit (C-).
Benzo(g,h,i)perylene (68% @ 80-120%), Dibenzo(a,h)Anthracene (79% @ 80-120%)

No other observations noted.

End of Project Narrative.



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408387

DATA USABILITY LINKS

[Definitions of Quality Control Parameters](#)

[Semivolatile Organics Internal Standard Information](#)

[Semivolatile Organics Surrogate Information](#)

[Volatile Organics Internal Standard Information](#)

[Volatile Organics Surrogate Information](#)

[EPH and VPH Alkane Lists](#)

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

1010A - Flashpoint
6010C - ICP
6020A - ICP MS
7010 - Graphite Furnace
7196A - Hexavalent Chromium
7470A - Aqueous Mercury
7471B - Solid Mercury
8011 - EDB/DBCP/TCP
8015D - GRO/DRO
8081B - Pesticides
8082A - PCB
8100M - TPH
8151A - Herbicides
8260B - VOA
8270D - SVOA
8270D SIM - SVOA Low Level
9014 - Cyanide
9038 - Sulfate
9040C - Aqueous pH
9045D - Solid pH (Corrosivity)
9050A - Specific Conductance
9056A - Anions (IC)
9060A - TOC
9095B - Paint Filter
MADEP 04-1.1 - EPH / VPH

Prep Methods

3005A - Aqueous ICP Digestion
3020A - Aqueous Graphite Furnace / ICP MS Digestion
3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
3060A - Solid Hexavalent Chromium Digestion
3510C - Separatory Funnel Extraction
3520C - Liquid / Liquid Extraction
3540C - Manual Soxhlet Extraction
3541 - Automated Soxhlet Extraction
3546 - Microwave Extraction
3580A - Waste Dilution
5030B - Aqueous Purge and Trap
5030C - Aqueous Purge and Trap
5035 - Solid Purge and Trap



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408387

MassDEP Analytical Protocol Certification Form

MADEP RTN: _____

This form provides certification for the following data set: **1408387-01 through 1408387-03**

Matrices: () Ground Water/Surface Water (X) Soil/Sediment () Drinking Water () Air () Other: _____

CAM Protocol (check all that apply below):

(X) 8260 VOC CAM II A	(X) 7470/7471 Hg CAM III B	(X) MassDEP VPH CAM IV A	() 8081 Pesticides CAM V B	() 7196 Hex Cr CAM VI B	() MassDEP APH CAM IX A
(X) 8270 SVOC CAM II B	(X) 7010 Metals CAM III C	(X) MassDEP EPH CAM IV B	() 8151 Herbicides CAM V C	() 8330 Explosives CAM VIII A	() TO-15 VOC CAM IX B
(X) 6010 Metals CAM III A	() 6020 Metals CAM III D	(X) 8082 PCB CAM V A	() 6860 Perchlorate CAM VIII B	() 9014 Total Cyanide/PAC CAM VI A	

Affirmative responses to questions A through F are required for Presumptive Certainty's status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	Yes (X) No ()
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	Yes (X) No ()
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	Yes (X) No ()
D	Does the laboratory report comply with all the reporting requirements specified in the CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	Yes (X) No ()
E	a. VPH, EPH, APH and TO-15 only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	Yes (X) No ()
	b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	Yes () No ()
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	Yes (X) No ()

Responses to Questions G, H and I below are required for Presumptive Certainty's status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocols(s)? Data User Note: Data that achieve Presumptive Certainty's status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.	Yes (X) No ()*
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	Yes () No (X)*
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	Yes (X) No ()*

***All negative responses must be addressed in an attached laboratory narrative.**

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: Laurel Stoddard
Printed Name: Laurel Stoddard

Date: August 26, 2014
Position: Laboratory Director



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

Client Sample ID: PB1 6.5-8.5ft

Date Sampled: 08/18/14 11:51

Percent Solids: 93

Initial Volume: 5.2

Final Volume: 10

Extraction Method: 5035

ESS Laboratory Work Order: 1408387

ESS Laboratory Sample ID: 1408387-01

Sample Matrix: Soil

Units: mg/kg dry

Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1,2-Tetrachloroethane	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
1,1,1-Trichloroethane	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
1,1,2,2-Tetrachloroethane	ND (0.0021)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
1,1,2-Trichloroethane	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
1,1-Dichloroethane	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
1,1-Dichloroethene	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
1,1-Dichloropropene	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
1,2,3-Trichlorobenzene	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
1,2,3-Trichloropropane	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
1,2,4-Trichlorobenzene	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
1,2,4-Trimethylbenzene	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
1,2-Dibromo-3-Chloropropane	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
1,2-Dibromoethane	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
1,2-Dichlorobenzene	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
1,2-Dichloroethane	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
1,2-Dichloropropane	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
1,3,5-Trimethylbenzene	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
1,3-Dichlorobenzene	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
1,3-Dichloropropane	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
1,4-Dichlorobenzene	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
1,4-Dioxane	ND (0.103)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
2,2-Dichloropropane	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
2-Butanone	ND (0.0103)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
2-Chlorotoluene	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
2-Hexanone	ND (0.0103)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
4-Chlorotoluene	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
4-Isopropyltoluene	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
4-Methyl-2-Pentanone	ND (0.0103)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
Acetone	0.0130 (0.0103)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
Benzene	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
Bromobenzene	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
Bromochloromethane	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

Client Sample ID: PB1 6.5-8.5ft

Date Sampled: 08/18/14 11:51

Percent Solids: 93

Initial Volume: 5.2

Final Volume: 10

Extraction Method: 5035

ESS Laboratory Work Order: 1408387

ESS Laboratory Sample ID: 1408387-01

Sample Matrix: Soil

Units: mg/kg dry

Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Bromodichloromethane	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
Bromoform	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
Bromomethane	ND (0.0103)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
Carbon Disulfide	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
Carbon Tetrachloride	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
Chlorobenzene	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
Chloroethane	ND (0.0103)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
Chloroform	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
Chloromethane	ND (0.0103)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
cis-1,2-Dichloroethene	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
cis-1,3-Dichloropropene	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
Dibromochloromethane	ND (0.0021)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
Dibromomethane	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
Dichlorodifluoromethane	ND (0.0103)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
Diethyl Ether	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
Di-isopropyl ether	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
Ethyl tertiary-butyl ether	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
Ethylbenzene	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
Hexachlorobutadiene	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
Isopropylbenzene	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
Methyl tert-Butyl Ether	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
Methylene Chloride	ND (0.0103)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
Naphthalene	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
n-Butylbenzene	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
n-Propylbenzene	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
sec-Butylbenzene	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
Styrene	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
tert-Butylbenzene	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
Tertiary-amyl methyl ether	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
Tetrachloroethene	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
Tetrahydrofuran	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
Toluene	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB1 6.5-8.5ft
Date Sampled: 08/18/14 11:51
Percent Solids: 93
Initial Volume: 5.2
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1408387
ESS Laboratory Sample ID: 1408387-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
trans-1,2-Dichloroethene	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
trans-1,3-Dichloropropene	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
Trichloroethene	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
Trichlorofluoromethane	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
Vinyl Chloride	ND (0.0103)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
Xylene O	ND (0.0051)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
Xylene P,M	ND (0.0103)		8260B Low		1	08/21/14 21:29	CXH0248	CH42130
Xylenes (Total)	ND (0.0103)		8260B Low		1	08/21/14 21:29		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>111 %</i>		<i>70-130</i>
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>108 %</i>		<i>70-130</i>
<i>Surrogate: Dibromofluoromethane</i>	<i>111 %</i>		<i>70-130</i>
<i>Surrogate: Toluene-d8</i>	<i>112 %</i>		<i>70-130</i>



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB1 0.5-12.5ft
Date Sampled: 08/18/14 13:29
Percent Solids: 93

ESS Laboratory Work Order: 1408387
ESS Laboratory Sample ID: 1408387-02
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Antimony	ND (3.9)		6010C		1	KJK	08/22/14 20:20	2.75	100	CH42203
Arsenic	4.2 (2.0)		6010C		1	KJK	08/22/14 20:20	2.75	100	CH42203
Barium	11.7 (2.0)		6010C		1	KJK	08/22/14 20:20	2.75	100	CH42203
Beryllium	0.18 (0.09)		6010C		1	KJK	08/22/14 20:20	2.75	100	CH42203
Cadmium	ND (0.39)		6010C		1	KJK	08/22/14 20:20	2.75	100	CH42203
Chromium	8.9 (0.8)		6010C		1	KJK	08/22/14 20:20	2.75	100	CH42203
Lead	9.0 (3.9)		6010C		1	KJK	08/22/14 20:20	2.75	100	CH42203
Mercury	0.165 (0.036)		7471A		1	BJV	08/26/14 12:18	0.6	40	CH42505
Nickel	7.5 (2.0)		6010C		1	KJK	08/22/14 20:20	2.75	100	CH42203
Selenium	ND (1.96)		7010		5	KJK	08/22/14 23:43	2.75	100	CH42203
Silver	ND (0.39)		6010C		1	KJK	08/22/14 20:20	2.75	100	CH42203
Thallium	ND (0.98)		7010		5	JP	08/25/14 15:48	2.75	100	CH42203
Vanadium	12.4 (0.8)		6010C		1	KJK	08/22/14 20:20	2.75	100	CH42203
Zinc	21.3 (2.0)		6010C		1	KJK	08/22/14 20:20	2.75	100	CH42203



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB1 0.5-12.5ft
Date Sampled: 08/18/14 13:29
Percent Solids: 93
Initial Volume: 20.3
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 1408387
ESS Laboratory Sample ID: 1408387-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TAJ
Prepared: 8/20/14 18:04
Cleanup Method: 3665A

8082A Polychlorinated Biphenyls (PCB)

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Aroclor 1016	ND (0.0531)		8082A		1	08/21/14 13:16		CH42010
Aroclor 1221	ND (0.0531)		8082A		1	08/21/14 13:16		CH42010
Aroclor 1232	ND (0.0531)		8082A		1	08/21/14 13:16		CH42010
Aroclor 1242	ND (0.0531)		8082A		1	08/21/14 13:16		CH42010
Aroclor 1248	ND (0.0531)		8082A		1	08/21/14 13:16		CH42010
Aroclor 1254	ND (0.0531)		8082A		1	08/21/14 13:16		CH42010
Aroclor 1260	ND (0.0531)		8082A		1	08/21/14 13:16		CH42010
Aroclor 1262	ND (0.0531)		8082A		1	08/21/14 13:16		CH42010
Aroclor 1268	ND (0.0531)		8082A		1	08/21/14 13:16		CH42010

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
Surrogate: Decachlorobiphenyl	69 %		30-150
Surrogate: Decachlorobiphenyl [2C]	65 %		30-150
Surrogate: Tetrachloro-m-xylene	82 %		30-150
Surrogate: Tetrachloro-m-xylene [2C]	88 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB1 0.5-12.5ft
Date Sampled: 08/18/14 13:29
Percent Solids: 93
Initial Volume: 15
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1408387
ESS Laboratory Sample ID: 1408387-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 8/20/14 12:00

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,2,4-Trichlorobenzene	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
1,2-Dichlorobenzene	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
1,3-Dichlorobenzene	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
1,4-Dichlorobenzene	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
2,4,5-Trichlorophenol	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
2,4,6-Trichlorophenol	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
2,4-Dichlorophenol	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
2,4-Dimethylphenol	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
2,4-Dinitrophenol	ND (1.80)		8270D		1	08/21/14 10:25	CXH0239	CH41931
2,4-Dinitrotoluene	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
2,6-Dinitrotoluene	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
2-Chloronaphthalene	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
2-Chlorophenol	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
2-Methylnaphthalene	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
2-Methylphenol	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
2-Nitrophenol	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
3,3'-Dichlorobenzidine	ND (0.719)		8270D		1	08/21/14 10:25	CXH0239	CH41931
3+4-Methylphenol	ND (0.719)		8270D		1	08/21/14 10:25	CXH0239	CH41931
4-Bromophenyl-phenylether	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
4-Chloroaniline	ND (0.719)		8270D		1	08/21/14 10:25	CXH0239	CH41931
4-Nitrophenol	ND (1.80)		8270D		1	08/21/14 10:25	CXH0239	CH41931
Acenaphthene	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
Acenaphthylene	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
Acetophenone	ND (0.719)		8270D		1	08/21/14 10:25	CXH0239	CH41931
Aniline	ND (1.80)		8270D		1	08/21/14 10:25	CXH0239	CH41931
Anthracene	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
Azobenzene	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
Benzo(a)anthracene	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
Benzo(a)pyrene	ND (0.180)		8270D		1	08/21/14 10:25	CXH0239	CH41931
Benzo(b)fluoranthene	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
Benzo(g,h,i)perylene	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
Benzo(k)fluoranthene	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB1 0.5-12.5ft
Date Sampled: 08/18/14 13:29
Percent Solids: 93
Initial Volume: 15
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1408387
ESS Laboratory Sample ID: 1408387-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 8/20/14 12:00

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
bis(2-Chloroethoxy)methane	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
bis(2-Chloroethyl)ether	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
bis(2-chloroisopropyl)Ether	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
bis(2-Ethylhexyl)phthalate	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
Butylbenzylphthalate	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
Chrysene	ND (0.180)		8270D		1	08/21/14 10:25	CXH0239	CH41931
Dibenzo(a,h)Anthracene	ND (0.180)		8270D		1	08/21/14 10:25	CXH0239	CH41931
Dibenzofuran	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
Diethylphthalate	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
Dimethylphthalate	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
Di-n-butylphthalate	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
Di-n-octylphthalate	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
Fluoranthene	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
Fluorene	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
Hexachlorobenzene	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
Hexachlorobutadiene	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
Hexachloroethane	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
Indeno(1,2,3-cd)Pyrene	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
Isophorone	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
Naphthalene	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
Nitrobenzene	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
N-Nitrosodimethylamine	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
Pentachlorophenol	ND (1.80)		8270D		1	08/21/14 10:25	CXH0239	CH41931
Phenanthrene	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
Phenol	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931
Pyrene	ND (0.359)		8270D		1	08/21/14 10:25	CXH0239	CH41931

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
Surrogate: 1,2-Dichlorobenzene-d4	63 %		30-130
Surrogate: 2,4,6-Tribromophenol	73 %		30-130
Surrogate: 2-Chlorophenol-d4	72 %		30-130
Surrogate: 2-Fluorobiphenyl	70 %		30-130



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB1 0.5-12.5ft
Date Sampled: 08/18/14 13:29
Percent Solids: 93
Initial Volume: 15
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1408387
ESS Laboratory Sample ID: 1408387-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 8/20/14 12:00

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Surrogate: 2-Fluorophenol		66 %		30-130				
Surrogate: Nitrobenzene-d5		67 %		30-130				
Surrogate: Phenol-d6		75 %		30-130				
Surrogate: p-Terphenyl-d14		83 %		30-130				



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB1 0.5-12.5ft
Date Sampled: 08/18/14 13:29
Percent Solids: 93

ESS Laboratory Work Order: 1408387
ESS Laboratory Sample ID: 1408387-02
Sample Matrix: Soil

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Conductivity	WL 197 (5)		9050A		1	JLK	08/20/14 15:39	umhos/cm	CH42024



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB1 0.5-12.5ft
Date Sampled: 08/18/14 13:29
Percent Solids: 93
Initial Volume: 25
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1408387
ESS Laboratory Sample ID: 1408387-02
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 8/20/14 15:46

MADEP-EPH Extractable Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C18 Aliphatics1	ND (16.2)		MADEP-EPH		1	VSC	08/22/14 1:09	CXH0226	CH41908
C19-C36 Aliphatics1	ND (16.2)		MADEP-EPH		1	VSC	08/22/14 1:09	CXH0226	CH41908
C11-C22 Unadjusted Aromatics1	ND (16.2)		EPH8270		1	VSC	08/22/14 15:41	CXH0265	CH41908
C11-C22 Aromatics1,2	ND (16.2)		EPH8270			VSC	08/22/14 15:41		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1-Chlorooctadecane</i>	66 %		40-140
<i>Surrogate: 2-Bromonaphthalene</i>	82 %		40-140
<i>Surrogate: 2-Fluorobiphenyl</i>	75 %		40-140
<i>Surrogate: O-Terphenyl</i>	63 %		40-140



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB1 0.5-12.5ft
Date Sampled: 08/18/14 13:29
Percent Solids: 93
Initial Volume: 15.7
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1408387
ESS Laboratory Sample ID: 1408387-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: NMS

MADEP-VPH Volatile Petroleum Hydrocarbon

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C10 Aromatics	ND (11.1)		MADEP-VPH		1	08/21/14 15:59	CXH0256	CH42140
C5-C8 Aliphatics1,2	ND (11.1)		MADEP-VPH		1	08/21/14 15:59		[CALC]
C9-C12 Aliphatics2,3	ND (11.1)		MADEP-VPH		1	08/21/14 15:59		[CALC]
Benzene	ND (0.22)		MADEP-VPH		1	08/21/14 15:59	CXH0256	CH42140
Ethylbenzene	ND (0.22)		MADEP-VPH		1	08/21/14 15:59	CXH0256	CH42140
Methyl tert-Butyl Ether	ND (0.06)		MADEP-VPH		1	08/21/14 15:59	CXH0256	CH42140
Naphthalene	ND (0.22)		MADEP-VPH		1	08/21/14 15:59	CXH0256	CH42140
Toluene	ND (0.22)		MADEP-VPH		1	08/21/14 15:59	CXH0256	CH42140
Xylene O	ND (0.22)		MADEP-VPH		1	08/21/14 15:59	CXH0256	CH42140
Xylene P,M	ND (0.44)		MADEP-VPH		1	08/21/14 15:59	CXH0256	CH42140
1:1 Methanol/Soil Ratio %D	5 (N/A)		MADEP-VPH			08/21/14 0:00		CH42140
Preservative:	MeOH - covered		MADEP-VPH					CH42140

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
Surrogate: 2,5-Dibromotoluene - FID	111 %		70-130
Surrogate: 2,5-Dibromotoluene - PID	113 %		70-130
Surrogate: Trifluorotoluene - FID	101 %		70-130
Surrogate: Trifluorotoluene - PID	103 %		70-130



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB3 1-13ft
Date Sampled: 08/19/14 10:48
Percent Solids: 88

ESS Laboratory Work Order: 1408387
ESS Laboratory Sample ID: 1408387-03
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Antimony	ND (4.6)		6010C		1	KJK	08/22/14 20:24	2.45	100	CH42203
Arsenic	3.5 (2.3)		6010C		1	KJK	08/22/14 20:24	2.45	100	CH42203
Barium	14.4 (2.3)		6010C		1	KJK	08/22/14 20:24	2.45	100	CH42203
Beryllium	0.17 (0.10)		6010C		1	KJK	08/22/14 20:24	2.45	100	CH42203
Cadmium	ND (0.46)		6010C		1	KJK	08/22/14 20:24	2.45	100	CH42203
Chromium	7.2 (0.9)		6010C		1	KJK	08/22/14 20:24	2.45	100	CH42203
Lead	6.9 (4.6)		6010C		1	KJK	08/22/14 20:24	2.45	100	CH42203
Mercury	ND (0.037)		7471A		1	BJV	08/26/14 12:21	0.6	40	CH42505
Nickel	7.5 (2.3)		6010C		1	KJK	08/22/14 20:24	2.45	100	CH42203
Selenium	ND (2.32)		7010		5	KJK	08/22/14 23:48	2.45	100	CH42203
Silver	ND (0.46)		6010C		1	KJK	08/22/14 20:24	2.45	100	CH42203
Thallium	ND (1.16)		7010		5	JP	08/25/14 16:05	2.45	100	CH42203
Vanadium	11.7 (0.9)		6010C		1	KJK	08/22/14 20:24	2.45	100	CH42203
Zinc	16.7 (2.3)		6010C		1	KJK	08/22/14 20:24	2.45	100	CH42203



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB3 1-13ft
Date Sampled: 08/19/14 10:48
Percent Solids: 88
Initial Volume: 20.2
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 1408387
ESS Laboratory Sample ID: 1408387-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TAJ
Prepared: 8/20/14 18:04
Cleanup Method: 3665A

8082A Polychlorinated Biphenyls (PCB)

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Aroclor 1016	ND (0.0562)		8082A		1	08/21/14 13:35		CH42010
Aroclor 1221	ND (0.0562)		8082A		1	08/21/14 13:35		CH42010
Aroclor 1232	ND (0.0562)		8082A		1	08/21/14 13:35		CH42010
Aroclor 1242	ND (0.0562)		8082A		1	08/21/14 13:35		CH42010
Aroclor 1248	ND (0.0562)		8082A		1	08/21/14 13:35		CH42010
Aroclor 1254	ND (0.0562)		8082A		1	08/21/14 13:35		CH42010
Aroclor 1260	ND (0.0562)		8082A		1	08/21/14 13:35		CH42010
Aroclor 1262	ND (0.0562)		8082A		1	08/21/14 13:35		CH42010
Aroclor 1268	ND (0.0562)		8082A		1	08/21/14 13:35		CH42010

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
Surrogate: Decachlorobiphenyl	81 %		30-150
Surrogate: Decachlorobiphenyl [2C]	74 %		30-150
Surrogate: Tetrachloro-m-xylene	91 %		30-150
Surrogate: Tetrachloro-m-xylene [2C]	99 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB3 1-13ft
Date Sampled: 08/19/14 10:48
Percent Solids: 88
Initial Volume: 14.7
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1408387
ESS Laboratory Sample ID: 1408387-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 8/20/14 12:00

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,2,4-Trichlorobenzene	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
1,2-Dichlorobenzene	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
1,3-Dichlorobenzene	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
1,4-Dichlorobenzene	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
2,4,5-Trichlorophenol	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
2,4,6-Trichlorophenol	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
2,4-Dichlorophenol	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
2,4-Dimethylphenol	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
2,4-Dinitrophenol	ND (1.93)		8270D		1	08/20/14 19:19	CXH0219	CH41931
2,4-Dinitrotoluene	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
2,6-Dinitrotoluene	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
2-Chloronaphthalene	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
2-Chlorophenol	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
2-Methylnaphthalene	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
2-Methylphenol	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
2-Nitrophenol	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
3,3'-Dichlorobenzidine	ND (0.773)		8270D		1	08/20/14 19:19	CXH0219	CH41931
3+4-Methylphenol	ND (0.773)		8270D		1	08/20/14 19:19	CXH0219	CH41931
4-Bromophenyl-phenylether	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
4-Chloroaniline	ND (0.773)		8270D		1	08/20/14 19:19	CXH0219	CH41931
4-Nitrophenol	ND (1.93)		8270D		1	08/20/14 19:19	CXH0219	CH41931
Acenaphthene	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
Acenaphthylene	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
Acetophenone	ND (0.773)		8270D		1	08/20/14 19:19	CXH0219	CH41931
Aniline	ND (1.93)		8270D		1	08/20/14 19:19	CXH0219	CH41931
Anthracene	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
Azobenzene	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
Benzo(a)anthracene	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
Benzo(a)pyrene	ND (0.193)		8270D		1	08/20/14 19:19	CXH0219	CH41931
Benzo(b)fluoranthene	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
Benzo(g,h,i)perylene	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
Benzo(k)fluoranthene	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB3 1-13ft
Date Sampled: 08/19/14 10:48
Percent Solids: 88
Initial Volume: 14.7
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1408387
ESS Laboratory Sample ID: 1408387-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 8/20/14 12:00

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
bis(2-Chloroethoxy)methane	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
bis(2-Chloroethyl)ether	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
bis(2-chloroisopropyl)Ether	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
bis(2-Ethylhexyl)phthalate	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
Butylbenzylphthalate	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
Chrysene	ND (0.193)		8270D		1	08/20/14 19:19	CXH0219	CH41931
Dibenzo(a,h)Anthracene	ND (0.193)		8270D		1	08/20/14 19:19	CXH0219	CH41931
Dibenzofuran	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
Diethylphthalate	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
Dimethylphthalate	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
Di-n-butylphthalate	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
Di-n-octylphthalate	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
Fluoranthene	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
Fluorene	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
Hexachlorobenzene	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
Hexachlorobutadiene	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
Hexachloroethane	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
Indeno(1,2,3-cd)Pyrene	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
Isophorone	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
Naphthalene	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
Nitrobenzene	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
N-Nitrosodimethylamine	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
Pentachlorophenol	ND (1.93)		8270D		1	08/20/14 19:19	CXH0219	CH41931
Phenanthrene	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
Phenol	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931
Pyrene	ND (0.386)		8270D		1	08/20/14 19:19	CXH0219	CH41931

	<u>%Recovery</u>	<u>Qualifier</u>	<u>Limits</u>
Surrogate: 1,2-Dichlorobenzene-d4	65 %		30-130
Surrogate: 2,4,6-Tribromophenol	78 %		30-130
Surrogate: 2-Chlorophenol-d4	68 %		30-130
Surrogate: 2-Fluorobiphenyl	73 %		30-130



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB3 1-13ft
Date Sampled: 08/19/14 10:48
Percent Solids: 88
Initial Volume: 14.7
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1408387
ESS Laboratory Sample ID: 1408387-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: IBM
Prepared: 8/20/14 12:00

8270D Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Surrogate: 2-Fluorophenol		65 %		30-130				
Surrogate: Nitrobenzene-d5		69 %		30-130				
Surrogate: Phenol-d6		74 %		30-130				
Surrogate: p-Terphenyl-d14		89 %		30-130				



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB3 1-13ft
Date Sampled: 08/19/14 10:48
Percent Solids: 88

ESS Laboratory Work Order: 1408387
ESS Laboratory Sample ID: 1408387-03
Sample Matrix: Soil

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Conductivity	WL 1490 (5)		9050A		1	JLK	08/20/14 15:39	umhos/cm	CH42024



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB3 1-13ft
Date Sampled: 08/19/14 10:48
Percent Solids: 88
Initial Volume: 24.9
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1408387
ESS Laboratory Sample ID: 1408387-03
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 8/20/14 15:46

MADEP-EPH Extractable Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C18 Aliphatics1	ND (17.1)		MADEP-EPH		1	VSC	08/22/14 2:00	CXH0226	CH41908
C19-C36 Aliphatics1	ND (17.1)		MADEP-EPH		1	VSC	08/22/14 2:00	CXH0226	CH41908
C11-C22 Unadjusted Aromatics1	ND (17.1)		EPH8270		1	VSC	08/22/14 16:31	CXH0265	CH41908
C11-C22 Aromatics1,2	ND (17.1)		EPH8270			VSC	08/22/14 16:31		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1-Chlorooctadecane</i>	78 %		40-140
<i>Surrogate: 2-Bromonaphthalene</i>	90 %		40-140
<i>Surrogate: 2-Fluorobiphenyl</i>	81 %		40-140
<i>Surrogate: O-Terphenyl</i>	66 %		40-140



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB3 1-13ft
Date Sampled: 08/19/14 10:48
Percent Solids: 88
Initial Volume: 14.4
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1408387
ESS Laboratory Sample ID: 1408387-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: NMS

MADEP-VPH Volatile Petroleum Hydrocarbon

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C10 Aromatics	ND (13.2)		MADEP-VPH		1	08/21/14 18:50	CXH0256	CH42140
C5-C8 Aliphatics1,2	ND (13.2)		MADEP-VPH		1	08/21/14 18:50		[CALC]
C9-C12 Aliphatics2,3	ND (13.2)		MADEP-VPH		1	08/21/14 18:50		[CALC]
Benzene	ND (0.26)		MADEP-VPH		1	08/21/14 18:50	CXH0256	CH42140
Ethylbenzene	ND (0.26)		MADEP-VPH		1	08/21/14 18:50	CXH0256	CH42140
Methyl tert-Butyl Ether	ND (0.07)		MADEP-VPH		1	08/21/14 18:50	CXH0256	CH42140
Naphthalene	ND (0.26)		MADEP-VPH		1	08/21/14 18:50	CXH0256	CH42140
Toluene	ND (0.26)		MADEP-VPH		1	08/21/14 18:50	CXH0256	CH42140
Xylene O	ND (0.26)		MADEP-VPH		1	08/21/14 18:50	CXH0256	CH42140
Xylene P,M	ND (0.53)		MADEP-VPH		1	08/21/14 18:50	CXH0256	CH42140
1:1 Methanol/Soil Ratio %D	4 (N/A)		MADEP-VPH			08/21/14 0:00		CH42140
Preservative:	MeOH - covered		MADEP-VPH					CH42140

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
Surrogate: 2,5-Dibromotoluene - FID	115 %		70-130
Surrogate: 2,5-Dibromotoluene - PID	118 %		70-130
Surrogate: Trifluorotoluene - FID	95 %		70-130
Surrogate: Trifluorotoluene - PID	98 %		70-130



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408387

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

Total Metals

Batch CH42203 - 3050B

Blank

Antimony	ND	5.0	mg/kg wet
Arsenic	ND	2.5	mg/kg wet
Barium	ND	2.5	mg/kg wet
Beryllium	ND	0.11	mg/kg wet
Cadmium	ND	0.50	mg/kg wet
Chromium	ND	1.0	mg/kg wet
Lead	ND	5.0	mg/kg wet
Nickel	ND	2.5	mg/kg wet
Selenium	ND	0.50	mg/kg wet
Silver	ND	0.50	mg/kg wet
Thallium	ND	1.25	mg/kg wet
Vanadium	ND	1.0	mg/kg wet
Zinc	ND	2.5	mg/kg wet

LCS

Antimony	76.6	13.3	mg/kg wet	94.00	81	80-120
Arsenic	89.9	6.7	mg/kg wet	113.0	80	80-120
Barium	124	6.7	mg/kg wet	155.0	80	73-127
Beryllium	86.1	0.29	mg/kg wet	109.0	79	75-125
Cadmium	50.4	1.33	mg/kg wet	67.50	75	73-127
Chromium	133	2.7	mg/kg wet	164.0	81	80-120
Lead	75.2	13.3	mg/kg wet	90.10	83	80-120
Nickel	73.0	6.7	mg/kg wet	89.30	82	80-120
Selenium	147	66.7	mg/kg wet	156.0	94	80-120
Silver	43.0	1.33	mg/kg wet	52.60	82	80-120
Thallium	96.8	33.3	mg/kg wet	116.0	83	80-120
Vanadium	57.5	2.7	mg/kg wet	73.00	79	60-140
Zinc	131	6.7	mg/kg wet	168.0	78	69-132

LCS Dup

Antimony	78.1	14.9	mg/kg wet	94.00	83	80-120	2	20
Arsenic	91.6	7.5	mg/kg wet	113.0	81	80-120	2	20
Barium	122	7.5	mg/kg wet	155.0	79	73-127	2	20
Beryllium	87.5	0.33	mg/kg wet	109.0	80	75-125	2	20
Cadmium	51.6	1.49	mg/kg wet	67.50	77	73-127	2	20
Chromium	132	3.0	mg/kg wet	164.0	81	80-120	0.3	20
Lead	75.6	14.9	mg/kg wet	90.10	84	80-120	0.5	20
Nickel	74.7	7.5	mg/kg wet	89.30	84	80-120	2	20
Selenium	145	74.6	mg/kg wet	156.0	93	80-120	2	20
Silver	42.2	1.49	mg/kg wet	52.60	80	80-120	2	20
Thallium	96.3	37.3	mg/kg wet	116.0	83	80-120	0.6	20
Vanadium	56.8	3.0	mg/kg wet	73.00	78	60-140	1	20
Zinc	133	7.5	mg/kg wet	168.0	79	69-132	2	20

Batch CH42505 - 7471A

Blank



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408387

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

Total Metals

Batch CH42505 - 7471A

Mercury	ND	0.033	mg/kg wet							

LCS

Mercury	8.00	1.50	mg/kg wet	8.370		96	80-120			

LCS Dup

Mercury	8.00	1.27	mg/kg wet	8.370		96	80-120	0.01	20	

5035/8260B Volatile Organic Compounds / Low Level

Batch CH42130 - 5035

Blank

1,1,1,2-Tetrachloroethane	ND	0.0050	mg/kg wet
1,1,1-Trichloroethane	ND	0.0050	mg/kg wet
1,1,2,2-Tetrachloroethane	ND	0.0020	mg/kg wet
1,1,2-Trichloroethane	ND	0.0050	mg/kg wet
1,1-Dichloroethane	ND	0.0050	mg/kg wet
1,1-Dichloroethene	ND	0.0050	mg/kg wet
1,1-Dichloropropene	ND	0.0050	mg/kg wet
1,2,3-Trichlorobenzene	ND	0.0050	mg/kg wet
1,2,3-Trichloropropane	ND	0.0050	mg/kg wet
1,2,4-Trichlorobenzene	ND	0.0050	mg/kg wet
1,2,4-Trimethylbenzene	ND	0.0050	mg/kg wet
1,2-Dibromo-3-Chloropropane	ND	0.0050	mg/kg wet
1,2-Dibromoethane	ND	0.0050	mg/kg wet
1,2-Dichlorobenzene	ND	0.0050	mg/kg wet
1,2-Dichloroethane	ND	0.0050	mg/kg wet
1,2-Dichloropropane	ND	0.0050	mg/kg wet
1,3,5-Trimethylbenzene	ND	0.0050	mg/kg wet
1,3-Dichlorobenzene	ND	0.0050	mg/kg wet
1,3-Dichloropropane	ND	0.0050	mg/kg wet
1,4-Dichlorobenzene	ND	0.0050	mg/kg wet
1,4-Dioxane	ND	0.100	mg/kg wet
2,2-Dichloropropane	ND	0.0050	mg/kg wet
2-Butanone	ND	0.0100	mg/kg wet
2-Chlorotoluene	ND	0.0050	mg/kg wet
2-Hexanone	ND	0.0100	mg/kg wet
4-Chlorotoluene	ND	0.0050	mg/kg wet
4-Isopropyltoluene	ND	0.0050	mg/kg wet
4-Methyl-2-Pentanone	ND	0.0100	mg/kg wet
Acetone	ND	0.0100	mg/kg wet
Benzene	ND	0.0050	mg/kg wet
Bromobenzene	ND	0.0050	mg/kg wet
Bromochloromethane	ND	0.0050	mg/kg wet
Bromodichloromethane	ND	0.0050	mg/kg wet
Bromoform	ND	0.0050	mg/kg wet
Bromomethane	ND	0.0100	mg/kg wet



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1408387

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

5035/8260B Volatile Organic Compounds / Low Level

Batch CH42130 - 5035

Carbon Disulfide	ND	0.0050	mg/kg wet							
Carbon Tetrachloride	ND	0.0050	mg/kg wet							
Chlorobenzene	ND	0.0050	mg/kg wet							
Chloroethane	ND	0.0100	mg/kg wet							
Chloroform	ND	0.0050	mg/kg wet							
Chloromethane	ND	0.0100	mg/kg wet							
cis-1,2-Dichloroethene	ND	0.0050	mg/kg wet							
cis-1,3-Dichloropropene	ND	0.0050	mg/kg wet							
Dibromochloromethane	ND	0.0020	mg/kg wet							
Dibromomethane	ND	0.0050	mg/kg wet							
Dichlorodifluoromethane	ND	0.0100	mg/kg wet							
Diethyl Ether	ND	0.0050	mg/kg wet							
Di-isopropyl ether	ND	0.0050	mg/kg wet							
Ethyl tertiary-butyl ether	ND	0.0050	mg/kg wet							
Ethylbenzene	ND	0.0050	mg/kg wet							
Hexachlorobutadiene	ND	0.0050	mg/kg wet							
Isopropylbenzene	ND	0.0050	mg/kg wet							
Methyl tert-Butyl Ether	ND	0.0050	mg/kg wet							
Methylene Chloride	ND	0.0100	mg/kg wet							
Naphthalene	ND	0.0050	mg/kg wet							
n-Butylbenzene	ND	0.0050	mg/kg wet							
n-Propylbenzene	ND	0.0050	mg/kg wet							
sec-Butylbenzene	ND	0.0050	mg/kg wet							
Styrene	ND	0.0050	mg/kg wet							
tert-Butylbenzene	ND	0.0050	mg/kg wet							
Tertiary-amyl methyl ether	ND	0.0050	mg/kg wet							
Tetrachloroethene	ND	0.0050	mg/kg wet							
Tetrahydrofuran	ND	0.0050	mg/kg wet							
Toluene	ND	0.0050	mg/kg wet							
trans-1,2-Dichloroethene	ND	0.0050	mg/kg wet							
trans-1,3-Dichloropropene	ND	0.0050	mg/kg wet							
Trichloroethene	ND	0.0050	mg/kg wet							
Trichlorofluoromethane	ND	0.0050	mg/kg wet							
Vinyl Chloride	ND	0.0100	mg/kg wet							
Xylene O	ND	0.0050	mg/kg wet							
Xylene P,M	ND	0.0100	mg/kg wet							
Surrogate: 1,2-Dichloroethane-d4	0.0516		mg/kg wet	0.05000		103	70-130			
Surrogate: 4-Bromofluorobenzene	0.0544		mg/kg wet	0.05000		109	70-130			
Surrogate: Dibromofluoromethane	0.0533		mg/kg wet	0.05000		107	70-130			
Surrogate: Toluene-d8	0.0548		mg/kg wet	0.05000		110	70-130			

LCS

1,1,1,2-Tetrachloroethane	0.0455	0.0050	mg/kg wet	0.05000		91	70-130			
1,1,1-Trichloroethane	0.0519	0.0050	mg/kg wet	0.05000		104	70-130			
1,1,2,2-Tetrachloroethane	0.0568	0.0020	mg/kg wet	0.05000		114	70-130			
1,1,2-Trichloroethane	0.0505	0.0050	mg/kg wet	0.05000		101	70-130			



CERTIFICATE OF ANALYSIS

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

5035/8260B Volatile Organic Compounds / Low Level

Batch CH42130 - 5035

1,1-Dichloroethane	0.0517	0.0050	mg/kg wet	0.05000		103	70-130			
1,1-Dichloroethene	0.0525	0.0050	mg/kg wet	0.05000		105	70-130			
1,1-Dichloropropene	0.0502	0.0050	mg/kg wet	0.05000		100	70-130			
1,2,3-Trichlorobenzene	0.0521	0.0050	mg/kg wet	0.05000		104	70-130			
1,2,3-Trichloropropane	0.0536	0.0050	mg/kg wet	0.05000		107	70-130			
1,2,4-Trichlorobenzene	0.0513	0.0050	mg/kg wet	0.05000		103	70-130			
1,2,4-Trimethylbenzene	0.0568	0.0050	mg/kg wet	0.05000		114	70-130			
1,2-Dibromo-3-Chloropropane	0.0627	0.0050	mg/kg wet	0.05000		125	70-130			
1,2-Dibromoethane	0.0489	0.0050	mg/kg wet	0.05000		98	70-130			
1,2-Dichlorobenzene	0.0506	0.0050	mg/kg wet	0.05000		101	70-130			
1,2-Dichloroethane	0.0523	0.0050	mg/kg wet	0.05000		105	70-130			
1,2-Dichloropropane	0.0480	0.0050	mg/kg wet	0.05000		96	70-130			
1,3,5-Trimethylbenzene	0.0604	0.0050	mg/kg wet	0.05000		121	70-130			
1,3-Dichlorobenzene	0.0527	0.0050	mg/kg wet	0.05000		105	70-130			
1,3-Dichloropropane	0.0463	0.0050	mg/kg wet	0.05000		93	70-130			
1,4-Dichlorobenzene	0.0490	0.0050	mg/kg wet	0.05000		98	70-130			
1,4-Dioxane	1.25	0.100	mg/kg wet	1.000		125	70-130			
2,2-Dichloropropane	0.0540	0.0050	mg/kg wet	0.05000		108	70-130			
2-Butanone	0.214	0.0100	mg/kg wet	0.2500		85	70-130			
2-Chlorotoluene	0.0538	0.0050	mg/kg wet	0.05000		108	70-130			
2-Hexanone	0.288	0.0100	mg/kg wet	0.2500		115	70-130			
4-Chlorotoluene	0.0615	0.0050	mg/kg wet	0.05000		123	70-130			
4-Isopropyltoluene	0.0571	0.0050	mg/kg wet	0.05000		114	70-130			
4-Methyl-2-Pentanone	0.301	0.0100	mg/kg wet	0.2500		120	70-130			
Acetone	0.320	0.0100	mg/kg wet	0.2500		128	70-130			
Benzene	0.0525	0.0050	mg/kg wet	0.05000		105	70-130			
Bromobenzene	0.0527	0.0050	mg/kg wet	0.05000		105	70-130			
Bromochloromethane	0.0545	0.0050	mg/kg wet	0.05000		109	70-130			
Bromodichloromethane	0.0467	0.0050	mg/kg wet	0.05000		93	70-130			
Bromoform	0.0479	0.0050	mg/kg wet	0.05000		96	70-130			
Bromomethane	0.0548	0.0100	mg/kg wet	0.05000		110	70-130			
Carbon Disulfide	0.0632	0.0050	mg/kg wet	0.05000		126	70-130			
Carbon Tetrachloride	0.0538	0.0050	mg/kg wet	0.05000		108	70-130			
Chlorobenzene	0.0495	0.0050	mg/kg wet	0.05000		99	70-130			
Chloroethane	0.0537	0.0100	mg/kg wet	0.05000		107	70-130			
Chloroform	0.0525	0.0050	mg/kg wet	0.05000		105	70-130			
Chloromethane	0.0618	0.0100	mg/kg wet	0.05000		124	70-130			
cis-1,2-Dichloroethene	0.0499	0.0050	mg/kg wet	0.05000		100	70-130			
cis-1,3-Dichloropropene	0.0467	0.0050	mg/kg wet	0.05000		93	70-130			
Dibromochloromethane	0.0467	0.0020	mg/kg wet	0.05000		93	70-130			
Dibromomethane	0.0595	0.0050	mg/kg wet	0.05000		119	70-130			
Dichlorodifluoromethane	0.0644	0.0100	mg/kg wet	0.05000		129	70-130			
Diethyl Ether	0.0527	0.0050	mg/kg wet	0.05000		105	70-130			
Di-isopropyl ether	0.0533	0.0050	mg/kg wet	0.05000		107	70-130			
Ethyl tertiary-butyl ether	0.0451	0.0050	mg/kg wet	0.05000		90	70-130			



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1408387

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

5035/8260B Volatile Organic Compounds / Low Level

Batch CH42130 - 5035

Ethylbenzene	0.0553	0.0050	mg/kg wet	0.05000		111	70-130			
Hexachlorobutadiene	0.0521	0.0050	mg/kg wet	0.05000		104	70-130			
Isopropylbenzene	0.0564	0.0050	mg/kg wet	0.05000		113	70-130			
Methyl tert-Butyl Ether	0.0488	0.0050	mg/kg wet	0.05000		98	70-130			
Methylene Chloride	0.0586	0.0100	mg/kg wet	0.05000		117	70-130			
Naphthalene	0.0458	0.0050	mg/kg wet	0.05000		92	70-130			
n-Butylbenzene	0.0573	0.0050	mg/kg wet	0.05000		115	70-130			
n-Propylbenzene	0.0567	0.0050	mg/kg wet	0.05000		113	70-130			
sec-Butylbenzene	0.0559	0.0050	mg/kg wet	0.05000		112	70-130			
Styrene	0.0540	0.0050	mg/kg wet	0.05000		108	70-130			
tert-Butylbenzene	0.0551	0.0050	mg/kg wet	0.05000		110	70-130			
Tertiary-amyl methyl ether	0.0490	0.0050	mg/kg wet	0.05000		98	70-130			
Tetrachloroethene	0.0436	0.0050	mg/kg wet	0.05000		87	70-130			
Tetrahydrofuran	0.0703	0.0050	mg/kg wet	0.05000		141	70-130			B+
Toluene	0.0588	0.0050	mg/kg wet	0.05000		118	70-130			
trans-1,2-Dichloroethene	0.0521	0.0050	mg/kg wet	0.05000		104	70-130			
trans-1,3-Dichloropropene	0.0465	0.0050	mg/kg wet	0.05000		93	70-130			
Trichloroethene	0.0491	0.0050	mg/kg wet	0.05000		98	70-130			
Trichlorofluoromethane	0.0492	0.0050	mg/kg wet	0.05000		98	70-130			
Vinyl Chloride	0.0626	0.0100	mg/kg wet	0.05000		125	70-130			
Xylene O	0.0521	0.0050	mg/kg wet	0.05000		104	70-130			
Xylene P,M	0.105	0.0100	mg/kg wet	0.1000		105	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0561		mg/kg wet	0.05000		112	70-130			
Surrogate: 4-Bromofluorobenzene	0.0596		mg/kg wet	0.05000		119	70-130			
Surrogate: Dibromofluoromethane	0.0568		mg/kg wet	0.05000		114	70-130			
Surrogate: Toluene-d8	0.0525		mg/kg wet	0.05000		105	70-130			

LCS Dup

1,1,1,2-Tetrachloroethane	0.0517	0.0050	mg/kg wet	0.05000		103	70-130	13	25	
1,1,1-Trichloroethane	0.0566	0.0050	mg/kg wet	0.05000		113	70-130	9	25	
1,1,2,2-Tetrachloroethane	0.0607	0.0020	mg/kg wet	0.05000		121	70-130	7	25	
1,1,2-Trichloroethane	0.0550	0.0050	mg/kg wet	0.05000		110	70-130	8	25	
1,1-Dichloroethane	0.0568	0.0050	mg/kg wet	0.05000		114	70-130	9	25	
1,1-Dichloroethene	0.0554	0.0050	mg/kg wet	0.05000		111	70-130	6	25	
1,1-Dichloropropene	0.0585	0.0050	mg/kg wet	0.05000		117	70-130	15	25	
1,2,3-Trichlorobenzene	0.0545	0.0050	mg/kg wet	0.05000		109	70-130	5	25	
1,2,3-Trichloropropane	0.0574	0.0050	mg/kg wet	0.05000		115	70-130	7	25	
1,2,4-Trichlorobenzene	0.0551	0.0050	mg/kg wet	0.05000		110	70-130	7	25	
1,2,4-Trimethylbenzene	0.0595	0.0050	mg/kg wet	0.05000		119	70-130	5	25	
1,2-Dibromo-3-Chloropropane	0.0608	0.0050	mg/kg wet	0.05000		122	70-130	3	25	
1,2-Dibromoethane	0.0547	0.0050	mg/kg wet	0.05000		109	70-130	11	25	
1,2-Dichlorobenzene	0.0529	0.0050	mg/kg wet	0.05000		106	70-130	4	25	
1,2-Dichloroethane	0.0573	0.0050	mg/kg wet	0.05000		115	70-130	9	25	
1,2-Dichloropropane	0.0534	0.0050	mg/kg wet	0.05000		107	70-130	11	25	
1,3,5-Trimethylbenzene	0.0625	0.0050	mg/kg wet	0.05000		125	70-130	3	25	
1,3-Dichlorobenzene	0.0569	0.0050	mg/kg wet	0.05000		114	70-130	8	25	



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1408387

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

5035/8260B Volatile Organic Compounds / Low Level

Batch CH42130 - 5035

1,3-Dichloropropane	0.0536	0.0050	mg/kg wet	0.05000		107	70-130	15	25	
1,4-Dichlorobenzene	0.0506	0.0050	mg/kg wet	0.05000		101	70-130	3	25	
1,4-Dioxane	1.22	0.100	mg/kg wet	1.000		122	70-130	3	20	
2,2-Dichloropropane	0.0582	0.0050	mg/kg wet	0.05000		116	70-130	8	25	
2-Butanone	0.257	0.0100	mg/kg wet	0.2500		103	70-130	18	25	
2-Chlorotoluene	0.0568	0.0050	mg/kg wet	0.05000		114	70-130	5	25	
2-Hexanone	0.286	0.0100	mg/kg wet	0.2500		114	70-130	0.5	25	
4-Chlorotoluene	0.0626	0.0050	mg/kg wet	0.05000		125	70-130	2	25	
4-Isopropyltoluene	0.0587	0.0050	mg/kg wet	0.05000		117	70-130	3	25	
4-Methyl-2-Pentanone	0.298	0.0100	mg/kg wet	0.2500		119	70-130	1	25	
Acetone	0.329	0.0100	mg/kg wet	0.2500		132	70-130	3	25	B+
Benzene	0.0590	0.0050	mg/kg wet	0.05000		118	70-130	12	25	
Bromobenzene	0.0553	0.0050	mg/kg wet	0.05000		111	70-130	5	25	
Bromochloromethane	0.0554	0.0050	mg/kg wet	0.05000		111	70-130	2	25	
Bromodichloromethane	0.0535	0.0050	mg/kg wet	0.05000		107	70-130	14	25	
Bromoform	0.0559	0.0050	mg/kg wet	0.05000		112	70-130	15	25	
Bromomethane	0.0598	0.0100	mg/kg wet	0.05000		120	70-130	9	25	
Carbon Disulfide	0.0622	0.0050	mg/kg wet	0.05000		124	70-130	2	25	
Carbon Tetrachloride	0.0603	0.0050	mg/kg wet	0.05000		121	70-130	11	25	
Chlorobenzene	0.0513	0.0050	mg/kg wet	0.05000		103	70-130	4	25	
Chloroethane	0.0512	0.0100	mg/kg wet	0.05000		102	70-130	5	25	
Chloroform	0.0584	0.0050	mg/kg wet	0.05000		117	70-130	11	25	
Chloromethane	0.0603	0.0100	mg/kg wet	0.05000		121	70-130	2	25	
cis-1,2-Dichloroethene	0.0549	0.0050	mg/kg wet	0.05000		110	70-130	10	25	
cis-1,3-Dichloropropene	0.0532	0.0050	mg/kg wet	0.05000		106	70-130	13	25	
Dibromochloromethane	0.0538	0.0020	mg/kg wet	0.05000		108	70-130	14	25	
Dibromomethane	0.0645	0.0050	mg/kg wet	0.05000		129	70-130	8	25	
Dichlorodifluoromethane	0.0634	0.0100	mg/kg wet	0.05000		127	70-130	2	25	
Diethyl Ether	0.0558	0.0050	mg/kg wet	0.05000		112	70-130	6	25	
Di-isopropyl ether	0.0580	0.0050	mg/kg wet	0.05000		116	70-130	8	25	
Ethyl tertiary-butyl ether	0.0542	0.0050	mg/kg wet	0.05000		108	70-130	18	25	
Ethylbenzene	0.0577	0.0050	mg/kg wet	0.05000		115	70-130	4	25	
Hexachlorobutadiene	0.0557	0.0050	mg/kg wet	0.05000		111	70-130	7	25	
Isopropylbenzene	0.0594	0.0050	mg/kg wet	0.05000		119	70-130	5	25	
Methyl tert-Butyl Ether	0.0546	0.0050	mg/kg wet	0.05000		109	70-130	11	25	
Methylene Chloride	0.0600	0.0100	mg/kg wet	0.05000		120	70-130	2	25	
Naphthalene	0.0467	0.0050	mg/kg wet	0.05000		93	70-130	2	25	
n-Butylbenzene	0.0603	0.0050	mg/kg wet	0.05000		121	70-130	5	25	
n-Propylbenzene	0.0592	0.0050	mg/kg wet	0.05000		118	70-130	4	25	
sec-Butylbenzene	0.0586	0.0050	mg/kg wet	0.05000		117	70-130	5	25	
Styrene	0.0550	0.0050	mg/kg wet	0.05000		110	70-130	2	25	
tert-Butylbenzene	0.0588	0.0050	mg/kg wet	0.05000		118	70-130	7	25	
Tertiary-amyl methyl ether	0.0542	0.0050	mg/kg wet	0.05000		108	70-130	10	25	
Tetrachloroethene	0.0466	0.0050	mg/kg wet	0.05000		93	70-130	7	25	
Tetrahydrofuran	0.0681	0.0050	mg/kg wet	0.05000		136	70-130	3	25	B+



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1408387

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

5035/8260B Volatile Organic Compounds / Low Level

Batch CH42130 - 5035

Toluene	0.0610	0.0050	mg/kg wet	0.05000		122	70-130	4	25	
trans-1,2-Dichloroethene	0.0586	0.0050	mg/kg wet	0.05000		117	70-130	12	25	
trans-1,3-Dichloropropene	0.0525	0.0050	mg/kg wet	0.05000		105	70-130	12	25	
Trichloroethene	0.0540	0.0050	mg/kg wet	0.05000		108	70-130	9	25	
Trichlorofluoromethane	0.0542	0.0050	mg/kg wet	0.05000		108	70-130	10	25	
Vinyl Chloride	0.0600	0.0100	mg/kg wet	0.05000		120	70-130	4	25	
Xylene O	0.0536	0.0050	mg/kg wet	0.05000		107	70-130	3	25	
Xylene P,M	0.110	0.0100	mg/kg wet	0.1000		110	70-130	4	25	
Surrogate: 1,2-Dichloroethane-d4	0.0588		mg/kg wet	0.05000		118	70-130			
Surrogate: 4-Bromofluorobenzene	0.0580		mg/kg wet	0.05000		116	70-130			
Surrogate: Dibromofluoromethane	0.0583		mg/kg wet	0.05000		117	70-130			
Surrogate: Toluene-d8	0.0536		mg/kg wet	0.05000		107	70-130			

8082A Polychlorinated Biphenyls (PCB)

Batch CH42010 - 3540C

Blank

Aroclor 1016	ND	0.0500	mg/kg wet							
Aroclor 1221	ND	0.0500	mg/kg wet							
Aroclor 1232	ND	0.0500	mg/kg wet							
Aroclor 1242	ND	0.0500	mg/kg wet							
Aroclor 1248	ND	0.0500	mg/kg wet							
Aroclor 1254	ND	0.0500	mg/kg wet							
Aroclor 1260	ND	0.0500	mg/kg wet							
Aroclor 1262	ND	0.0500	mg/kg wet							
Aroclor 1268	ND	0.0500	mg/kg wet							

Surrogate: Decachlorobiphenyl	0.0232		mg/kg wet	0.02500		93	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0243		mg/kg wet	0.02500		97	30-150			
Surrogate: Tetrachloro-m-xylene	0.0219		mg/kg wet	0.02500		88	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0208		mg/kg wet	0.02500		83	30-150			

LCS

Aroclor 1016	0.657	0.0500	mg/kg wet	0.5000		131	40-140			
Aroclor 1260	0.653	0.0500	mg/kg wet	0.5000		131	40-140			

Surrogate: Decachlorobiphenyl	0.0252		mg/kg wet	0.02500		101	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0262		mg/kg wet	0.02500		105	30-150			
Surrogate: Tetrachloro-m-xylene	0.0221		mg/kg wet	0.02500		88	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0227		mg/kg wet	0.02500		91	30-150			

LCS Dup

Aroclor 1016	0.485	0.0500	mg/kg wet	0.5000		97	40-140	30	30	
Aroclor 1260	0.479	0.0500	mg/kg wet	0.5000		96	40-140	31	30	D+

Surrogate: Decachlorobiphenyl	0.0247		mg/kg wet	0.02500		99	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0257		mg/kg wet	0.02500		103	30-150			
Surrogate: Tetrachloro-m-xylene	0.0229		mg/kg wet	0.02500		92	30-150			



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408387

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

8082A Polychlorinated Biphenyls (PCB)

Batch CH42010 - 3540C

Surrogate: Tetrachloro-m-xylene [2C] 0.0232 mg/kg wet 0.02500 93 30-150

8270D Semi-Volatile Organic Compounds

Batch CH41931 - 3546

Blank

1,2,4-Trichlorobenzene	ND	0.333	mg/kg wet
1,2-Dichlorobenzene	ND	0.333	mg/kg wet
1,3-Dichlorobenzene	ND	0.333	mg/kg wet
1,4-Dichlorobenzene	ND	0.333	mg/kg wet
2,4,5-Trichlorophenol	ND	0.333	mg/kg wet
2,4,6-Trichlorophenol	ND	0.333	mg/kg wet
2,4-Dichlorophenol	ND	0.333	mg/kg wet
2,4-Dimethylphenol	ND	0.333	mg/kg wet
2,4-Dinitrophenol	ND	1.67	mg/kg wet
2,4-Dinitrotoluene	ND	0.333	mg/kg wet
2,6-Dinitrotoluene	ND	0.333	mg/kg wet
2-Chloronaphthalene	ND	0.333	mg/kg wet
2-Chlorophenol	ND	0.333	mg/kg wet
2-Methylnaphthalene	ND	0.333	mg/kg wet
2-Methylphenol	ND	0.333	mg/kg wet
2-Nitrophenol	ND	0.333	mg/kg wet
3,3'-Dichlorobenzidine	ND	0.667	mg/kg wet
3+4-Methylphenol	ND	0.667	mg/kg wet
4-Bromophenyl-phenylether	ND	0.333	mg/kg wet
4-Chloroaniline	ND	0.667	mg/kg wet
4-Nitrophenol	ND	1.67	mg/kg wet
Acenaphthene	ND	0.333	mg/kg wet
Acenaphthylene	ND	0.333	mg/kg wet
Acetophenone	ND	0.667	mg/kg wet
Aniline	ND	1.67	mg/kg wet
Anthracene	ND	0.333	mg/kg wet
Azobenzene	ND	0.333	mg/kg wet
Benzo(a)anthracene	ND	0.333	mg/kg wet
Benzo(a)pyrene	ND	0.167	mg/kg wet
Benzo(b)fluoranthene	ND	0.333	mg/kg wet
Benzo(g,h,i)perylene	ND	0.333	mg/kg wet
Benzo(k)fluoranthene	ND	0.333	mg/kg wet
bis(2-Chloroethoxy)methane	ND	0.333	mg/kg wet
bis(2-Chloroethyl)ether	ND	0.333	mg/kg wet
bis(2-chloroisopropyl)Ether	ND	0.333	mg/kg wet
bis(2-Ethylhexyl)phthalate	ND	0.333	mg/kg wet
Butylbenzylphthalate	ND	0.333	mg/kg wet
Chrysene	ND	0.167	mg/kg wet
Dibenzo(a,h)Anthracene	ND	0.167	mg/kg wet



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1408387

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

8270D Semi-Volatile Organic Compounds

Batch CH41931 - 3546

Dibenzofuran	ND	0.333	mg/kg wet							
Diethylphthalate	ND	0.333	mg/kg wet							
Dimethylphthalate	ND	0.333	mg/kg wet							
Di-n-butylphthalate	ND	0.333	mg/kg wet							
Di-n-octylphthalate	ND	0.333	mg/kg wet							
Fluoranthene	ND	0.333	mg/kg wet							
Fluorene	ND	0.333	mg/kg wet							
Hexachlorobenzene	ND	0.333	mg/kg wet							
Hexachlorobutadiene	ND	0.333	mg/kg wet							
Hexachloroethane	ND	0.333	mg/kg wet							
Indeno(1,2,3-cd)Pyrene	ND	0.333	mg/kg wet							
Isophorone	ND	0.333	mg/kg wet							
Naphthalene	ND	0.333	mg/kg wet							
Nitrobenzene	ND	0.333	mg/kg wet							
N-Nitrosodimethylamine	ND	0.333	mg/kg wet							
Pentachlorophenol	ND	1.67	mg/kg wet							
Phenanthrene	ND	0.333	mg/kg wet							
Phenol	ND	0.333	mg/kg wet							
Pyrene	ND	0.333	mg/kg wet							
Surrogate: 1,2-Dichlorobenzene-d4	2.91		mg/kg wet	3.333		87	30-130			
Surrogate: 2,4,6-Tribromophenol	4.18		mg/kg wet	5.000		84	30-130			
Surrogate: 2-Chlorophenol-d4	4.39		mg/kg wet	5.000		88	30-130			
Surrogate: 2-Fluorobiphenyl	2.95		mg/kg wet	3.333		89	30-130			
Surrogate: 2-Fluorophenol	4.24		mg/kg wet	5.000		85	30-130			
Surrogate: Nitrobenzene-d5	3.02		mg/kg wet	3.333		90	30-130			
Surrogate: Phenol-d6	4.61		mg/kg wet	5.000		92	30-130			
Surrogate: p-Terphenyl-d14	3.74		mg/kg wet	3.333		112	30-130			

LCS

1,2,4-Trichlorobenzene	2.57	0.333	mg/kg wet	3.333		77	40-140			
1,2-Dichlorobenzene	2.53	0.333	mg/kg wet	3.333		76	40-140			
1,3-Dichlorobenzene	2.51	0.333	mg/kg wet	3.333		75	40-140			
1,4-Dichlorobenzene	2.53	0.333	mg/kg wet	3.333		76	40-140			
2,4,5-Trichlorophenol	3.00	0.333	mg/kg wet	3.333		90	30-130			
2,4,6-Trichlorophenol	3.04	0.333	mg/kg wet	3.333		91	30-130			
2,4-Dichlorophenol	2.87	0.333	mg/kg wet	3.333		86	30-130			
2,4-Dimethylphenol	2.89	0.333	mg/kg wet	3.333		87	30-130			
2,4-Dinitrophenol	2.80	1.67	mg/kg wet	3.333		84	30-130			
2,4-Dinitrotoluene	2.78	0.333	mg/kg wet	3.333		83	40-140			
2,6-Dinitrotoluene	2.92	0.333	mg/kg wet	3.333		88	40-140			
2-Chloronaphthalene	2.42	0.333	mg/kg wet	3.333		73	40-140			
2-Chlorophenol	2.73	0.333	mg/kg wet	3.333		82	30-130			
2-Methylnaphthalene	2.67	0.333	mg/kg wet	3.333		80	40-140			
2-Methylphenol	2.90	0.333	mg/kg wet	3.333		87	30-130			
2-Nitrophenol	2.74	0.333	mg/kg wet	3.333		82	30-130			
3,3'-Dichlorobenzidine	2.45	0.667	mg/kg wet	3.333		74	40-140			



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1408387

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

8270D Semi-Volatile Organic Compounds

Batch CH41931 - 3546

3+4-Methylphenol	6.14	0.667	mg/kg wet	6.667		92	30-130			
4-Bromophenyl-phenylether	2.68	0.333	mg/kg wet	3.333		80	40-140			
4-Chloroaniline	2.00	0.667	mg/kg wet	3.333		60	40-140			
4-Nitrophenol	3.08	1.67	mg/kg wet	3.333		93	30-130			
Acenaphthene	2.60	0.333	mg/kg wet	3.333		78	40-140			
Acenaphthylene	2.52	0.333	mg/kg wet	3.333		76	40-140			
Acetophenone	2.61	0.667	mg/kg wet	3.333		78	40-140			
Aniline	2.24	1.67	mg/kg wet	3.333		67	40-140			
Anthracene	2.83	0.333	mg/kg wet	3.333		85	40-140			
Azobenzene	2.81	0.333	mg/kg wet	3.333		84	40-140			
Benzo(a)anthracene	2.91	0.333	mg/kg wet	3.333		87	40-140			
Benzo(a)pyrene	2.70	0.167	mg/kg wet	3.333		81	40-140			
Benzo(b)fluoranthene	3.10	0.333	mg/kg wet	3.333		93	40-140			
Benzo(g,h,i)perylene	2.93	0.333	mg/kg wet	3.333		88	40-140			
Benzo(k)fluoranthene	2.61	0.333	mg/kg wet	3.333		78	40-140			
bis(2-Chloroethoxy)methane	2.69	0.333	mg/kg wet	3.333		81	40-140			
bis(2-Chloroethyl)ether	2.67	0.333	mg/kg wet	3.333		80	40-140			
bis(2-chloroisopropyl)Ether	2.61	0.333	mg/kg wet	3.333		78	40-140			
bis(2-Ethylhexyl)phthalate	3.18	0.333	mg/kg wet	3.333		95	40-140			
Butylbenzylphthalate	2.99	0.333	mg/kg wet	3.333		90	40-140			
Chrysene	2.86	0.167	mg/kg wet	3.333		86	40-140			
Dibenzo(a,h)Anthracene	2.90	0.167	mg/kg wet	3.333		87	40-140			
Dibenzofuran	2.58	0.333	mg/kg wet	3.333		77	40-140			
Diethylphthalate	3.05	0.333	mg/kg wet	3.333		92	40-140			
Dimethylphthalate	2.79	0.333	mg/kg wet	3.333		84	40-140			
Di-n-butylphthalate	3.23	0.333	mg/kg wet	3.333		97	40-140			
Di-n-octylphthalate	3.16	0.333	mg/kg wet	3.333		95	40-140			
Fluoranthene	2.98	0.333	mg/kg wet	3.333		89	40-140			
Fluorene	2.75	0.333	mg/kg wet	3.333		82	40-140			
Hexachlorobenzene	2.71	0.333	mg/kg wet	3.333		81	40-140			
Hexachlorobutadiene	2.45	0.333	mg/kg wet	3.333		74	40-140			
Hexachloroethane	2.61	0.333	mg/kg wet	3.333		78	40-140			
Indeno(1,2,3-cd)Pyrene	2.99	0.333	mg/kg wet	3.333		90	40-140			
Isophorone	2.68	0.333	mg/kg wet	3.333		80	40-140			
Naphthalene	2.66	0.333	mg/kg wet	3.333		80	40-140			
Nitrobenzene	2.70	0.333	mg/kg wet	3.333		81	40-140			
N-Nitrosodimethylamine	2.21	0.333	mg/kg wet	3.333		66	40-140			
Pentachlorophenol	2.60	1.67	mg/kg wet	3.333		78	30-130			
Phenanthrene	2.85	0.333	mg/kg wet	3.333		85	40-140			
Phenol	2.98	0.333	mg/kg wet	3.333		89	30-130			
Pyrene	3.02	0.333	mg/kg wet	3.333		91	40-140			
Surrogate: 1,2-Dichlorobenzene-d4	2.99		mg/kg wet	3.333		90	30-130			
Surrogate: 2,4,6-Tribromophenol	4.60		mg/kg wet	5.000		92	30-130			
Surrogate: 2-Chlorophenol-d4	4.47		mg/kg wet	5.000		89	30-130			
Surrogate: 2-Fluorobiphenyl	3.01		mg/kg wet	3.333		90	30-130			



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1408387

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

8270D Semi-Volatile Organic Compounds

Batch CH41931 - 3546

Surrogate: 2-Fluorophenol	4.40		mg/kg wet	5.000		88	30-130			
Surrogate: Nitrobenzene-d5	3.11		mg/kg wet	3.333		93	30-130			
Surrogate: Phenol-d6	4.73		mg/kg wet	5.000		95	30-130			
Surrogate: p-Terphenyl-d14	3.70		mg/kg wet	3.333		111	30-130			
LCS Dup										
1,2,4-Trichlorobenzene	2.52	0.333	mg/kg wet	3.333		75	40-140	2	30	
1,2-Dichlorobenzene	2.44	0.333	mg/kg wet	3.333		73	40-140	4	30	
1,3-Dichlorobenzene	2.40	0.333	mg/kg wet	3.333		72	40-140	5	30	
1,4-Dichlorobenzene	2.42	0.333	mg/kg wet	3.333		73	40-140	4	30	
2,4,5-Trichlorophenol	3.02	0.333	mg/kg wet	3.333		91	30-130	0.7	30	
2,4,6-Trichlorophenol	3.06	0.333	mg/kg wet	3.333		92	30-130	0.5	30	
2,4-Dichlorophenol	2.84	0.333	mg/kg wet	3.333		85	30-130	1	30	
2,4-Dimethylphenol	2.91	0.333	mg/kg wet	3.333		87	30-130	0.4	30	
2,4-Dinitrophenol	3.03	1.67	mg/kg wet	3.333		91	30-130	8	30	
2,4-Dinitrotoluene	2.85	0.333	mg/kg wet	3.333		85	40-140	3	30	
2,6-Dinitrotoluene	2.98	0.333	mg/kg wet	3.333		89	40-140	2	30	
2-Chloronaphthalene	2.42	0.333	mg/kg wet	3.333		73	40-140	0.08	30	
2-Chlorophenol	2.66	0.333	mg/kg wet	3.333		80	30-130	3	30	
2-Methylnaphthalene	2.64	0.333	mg/kg wet	3.333		79	40-140	1	30	
2-Methylphenol	2.84	0.333	mg/kg wet	3.333		85	30-130	2	30	
2-Nitrophenol	2.71	0.333	mg/kg wet	3.333		81	30-130	1	30	
3,3'-Dichlorobenzidine	2.51	0.667	mg/kg wet	3.333		75	40-140	2	30	
3+4-Methylphenol	5.68	0.667	mg/kg wet	6.667		85	30-130	8	30	
4-Bromophenyl-phenylether	2.66	0.333	mg/kg wet	3.333		80	40-140	0.4	30	
4-Chloroaniline	2.02	0.667	mg/kg wet	3.333		61	40-140	1	30	
4-Nitrophenol	3.20	1.67	mg/kg wet	3.333		96	30-130	4	30	
Acenaphthene	2.62	0.333	mg/kg wet	3.333		79	40-140	0.8	30	
Acenaphthylene	2.52	0.333	mg/kg wet	3.333		76	40-140	0.07	30	
Acetophenone	2.54	0.667	mg/kg wet	3.333		76	40-140	3	30	
Aniline	2.20	1.67	mg/kg wet	3.333		66	40-140	2	30	
Anthracene	2.85	0.333	mg/kg wet	3.333		85	40-140	0.6	30	
Azobenzene	2.80	0.333	mg/kg wet	3.333		84	40-140	0.4	30	
Benzo(a)anthracene	2.89	0.333	mg/kg wet	3.333		87	40-140	0.6	30	
Benzo(a)pyrene	2.76	0.167	mg/kg wet	3.333		83	40-140	2	30	
Benzo(b)fluoranthene	3.14	0.333	mg/kg wet	3.333		94	40-140	1	30	
Benzo(g,h,i)perylene	3.00	0.333	mg/kg wet	3.333		90	40-140	2	30	
Benzo(k)fluoranthene	2.72	0.333	mg/kg wet	3.333		82	40-140	4	30	
bis(2-Chloroethoxy)methane	2.66	0.333	mg/kg wet	3.333		80	40-140	1	30	
bis(2-Chloroethyl)ether	2.52	0.333	mg/kg wet	3.333		75	40-140	6	30	
bis(2-chloroisopropyl)Ether	2.53	0.333	mg/kg wet	3.333		76	40-140	3	30	
bis(2-Ethylhexyl)phthalate	3.18	0.333	mg/kg wet	3.333		95	40-140	0.04	30	
Butylbenzylphthalate	2.95	0.333	mg/kg wet	3.333		89	40-140	1	30	
Chrysene	2.86	0.167	mg/kg wet	3.333		86	40-140	0.02	30	
Dibenzo(a,h)Anthracene	2.97	0.167	mg/kg wet	3.333		89	40-140	2	30	



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1408387

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

8270D Semi-Volatile Organic Compounds

Batch CH41931 - 3546

Dibenzofuran	2.61	0.333	mg/kg wet	3.333		78	40-140	1	30	
Diethylphthalate	3.09	0.333	mg/kg wet	3.333		93	40-140	1	30	
Dimethylphthalate	2.78	0.333	mg/kg wet	3.333		83	40-140	0.4	30	
Di-n-butylphthalate	3.24	0.333	mg/kg wet	3.333		97	40-140	0.4	30	
Di-n-octylphthalate	3.20	0.333	mg/kg wet	3.333		96	40-140	1	30	
Fluoranthene	3.02	0.333	mg/kg wet	3.333		91	40-140	1	30	
Fluorene	2.77	0.333	mg/kg wet	3.333		83	40-140	0.7	30	
Hexachlorobenzene	2.73	0.333	mg/kg wet	3.333		82	40-140	0.8	30	
Hexachlorobutadiene	2.41	0.333	mg/kg wet	3.333		72	40-140	2	30	
Hexachloroethane	2.50	0.333	mg/kg wet	3.333		75	40-140	4	30	
Indeno(1,2,3-cd)Pyrene	3.05	0.333	mg/kg wet	3.333		92	40-140	2	30	
Isophorone	2.65	0.333	mg/kg wet	3.333		79	40-140	1	30	
Naphthalene	2.61	0.333	mg/kg wet	3.333		78	40-140	2	30	
Nitrobenzene	2.65	0.333	mg/kg wet	3.333		80	40-140	2	30	
N-Nitrosodimethylamine	2.13	0.333	mg/kg wet	3.333		64	40-140	4	30	
Pentachlorophenol	2.66	1.67	mg/kg wet	3.333		80	30-130	2	30	
Phenanthrene	2.87	0.333	mg/kg wet	3.333		86	40-140	0.9	30	
Phenol	2.85	0.333	mg/kg wet	3.333		86	30-130	4	30	
Pyrene	2.98	0.333	mg/kg wet	3.333		89	40-140	1	30	
Surrogate: 1,2-Dichlorobenzene-d4	2.80		mg/kg wet	3.333		84	30-130			
Surrogate: 2,4,6-Tribromophenol	4.51		mg/kg wet	5.000		90	30-130			
Surrogate: 2-Chlorophenol-d4	4.32		mg/kg wet	5.000		86	30-130			
Surrogate: 2-Fluorobiphenyl	2.95		mg/kg wet	3.333		89	30-130			
Surrogate: 2-Fluorophenol	4.18		mg/kg wet	5.000		84	30-130			
Surrogate: Nitrobenzene-d5	3.01		mg/kg wet	3.333		90	30-130			
Surrogate: Phenol-d6	4.53		mg/kg wet	5.000		91	30-130			
Surrogate: p-Terphenyl-d14	3.57		mg/kg wet	3.333		107	30-130			

Classical Chemistry

Batch CH42024 - General Preparation

Blank

Conductivity	ND	5	umhos/cm							

LCS

Conductivity	1400		umhos/cm	1411		99	90-110			

MADEP-EPH Extractable Petroleum Hydrocarbons

Batch CH41908 - 3546

Blank

C19-C36 Aliphatics1	ND	15.0	mg/kg wet							
C9-C18 Aliphatics1	ND	15.0	mg/kg wet							
Decane (C10)	ND	0.5	mg/kg wet							
Docosane (C22)	ND	0.5	mg/kg wet							
Dodecane (C12)	ND	0.5	mg/kg wet							
Eicosane (C20)	ND	0.5	mg/kg wet							



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1408387

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

MADEP-EPH Extractable Petroleum Hydrocarbons

Batch CH41908 - 3546

Hexacosane (C26)	ND	0.5	mg/kg wet							
Hexadecane (C16)	ND	0.5	mg/kg wet							
Hexatriacontane (C36)	ND	0.5	mg/kg wet							
Nonadecane (C19)	ND	0.5	mg/kg wet							
Nonane (C9)	ND	0.5	mg/kg wet							
Octacosane (C28)	ND	0.5	mg/kg wet							
Octadecane (C18)	ND	0.5	mg/kg wet							
Tetracosane (C24)	ND	0.5	mg/kg wet							
Tetradecane (C14)	ND	0.5	mg/kg wet							
Triacontane (C30)	ND	0.5	mg/kg wet							

<i>Surrogate: 1-Chlorooctadecane</i>	<i>0.916</i>		mg/kg wet	<i>2.000</i>		<i>46</i>	<i>40-140</i>

Blank

2-Methylnaphthalene	ND	0.20	mg/kg wet				
Acenaphthene	ND	0.40	mg/kg wet				
Acenaphthylene	ND	0.20	mg/kg wet				
Anthracene	ND	0.40	mg/kg wet				
Benzo(a)anthracene	ND	0.40	mg/kg wet				
Benzo(a)pyrene	ND	0.40	mg/kg wet				
Benzo(b)fluoranthene	ND	0.40	mg/kg wet				
Benzo(g,h,i)perylene	ND	0.40	mg/kg wet				
Benzo(k)fluoranthene	ND	0.40	mg/kg wet				
C11-C22 Unadjusted Aromatics1	ND	15.0	mg/kg wet				
Chrysene	ND	0.40	mg/kg wet				
Dibenzo(a,h)Anthracene	ND	0.20	mg/kg wet				
Fluoranthene	ND	0.40	mg/kg wet				
Fluorene	ND	0.40	mg/kg wet				
Indeno(1,2,3-cd)Pyrene	ND	0.40	mg/kg wet				
Naphthalene	ND	0.40	mg/kg wet				
Phenanthrene	ND	0.40	mg/kg wet				
Pyrene	ND	0.40	mg/kg wet				

<i>Surrogate: 2-Bromonaphthalene</i>	<i>2.16</i>		mg/kg wet	<i>2.000</i>		<i>108</i>	<i>40-140</i>

<i>Surrogate: 2-Fluorobiphenyl</i>	<i>2.03</i>		mg/kg wet	<i>2.000</i>		<i>102</i>	<i>40-140</i>

<i>Surrogate: O-Terphenyl</i>	<i>1.53</i>		mg/kg wet	<i>2.000</i>		<i>77</i>	<i>40-140</i>

LCS

C19-C36 Aliphatics1	12.8	15.0	mg/kg wet	16.00		80	40-140
C9-C18 Aliphatics1	8.1	15.0	mg/kg wet	12.00		67	40-140
Decane (C10)	0.9	0.5	mg/kg wet	2.000		46	40-140
Docosane (C22)	1.4	0.5	mg/kg wet	2.000		70	40-140
Dodecane (C12)	1.0	0.5	mg/kg wet	2.000		50	40-140
Eicosane (C20)	1.3	0.5	mg/kg wet	2.000		67	40-140
Hexacosane (C26)	1.3	0.5	mg/kg wet	2.000		67	40-140
Hexadecane (C16)	1.3	0.5	mg/kg wet	2.000		64	40-140
Hexatriacontane (C36)	1.4	0.5	mg/kg wet	2.000		69	40-140
Nonadecane (C19)	1.4	0.5	mg/kg wet	2.000		68	40-140



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1408387

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch CH41908 - 3546										
Nonane (C9)	0.7	0.5	mg/kg wet	2.000		34	30-140			
Octacosane (C28)	1.3	0.5	mg/kg wet	2.000		66	40-140			
Octadecane (C18)	1.3	0.5	mg/kg wet	2.000		66	40-140			
Tetracosane (C24)	1.4	0.5	mg/kg wet	2.000		70	40-140			
Tetradecane (C14)	1.1	0.5	mg/kg wet	2.000		57	40-140			
Triacotane (C30)	1.3	0.5	mg/kg wet	2.000		65	40-140			
<i>Surrogate: 1-Chlorooctadecane</i>	<i>0.917</i>		mg/kg wet	<i>2.000</i>		<i>46</i>	<i>40-140</i>			
LCS										
2-Methylnaphthalene	1.68	0.20	mg/kg wet	2.000		84	40-140			
Acenaphthene	1.72	0.40	mg/kg wet	2.000		86	40-140			
Acenaphthylene	1.71	0.20	mg/kg wet	2.000		86	40-140			
Anthracene	1.86	0.40	mg/kg wet	2.000		93	40-140			
Benzo(a)anthracene	1.92	0.40	mg/kg wet	2.000		96	40-140			
Benzo(a)pyrene	2.28	0.40	mg/kg wet	2.000		114	40-140			
Benzo(b)fluoranthene	2.07	0.40	mg/kg wet	2.000		104	40-140			
Benzo(g,h,i)perylene	2.16	0.40	mg/kg wet	2.000		108	40-140			
Benzo(k)fluoranthene	2.16	0.40	mg/kg wet	2.000		108	40-140			
C11-C22 Unadjusted Aromatics1	37.3	15.0	mg/kg wet	34.00		110	40-140			
Chrysene	1.95	0.40	mg/kg wet	2.000		98	40-140			
Dibenzo(a,h)Anthracene	2.20	0.20	mg/kg wet	2.000		110	40-140			
Fluoranthene	1.87	0.40	mg/kg wet	2.000		94	40-140			
Fluorene	1.81	0.40	mg/kg wet	2.000		91	40-140			
Indeno(1,2,3-cd)Pyrene	2.25	0.40	mg/kg wet	2.000		112	40-140			
Naphthalene	1.60	0.40	mg/kg wet	2.000		80	40-140			
Phenanthrene	1.89	0.40	mg/kg wet	2.000		94	40-140			
Pyrene	1.92	0.40	mg/kg wet	2.000		96	40-140			
<i>Surrogate: 2-Bromonaphthalene</i>	<i>2.29</i>		mg/kg wet	<i>2.000</i>		<i>115</i>	<i>40-140</i>			
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>2.22</i>		mg/kg wet	<i>2.000</i>		<i>111</i>	<i>40-140</i>			
<i>Surrogate: O-Terphenyl</i>	<i>1.60</i>		mg/kg wet	<i>2.000</i>		<i>80</i>	<i>40-140</i>			
LCS										
2-Methylnaphthalene Breakthrough	0.0		%				0-5			
Naphthalene Breakthrough	0.0		%				0-5			
LCS Dup										
C19-C36 Aliphatics1	20.0	15.0	mg/kg wet	16.00		125	40-140	44	25	B+, D+
C9-C18 Aliphatics1	10.7	15.0	mg/kg wet	12.00		89	40-140	28	25	D+
Decane (C10)	0.9	0.5	mg/kg wet	2.000		45	40-140	1	25	
Docosane (C22)	1.8	0.5	mg/kg wet	2.000		91	40-140	26	25	D+
Dodecane (C12)	1.0	0.5	mg/kg wet	2.000		52	40-140	3	25	
Eicosane (C20)	1.7	0.5	mg/kg wet	2.000		86	40-140	24	25	D+
Hexacosane (C26)	1.7	0.5	mg/kg wet	2.000		87	40-140	27	25	D+
Hexadecane (C16)	1.5	0.5	mg/kg wet	2.000		76	40-140	18	25	
Hexatriacontane (C36)	1.8	0.5	mg/kg wet	2.000		88	40-140	24	25	D+
Nonadecane (C19)	1.7	0.5	mg/kg wet	2.000		86	40-140	23	25	D+



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1408387

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

MADEP-EPH Extractable Petroleum Hydrocarbons

Batch CH41908 - 3546

Nonane (C9)	0.6	0.5	mg/kg wet	2.000		30	30-140	13	25	
Octacosane (C28)	1.7	0.5	mg/kg wet	2.000		86	40-140	27	25	D+
Octadecane (C18)	1.7	0.5	mg/kg wet	2.000		83	40-140	22	25	
Tetracosane (C24)	1.8	0.5	mg/kg wet	2.000		89	40-140	24	25	D+
Tetradecane (C14)	1.3	0.5	mg/kg wet	2.000		63	40-140	11	25	
Triacontane (C30)	1.7	0.5	mg/kg wet	2.000		83	40-140	24	25	D+

Surrogate: 1-Chlorooctadecane

1.49

mg/kg wet

2.000

75

40-140

LCS Dup

2-Methylnaphthalene	1.14	0.20	mg/kg wet	2.000		57	40-140	39	20	D+
Acenaphthene	1.29	0.40	mg/kg wet	2.000		65	40-140	29	20	D+
Acenaphthylene	1.27	0.20	mg/kg wet	2.000		63	40-140	30	20	D+
Anthracene	1.59	0.40	mg/kg wet	2.000		80	40-140	15	20	
Benzo(a)anthracene	1.76	0.40	mg/kg wet	2.000		88	40-140	9	20	
Benzo(a)pyrene	2.03	0.40	mg/kg wet	2.000		102	40-140	11	20	
Benzo(b)fluoranthene	1.85	0.40	mg/kg wet	2.000		93	40-140	11	20	
Benzo(g,h,i)perylene	1.24	0.40	mg/kg wet	2.000		62	40-140	54	20	D+
Benzo(k)fluoranthene	1.86	0.40	mg/kg wet	2.000		93	40-140	15	20	
C11-C22 Unadjusted Aromatics1	25.7	15.0	mg/kg wet	34.00		75	40-140	37	25	D+
Chrysene	1.75	0.40	mg/kg wet	2.000		87	40-140	11	20	
Dibenzo(a,h)Anthracene	1.45	0.20	mg/kg wet	2.000		73	40-140	41	20	D+
Fluoranthene	1.70	0.40	mg/kg wet	2.000		85	40-140	10	20	
Fluorene	1.44	0.40	mg/kg wet	2.000		72	40-140	23	20	D+
Indeno(1,2,3-cd)Pyrene	1.46	0.40	mg/kg wet	2.000		73	40-140	42	20	D+
Naphthalene	0.99	0.40	mg/kg wet	2.000		50	40-140	47	20	D+
Phenanthrene	1.61	0.40	mg/kg wet	2.000		81	40-140	16	20	
Pyrene	1.73	0.40	mg/kg wet	2.000		87	40-140	10	20	

Surrogate: 2-Bromonaphthalene

1.56

mg/kg wet

2.000

78

40-140

Surrogate: 2-Fluorobiphenyl

1.41

mg/kg wet

2.000

70

40-140

Surrogate: O-Terphenyl

1.35

mg/kg wet

2.000

68

40-140

LCS Dup

2-Methylnaphthalene Breakthrough	0.0		%				0-5		200	
Naphthalene Breakthrough	0.0		%				0-5		200	

MADEP-VPH Volatile Petroleum Hydrocarbon

Batch CH42140 - 5035

Blank

1,2,4-Trimethylbenzene	ND	0.20	mg/kg wet							
2,2,4-Trimethylpentane	ND	5.00	mg/kg wet							
2-Methylpentane	ND	5.00	mg/kg wet							
Benzene	ND	0.20	mg/kg wet							
C5-C8 Unadjusted Aliphatics	ND	10.0	mg/kg wet							
C9-C10 Aromatics	ND	10.0	mg/kg wet							
C9-C12 Unadjusted Aliphatics	ND	10.0	mg/kg wet							



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1408387

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

MADEP-VPH Volatile Petroleum Hydrocarbon

Batch CH42140 - 5035

Ethylbenzene	ND	0.20	mg/kg wet							
Methyl tert-Butyl Ether	ND	0.05	mg/kg wet							
Naphthalene	ND	0.20	mg/kg wet							
n-Butylcyclohexane	ND	5.00	mg/kg wet							
n-Decane	ND	5.00	mg/kg wet							
Nonane (C9)	ND	5.00	mg/kg wet							
Pentane	ND	5.00	mg/kg wet							
Toluene	ND	0.20	mg/kg wet							
Xylene O	ND	0.20	mg/kg wet							
Xylene P,M	ND	0.40	mg/kg wet							

Surrogate: 2,5-Dibromotoluene - FID	5.20		mg/kg wet	5.000		104	70-130			
Surrogate: 2,5-Dibromotoluene - PID	5.28		mg/kg wet	5.000		106	70-130			
Surrogate: Trifluorotoluene - FID	4.40		mg/kg wet	5.333		83	70-130			
Surrogate: Trifluorotoluene - PID	4.56		mg/kg wet	5.333		85	70-130			

LCS

1,2,4-Trimethylbenzene	10.2	0.20	mg/kg wet	10.00		102	70-130			
2,2,4-Trimethylpentane	14.1	5.00	mg/kg wet	15.00		94	70-130			
2-Methylpentane	16.5	5.00	mg/kg wet	15.00		110	70-130			
Benzene	4.94	0.20	mg/kg wet	5.000		99	70-130			
C5-C8 Unadjusted Aliphatics	41.8	10.0	mg/kg wet	40.00		105	70-130			
C9-C10 Aromatics	9.94	10.0	mg/kg wet	10.00		99	70-130			
C9-C12 Unadjusted Aliphatics	25.6	10.0	mg/kg wet	30.00		85	70-130			
Ethylbenzene	5.04	0.20	mg/kg wet	5.000		101	70-130			
Methyl tert-Butyl Ether	15.1	0.05	mg/kg wet	15.00		101	70-130			
Naphthalene	8.85	0.20	mg/kg wet	10.00		89	70-130			
n-Butylcyclohexane	7.77	5.00	mg/kg wet	10.00		78	70-130			
n-Decane	8.79	5.00	mg/kg wet	10.00		88	70-130			
Nonane (C9)	8.05	5.00	mg/kg wet	10.00		80	30-130			
Pentane	11.5	5.00	mg/kg wet	10.00		115	70-130			
Toluene	15.2	0.20	mg/kg wet	15.00		102	70-130			
Xylene O	10.2	0.20	mg/kg wet	10.00		102	70-130			
Xylene P,M	20.8	0.40	mg/kg wet	20.00		104	70-130			

Surrogate: 2,5-Dibromotoluene - FID	4.89		mg/kg wet	5.000		98	70-130			
Surrogate: 2,5-Dibromotoluene - PID	5.01		mg/kg wet	5.000		100	70-130			
Surrogate: Trifluorotoluene - FID	4.46		mg/kg wet	5.333		84	70-130			
Surrogate: Trifluorotoluene - PID	4.69		mg/kg wet	5.333		88	70-130			

LCS Dup

1,2,4-Trimethylbenzene	10.2	0.20	mg/kg wet	10.00		102	70-130	0.6	25	
2,2,4-Trimethylpentane	17.1	5.00	mg/kg wet	15.00		114	70-130	20	25	
2-Methylpentane	16.5	5.00	mg/kg wet	15.00		110	70-130	0.1	25	
Benzene	4.94	0.20	mg/kg wet	5.000		99	70-130	0.05	25	
C5-C8 Unadjusted Aliphatics	44.3	10.0	mg/kg wet	40.00		111	70-130	6	25	
C9-C10 Aromatics	9.83	10.0	mg/kg wet	10.00		98	70-130	1	25	
C9-C12 Unadjusted Aliphatics	24.5	10.0	mg/kg wet	30.00		82	70-130	4	25	



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-VPH Volatile Petroleum Hydrocarbon										
Batch CH42140 - 5035										
Ethylbenzene	4.98	0.20	mg/kg wet	5.000		100	70-130	1	25	
Methyl tert-Butyl Ether	15.8	0.05	mg/kg wet	15.00		105	70-130	4	25	
Naphthalene	9.50	0.20	mg/kg wet	10.00		95	70-130	7	25	
n-Butylcyclohexane	7.36	5.00	mg/kg wet	10.00		74	70-130	5	25	
n-Decane	8.18	5.00	mg/kg wet	10.00		82	70-130	7	25	
Nonane (C9)	8.13	5.00	mg/kg wet	10.00		81	30-130	0.9	25	
Pentane	11.4	5.00	mg/kg wet	10.00		114	70-130	0.9	25	
Toluene	15.1	0.20	mg/kg wet	15.00		101	70-130	0.7	25	
Xylene O	10.0	0.20	mg/kg wet	10.00		100	70-130	2	25	
Xylene P,M	20.4	0.40	mg/kg wet	20.00		102	70-130	2	25	
Surrogate: 2,5-Dibromotoluene - FID	5.30		mg/kg wet	5.000		106	70-130			
Surrogate: 2,5-Dibromotoluene - PID	5.40		mg/kg wet	5.000		108	70-130			
Surrogate: Trifluorotoluene - FID	4.90		mg/kg wet	5.333		92	70-130			
Surrogate: Trifluorotoluene - PID	5.05		mg/kg wet	5.333		95	70-130			



CERTIFICATE OF ANALYSIS

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Notes and Definitions

Z-04	MeOH - covered
WL	Results obtained from a deionized water leach of the sample.
U	Analyte included in the analysis, but not detected
Q	Calibration required quadratic regression (Q).
D+	Relative percent difference for duplicate is outside of criteria (D+).
D	Diluted.
C-	Continuing Calibration recovery is below lower control limit (C-).
B+	Blank Spike recovery is above upper control limit (B+).
ND	Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MDL	Method Detection Limit
MRL	Method Reporting Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
DL	Detection Limit
I/V	Initial Volume
F/V	Final Volume
§	Subcontracted analysis; see attached report
1	Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
2	Range result excludes concentrations of target analytes eluting in that range.
3	Range result excludes the concentration of the C9-C10 aromatic range.
Avg	Results reported as a mathematical average.
NR	No Recovery
[CALC]	Calculated Analyte
SUB	Subcontracted analysis; see attached report



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
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ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Department of Defense (DoD) Environmental Laboratory Accreditation Program (ELAP)

A2LA Accredited: Testing Cert# 2864.01

<http://www.a2la.org/scopepdf/2864-01.pdf>

Rhode Island Potable and Non Potable Water: LAI00179

<http://www.health.ri.gov/find/labs/analytical/ESS.pdf>

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750

http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutOfStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI0002

<http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/documents/AllLabs.xls>

Massachusetts Potable and Non Potable Water: M-RI002

<http://public.dep.state.ma.us/Labcert/Labcert.aspx>

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424

<http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm>

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313

<http://www.wadsworth.org/labcert/elap/comm.html>

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006

http://datamine2.state.nj.us/DEP_Opra/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752

http://www.depweb.state.pa.us/portal/server.pt/community/labs/13780/laboratory_accreditation_program/590095

CHEMISTRY

A2LA Accredited: Testing Cert # 2864.01

Lead in Paint, Phthalates, Lead in Children's Metals Products (Including Jewelry)

<http://www.A2LA.org/dirsearchnew/newsearch.cfm>

CPSC ID# 1141

Lead Paint, Lead in Children's Metals Jewelry

<http://www.cpsc.gov/cgi-bin/labapplist.aspx>

Sample and Cooler Receipt Checklist

Client: PEER Consultants

Client Project ID: _____

Shipped/Delivered Via: ESS CourierESS Project ID: 14080387Date Project Due: 8/26/14Days For Project: 5 Day**Items to be checked upon receipt:**

1. Air Bill Manifest Present?

☒ **No**

Air No.: _____

2. Were Custody Seals Present?

☐ **No**

3. Were Custody Seals Intact?

☐ **N/A**

4. Is Radiation count < 100 CPM?

☐ **Yes**

5. Is a cooler present?

☐ **Yes**Cooler Temp: 1.8Iced With: Ice

6. Was COC included with samples?

☐ **Yes**

7. Was COC signed and dated by client?

☐ **Yes**

8. Does the COC match the sample

☐ **Yes**

9. Is COC complete and correct?

☐ **Yes**

10. Are the samples properly preserved?

☐ **Yes**

11. Proper sample containers used?

☐ **Yes**

12. Any air bubbles in the VOA vials?

☐ **N/A**

13. Holding times exceeded?

☐ **No**

14. Sufficient sample volumes?

☐ **Yes**

15. Any Subcontracting needed?

☐ **No**

16. Are ESS labels on correct containers?

☒ **Yes** ☐ **No**

17. Were samples received intact?

☒ **Yes** ☐ **No**

ESS Sample IDs: _____

Sub Lab: _____

Analysis: _____

TAT: _____

18. Was there need to call project manager to discuss status? If yes, please explain.

LL VIALS frozen 8/19/14 @ 1735 NB 8/19/14

Who was called?: _____

By whom? _____

Sample Number	Properly Preserved	Container Type	# of Containers	Preservative
1	Yes	4 oz Soil Jar	1	NP
1	Yes	40 ml - VOA	1	MeOH
1	Yes	40 ml - VOA	2	other
2	Yes	4 oz Soil Jar	2	NP
2	Yes	40 ml - VOA	1	MeOH
3	Yes	4 oz Soil Jar	2	NP
3	Yes	40 ml - VOA	1	MeOH

Completed By: _____

Date/Time: 8/19/14 1718

Reviewed By: _____

Date/Time: 8/19/14 1732

ESS Laboratory

Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston, RI 02910-2211
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

CHAIN OF CUSTODY

Page 1 of 1

Turn Time If faster than 5 days, prior approval by laboratory is required # _____ State where samples were collected from: (MA) RI CT NH NJ NY ME Other _____ Is this project for any of the following: USACE Navy Other _____ MA-MCP				Reporting Limits com 97 / mcl 5-1 Electronic Deliverable Yes ☒ No ☐ Format: Excel ☒ Access ☐ PDF ☒ Other _____		ESS LAB PROJECT ID 1408387	
Co. Name PEER Consultants		Project # 5559		Project Name (20 Char. or less) Union Square		Write Required Analysis	
Contact Person Dave Gorden		Address 99 S. Bedford St Suite 200		Number of Containers		Type of Containers	
City Burlington MA		State MA		Zip 01803		PO# 5559	
Telephone # 7812388800		Fax # 7812388884		Email Address gorden@peerpc.com		Code Pres	
ESS LAB Sample #		Collection Time		Sample Identification (20 Char. or less)		Code Pres	
Date		COMP		GRAB		MATRIX	
1 8/18/14 1151		VS		PB1 6.5-8.5'		6/9 4 6N	
2 8/18/14 1329		S		PB1 0.5-12.5'		6/11 3 6N	
3 8/19/14 1048		S		PB3 1-13'		6/11 3 6N	
8/19/14		S		(Signature)		(Signature)	
Container Type: P-Poly G-Glass S-Sterile V-VOA Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters							
Cooler Present Yes ☒ No ☐		Internal Use Only		Preservation Code 1- NP; 2- HCl; 3- H ₂ SO ₄ ; 4- HNO ₃ ; 5- NaOH; 6- MeOH; 7- Asorbic Acid; 8- Zn Act; 9-		Seals Intact Yes ☒ No ☐	
Cooler Temp: 1.8		(Signature)		(Signature)		(Signature)	
Relinquished by: (Signature)		Date/Time 8/19/14 1205		Relinquished by: (Signature)		Date/Time 8/19/14 1205	
Relinquished by: (Signature)		Date/Time 8/19/14 1205		Relinquished by: (Signature)		Date/Time 8/19/14 1205	

*By circling MA-MCP, client acknowledges samples were collected in accordance with MADEP CAM VII A

Please fax all changes to Chain of Custody in writing.

1 (White) Lab Copy 2 (Yellow) Client Receipt 10/26/04 A

Limited Groundwater Sampling Investigation

Union Square Utilities and Roadway Improvements Project
Washington Street and Somerville Avenue
Somerville, Massachusetts

January 12, 2015

PEER Project No. 5559



Prepared for:

City of Somerville
Somerville, Massachusetts

Prepared through:

Parsons Brinckerhoff
Boston, Massachusetts

Prepared by:

PEER Consultants, P.C.
Burlington, Massachusetts



Est. 1978

99 South Bedford Street, Suite 200 • Burlington, MA 01803
Phone: 781-238-8880 • Fax: 781-238-8884

Engineers • Scientists • Planners

January 12, 2015

Parsons Brinckerhoff
75 Arlington Street
Boston, MA 02116

Attn: Ms. Rachel Burckhardt

Re: Limited Groundwater Sampling Investigation
Union Square Utilities and Roadway Improvements Project
Washington Street and Somerville Avenue
Somerville, Middlesex County, Massachusetts
PEER Project No. 5559

Dear Ms. Burckhardt:

PEER Consultants, P.C. (PEER) is pleased to submit our report of Limited Groundwater Sampling Investigation (LGSi) activities completed at the site referenced above. The report presents data from field activities that included the environmental sampling of three groundwater monitoring wells for chemical analysis. The activities were completed to pre-characterize the groundwater within the Union Square area as part of the Union Square Utilities and Roadway Improvements Project.

PEER appreciates this opportunity to provide environmental support services to Parsons Brinckerhoff. Should you have any questions or require additional information, please do not hesitate to contact our office.

Sincerely,
PEER Consultants, P.C.

David Gorden, CPSS | CWS
Environmental Scientist

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APPENDIX B

Analytical Summary Tables

APPENDIX C

Analytical Report and Chain of Custody

ACKNOWLEDGEMENTS

This report to the City of Somerville has been prepared by PEER Consultants P.C. for Parsons Brinckerhoff. Parsons Brinckerhoff is the lead firm of the Union Square Utilities and Roadway Improvements Project. This report has been prepared by Mr. David Gorden, who serves as the PEER Project Manager for the project. This report has been reviewed by Mr. Kenneth Menzies, Licensed Site Professional.

LIMITED GROUNDWATER SAMPLING INVESTIGATION UNION SQUARE UTILITIES & ROADWAY IMPROVEMENTS PROJECT SOMERVILLE, MASSACHUSETTS

PEER Project No. 5559

January 12, 2015

1.0 INTRODUCTION

The site location is depicted on Figure 1 within Appendix A, which was reproduced from a portion of the Boston North, Massachusetts USGS 7.5-minute series topographic map. The Union Square Utilities & Roadway Improvements project area is centered on Union Square and extends roughly in a narrow quadrilateral of 4,000 LF by 400 LF (Figure 1). The corridor is bounded on the east and west by McGrath Highway and Dane Street, respectively. The approximately linear corridor is centered on Somerville Avenue. The main utility corridor extends along Somerville Avenue from Webster Street to Medford Street on the eastern half of the project area.

PEER previously performed a Limited Environmental Site Analysis of the property for Parsons Brinckerhoff (PB) (Project No. 5559, report dated November 15, 2013). Based on the findings of this limited analysis, PEER concluded that during any Phase II investigation, it may be appropriate to collect and analyze soil samples along utility line sections which are likely to be replaced, and which are within 0.25 miles of sources that are ranked as a High Potential for Impact. PEER completed this soil investigation, and provided the information to PB as part of a Limited Soil Sampling Investigation (LSSI) report, dated December 9, 2014. During the soil investigation, PB installed three groundwater monitoring wells across the study area. PB requested that PEER sample these groundwater monitoring wells for chemical constituents, and on December 15, 2014, PEER conducted this groundwater monitoring well sampling task.

2.0 APPROACH

PEER's Limited Groundwater Sampling Investigation (LGSI) was undertaken in response to the findings in the limited ESA and the findings in the LSSI. The LGSI was conducted to assess for potential contaminants in groundwater that may impact the Union Square Utilities and Roadway Improvements Project and may necessitate the need to pre-characterize groundwater that may be affected by or require pumping as a result of proposed project activities. The approach was not intended to identify every chemical possibly associated with the project site. In addition, groundwater monitoring well installation locations, from which PEER collected environmental samples, were pre-selected by PB in advance to gauge groundwater level, and may not represent groundwater conditions within the entire utility corridor.

Limited Groundwater Sampling Investigation

Union Square ■ Somerville, Massachusetts

January 12, 2015 ■ PEER Project No. 5559



PEER conducted the fieldwork under a soil and groundwater sampling plan proposal developed for this project. Work was performed using United States Environmental Protection Agency (USEPA) modified Level D work attire.

On December 15, 2014, PEER collected environmental groundwater samples from three groundwater monitoring well locations from within this corridor. Monitoring wells were developed by using a bailer to purge the monitoring wells of three times the well volume, before grab groundwater samples were collected.

Upon removal of the bailer from the monitoring well, PEER poured the groundwater from the bailer into laboratory-provided containers. PEER then recorded the sample time on each container label in permanent ink and placed the filled containers in an ice-filled cooler for transport to ESS Laboratory, a National Environmental Laboratory Accreditation Conference laboratory, in Cranston, Rhode Island.

PEER submitted the following samples for laboratory analysis:

- Groundwater samples PB-5, PB-3, and PB-1 were submitted for laboratory analysis for volatile organic compounds (VOCs) by EPA Method 8260B (extraction method 5030B), polychlorinated biphenyls (PCBs) by EPA Method 8082A (extraction method 3510C), semivolatile organic compounds (SVOCs) by EPA Method 8270C (extraction method 3520C) and EPA Method 8270D(SIM) (extraction method 3510C), extractable petroleum hydrocarbons (EPH) by MADEP Methods and EPH8270SIM Methods (extraction method 3510C), volatile petroleum hydrocarbons (VPH) by MADEP Methods (extraction method 5030B), and dissolved metals by EPA Method 6010C, 7010, or 7470A (extraction method 3005A).

Groundwater samples for dissolved metals were collected unpreserved, and were filtered at ESS laboratory. According to the laboratory, due to traffic delays, the dissolved metals sample for PB-5, was filtered 0.5 hours outside of the 24-hour holding time required by the analytical method. As the analytical results for dissolved metals in all three groundwater samples analyzed were very similar, this exceedance of holding time is not considered significant to the quality of the dissolved metals data for PB-5. Holding times for the other two samples were not exceeded for dissolved metals.

2.1 Limitations

PEER's services were performed in a manner consistent with generally accepted practices of the profession undertaken in similar studies in the same geographical area during the same time. PEER makes no warranties, either express or implied, regarding the findings, conclusions,

Limited Groundwater Sampling Investigation

Union Square ■ Somerville, Massachusetts

January 12, 2015 ■ PEER Project No. 5559



or recommendations. Please note that PEER does not warrant the work of laboratories, regulatory agencies, or other third parties supplying information used in the preparation of the report. These LSSI services were performed in accordance with the scope of work agreed with you, our client, as reflected in our proposal and were not restricted by ASTM E1903-11.

Findings, conclusions, and recommendations resulting from these services are based upon information derived from the on-site activities and other services performed under this scope of work; such information is subject to change over time. Certain indicators of the presence of hazardous substances, petroleum products, or other constituents may have been latent, inaccessible, unobservable, non-detectable, or not present during these services. We cannot represent that the site contains no hazardous substances, toxic materials, petroleum products, or other latent conditions beyond those identified during this LGSI. Subsurface conditions may vary from those encountered at specific locations during surveys, tests, assessments, investigations, or exploratory services. The data, interpretations, findings, and our recommendations are based solely upon data obtained at the time and within the scope of these services.

3.0 FINDINGS

3.1 Geology/Hydrogeology

In general, as described in the LSSI report, surface soil types were consistent with urban fill, soils that have been excavated or filled by anthropogenic means. The following field textural analysis and groundwater depths were as determined by PB during the LSSI. The following information was updated based on the groundwater monitoring well sampling for the three groundwater monitoring wells:

- PB-1; sand and gravel to sand to clay to an end of boring depth of 27 feet.
 - Groundwater encountered at 12.9 feet below ground surface during LSSI.
 - Groundwater measured at 11.8 feet below ground surface during LGSI.
- PB-3; sand to gravel to clay at depths to an end of boring depth of 27 feet.
 - Groundwater encountered at 9 feet below ground surface during LSSI
 - Groundwater measured at 8 feet below ground surface during LGSI.
- PB-5; sand to sand and silt to clay to an end of boring depth of 32 feet.
 - Groundwater encountered at 9 feet below ground surface during LSSI.
 - Groundwater measured at 8 feet below ground surface during LGSI.

3.2 Analytical Results

For the purpose of determining whether a notification obligation exists under 310 CMR 40.0315, measured dissolved concentrations of any oil or hazardous material listed at 310 CMR 40.1600 shall be compared to the Reportable Concentration (RC) value in the reporting category that best characterizes the site under evaluation, as described below:



(a) Reporting Category RCGW-1. Reporting category RCGW-1 shall be applied to all groundwater samples obtained:

1. within a Current Drinking Water Source Area; or
2. within a Potential Drinking Water Source Area.

(b) Reporting Category RCGW-2. Reporting category RCGW-2 shall be applied to all groundwater samples that are not obtained from category RCGW-1 areas.

For the purpose of this investigation, since groundwater samples were obtained from areas not within a current or potential drinking water source area, they were compared to Massachusetts Contingency Plan RC GW-2 criteria.

A summary of the laboratory analytical data is presented in Appendix B and the full laboratory analytical report and chain-of-custody record are attached in Appendix C. The following sections describe the results of the groundwater testing.

3.2.1 Groundwater Sample Results

VOCs were not detected in groundwater samples from PB-5 and PB-3. However, groundwater samples from PB-1 had detectable concentrations of cis-1,2-dichloroethene [6.8 micrograms per Liter (ug/L)], tetrachloroethene (72.8 ug/L), and trichloroethene (11.4 ug/L). The method reporting limits (MRLs) were all less than the RC values for GW-2 groundwater.

PCB concentrations were not detected in any of the groundwater samples analyzed as part of this project. The MRLs were all less than the RC values for GW-2 groundwater.

SVOC concentrations were not detected in any of the groundwater samples analyzed as part of this project. The MRLs were all less than the RC values for GW-2 groundwater.

EPH concentrations were not detected in any of the groundwater samples analyzed as part of this project. The MRLs were all less than the RC values for GW-2 groundwater.

VPH concentrations were not detected in any of the groundwater samples analyzed as part of this project. The MRLs were all less than the RC values for GW-2 groundwater.

Dissolved metal concentrations were not detected in the groundwater sample from PB-1, analyzed as part of this project. Barium was the only metal detected in groundwater sample PB-5 (172 ug/L) and PB-3 (230 ug/L). The MRLs were all less than the RC values for GW-2 groundwater.



3.2.2 Groundwater Reportable Concentration Parameters Sample Results

For the purpose of this investigation, since groundwater samples were obtained from areas not within a current or potential drinking water source area, the analytical results were compared to MCP RC GW-2 criteria.

For this project, groundwater samples were collected from flush-mounted groundwater monitoring wells located within the pavement of the public way, and the MCP reporting category RCGW-2 is used for comparison purposes. Of the analytes sampled within the three groundwater monitoring well sample locations, only two compounds, tetrachloroethene (72.8 ug/L) and trichloroethene (11.4 ug/L), in PB-1, were detected at a concentration equal to or above the RCGW-2 RC of 50 ug/L and 5 ug/L, respectively.

Two properties along the corridor and upgradient to PB-1 are listed on environmental database reports for concerns related to historical cleaners. Specifically, Davidson Laundry (10 Bow Street) and Andrades Cleaning & Maintenance (22 Bow Street) are listed in the historical cleaners EDR database. Tetrachloroethene, a typical solvent used by cleaners, was identified in monitoring well PB-1, downgradient of the listed facility. Trichloroethene and cis-1,2-dichloroethene, also identified in groundwater samples from PB-1 are typical chemical breakdown products of tetrachloroethene.

4.0 CONCLUSIONS

Based on the approach described in this report and subject to the limitations described herein, PEER concludes the following.

- None of the concentrations of contaminants analyzed as part of this investigation in the groundwater for samples PB-5, PB-3, and PB-1 exceeded MCP RC for reporting category RCGW-2, except for tetrachloroethene (72.8 ug/L) and trichloroethene (11.4 ug/L), in PB-1. These contaminants were detected at a concentration equal to or above the RCGW-2 RC of 50 ug/L and 5 ug/L, respectively.
- Two properties along the corridor and upgradient to PB-1 are listed on environmental database reports for concerns related to historical cleaners. Specifically, Davidson Laundry (10 Bow Street) and Andrades Cleaning & Maintenance (22 Bow Street) are listed in the historical cleaners EDR database.
- Tetrachloroethene, a typical solvent used by cleaners, was identified in monitoring well PB-1, downgradient of the listed facility. Trichloroethene and cis-1,2-dichloroethene, also identified in groundwater samples from PB-1 are typical chemical breakdown products of tetrachloroethene.



5.0 DISCUSSION

Based on the results of the groundwater sampling activities, it appears that most groundwater, if encountered during the proposed project, may be managed on site. However, some groundwater with a contaminant concentration greater than or equal to the RC for reporting category RCGW-2 may be found and need to be treated and managed on-site or removed off-site for proper disposal.

Therefore, if the proposed work generates a need to manage groundwater within the excavation, PEER suggests obtaining pre-characterization approvals from a Massachusetts licensed treatment facility/waste hauler, prior to disposal of construction media. This may necessitate the installation of additional groundwater monitoring wells along the corridor, or may require City and State permit approvals to discharge groundwater into the sanitary or sewer system, or may require the on-site placement of holding tanks, in order to manage and treat groundwater prior to discharge, either on-site or off site.

This limited groundwater sampling program does not represent conditions along the entire construction corridor. It's likely that other areas within the corridor that are near known (or unknown) release sites may have elevated levels of contaminants. PEER recommends providing MADEP a Downgradient Property Status (DPS) Submittal for this release at PB-1. The DPS submittal is for properties that have been affected by contamination from an upgradient or upstream source and may not be able to meet the requirements of the MCP because they do not control the source of contamination.

In addition, PEER recommends that an environmental monitor be present during the Union Square Utilities & Roadway Improvements project in order to monitor and assist with groundwater (and soil) management during construction activities.

In summary, limited pre-characterization groundwater sampling has been completed for the proposed Union Square Utilities & Roadway Improvements project. Should excavations involve areas in or beneath the groundwater table, groundwater may need to be managed through groundwater management plan. In addition, as this was a limited groundwater sampling event, additional groundwater characterization may be required.

APPENDIX A
FIGURE 1 – USGS TOPOGRAPHIC MAP

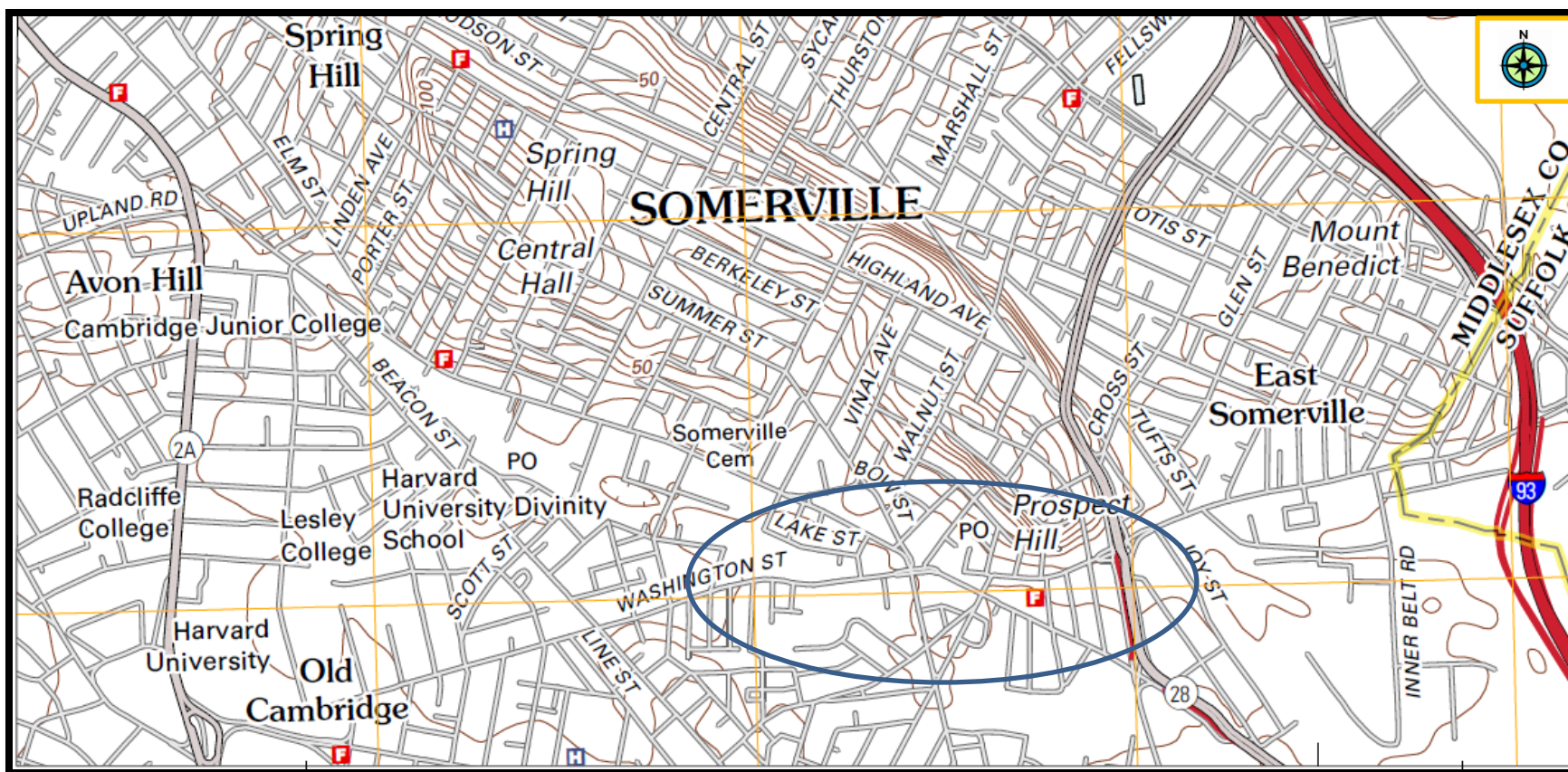


Figure 1 – USGS Topographic Map

Boston North, MA (2012), 1:24,000

Union Square

Somerville, Massachusetts

APPENDIX B
ANALYTICAL SUMMARY TABLES

Table 1
Volatile Organic Compounds
Union Square - Somerville, MA

Client Sample No.				PB5		PB3		PB1	
Sample Date				12/15/2014		12/15/2014		12/15/2014	
Lab Sample ID	2014-RCGW1	2014-RCGW2	Units	1412310-01		1412310-02		1412310-03	

8260B VOCs									
1,1,1,2-Tetrachloroethane	5	10	ug/L	1	U	1	U	1	U
1,1,1-Trichloroethane	200	4,000	ug/L	1	U	1	U	1	U
1,1,2,2-Tetrachloroethane	2	9	ug/L	0.5	U	0.5	U	0.5	U
1,1,2-Trichloroethane	5	900	ug/L	1	U	1	U	1	U
1,1-Dichloroethane	70	2,000	ug/L	1	U	1	U	1	U
1,1-Dichloroethene	7	80	ug/L	1	U	1	U	1	U
1,1-Dichloropropene	NA	NA	ug/L	2	U	2	U	2	U
1,2,3-Trichlorobenzene	NA	NA	ug/L	1	U	1	U	1	U
1,2,3-Trichloropropane	1,000	10,000	ug/L	1	U	1	U	1	U
1,2,4-Trichlorobenzene	70	200	ug/L	1	U	1	U	1	U
1,2,4-Trimethylbenzene	10,000	100,000	ug/L	1	U	1	U	1	U
1,2-Dibromo-3-Chloropropane	100	1,000	ug/L	5	U	5	U	5	U
1,2-Dibromoethane	0.02	2	ug/L	1 *	U	1 *	U	1 *	U
1,2-Dichlorobenzene	600	2,000	ug/L	1	U	1	U	1	U
1,2-Dichloroethane	5	5	ug/L	1	U	1	U	1	U
1,2-Dichloropropane	3	3	ug/L	1	U	1	U	1	U
1,3,5-Trimethylbenzene	100	1,000	ug/L	1	U	1	U	1	U
1,3-Dichlorobenzene	100	6,000	ug/L	1	U	1	U	1	U
1,3-Dichloropropane	5,000	50,000	ug/L	1	U	1	U	1	U
1,4-Dichlorobenzene	5	60	ug/L	1	U	1	U	1	U
1,4-Dioxane - Screen	0.3	6,000	ug/L	500 *	U	500 *	U	500 *	U
2,2-Dichloropropane	NA	NA	ug/L	1	U	1	U	1	U
2-Butanone	4,000	50,000	ug/L	10	U	10	U	10	U
2-Chlorotoluene	1,000	10,000	ug/L	1	U	1	U	1	U
2-Hexanone	1,000	10,000	ug/L	10	U	10	U	10	U
4-Chlorotoluene	NA	NA	ug/L	1	U	1	U	1	U
4-Isopropyltoluene	200	7,000	ug/L	1	U	1	U	1	U
4-Methyl-2-Pentanone	350	50,000	ug/L	10	U	10	U	10	U
Acetone	6,300	50,000	ug/L	10	U	10	U	10	U
Benzene	5	1,000	ug/L	1	U	1	U	1	U
Bromobenzene	1,000	10,000	ug/L	2	U	2	U	2	U
Bromochloromethane	NA	NA	ug/L	1	U	1	U	1	U
Bromodichloromethane	3	6	ug/L	0.6	U	0.6	U	0.6	U
Bromoform	4	700	ug/L	1	U	1	U	1	U
Bromomethane	7	7	ug/L	2	U	2	U	2	U
Carbon Disulfide	1,000	10,000	ug/L	1	U	1	U	1	U
Carbon Tetrachloride	2	2	ug/L	1	U	1	U	1	U
Chlorobenzene	100	200	ug/L	1	U	1	U	1	U
Chloroethane	1,000	10,000	ug/L	2	U	2	U	2	U
Chloroform	50	50	ug/L	1	U	1	U	1	U
Chloromethane	1,000	10,000	ug/L	2	U	2	U	2	U
cis-1,2-Dichloroethene	20	20	ug/L	1	U	1	U	6.8	
cis-1,3-Dichloropropene	0.4	10	ug/L	0.4	U	0.4	U	0.4	U
Dibromochloromethane	2	20	ug/L	1	U	1	U	1	U
Dibromomethane	5,000	50,000	ug/L	1	U	1	U	1	U
Dichlorodifluoromethane	10,000	100,000	ug/L	2	U	2	U	2	U
Diethyl Ether	1,000	10,000	ug/L	1	U	1	U	1	U
Di-isopropyl ether	1,000	10,000	ug/L	1	U	1	U	1	U

Table 1
Volatile Organic Compounds
Union Square - Somerville, MA

Client Sample No.				PB5	PB3	PB1
Sample Date				12/15/2014	12/15/2014	12/15/2014
Lab Sample ID	2014-RCGW1	2014-RCGW2	Units	1412310-01	1412310-02	1412310-03

8260B VOCs									
Ethyl tertiary-butyl ether	NA	NA	ug/L	1	U	1	U	1	U
Ethylbenzene	700	5,000	ug/L	1	U	1	U	1	U
Hexachlorobutadiene	0.6	50	ug/L	0.6	U	0.6	U	0.6	U
Hexachloroethane	8	100	ug/L	1	U	1	U	1	U
Isopropylbenzene	10,000	100,000	ug/L	1	U	1	U	1	U
Methyl tert-Butyl Ether	70	5,000	ug/L	1	U	1	U	1	U
Methylene Chloride	5	2,000	ug/L	2	U	2	U	2	U
Naphthalene	140	700	ug/L	1	U	1	U	1	U
n-Butylbenzene	200	7,000	ug/L	1	U	1	U	1	U
n-Propylbenzene	1,000	10,000	ug/L	1	U	1	U	1	U
sec-Butylbenzene	200	7,000	ug/L	1	U	1	U	1	U
Styrene	100	100	ug/L	1	U	1	U	1	U
tert-Butylbenzene	1,000	10,000	ug/L	1	U	1	U	1	U
Tertiary-amyl methyl ether	NA	NA	ug/L	1	U	1	U	1	U
Tetrachloroethene	5	50	ug/L	1	U	1	U	72.8	
Tetrahydrofuran	5,000	50,000	ug/L	5	U	5	U	5	U
Toluene	1,000	40,000	ug/L	1	U	1	U	1	U
trans-1,2-Dichloroethene	80	80	ug/L	1	U	1	U	1	U
trans-1,3-Dichloropropene	0.4	10	ug/L	0.4	U	0.4	U	0.4	U
Trichloroethene	5	5	ug/L	1	U	1	U	11.4	
Trichlorofluoromethane	10,000	100,000	ug/L	1	U	1	U	1	U
Vinyl Chloride	2	2	ug/L	1	U	1	U	1	U
Xylene O	3,000	3,000	ug/L	1	U	1	U	1	U
Xylene P,M	3,000	3,000	ug/L	2	U	2	U	2	U
Xylenes (Total)	3,000	3,000	ug/L	2	U	2	U	2	U

U = Analyte included in the analysis, but not detected

* = The method requested for this analysis does not meet criteria for all compounds.
The compound is undetected, however, the MRL is greater than the State limit.

Table 2
Polychlorinated Biphenyls
Union Square - Somerville, MA

Client Sample No.					PB5		PB3		PB1	
Sample Date					12/15/2014		12/15/2014		12/15/2014	
Lab Sample ID	2014-RCGW1	2014-RCGW2	Units		1412310-01		1412310-02		1412310-03	

8082A PCBs										
Aroclor 1016	0.5	5	ug/L		0.1	U	0.1	U	0.1	U
Aroclor 1221	0.5	5	ug/L		0.1	U	0.1	U	0.1	U
Aroclor 1232	0.5	5	ug/L		0.1	U	0.1	U	0.1	U
Aroclor 1242	0.5	5	ug/L		0.1	U	0.1	U	0.1	U
Aroclor 1248	0.5	5	ug/L		0.1	U	0.1	U	0.1	U
Aroclor 1254	0.5	5	ug/L		0.1	U	0.1	U	0.1	U
Aroclor 1260	0.5	5	ug/L		0.1	U	0.1	U	0.1	U
Aroclor 1262	0.5	5	ug/L		0.1	U	0.1	U	0.1	U
Aroclor 1268	0.5	5	ug/L		0.1	U	0.1	U	0.1	U

U = Analyte included in the analysis, but not detected

Table 3
Semi-volatile Organic Compounds
Union Square - Somerville, MA

Client Sample No.				PB5		PB3		PB1	
Sample Date				12/15/2014		12/15/2014		12/15/2014	
Lab Sample ID	2014-RCGW1	2014-RCGW2	Units	1412310-01		1412310-02		1412310-03	

8270C SVOCs									
1,2,4-Trichlorobenzene	70	200	ug/L	9.6	U	10	U	9.6	U
1,2-Dichlorobenzene	600	2,000	ug/L	9.6	U	10	U	9.6	U
1,3-Dichlorobenzene	100	6,000	ug/L	9.6	U	10	U	9.6	U
1,4-Dichlorobenzene	5	60	ug/L	9.6 *	U	10 *	U	9.6 *	U
2,4,5-Trichlorophenol	200	3,000	ug/L	9.6	U	10	U	9.6	U
2,4,6-Trichlorophenol	10	500	ug/L	9.6	U	10	U	9.6	U
2,4-Dichlorophenol	10	2,000	ug/L	9.6	U	10	U	9.6	U
2,4-Dimethylphenol	60	40,000	ug/L	48.1	U	50	U	48.1	U
2,4-Dinitrophenol	200	20,000	ug/L	48.1	U	50	U	48.1	U
2,4-Dinitrotoluene	30	20,000	ug/L	9.6	U	10	U	9.6	U
2,6-Dinitrotoluene	1,000	10,000	ug/L	9.6	U	10	U	9.6	U
2-Chloronaphthalene	10,000	100,000	ug/L	9.6	U	10	U	9.6	U
2-Chlorophenol	10	7,000	ug/L	9.6	U	10	U	9.6	U
2-Methylphenol	5,000	50,000	ug/L	9.6	U	10	U	9.6	U
2-Nitrophenol	1,000	10,000	ug/L	9.6	U	10	U	9.6	U
3,3'-Dichlorobenzidine	80	2,000	ug/L	19.2	U	20	U	19.2	U
3+4-Methylphenol	5,000	50,000	ug/L	19.2	U	20	U	19.2	U
4-Bromophenyl-phenylether	1,000	10,000	ug/L	9.6	U	10	U	9.6	U
4-Chloroaniline	20	300	ug/L	19.2	U	20	U	19.2	U
4-Nitrophenol	1,000	10,000	ug/L	48.1	U	50	U	48.1	U
Acetophenone	10,000	100,000	ug/L	9.6	U	10	U	9.6	U
Aniline	10,000	100,000	ug/L	9.6	U	10	U	9.6	U
Azobenzene	500	5,000	ug/L	19.2	U	20	U	19.2	U
bis(2-Chloroethoxy)methane	5,000	50,000	ug/L	9.6	U	10	U	9.6	U
bis(2-Chloroethyl)ether	30	30	ug/L	9.6	U	10	U	9.6	U
bis(2-chloroisopropyl)Ether	30	100	ug/L	9.6	U	10	U	9.6	U
bis(2-Ethylhexyl)phthalate	6	50,000	ug/L	5.8	U	6	U	5.8	U
Butylbenzylphthalate	1,000	10,000	ug/L	9.6	U	10	U	9.6	U
Dibenzofuran	1,000	10,000	ug/L	9.6	U	10	U	9.6	U
Diethylphthalate	2,000	9,000	ug/L	9.6	U	10	U	9.6	U
Dimethylphthalate	300	50,000	ug/L	9.6	U	10	U	9.6	U
Di-n-butylphthalate	500	5,000	ug/L	9.6	U	10	U	9.6	U
Di-n-octylphthalate	10,000	100,000	ug/L	9.6	U	10	U	9.6	U
Hexachlorobutadiene	0.6	50	ug/L	9.6 *	U	10 *	U	9.6 *	U
Hexachloroethane	8	100	ug/L	4.8	U	5	U	4.8	U
Isophorone	1,000	10,000	ug/L	9.6	U	10	U	9.6	U
Nitrobenzene	5,000	50,000	ug/L	9.6	U	10	U	9.6	U
N-Nitrosodimethylamine	500	5,000	ug/L	9.6	U	10	U	9.6	U
Phenol	1,000	2,000	ug/L	9.6	U	10	U	9.6	U

8270D(SIM) SVOCs									
2-Methylnaphthalene	10	2,000	ug/L	0.2	U	0.2	U	0.2	U
Acenaphthene	20	6,000	ug/L	0.2	U	0.2	U	0.2	U
Acenaphthylene	30	40	ug/L	0.2	U	0.2	U	0.2	U
Anthracene	30	30	ug/L	0.2	U	0.2	U	0.2	U
Benzo(a)anthracene	1	1,000	ug/L	0.05	U	0.05	U	0.05	U
Benzo(a)pyrene	0.2	500	ug/L	0.05	U	0.05	U	0.05	U
Benzo(b)fluoranthene	1	400	ug/L	0.05	U	0.05	U	0.05	U

Table 3
Semi-volatile Organic Compounds
Union Square - Somerville, MA

Client Sample No.				PB5	PB3	PB1
Sample Date				12/15/2014	12/15/2014	12/15/2014
Lab Sample ID	2014-RCGW1	2014-RCGW2	Units	1412310-01	1412310-02	1412310-03

8270D(SIM) SVOCs									
Benzo(g,h,i)perylene	20	20	ug/L	0.2	U	0.2	U	0.2	U
Benzo(k)fluoranthene	1	100	ug/L	0.05	U	0.05	U	0.05	U
Chrysene	2	70	ug/L	0.05	U	0.05	U	0.05	U
Dibenzo(a,h)Anthracene	0.5	40	ug/L	0.05	U	0.05	U	0.05	U
Fluoranthene	90	200	ug/L	0.2	U	0.2	U	0.2	U
Fluorene	30	40	ug/L	0.2	U	0.2	U	0.2	U
Hexachlorobenzene	1	1	ug/L	0.2	U	0.2	U	0.2	U
Indeno(1,2,3-cd)Pyrene	0.5	100	ug/L	0.05	U	0.05	U	0.05	U
Naphthalene	140	700	ug/L	0.2	U	0.2	U	0.2	U
Pentachlorophenol	1	200	ug/L	0.9	U	0.9	U	0.9	U
Phenanthrene	40	10,000	ug/L	0.2	U	0.2	U	0.2	U
Pyrene	20	20	ug/L	0.2	U	0.2	U	0.2	U

U = Analyte included in the analysis, but not detected

* = The method requested for this analysis does not meet criteria for all compounds.
The compound is undetected, however, the MRL is greater than the State limit.

Table 4
Extractable Petroleum Hydrocarbons / Volatile Petroleum Hydrocarbons
Union Square - Somerville, MA

Client Sample No.				PB5		PB3		PB1	
Sample Date				12/15/2014		12/15/2014		12/15/2014	
Lab Sample ID	2014-RCGW1	2014-RCGW2	Units	1412310-01		1412310-02		1412310-03	

MADEP-EPH									
2-Methylnaphthalene	10	2,000	ug/L	0.49	U	0.5	U	0.53	U
Acenaphthene	20	6,000	ug/L	0.19	U	0.2	U	0.21	U
Acenaphthylene	30	40	ug/L	0.19	U	0.2	U	0.21	U
Anthracene	30	30	ug/L	0.19	U	0.2	U	0.21	U
Benzo(a)anthracene	1	1,000	ug/L	0.19	U	0.2	U	0.21	U
Benzo(a)pyrene	0.2	500	ug/L	0.1	U	0.1	U	0.11	U
Benzo(b)fluoranthene	1	400	ug/L	0.19	U	0.2	U	0.21	U
Benzo(g,h,i)perylene	20	20	ug/L	0.19	U	0.2	U	0.21	U
Benzo(k)fluoranthene	1	100	ug/L	0.19	U	0.2	U	0.21	U
C11-C22 Aromatics1,2	200	5,000	ug/L	98	U	99	U	105	U
C11-C22 Unadjusted Aromatics1	200	5,000	ug/L	98	U	99	U	105	U
C19-C36 Aliphatics1	14,000	50,000	ug/L	98	U	99	U	105	U
C9-C18 Aliphatics1	700	5,000	ug/L	98	U	99	U	105	U
Chrysene	2	70	ug/L	0.19	U	0.2	U	0.21	U
Dibenzo(a,h)Anthracene	0.5	40	ug/L	0.19	U	0.2	U	0.21	U
Fluoranthene	90	200	ug/L	0.19	U	0.2	U	0.21	U
Fluorene	30	40	ug/L	0.19	U	0.2	U	0.21	U
Indeno(1,2,3-cd)Pyrene	0.5	100	ug/L	0.19	U	0.2	U	0.21	U
Naphthalene	140	700	ug/L	0.49	U	0.5	U	0.53	U
Phenanthrene	40	10,000	ug/L	0.49	U	0.5	U	0.53	U
Pyrene	20	20	ug/L	0.19	U	0.2	U	0.21	U

MADEP-VPH									
Benzene	5	1,000	ug/L	1.5	U	1.5	U	1.5	U
C5-C8 Aliphatics1,2	300	3,000	ug/L	150	U	150	U	150	U
C9-C10 Aromatics	200	4,000	ug/L	100	U	100	U	100	U
C9-C12 Aliphatics2,3	700	5,000	ug/L	150	U	150	U	150	U
Ethylbenzene	700	5,000	ug/L	5	U	5	U	5	U
Methyl tert-Butyl Ether	70	5,000	ug/L	1.5	U	1.5	U	1.5	U
Naphthalene	140	700	ug/L	5	U	5	U	5	U
Toluene	1,000	40,000	ug/L	5	U	5	U	5	U
Xylene O	3,000	3,000	ug/L	5	U	5	U	5	U
Xylene P,M	3,000	3,000	ug/L	10	U	10	U	10	U

U = Analyte included in the analysis, but not detected

Table 5
Dissolved Metals
Union Square - Somerville, MA

Client Sample No.					PB5		PB3		PB1	
Sample Date					12/15/2014		12/15/2014		12/15/2014	
Lab Sample ID	2014-RCGW1	2014-RCGW2	Units		1412310-01		1412310-02		1412310-03	

Dissolved Metals										
Arsenic	10	900	ug/L		2.5	U	2.5	U	2.5	U
Barium	2,000	50,000	ug/L		172		230		25	U
Cadmium	4	4	ug/L		2.5	U	2.5	U	2.5	U
Chromium	100	300	ug/L		10	U	10	U	10	U
Lead	10	10	ug/L		5	U, D	10	U	2.5	U
Mercury	2	20	ug/L		0.2	U	0.2	U	0.2	U
Selenium	50	100	ug/L		5	U	5	U	5	U
Silver	7	7	ug/L		5	U	5	U	5	U

D = Sample was diluted in order to obtain a value within the calibration range.

U = Analyte included in the analysis, but not detected

APPENDIX C
ANALYTICAL REPORT AND CHAIN OF CUSTODY



CERTIFICATE OF ANALYSIS

David Gorden
PEER Consultants, P.C.
99 S. Bedford Street
Burlington, MA 01803

RE: Union Square (5559)
ESS Laboratory Work Order Number: 1412310

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

REVIEWED

By ESS Laboratory at 11:01 am, Dec 24, 2014

Analytical Summary

The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with NELAC Standards, A2LA and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1412310

SAMPLE RECEIPT

The following samples were received on December 16, 2014 for the analyses specified on the enclosed Chain of Custody Record.

To achieve CAM compliance for MCP data, ESS Laboratory has performed and reviewed all QA/QC Requirements and Performance Standards listed in each method. Holding times and preservation have also been reviewed. All CAM requirements have been achieved unless noted in the project narrative.

Each method has been set-up in the laboratory to reach required MCP standards. The methods for aqueous VOA and Soil Methanol VOA have known limitations for certain analytes. The regulatory standards may not be achieved due to these limitations. In addition, for all methods, matrix interferences, dilutions, and %Solids may elevate method reporting limits above regulatory standards. ESS Laboratory can provide, upon request, a Data Checker (regulatory standard comparison spreadsheet) electronic deliverable which will highlight these exceedances.

For EPH soil samples, the aromatic range results have been corrected for identified cartridge contaminant in accordance with the CAM protocol.

Question A : Sample 1412310-01 (PB5) was filtered for dissolved metals outside of the 24 hour HT by the laboratory.

Question I: All samples for Metals were analyzed for a subset of the required MCP list per the client's request.

<u>Lab Number</u>	<u>Sample Name</u>	<u>Matrix</u>	<u>Analysis</u>
1412310-01	PB5	Ground Water	6010C, 7010, 7470A, 8082A, 8260B, 8270C, 8270D SIM, EPH8270, EPH8270SIM, MADEP-EPH, MADEP-VPH
1412310-02	PB3	Ground Water	6010C, 7010, 7470A, 8082A, 8260B, 8270C, 8270D SIM, EPH8270, EPH8270SIM, MADEP-EPH, MADEP-VPH
1412310-03	PB1	Ground Water	6010C, 7010, 7470A, 8082A, 8260B, 8270C, 8270D SIM, EPH8270, EPH8270SIM, MADEP-EPH, MADEP-VPH



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1412310

PROJECT NARRATIVE

8270C Semi-Volatile Organic Compounds

CL41611-BSD1 Relative percent difference for duplicate is outside of criteria (D+).

N-Nitrosodimethylamine (30% @ 20%)

CXL0261-CCV1 Continuing Calibration recovery is above upper control limit (C+).

Di-n-octylphthalate (122% @ 80-120%)

8270D(SIM) Semi-Volatile Organic Compounds

1412310-01 Surrogate recovery(ies) above upper control limit (S+).

2,4,6-Tribromophenol (143% @ 15-110%)

CL41801-BS1 Surrogate recovery(ies) above upper control limit (S+).

2,4,6-Tribromophenol (116% @ 15-110%)

CXL0274-CCV1 Continuing Calibration recovery is above upper control limit (C+).

2,4,6-Tribromophenol (162% @ 70-130%), Hexachlorobenzene (157% @ 70-130%), Pentachlorophenol (144% @ 70-130%)

Dissolved Metals

CL41709-BSD1 Blank Spike recovery is below lower control limit (B-).

Silver (27% @ 80-120%)

CL41709-BSD1 Relative percent difference for duplicate is outside of criteria (D+).

Selenium (26% @ 20%), Silver (122% @ 20%)

MADEP-EPH Extractable Petroleum Hydrocarbons

1412310-01 Surrogate recovery(ies) outside of criteria. Reextraction/Reanalysis confirms results (SC).

1-Chlorooctadecane (22% @ 40-140%)

1412310-01RE1 Surrogate recovery(ies) outside of criteria. Reextraction/Reanalysis confirms results (SC).

1-Chlorooctadecane (28% @ 40-140%)

1412310-02 Surrogate recovery(ies) outside of criteria. Reextraction/Reanalysis confirms results (SC).

1-Chlorooctadecane (23% @ 40-140%)

1412310-02RE1 Surrogate recovery(ies) outside of criteria. Reextraction/Reanalysis confirms results (SC).

1-Chlorooctadecane (24% @ 40-140%)

CL41521-BSD1 Blank Spike recovery is below lower control limit (B-).

Decane (C10) (31% @ 40-140%), Dodecane (C12) (38% @ 40-140%), Nonane (C9) (24% @ 30-140%)

CL41521-BSD1 Relative percent difference for duplicate is outside of criteria (D+).

No other observations noted.

End of Project Narrative.



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1412310

DATA USABILITY LINKS

[Definitions of Quality Control Parameters](#)
[Semivolatile Organics Internal Standard Information](#)
[Semivolatile Organics Surrogate Information](#)
[Volatile Organics Internal Standard Information](#)
[Volatile Organics Surrogate Information](#)
[EPH and VPH Alkane Lists](#)

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

1010A - Flashpoint
6010C - ICP
6020A - ICP MS
7010 - Graphite Furnace
7196A - Hexavalent Chromium
7470A - Aqueous Mercury
7471B - Solid Mercury
8011 - EDB/DBCP/TCP
8015D - GRO/DRO
8081B - Pesticides
8082A - PCB
8100M - TPH
8151A - Herbicides
8260B - VOA
8270D - SVOA
8270D SIM - SVOA Low Level
9014 - Cyanide
9038 - Sulfate
9040C - Aqueous pH
9045D - Solid pH (Corrosivity)
9050A - Specific Conductance
9056A - Anions (IC)
9060A - TOC
9095B - Paint Filter
MADEP 04-1.1 - EPH / VPH

Prep Methods

3005A - Aqueous ICP and Graphite Furnace Digestion
3020A - Aqueous ICP MS Digestion
3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
3060A - Solid Hexavalent Chromium Digestion
3510C - Separatory Funnel Extraction
3520C - Liquid / Liquid Extraction
3540C - Manual Soxhlet Extraction
3541 - Automated Soxhlet Extraction
3546 - Microwave Extraction
3580A - Waste Dilution
5030B - Aqueous Purge and Trap
5030C - Aqueous Purge and Trap
5035 - Solid Purge and Trap



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1412310

MassDEP Analytical Protocol Certification Form

MADEP RTN: _____

This form provides certification for the following data set: **1412310-01 through 1412310-03**

Matrices: ☒ Ground Water/Surface Water () Soil/Sediment () Drinking Water () Air () Other: _____

CAM Protocol (check all that apply below):

☒ 8260 VOC CAM II A	☒ 7470/7471 Hg CAM III B	☒ MassDEP VPH CAM IV A	() 8081 Pesticides CAM V B	() 7196 Hex Cr CAM VI B	() MassDEP APH CAM IX A
☒ 8270 SVOC CAM II B	☒ 7010 Metals CAM III C	☒ MassDEP EPH CAM IV B	() 8151 Herbicides CAM V C	() 8330 Explosives CAM VIII A	() TO-15 VOC CAM IX B
☒ 6010 Metals CAM III A	() 6020 Metals CAM III D	☒ 8082 PCB CAM V A	() 6860 Perchlorate CAM VIII B	() 9014 Total Cyanide/PAC CAM VI A	

Affirmative responses to questions A through F are required for Presumptive Certainty's status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	Yes () No ☒
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	Yes ☒ No ()
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	Yes ☒ No ()
D	Does the laboratory report comply with all the reporting requirements specified in the CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	Yes ☒ No ()
E	a. VPH, EPH, APH and TO-15 only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	Yes ☒ No ()
	b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	Yes () No ()
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	Yes ☒ No ()

Responses to Questions G, H and I below are required for Presumptive Certainty's status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocols(s)? Data User Note: Data that achieve Presumptive Certainty's status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.	Yes ☒ No ()*
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	Yes () No ☒ *
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	Yes () No ☒ *

***All negative responses must be addressed in an attached laboratory narrative.**

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: Laurel Stoddard
Printed Name: Laurel Stoddard

Date: December 24, 2014
Position: Laboratory Director



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB5
Date Sampled: 12/15/14 10:00
Percent Solids: N/A

ESS Laboratory Work Order: 1412310
ESS Laboratory Sample ID: 1412310-01
Sample Matrix: Ground Water
Units: ug/L

Extraction Method: 3005A

Dissolved Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Arsenic	ND (2.5)		7010		1	KJK	12/17/14 22:39	50	25	CL41709
Barium	172 (25.0)		6010C		1	KJK	12/18/14 2:55	50	25	CL41709
Cadmium	ND (2.5)		6010C		1	KJK	12/18/14 2:55	50	25	CL41709
Chromium	ND (10.0)		6010C		1	KJK	12/18/14 2:55	50	25	CL41709
Lead	ND (5.0)		7010		2	KJK	12/19/14 18:17	50	25	CL41709
Mercury	ND (0.20)		7470A		1	BJV	12/18/14 13:22	20	40	CL41752
Selenium	ND (5.0)		7010		1	NAR	12/24/14 1:13	50	25	CL41709
Silver	ND (5.0)		6010C		1	KJK	12/18/14 2:55	50	25	CL41709



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB5
Date Sampled: 12/15/14 10:00
Percent Solids: N/A
Initial Volume: 1030
Final Volume: 1
Extraction Method: 3510C

ESS Laboratory Work Order: 1412310
ESS Laboratory Sample ID: 1412310-01
Sample Matrix: Ground Water
Units: ug/L
Analyst: TAJ
Prepared: 12/16/14 17:45
Cleanup Method: 3665A

8082A Polychlorinated Biphenyls (PCB)

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Aroclor 1016	ND (0.10)		8082A		1	12/17/14 20:54		CL41635
Aroclor 1221	ND (0.10)		8082A		1	12/17/14 20:54		CL41635
Aroclor 1232	ND (0.10)		8082A		1	12/17/14 20:54		CL41635
Aroclor 1242	ND (0.10)		8082A		1	12/17/14 20:54		CL41635
Aroclor 1248	ND (0.10)		8082A		1	12/17/14 20:54		CL41635
Aroclor 1254	ND (0.10)		8082A		1	12/17/14 20:54		CL41635
Aroclor 1260	ND (0.10)		8082A		1	12/17/14 20:54		CL41635
Aroclor 1262	ND (0.10)		8082A		1	12/17/14 20:54		CL41635
Aroclor 1268	ND (0.10)		8082A		1	12/17/14 20:54		CL41635

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: Decachlorobiphenyl</i>	72 %		30-150
<i>Surrogate: Decachlorobiphenyl [2C]</i>	66 %		30-150
<i>Surrogate: Tetrachloro-m-xylene</i>	85 %		30-150
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	93 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB5
Date Sampled: 12/15/14 10:00
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 1412310
ESS Laboratory Sample ID: 1412310-01
Sample Matrix: Ground Water
Units: ug/L
Analyst: MD

8260B Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1,2-Tetrachloroethane	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
1,1,1-Trichloroethane	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
1,1,2,2-Tetrachloroethane	ND (0.5)		8260B		1	12/23/14 12:26	CXL0348	CL42337
1,1,2-Trichloroethane	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
1,1-Dichloroethane	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
1,1-Dichloroethene	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
1,1-Dichloropropene	ND (2.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
1,2,3-Trichlorobenzene	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
1,2,3-Trichloropropane	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
1,2,4-Trichlorobenzene	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
1,2,4-Trimethylbenzene	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
1,2-Dibromo-3-Chloropropane	ND (5.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
1,2-Dibromoethane	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
1,2-Dichlorobenzene	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
1,2-Dichloroethane	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
1,2-Dichloropropane	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
1,3,5-Trimethylbenzene	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
1,3-Dichlorobenzene	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
1,3-Dichloropropane	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
1,4-Dichlorobenzene	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
1,4-Dioxane - Screen	ND (500)		8260B		1	12/23/14 12:26	CXL0348	CL42337
2,2-Dichloropropane	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
2-Butanone	ND (10.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
2-Chlorotoluene	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
2-Hexanone	ND (10.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
4-Chlorotoluene	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
4-Isopropyltoluene	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
4-Methyl-2-Pentanone	ND (10.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
Acetone	ND (10.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
Benzene	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
Bromobenzene	ND (2.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
Bromochloromethane	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB5
Date Sampled: 12/15/14 10:00
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 1412310
ESS Laboratory Sample ID: 1412310-01
Sample Matrix: Ground Water
Units: ug/L
Analyst: MD

8260B Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Bromodichloromethane	ND (0.6)		8260B		1	12/23/14 12:26	CXL0348	CL42337
Bromoform	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
Bromomethane	ND (2.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
Carbon Disulfide	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
Carbon Tetrachloride	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
Chlorobenzene	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
Chloroethane	ND (2.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
Chloroform	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
Chloromethane	ND (2.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
cis-1,2-Dichloroethene	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
cis-1,3-Dichloropropene	ND (0.4)		8260B		1	12/23/14 12:26	CXL0348	CL42337
Dibromochloromethane	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
Dibromomethane	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
Dichlorodifluoromethane	ND (2.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
Diethyl Ether	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
Di-isopropyl ether	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
Ethyl tertiary-butyl ether	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
Ethylbenzene	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
Hexachlorobutadiene	ND (0.6)		8260B		1	12/23/14 12:26	CXL0348	CL42337
Hexachloroethane	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
Isopropylbenzene	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
Methyl tert-Butyl Ether	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
Methylene Chloride	ND (2.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
Naphthalene	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
n-Butylbenzene	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
n-Propylbenzene	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
sec-Butylbenzene	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
Styrene	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
tert-Butylbenzene	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
Tertiary-amyl methyl ether	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
Tetrachloroethene	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
Tetrahydrofuran	ND (5.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB5
Date Sampled: 12/15/14 10:00
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 1412310
ESS Laboratory Sample ID: 1412310-01
Sample Matrix: Ground Water
Units: ug/L
Analyst: MD

8260B Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Toluene	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
trans-1,2-Dichloroethene	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
trans-1,3-Dichloropropene	ND (0.4)		8260B		1	12/23/14 12:26	CXL0348	CL42337
Trichloroethene	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
Trichlorofluoromethane	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
Vinyl Chloride	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
Xylene O	ND (1.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
Xylene P,M	ND (2.0)		8260B		1	12/23/14 12:26	CXL0348	CL42337
Xylenes (Total)	ND (2.0)		8260B		1	12/23/14 12:26		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
Surrogate: 1,2-Dichloroethane-d4	102 %		70-130
Surrogate: 4-Bromofluorobenzene	105 %		70-130
Surrogate: Dibromofluoromethane	110 %		70-130
Surrogate: Toluene-d8	99 %		70-130



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB5
Date Sampled: 12/15/14 10:00
Percent Solids: N/A
Initial Volume: 1040
Final Volume: 1
Extraction Method: 3520C

ESS Laboratory Work Order: 1412310
ESS Laboratory Sample ID: 1412310-01
Sample Matrix: Ground Water
Units: ug/L
Analyst: VSC
Prepared: 12/16/14 19:15

8270C Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,2,4-Trichlorobenzene	ND (9.6)		8270C		1	12/18/14 6:47	CXL0261	CL41611
1,2-Dichlorobenzene	ND (9.6)		8270C		1	12/18/14 6:47	CXL0261	CL41611
1,3-Dichlorobenzene	ND (9.6)		8270C		1	12/18/14 6:47	CXL0261	CL41611
1,4-Dichlorobenzene	ND (9.6)		8270C		1	12/18/14 6:47	CXL0261	CL41611
2,4,5-Trichlorophenol	ND (9.6)		8270C		1	12/18/14 6:47	CXL0261	CL41611
2,4,6-Trichlorophenol	ND (9.6)		8270C		1	12/18/14 6:47	CXL0261	CL41611
2,4-Dichlorophenol	ND (9.6)		8270C		1	12/18/14 6:47	CXL0261	CL41611
2,4-Dimethylphenol	ND (48.1)		8270C		1	12/18/14 6:47	CXL0261	CL41611
2,4-Dinitrophenol	ND (48.1)		8270C		1	12/18/14 6:47	CXL0261	CL41611
2,4-Dinitrotoluene	ND (9.6)		8270C		1	12/18/14 6:47	CXL0261	CL41611
2,6-Dinitrotoluene	ND (9.6)		8270C		1	12/18/14 6:47	CXL0261	CL41611
2-Chloronaphthalene	ND (9.6)		8270C		1	12/18/14 6:47	CXL0261	CL41611
2-Chlorophenol	ND (9.6)		8270C		1	12/18/14 6:47	CXL0261	CL41611
2-Methylphenol	ND (9.6)		8270C		1	12/18/14 6:47	CXL0261	CL41611
2-Nitrophenol	ND (9.6)		8270C		1	12/18/14 6:47	CXL0261	CL41611
3,3'-Dichlorobenzidine	ND (19.2)		8270C		1	12/18/14 6:47	CXL0261	CL41611
3+4-Methylphenol	ND (19.2)		8270C		1	12/18/14 6:47	CXL0261	CL41611
4-Bromophenyl-phenylether	ND (9.6)		8270C		1	12/18/14 6:47	CXL0261	CL41611
4-Chloroaniline	ND (19.2)		8270C		1	12/18/14 6:47	CXL0261	CL41611
4-Nitrophenol	ND (48.1)		8270C		1	12/18/14 6:47	CXL0261	CL41611
Acetophenone	ND (9.6)		8270C		1	12/18/14 6:47	CXL0261	CL41611
Aniline	ND (9.6)		8270C		1	12/18/14 6:47	CXL0261	CL41611
Azobenzene	ND (19.2)		8270C		1	12/18/14 6:47	CXL0261	CL41611
bis(2-Chloroethoxy)methane	ND (9.6)		8270C		1	12/18/14 6:47	CXL0261	CL41611
bis(2-Chloroethyl)ether	ND (9.6)		8270C		1	12/18/14 6:47	CXL0261	CL41611
bis(2-chloroisopropyl)Ether	ND (9.6)		8270C		1	12/18/14 6:47	CXL0261	CL41611
bis(2-Ethylhexyl)phthalate	ND (5.8)		8270C		1	12/18/14 6:47	CXL0261	CL41611
Butylbenzylphthalate	ND (9.6)		8270C		1	12/18/14 6:47	CXL0261	CL41611
Dibenzofuran	ND (9.6)		8270C		1	12/18/14 6:47	CXL0261	CL41611
Diethylphthalate	ND (9.6)		8270C		1	12/18/14 6:47	CXL0261	CL41611
Dimethylphthalate	ND (9.6)		8270C		1	12/18/14 6:47	CXL0261	CL41611
Di-n-butylphthalate	ND (9.6)		8270C		1	12/18/14 6:47	CXL0261	CL41611



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB5
Date Sampled: 12/15/14 10:00
Percent Solids: N/A
Initial Volume: 1040
Final Volume: 1
Extraction Method: 3520C

ESS Laboratory Work Order: 1412310
ESS Laboratory Sample ID: 1412310-01
Sample Matrix: Ground Water
Units: ug/L
Analyst: VSC
Prepared: 12/16/14 19:15

8270C Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Di-n-octylphthalate	ND (9.6)		8270C		1	12/18/14 6:47	CXL0261	CL41611
Hexachlorobutadiene	ND (9.6)		8270C		1	12/18/14 6:47	CXL0261	CL41611
Hexachloroethane	ND (4.8)		8270C		1	12/18/14 6:47	CXL0261	CL41611
Isophorone	ND (9.6)		8270C		1	12/18/14 6:47	CXL0261	CL41611
Nitrobenzene	ND (9.6)		8270C		1	12/18/14 6:47	CXL0261	CL41611
N-Nitrosodimethylamine	ND (9.6)		8270C		1	12/18/14 6:47	CXL0261	CL41611
Phenol	ND (9.6)		8270C		1	12/18/14 6:47	CXL0261	CL41611

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	59 %		30-130
<i>Surrogate: 2,4,6-Tribromophenol</i>	68 %		15-110
<i>Surrogate: 2-Chlorophenol-d4</i>	72 %		15-110
<i>Surrogate: 2-Fluorobiphenyl</i>	73 %		30-130
<i>Surrogate: 2-Fluorophenol</i>	61 %		15-110
<i>Surrogate: Nitrobenzene-d5</i>	65 %		30-130
<i>Surrogate: Phenol-d6</i>	64 %		15-110
<i>Surrogate: p-Terphenyl-d14</i>	59 %		30-130



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB5
Date Sampled: 12/15/14 10:00
Percent Solids: N/A
Initial Volume: 1000
Final Volume: 0.25
Extraction Method: 3510C

ESS Laboratory Work Order: 1412310
ESS Laboratory Sample ID: 1412310-01
Sample Matrix: Ground Water
Units: ug/L
Analyst: IBM
Prepared: 12/18/14 15:10

8270D(SIM) Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
2-Methylnaphthalene	ND (0.20)		8270D SIM		1	12/18/14 22:44	CXL0274	CL41801
Acenaphthene	ND (0.20)		8270D SIM		1	12/18/14 22:44	CXL0274	CL41801
Acenaphthylene	ND (0.20)		8270D SIM		1	12/18/14 22:44	CXL0274	CL41801
Anthracene	ND (0.20)		8270D SIM		1	12/18/14 22:44	CXL0274	CL41801
Benzo(a)anthracene	ND (0.05)		8270D SIM		1	12/18/14 22:44	CXL0274	CL41801
Benzo(a)pyrene	ND (0.05)		8270D SIM		1	12/18/14 22:44	CXL0274	CL41801
Benzo(b)fluoranthene	ND (0.05)		8270D SIM		1	12/18/14 22:44	CXL0274	CL41801
Benzo(g,h,i)perylene	ND (0.20)		8270D SIM		1	12/18/14 22:44	CXL0274	CL41801
Benzo(k)fluoranthene	ND (0.05)		8270D SIM		1	12/18/14 22:44	CXL0274	CL41801
Chrysene	ND (0.05)		8270D SIM		1	12/18/14 22:44	CXL0274	CL41801
Dibenzo(a,h)Anthracene	ND (0.05)		8270D SIM		1	12/18/14 22:44	CXL0274	CL41801
Fluoranthene	ND (0.20)		8270D SIM		1	12/18/14 22:44	CXL0274	CL41801
Fluorene	ND (0.20)		8270D SIM		1	12/18/14 22:44	CXL0274	CL41801
Hexachlorobenzene	ND (0.20)		8270D SIM		1	12/18/14 22:44	CXL0274	CL41801
Indeno(1,2,3-cd)Pyrene	ND (0.05)		8270D SIM		1	12/18/14 22:44	CXL0274	CL41801
Naphthalene	ND (0.20)		8270D SIM		1	12/18/14 22:44	CXL0274	CL41801
Pentachlorophenol	ND (0.90)		8270D SIM		1	12/18/14 22:44	CXL0274	CL41801
Phenanthrene	ND (0.20)		8270D SIM		1	12/18/14 22:44	CXL0274	CL41801
Pyrene	ND (0.20)		8270D SIM		1	12/18/14 22:44	CXL0274	CL41801

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>56 %</i>		<i>30-130</i>
<i>Surrogate: 2,4,6-Tribromophenol</i>	<i>143 %</i>	<i>S+</i>	<i>15-110</i>
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>104 %</i>		<i>30-130</i>
<i>Surrogate: Nitrobenzene-d5</i>	<i>85 %</i>		<i>30-130</i>
<i>Surrogate: p-Terphenyl-d14</i>	<i>121 %</i>		<i>30-130</i>



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB5
Date Sampled: 12/15/14 10:00
Percent Solids: N/A
Initial Volume: 1020
Final Volume: 1
Extraction Method: 3510C

ESS Laboratory Work Order: 1412310
ESS Laboratory Sample ID: 1412310-01
Sample Matrix: Ground Water
Units: ug/L

Prepared: 12/16/14 13:50

MADEP-EPH Extractable Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C18 Aliphatics1	ND (98)		MADEP-EPH		1	JXS	12/18/14 0:14	CXL0263	CL41521
C19-C36 Aliphatics1	ND (98)		MADEP-EPH		1	JXS	12/18/14 0:14	CXL0263	CL41521
C11-C22 Unadjusted Aromatics1	ND (98.0)		EPH8270		1	JXS	12/18/14 1:15	CXL0257	CL41521
C11-C22 Aromatics1,2	ND (98.0)		EPH8270			IBM	12/19/14 19:27		[CALC]
2-Methylnaphthalene	ND (0.49)		EPH8270SIM		1	IBM	12/19/14 19:27	CXL0286	CL41822
Acenaphthene	ND (0.19)		EPH8270SIM		1	IBM	12/19/14 19:27	CXL0286	CL41822
Naphthalene	ND (0.49)		EPH8270SIM		1	IBM	12/19/14 19:27	CXL0286	CL41822
Phenanthrene	ND (0.49)		EPH8270SIM		1	IBM	12/19/14 19:27	CXL0286	CL41822
Acenaphthylene	ND (0.19)		EPH8270SIM		1	IBM	12/19/14 19:27	CXL0286	CL41822
Anthracene	ND (0.19)		EPH8270SIM		1	IBM	12/19/14 19:27	CXL0286	CL41822
Benzo(a)anthracene	ND (0.19)		EPH8270SIM		1	IBM	12/19/14 19:27	CXL0286	CL41822
Benzo(a)pyrene	ND (0.10)		EPH8270SIM		1	IBM	12/19/14 19:27	CXL0286	CL41822
Benzo(b)fluoranthene	ND (0.19)		EPH8270SIM		1	IBM	12/19/14 19:27	CXL0286	CL41822
Benzo(g,h,i)perylene	ND (0.19)		EPH8270SIM		1	IBM	12/19/14 19:27	CXL0286	CL41822
Benzo(k)fluoranthene	ND (0.19)		EPH8270SIM		1	IBM	12/19/14 19:27	CXL0286	CL41822
Chrysene	ND (0.19)		EPH8270SIM		1	IBM	12/19/14 19:27	CXL0286	CL41822
Dibenzo(a,h)Anthracene	ND (0.19)		EPH8270SIM		1	IBM	12/19/14 19:27	CXL0286	CL41822
Fluoranthene	ND (0.19)		EPH8270SIM		1	IBM	12/19/14 19:27	CXL0286	CL41822
Fluorene	ND (0.19)		EPH8270SIM		1	IBM	12/19/14 19:27	CXL0286	CL41822
Indeno(1,2,3-cd)Pyrene	ND (0.19)		EPH8270SIM		1	IBM	12/19/14 19:27	CXL0286	CL41822
Pyrene	ND (0.19)		EPH8270SIM		1	IBM	12/19/14 19:27	CXL0286	CL41822
Preservative:	pH <= 2		MADEP-EPH			JXS			CL41521

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1-Chlorooctadecane</i>	22 %	SC	40-140
<i>Surrogate: 2-Bromonaphthalene</i>	82 %		40-140
<i>Surrogate: 2-Fluorobiphenyl</i>	96 %		40-140
<i>Surrogate: O-Terphenyl</i>	59 %		40-140



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB5
Date Sampled: 12/15/14 10:00
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 1412310
ESS Laboratory Sample ID: 1412310-01
Sample Matrix: Ground Water
Units: ug/L
Analyst: EEB

MADEP-VPH Volatile Petroleum Hydrocarbon

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C10 Aromatics	ND (100)		MADEP-VPH		1	12/17/14 18:52	CXL0249	CL41743
C5-C8 Aliphatics1,2	ND (150)		MADEP-VPH		1	12/17/14 18:52		[CALC]
C9-C12 Aliphatics2,3	ND (150)		MADEP-VPH		1	12/17/14 18:52		[CALC]
Benzene	ND (1.5)		MADEP-VPH		1	12/17/14 18:52	CXL0249	CL41743
Ethylbenzene	ND (5.0)		MADEP-VPH		1	12/17/14 18:52	CXL0249	CL41743
Methyl tert-Butyl Ether	ND (1.5)		MADEP-VPH		1	12/17/14 18:52	CXL0249	CL41743
Naphthalene	ND (5.0)		MADEP-VPH		1	12/17/14 18:52	CXL0249	CL41743
Toluene	ND (5.0)		MADEP-VPH		1	12/17/14 18:52	CXL0249	CL41743
Xylene O	ND (5.0)		MADEP-VPH		1	12/17/14 18:52	CXL0249	CL41743
Xylene P,M	ND (10.0)		MADEP-VPH		1	12/17/14 18:52	CXL0249	CL41743
Preservative:	pH <= 2		MADEP-VPH					CL41743

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 2,5-Dibromotoluene - FID</i>	<i>102 %</i>		<i>70-130</i>
<i>Surrogate: 2,5-Dibromotoluene - PID</i>	<i>107 %</i>		<i>70-130</i>



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB5
Date Sampled: 12/15/14 10:00
Percent Solids: N/A
Initial Volume: 1030
Final Volume: 1
Extraction Method: 3510C

ESS Laboratory Work Order: 1412310
ESS Laboratory Sample ID: 1412310-01RE1
Sample Matrix: Ground Water
Units: ug/L

Prepared: 12/18/14 16:55

MADEP-EPH Extractable Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C18 Aliphatics1	ND (97)		MADEP-EPH		1	DPS	12/20/14 18:55	CXL0298	CL41822
C19-C36 Aliphatics1	ND (97)		MADEP-EPH		1	DPS	12/20/14 18:55	CXL0298	CL41822
C11-C22 Unadjusted Aromatics1	ND (97.1)		EPH8270		1	IBM	12/19/14 21:26	CXL0317	CL41822
C11-C22 Aromatics1,2	ND (97.1)		EPH8270			IBM	12/19/14 21:26		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1-Chlorooctadecane</i>	28 %	SC	40-140
<i>Surrogate: 2-Bromonaphthalene</i>	86 %		40-140
<i>Surrogate: 2-Fluorobiphenyl</i>	95 %		40-140
<i>Surrogate: O-Terphenyl</i>	64 %		40-140



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB3
Date Sampled: 12/15/14 12:00
Percent Solids: N/A

ESS Laboratory Work Order: 1412310
ESS Laboratory Sample ID: 1412310-02
Sample Matrix: Ground Water
Units: ug/L

Extraction Method: 3005A

Dissolved Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Arsenic	ND (2.5)		7010		1	KJK	12/17/14 20:55	50	25	CL41709
Barium	230 (25.0)		6010C		1	KJK	12/18/14 3:00	50	25	CL41709
Cadmium	ND (2.5)		6010C		1	KJK	12/18/14 3:00	50	25	CL41709
Chromium	ND (10.0)		6010C		1	KJK	12/18/14 3:00	50	25	CL41709
Lead	ND (10.0)		6010C		1	KJK	12/18/14 14:51	50	25	CL41709
Mercury	ND (0.20)		7470A		1	BJV	12/18/14 13:25	20	40	CL41752
Selenium	ND (5.0)		7010		1	NAR	12/24/14 1:19	50	25	CL41709
Silver	ND (5.0)		6010C		1	KJK	12/18/14 3:00	50	25	CL41709



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB3
Date Sampled: 12/15/14 12:00
Percent Solids: N/A
Initial Volume: 990
Final Volume: 1
Extraction Method: 3510C

ESS Laboratory Work Order: 1412310
ESS Laboratory Sample ID: 1412310-02
Sample Matrix: Ground Water
Units: ug/L
Analyst: TAJ
Prepared: 12/16/14 17:45
Cleanup Method: 3665A

8082A Polychlorinated Biphenyls (PCB)

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Aroclor 1016	ND (0.10)		8082A		1	12/17/14 21:13		CL41635
Aroclor 1221	ND (0.10)		8082A		1	12/17/14 21:13		CL41635
Aroclor 1232	ND (0.10)		8082A		1	12/17/14 21:13		CL41635
Aroclor 1242	ND (0.10)		8082A		1	12/17/14 21:13		CL41635
Aroclor 1248	ND (0.10)		8082A		1	12/17/14 21:13		CL41635
Aroclor 1254	ND (0.10)		8082A		1	12/17/14 21:13		CL41635
Aroclor 1260	ND (0.10)		8082A		1	12/17/14 21:13		CL41635
Aroclor 1262	ND (0.10)		8082A		1	12/17/14 21:13		CL41635
Aroclor 1268	ND (0.10)		8082A		1	12/17/14 21:13		CL41635

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
Surrogate: Decachlorobiphenyl	47 %		30-150
Surrogate: Decachlorobiphenyl [2C]	44 %		30-150
Surrogate: Tetrachloro-m-xylene	87 %		30-150
Surrogate: Tetrachloro-m-xylene [2C]	96 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB3
Date Sampled: 12/15/14 12:00
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 1412310
ESS Laboratory Sample ID: 1412310-02
Sample Matrix: Ground Water
Units: ug/L
Analyst: MD

8260B Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1,2-Tetrachloroethane	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
1,1,1-Trichloroethane	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
1,1,2,2-Tetrachloroethane	ND (0.5)		8260B		1	12/23/14 12:52	CXL0348	CL42337
1,1,2-Trichloroethane	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
1,1-Dichloroethane	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
1,1-Dichloroethene	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
1,1-Dichloropropene	ND (2.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
1,2,3-Trichlorobenzene	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
1,2,3-Trichloropropane	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
1,2,4-Trichlorobenzene	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
1,2,4-Trimethylbenzene	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
1,2-Dibromo-3-Chloropropane	ND (5.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
1,2-Dibromoethane	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
1,2-Dichlorobenzene	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
1,2-Dichloroethane	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
1,2-Dichloropropane	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
1,3,5-Trimethylbenzene	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
1,3-Dichlorobenzene	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
1,3-Dichloropropane	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
1,4-Dichlorobenzene	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
1,4-Dioxane - Screen	ND (500)		8260B		1	12/23/14 12:52	CXL0348	CL42337
2,2-Dichloropropane	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
2-Butanone	ND (10.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
2-Chlorotoluene	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
2-Hexanone	ND (10.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
4-Chlorotoluene	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
4-Isopropyltoluene	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
4-Methyl-2-Pentanone	ND (10.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
Acetone	ND (10.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
Benzene	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
Bromobenzene	ND (2.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
Bromochloromethane	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB3
Date Sampled: 12/15/14 12:00
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 1412310
ESS Laboratory Sample ID: 1412310-02
Sample Matrix: Ground Water
Units: ug/L
Analyst: MD

8260B Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Bromodichloromethane	ND (0.6)		8260B		1	12/23/14 12:52	CXL0348	CL42337
Bromoform	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
Bromomethane	ND (2.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
Carbon Disulfide	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
Carbon Tetrachloride	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
Chlorobenzene	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
Chloroethane	ND (2.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
Chloroform	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
Chloromethane	ND (2.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
cis-1,2-Dichloroethene	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
cis-1,3-Dichloropropene	ND (0.4)		8260B		1	12/23/14 12:52	CXL0348	CL42337
Dibromochloromethane	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
Dibromomethane	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
Dichlorodifluoromethane	ND (2.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
Diethyl Ether	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
Di-isopropyl ether	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
Ethyl tertiary-butyl ether	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
Ethylbenzene	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
Hexachlorobutadiene	ND (0.6)		8260B		1	12/23/14 12:52	CXL0348	CL42337
Hexachloroethane	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
Isopropylbenzene	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
Methyl tert-Butyl Ether	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
Methylene Chloride	ND (2.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
Naphthalene	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
n-Butylbenzene	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
n-Propylbenzene	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
sec-Butylbenzene	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
Styrene	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
tert-Butylbenzene	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
Tertiary-amyl methyl ether	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
Tetrachloroethene	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
Tetrahydrofuran	ND (5.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB3
Date Sampled: 12/15/14 12:00
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 1412310
ESS Laboratory Sample ID: 1412310-02
Sample Matrix: Ground Water
Units: ug/L
Analyst: MD

8260B Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Toluene	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
trans-1,2-Dichloroethene	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
trans-1,3-Dichloropropene	ND (0.4)		8260B		1	12/23/14 12:52	CXL0348	CL42337
Trichloroethene	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
Trichlorofluoromethane	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
Vinyl Chloride	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
Xylene O	ND (1.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
Xylene P,M	ND (2.0)		8260B		1	12/23/14 12:52	CXL0348	CL42337
Xylenes (Total)	ND (2.0)		8260B		1	12/23/14 12:52		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>104 %</i>		<i>70-130</i>
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>106 %</i>		<i>70-130</i>
<i>Surrogate: Dibromofluoromethane</i>	<i>113 %</i>		<i>70-130</i>
<i>Surrogate: Toluene-d8</i>	<i>99 %</i>		<i>70-130</i>



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB3
Date Sampled: 12/15/14 12:00
Percent Solids: N/A
Initial Volume: 1000
Final Volume: 1
Extraction Method: 3520C

ESS Laboratory Work Order: 1412310
ESS Laboratory Sample ID: 1412310-02
Sample Matrix: Ground Water
Units: ug/L
Analyst: VSC
Prepared: 12/16/14 19:15

8270C Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,2,4-Trichlorobenzene	ND (10.0)		8270C		1	12/18/14 7:23	CXL0261	CL41611
1,2-Dichlorobenzene	ND (10.0)		8270C		1	12/18/14 7:23	CXL0261	CL41611
1,3-Dichlorobenzene	ND (10.0)		8270C		1	12/18/14 7:23	CXL0261	CL41611
1,4-Dichlorobenzene	ND (10.0)		8270C		1	12/18/14 7:23	CXL0261	CL41611
2,4,5-Trichlorophenol	ND (10.0)		8270C		1	12/18/14 7:23	CXL0261	CL41611
2,4,6-Trichlorophenol	ND (10.0)		8270C		1	12/18/14 7:23	CXL0261	CL41611
2,4-Dichlorophenol	ND (10.0)		8270C		1	12/18/14 7:23	CXL0261	CL41611
2,4-Dimethylphenol	ND (50.0)		8270C		1	12/18/14 7:23	CXL0261	CL41611
2,4-Dinitrophenol	ND (50.0)		8270C		1	12/18/14 7:23	CXL0261	CL41611
2,4-Dinitrotoluene	ND (10.0)		8270C		1	12/18/14 7:23	CXL0261	CL41611
2,6-Dinitrotoluene	ND (10.0)		8270C		1	12/18/14 7:23	CXL0261	CL41611
2-Chloronaphthalene	ND (10.0)		8270C		1	12/18/14 7:23	CXL0261	CL41611
2-Chlorophenol	ND (10.0)		8270C		1	12/18/14 7:23	CXL0261	CL41611
2-Methylphenol	ND (10.0)		8270C		1	12/18/14 7:23	CXL0261	CL41611
2-Nitrophenol	ND (10.0)		8270C		1	12/18/14 7:23	CXL0261	CL41611
3,3'-Dichlorobenzidine	ND (20.0)		8270C		1	12/18/14 7:23	CXL0261	CL41611
3+4-Methylphenol	ND (20.0)		8270C		1	12/18/14 7:23	CXL0261	CL41611
4-Bromophenyl-phenylether	ND (10.0)		8270C		1	12/18/14 7:23	CXL0261	CL41611
4-Chloroaniline	ND (20.0)		8270C		1	12/18/14 7:23	CXL0261	CL41611
4-Nitrophenol	ND (50.0)		8270C		1	12/18/14 7:23	CXL0261	CL41611
Acetophenone	ND (10.0)		8270C		1	12/18/14 7:23	CXL0261	CL41611
Aniline	ND (10.0)		8270C		1	12/18/14 7:23	CXL0261	CL41611
Azobenzene	ND (20.0)		8270C		1	12/18/14 7:23	CXL0261	CL41611
bis(2-Chloroethoxy)methane	ND (10.0)		8270C		1	12/18/14 7:23	CXL0261	CL41611
bis(2-Chloroethyl)ether	ND (10.0)		8270C		1	12/18/14 7:23	CXL0261	CL41611
bis(2-chloroisopropyl)Ether	ND (10.0)		8270C		1	12/18/14 7:23	CXL0261	CL41611
bis(2-Ethylhexyl)phthalate	ND (6.0)		8270C		1	12/18/14 7:23	CXL0261	CL41611
Butylbenzylphthalate	ND (10.0)		8270C		1	12/18/14 7:23	CXL0261	CL41611
Dibenzofuran	ND (10.0)		8270C		1	12/18/14 7:23	CXL0261	CL41611
Diethylphthalate	ND (10.0)		8270C		1	12/18/14 7:23	CXL0261	CL41611
Dimethylphthalate	ND (10.0)		8270C		1	12/18/14 7:23	CXL0261	CL41611
Di-n-butylphthalate	ND (10.0)		8270C		1	12/18/14 7:23	CXL0261	CL41611



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB3
Date Sampled: 12/15/14 12:00
Percent Solids: N/A
Initial Volume: 1000
Final Volume: 1
Extraction Method: 3520C

ESS Laboratory Work Order: 1412310
ESS Laboratory Sample ID: 1412310-02
Sample Matrix: Ground Water
Units: ug/L
Analyst: VSC
Prepared: 12/16/14 19:15

8270C Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Di-n-octylphthalate	ND (10.0)		8270C		1	12/18/14 7:23	CXL0261	CL41611
Hexachlorobutadiene	ND (10.0)		8270C		1	12/18/14 7:23	CXL0261	CL41611
Hexachloroethane	ND (5.0)		8270C		1	12/18/14 7:23	CXL0261	CL41611
Isophorone	ND (10.0)		8270C		1	12/18/14 7:23	CXL0261	CL41611
Nitrobenzene	ND (10.0)		8270C		1	12/18/14 7:23	CXL0261	CL41611
N-Nitrosodimethylamine	ND (10.0)		8270C		1	12/18/14 7:23	CXL0261	CL41611
Phenol	ND (10.0)		8270C		1	12/18/14 7:23	CXL0261	CL41611

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	62 %		30-130
<i>Surrogate: 2,4,6-Tribromophenol</i>	52 %		15-110
<i>Surrogate: 2-Chlorophenol-d4</i>	67 %		15-110
<i>Surrogate: 2-Fluorobiphenyl</i>	67 %		30-130
<i>Surrogate: 2-Fluorophenol</i>	55 %		15-110
<i>Surrogate: Nitrobenzene-d5</i>	65 %		30-130
<i>Surrogate: Phenol-d6</i>	60 %		15-110
<i>Surrogate: p-Terphenyl-d14</i>	40 %		30-130



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB3
Date Sampled: 12/15/14 12:00
Percent Solids: N/A
Initial Volume: 1000
Final Volume: 0.25
Extraction Method: 3510C

ESS Laboratory Work Order: 1412310
ESS Laboratory Sample ID: 1412310-02
Sample Matrix: Ground Water
Units: ug/L
Analyst: IBM
Prepared: 12/18/14 15:10

8270D(SIM) Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
2-Methylnaphthalene	ND (0.20)		8270D SIM		1	12/18/14 23:34	CXL0274	CL41801
Acenaphthene	ND (0.20)		8270D SIM		1	12/18/14 23:34	CXL0274	CL41801
Acenaphthylene	ND (0.20)		8270D SIM		1	12/18/14 23:34	CXL0274	CL41801
Anthracene	ND (0.20)		8270D SIM		1	12/18/14 23:34	CXL0274	CL41801
Benzo(a)anthracene	ND (0.05)		8270D SIM		1	12/18/14 23:34	CXL0274	CL41801
Benzo(a)pyrene	ND (0.05)		8270D SIM		1	12/18/14 23:34	CXL0274	CL41801
Benzo(b)fluoranthene	ND (0.05)		8270D SIM		1	12/18/14 23:34	CXL0274	CL41801
Benzo(g,h,i)perylene	ND (0.20)		8270D SIM		1	12/18/14 23:34	CXL0274	CL41801
Benzo(k)fluoranthene	ND (0.05)		8270D SIM		1	12/18/14 23:34	CXL0274	CL41801
Chrysene	ND (0.05)		8270D SIM		1	12/18/14 23:34	CXL0274	CL41801
Dibenzo(a,h)Anthracene	ND (0.05)		8270D SIM		1	12/18/14 23:34	CXL0274	CL41801
Fluoranthene	ND (0.20)		8270D SIM		1	12/18/14 23:34	CXL0274	CL41801
Fluorene	ND (0.20)		8270D SIM		1	12/18/14 23:34	CXL0274	CL41801
Hexachlorobenzene	ND (0.20)		8270D SIM		1	12/18/14 23:34	CXL0274	CL41801
Indeno(1,2,3-cd)Pyrene	ND (0.05)		8270D SIM		1	12/18/14 23:34	CXL0274	CL41801
Naphthalene	ND (0.20)		8270D SIM		1	12/18/14 23:34	CXL0274	CL41801
Pentachlorophenol	ND (0.90)		8270D SIM		1	12/18/14 23:34	CXL0274	CL41801
Phenanthrene	ND (0.20)		8270D SIM		1	12/18/14 23:34	CXL0274	CL41801
Pyrene	ND (0.20)		8270D SIM		1	12/18/14 23:34	CXL0274	CL41801

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
Surrogate: 1,2-Dichlorobenzene-d4	51 %		30-130
Surrogate: 2,4,6-Tribromophenol	79 %		15-110
Surrogate: 2-Fluorobiphenyl	78 %		30-130
Surrogate: Nitrobenzene-d5	71 %		30-130
Surrogate: p-Terphenyl-d14	72 %		30-130



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB3
Date Sampled: 12/15/14 12:00
Percent Solids: N/A
Initial Volume: 1010
Final Volume: 1
Extraction Method: 3510C

ESS Laboratory Work Order: 1412310
ESS Laboratory Sample ID: 1412310-02
Sample Matrix: Ground Water
Units: ug/L

Prepared: 12/16/14 13:50

MADEP-EPH Extractable Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C18 Aliphatics1	ND (99)		MADEP-EPH		1	JXS	12/18/14 1:05	CXL0263	CL41521
C19-C36 Aliphatics1	ND (99)		MADEP-EPH		1	JXS	12/18/14 1:05	CXL0263	CL41521
C11-C22 Unadjusted Aromatics1	ND (99.0)		EPH8270		1	JXS	12/18/14 1:52	CXL0257	CL41521
C11-C22 Aromatics1,2	ND (99.0)		EPH8270			IBM	12/19/14 20:18		[CALC]
2-Methylnaphthalene	ND (0.50)		EPH8270SIM		1	IBM	12/19/14 20:18	CXL0286	CL41822
Acenaphthene	ND (0.20)		EPH8270SIM		1	IBM	12/19/14 20:18	CXL0286	CL41822
Naphthalene	ND (0.50)		EPH8270SIM		1	IBM	12/19/14 20:18	CXL0286	CL41822
Phenanthrene	ND (0.50)		EPH8270SIM		1	IBM	12/19/14 20:18	CXL0286	CL41822
Acenaphthylene	ND (0.20)		EPH8270SIM		1	IBM	12/19/14 20:18	CXL0286	CL41822
Anthracene	ND (0.20)		EPH8270SIM		1	IBM	12/19/14 20:18	CXL0286	CL41822
Benzo(a)anthracene	ND (0.20)		EPH8270SIM		1	IBM	12/19/14 20:18	CXL0286	CL41822
Benzo(a)pyrene	ND (0.10)		EPH8270SIM		1	IBM	12/19/14 20:18	CXL0286	CL41822
Benzo(b)fluoranthene	ND (0.20)		EPH8270SIM		1	IBM	12/19/14 20:18	CXL0286	CL41822
Benzo(g,h,i)perylene	ND (0.20)		EPH8270SIM		1	IBM	12/19/14 20:18	CXL0286	CL41822
Benzo(k)fluoranthene	ND (0.20)		EPH8270SIM		1	IBM	12/19/14 20:18	CXL0286	CL41822
Chrysene	ND (0.20)		EPH8270SIM		1	IBM	12/19/14 20:18	CXL0286	CL41822
Dibenzo(a,h)Anthracene	ND (0.20)		EPH8270SIM		1	IBM	12/19/14 20:18	CXL0286	CL41822
Fluoranthene	ND (0.20)		EPH8270SIM		1	IBM	12/19/14 20:18	CXL0286	CL41822
Fluorene	ND (0.20)		EPH8270SIM		1	IBM	12/19/14 20:18	CXL0286	CL41822
Indeno(1,2,3-cd)Pyrene	ND (0.20)		EPH8270SIM		1	IBM	12/19/14 20:18	CXL0286	CL41822
Pyrene	ND (0.20)		EPH8270SIM		1	IBM	12/19/14 20:18	CXL0286	CL41822
Preservative:	pH <= 2		MADEP-EPH			JXS			CL41521

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1-Chlorooctadecane</i>	23 %	SC	40-140
<i>Surrogate: 2-Bromonaphthalene</i>	73 %		40-140
<i>Surrogate: 2-Fluorobiphenyl</i>	93 %		40-140
<i>Surrogate: O-Terphenyl</i>	57 %		40-140



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB3
Date Sampled: 12/15/14 12:00
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 1412310
ESS Laboratory Sample ID: 1412310-02
Sample Matrix: Ground Water
Units: ug/L
Analyst: EEB

MADEP-VPH Volatile Petroleum Hydrocarbon

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C10 Aromatics	ND (100)		MADEP-VPH		1	12/17/14 19:27	CXL0249	CL41743
C5-C8 Aliphatics1,2	ND (150)		MADEP-VPH		1	12/17/14 19:27		[CALC]
C9-C12 Aliphatics2,3	ND (150)		MADEP-VPH		1	12/17/14 19:27		[CALC]
Benzene	ND (1.5)		MADEP-VPH		1	12/17/14 19:27	CXL0249	CL41743
Ethylbenzene	ND (5.0)		MADEP-VPH		1	12/17/14 19:27	CXL0249	CL41743
Methyl tert-Butyl Ether	ND (1.5)		MADEP-VPH		1	12/17/14 19:27	CXL0249	CL41743
Naphthalene	ND (5.0)		MADEP-VPH		1	12/17/14 19:27	CXL0249	CL41743
Toluene	ND (5.0)		MADEP-VPH		1	12/17/14 19:27	CXL0249	CL41743
Xylene O	ND (5.0)		MADEP-VPH		1	12/17/14 19:27	CXL0249	CL41743
Xylene P,M	ND (10.0)		MADEP-VPH		1	12/17/14 19:27	CXL0249	CL41743
Preservative:	pH <= 2		MADEP-VPH					CL41743

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 2,5-Dibromotoluene - FID</i>	<i>97 %</i>		<i>70-130</i>
<i>Surrogate: 2,5-Dibromotoluene - PID</i>	<i>101 %</i>		<i>70-130</i>



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB3
Date Sampled: 12/15/14 12:00
Percent Solids: N/A
Initial Volume: 1000
Final Volume: 1
Extraction Method: 3510C

ESS Laboratory Work Order: 1412310
ESS Laboratory Sample ID: 1412310-02RE1
Sample Matrix: Ground Water
Units: ug/L

Prepared: 12/18/14 16:55

MADEP-EPH Extractable Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C18 Aliphatics1	ND (100)		MADEP-EPH		1	DPS	12/20/14 19:45	CXL0298	CL41822
C19-C36 Aliphatics1	ND (100)		MADEP-EPH		1	DPS	12/20/14 19:45	CXL0298	CL41822
C11-C22 Unadjusted Aromatics1	ND (100)		EPH8270		1	IBM	12/19/14 22:02	CXL0317	CL41822
C11-C22 Aromatics1,2	ND (100)		EPH8270			IBM	12/19/14 22:02		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
Surrogate: 1-Chlorooctadecane	24 %	SC	40-140
Surrogate: 2-Bromonaphthalene	88 %		40-140
Surrogate: 2-Fluorobiphenyl	96 %		40-140
Surrogate: O-Terphenyl	70 %		40-140



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB1
Date Sampled: 12/15/14 14:00
Percent Solids: N/A

ESS Laboratory Work Order: 1412310
ESS Laboratory Sample ID: 1412310-03
Sample Matrix: Ground Water
Units: ug/L

Extraction Method: 3005A

Dissolved Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Arsenic	ND (2.5)		7010		1	KJK	12/17/14 21:00	50	25	CL41709
Barium	ND (25.0)		6010C		1	KJK	12/18/14 3:05	50	25	CL41709
Cadmium	ND (2.5)		6010C		1	KJK	12/18/14 3:05	50	25	CL41709
Chromium	ND (10.0)		6010C		1	KJK	12/18/14 3:05	50	25	CL41709
Lead	ND (2.5)		7010		1	KJK	12/23/14 16:53	50	25	CL41709
Mercury	ND (0.20)		7470A		1	BJV	12/18/14 13:27	20	40	CL41752
Selenium	ND (5.0)		7010		1	NAR	12/24/14 1:25	50	25	CL41709
Silver	ND (5.0)		6010C		1	KJK	12/18/14 3:05	50	25	CL41709



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB1
Date Sampled: 12/15/14 14:00
Percent Solids: N/A
Initial Volume: 1000
Final Volume: 1
Extraction Method: 3510C

ESS Laboratory Work Order: 1412310
ESS Laboratory Sample ID: 1412310-03
Sample Matrix: Ground Water
Units: ug/L
Analyst: TAJ
Prepared: 12/16/14 17:45
Cleanup Method: 3665A

8082A Polychlorinated Biphenyls (PCB)

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Aroclor 1016	ND (0.10)		8082A		1	12/17/14 21:32		CL41635
Aroclor 1221	ND (0.10)		8082A		1	12/17/14 21:32		CL41635
Aroclor 1232	ND (0.10)		8082A		1	12/17/14 21:32		CL41635
Aroclor 1242	ND (0.10)		8082A		1	12/17/14 21:32		CL41635
Aroclor 1248	ND (0.10)		8082A		1	12/17/14 21:32		CL41635
Aroclor 1254	ND (0.10)		8082A		1	12/17/14 21:32		CL41635
Aroclor 1260	ND (0.10)		8082A		1	12/17/14 21:32		CL41635
Aroclor 1262	ND (0.10)		8082A		1	12/17/14 21:32		CL41635
Aroclor 1268	ND (0.10)		8082A		1	12/17/14 21:32		CL41635

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: Decachlorobiphenyl</i>	68 %		30-150
<i>Surrogate: Decachlorobiphenyl [2C]</i>	66 %		30-150
<i>Surrogate: Tetrachloro-m-xylene</i>	78 %		30-150
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	86 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

Client Sample ID: PB1

Date Sampled: 12/15/14 14:00

Percent Solids: N/A

Initial Volume: 5

Final Volume: 5

Extraction Method: 5030B

ESS Laboratory Work Order: 1412310

ESS Laboratory Sample ID: 1412310-03

Sample Matrix: Ground Water

Units: ug/L

Analyst: MD

8260B Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1,2-Tetrachloroethane	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
1,1,1-Trichloroethane	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
1,1,2,2-Tetrachloroethane	ND (0.5)		8260B		1	12/23/14 13:20	CXL0348	CL42337
1,1,2-Trichloroethane	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
1,1-Dichloroethane	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
1,1-Dichloroethene	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
1,1-Dichloropropene	ND (2.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
1,2,3-Trichlorobenzene	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
1,2,3-Trichloropropane	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
1,2,4-Trichlorobenzene	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
1,2,4-Trimethylbenzene	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
1,2-Dibromo-3-Chloropropane	ND (5.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
1,2-Dibromoethane	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
1,2-Dichlorobenzene	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
1,2-Dichloroethane	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
1,2-Dichloropropane	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
1,3,5-Trimethylbenzene	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
1,3-Dichlorobenzene	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
1,3-Dichloropropane	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
1,4-Dichlorobenzene	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
1,4-Dioxane - Screen	ND (500)		8260B		1	12/23/14 13:20	CXL0348	CL42337
2,2-Dichloropropane	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
2-Butanone	ND (10.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
2-Chlorotoluene	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
2-Hexanone	ND (10.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
4-Chlorotoluene	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
4-Isopropyltoluene	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
4-Methyl-2-Pentanone	ND (10.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
Acetone	ND (10.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
Benzene	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
Bromobenzene	ND (2.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
Bromochloromethane	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB1
Date Sampled: 12/15/14 14:00
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 1412310
ESS Laboratory Sample ID: 1412310-03
Sample Matrix: Ground Water
Units: ug/L
Analyst: MD

8260B Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Bromodichloromethane	ND (0.6)		8260B		1	12/23/14 13:20	CXL0348	CL42337
Bromoform	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
Bromomethane	ND (2.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
Carbon Disulfide	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
Carbon Tetrachloride	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
Chlorobenzene	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
Chloroethane	ND (2.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
Chloroform	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
Chloromethane	ND (2.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
cis-1,2-Dichloroethene	6.8 (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
cis-1,3-Dichloropropene	ND (0.4)		8260B		1	12/23/14 13:20	CXL0348	CL42337
Dibromochloromethane	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
Dibromomethane	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
Dichlorodifluoromethane	ND (2.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
Diethyl Ether	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
Di-isopropyl ether	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
Ethyl tertiary-butyl ether	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
Ethylbenzene	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
Hexachlorobutadiene	ND (0.6)		8260B		1	12/23/14 13:20	CXL0348	CL42337
Hexachloroethane	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
Isopropylbenzene	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
Methyl tert-Butyl Ether	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
Methylene Chloride	ND (2.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
Naphthalene	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
n-Butylbenzene	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
n-Propylbenzene	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
sec-Butylbenzene	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
Styrene	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
tert-Butylbenzene	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
Tertiary-amyl methyl ether	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
Tetrachloroethene	72.8 (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
Tetrahydrofuran	ND (5.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB1
Date Sampled: 12/15/14 14:00
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 1412310
ESS Laboratory Sample ID: 1412310-03
Sample Matrix: Ground Water
Units: ug/L
Analyst: MD

8260B Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Toluene	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
trans-1,2-Dichloroethene	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
trans-1,3-Dichloropropene	ND (0.4)		8260B		1	12/23/14 13:20	CXL0348	CL42337
Trichloroethene	11.4 (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
Trichlorofluoromethane	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
Vinyl Chloride	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
Xylene O	ND (1.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
Xylene P,M	ND (2.0)		8260B		1	12/23/14 13:20	CXL0348	CL42337
Xylenes (Total)	ND (2.0)		8260B		1	12/23/14 13:20		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>101 %</i>		<i>70-130</i>
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>103 %</i>		<i>70-130</i>
<i>Surrogate: Dibromofluoromethane</i>	<i>112 %</i>		<i>70-130</i>
<i>Surrogate: Toluene-d8</i>	<i>98 %</i>		<i>70-130</i>



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB1
Date Sampled: 12/15/14 14:00
Percent Solids: N/A
Initial Volume: 1040
Final Volume: 1
Extraction Method: 3520C

ESS Laboratory Work Order: 1412310
ESS Laboratory Sample ID: 1412310-03
Sample Matrix: Ground Water
Units: ug/L
Analyst: VSC
Prepared: 12/16/14 19:15

8270C Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,2,4-Trichlorobenzene	ND (9.6)		8270C		1	12/18/14 8:00	CXL0261	CL41611
1,2-Dichlorobenzene	ND (9.6)		8270C		1	12/18/14 8:00	CXL0261	CL41611
1,3-Dichlorobenzene	ND (9.6)		8270C		1	12/18/14 8:00	CXL0261	CL41611
1,4-Dichlorobenzene	ND (9.6)		8270C		1	12/18/14 8:00	CXL0261	CL41611
2,4,5-Trichlorophenol	ND (9.6)		8270C		1	12/18/14 8:00	CXL0261	CL41611
2,4,6-Trichlorophenol	ND (9.6)		8270C		1	12/18/14 8:00	CXL0261	CL41611
2,4-Dichlorophenol	ND (9.6)		8270C		1	12/18/14 8:00	CXL0261	CL41611
2,4-Dimethylphenol	ND (48.1)		8270C		1	12/18/14 8:00	CXL0261	CL41611
2,4-Dinitrophenol	ND (48.1)		8270C		1	12/18/14 8:00	CXL0261	CL41611
2,4-Dinitrotoluene	ND (9.6)		8270C		1	12/18/14 8:00	CXL0261	CL41611
2,6-Dinitrotoluene	ND (9.6)		8270C		1	12/18/14 8:00	CXL0261	CL41611
2-Chloronaphthalene	ND (9.6)		8270C		1	12/18/14 8:00	CXL0261	CL41611
2-Chlorophenol	ND (9.6)		8270C		1	12/18/14 8:00	CXL0261	CL41611
2-Methylphenol	ND (9.6)		8270C		1	12/18/14 8:00	CXL0261	CL41611
2-Nitrophenol	ND (9.6)		8270C		1	12/18/14 8:00	CXL0261	CL41611
3,3'-Dichlorobenzidine	ND (19.2)		8270C		1	12/18/14 8:00	CXL0261	CL41611
3+4-Methylphenol	ND (19.2)		8270C		1	12/18/14 8:00	CXL0261	CL41611
4-Bromophenyl-phenylether	ND (9.6)		8270C		1	12/18/14 8:00	CXL0261	CL41611
4-Chloroaniline	ND (19.2)		8270C		1	12/18/14 8:00	CXL0261	CL41611
4-Nitrophenol	ND (48.1)		8270C		1	12/18/14 8:00	CXL0261	CL41611
Acetophenone	ND (9.6)		8270C		1	12/18/14 8:00	CXL0261	CL41611
Aniline	ND (9.6)		8270C		1	12/18/14 8:00	CXL0261	CL41611
Azobenzene	ND (19.2)		8270C		1	12/18/14 8:00	CXL0261	CL41611
bis(2-Chloroethoxy)methane	ND (9.6)		8270C		1	12/18/14 8:00	CXL0261	CL41611
bis(2-Chloroethyl)ether	ND (9.6)		8270C		1	12/18/14 8:00	CXL0261	CL41611
bis(2-chloroisopropyl)Ether	ND (9.6)		8270C		1	12/18/14 8:00	CXL0261	CL41611
bis(2-Ethylhexyl)phthalate	ND (5.8)		8270C		1	12/18/14 8:00	CXL0261	CL41611
Butylbenzylphthalate	ND (9.6)		8270C		1	12/18/14 8:00	CXL0261	CL41611
Dibenzofuran	ND (9.6)		8270C		1	12/18/14 8:00	CXL0261	CL41611
Diethylphthalate	ND (9.6)		8270C		1	12/18/14 8:00	CXL0261	CL41611
Dimethylphthalate	ND (9.6)		8270C		1	12/18/14 8:00	CXL0261	CL41611
Di-n-butylphthalate	ND (9.6)		8270C		1	12/18/14 8:00	CXL0261	CL41611



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB1
Date Sampled: 12/15/14 14:00
Percent Solids: N/A
Initial Volume: 1040
Final Volume: 1
Extraction Method: 3520C

ESS Laboratory Work Order: 1412310
ESS Laboratory Sample ID: 1412310-03
Sample Matrix: Ground Water
Units: ug/L
Analyst: VSC
Prepared: 12/16/14 19:15

8270C Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Di-n-octylphthalate	ND (9.6)		8270C		1	12/18/14 8:00	CXL0261	CL41611
Hexachlorobutadiene	ND (9.6)		8270C		1	12/18/14 8:00	CXL0261	CL41611
Hexachloroethane	ND (4.8)		8270C		1	12/18/14 8:00	CXL0261	CL41611
Isophorone	ND (9.6)		8270C		1	12/18/14 8:00	CXL0261	CL41611
Nitrobenzene	ND (9.6)		8270C		1	12/18/14 8:00	CXL0261	CL41611
N-Nitrosodimethylamine	ND (9.6)		8270C		1	12/18/14 8:00	CXL0261	CL41611
Phenol	ND (9.6)		8270C		1	12/18/14 8:00	CXL0261	CL41611

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	74 %		30-130
<i>Surrogate: 2,4,6-Tribromophenol</i>	62 %		15-110
<i>Surrogate: 2-Chlorophenol-d4</i>	78 %		15-110
<i>Surrogate: 2-Fluorobiphenyl</i>	79 %		30-130
<i>Surrogate: 2-Fluorophenol</i>	62 %		15-110
<i>Surrogate: Nitrobenzene-d5</i>	74 %		30-130
<i>Surrogate: Phenol-d6</i>	68 %		15-110
<i>Surrogate: p-Terphenyl-d14</i>	76 %		30-130



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB1
Date Sampled: 12/15/14 14:00
Percent Solids: N/A
Initial Volume: 1000
Final Volume: 0.25
Extraction Method: 3510C

ESS Laboratory Work Order: 1412310
ESS Laboratory Sample ID: 1412310-03
Sample Matrix: Ground Water
Units: ug/L
Analyst: IBM
Prepared: 12/18/14 15:10

8270D(SIM) Semi-Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
2-Methylnaphthalene	ND (0.20)		8270D SIM		1	12/19/14 0:24	CXL0274	CL41801
Acenaphthene	ND (0.20)		8270D SIM		1	12/19/14 0:24	CXL0274	CL41801
Acenaphthylene	ND (0.20)		8270D SIM		1	12/19/14 0:24	CXL0274	CL41801
Anthracene	ND (0.20)		8270D SIM		1	12/19/14 0:24	CXL0274	CL41801
Benzo(a)anthracene	ND (0.05)		8270D SIM		1	12/19/14 0:24	CXL0274	CL41801
Benzo(a)pyrene	ND (0.05)		8270D SIM		1	12/19/14 0:24	CXL0274	CL41801
Benzo(b)fluoranthene	ND (0.05)		8270D SIM		1	12/19/14 0:24	CXL0274	CL41801
Benzo(g,h,i)perylene	ND (0.20)		8270D SIM		1	12/19/14 0:24	CXL0274	CL41801
Benzo(k)fluoranthene	ND (0.05)		8270D SIM		1	12/19/14 0:24	CXL0274	CL41801
Chrysene	ND (0.05)		8270D SIM		1	12/19/14 0:24	CXL0274	CL41801
Dibenzo(a,h)Anthracene	ND (0.05)		8270D SIM		1	12/19/14 0:24	CXL0274	CL41801
Fluoranthene	ND (0.20)		8270D SIM		1	12/19/14 0:24	CXL0274	CL41801
Fluorene	ND (0.20)		8270D SIM		1	12/19/14 0:24	CXL0274	CL41801
Hexachlorobenzene	ND (0.20)		8270D SIM		1	12/19/14 0:24	CXL0274	CL41801
Indeno(1,2,3-cd)Pyrene	ND (0.05)		8270D SIM		1	12/19/14 0:24	CXL0274	CL41801
Naphthalene	ND (0.20)		8270D SIM		1	12/19/14 0:24	CXL0274	CL41801
Pentachlorophenol	ND (0.90)		8270D SIM		1	12/19/14 0:24	CXL0274	CL41801
Phenanthrene	ND (0.20)		8270D SIM		1	12/19/14 0:24	CXL0274	CL41801
Pyrene	ND (0.20)		8270D SIM		1	12/19/14 0:24	CXL0274	CL41801

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
Surrogate: 1,2-Dichlorobenzene-d4	56 %		30-130
Surrogate: 2,4,6-Tribromophenol	93 %		15-110
Surrogate: 2-Fluorobiphenyl	81 %		30-130
Surrogate: Nitrobenzene-d5	72 %		30-130
Surrogate: p-Terphenyl-d14	100 %		30-130



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB1
Date Sampled: 12/15/14 14:00
Percent Solids: N/A
Initial Volume: 950
Final Volume: 1
Extraction Method: 3510C

ESS Laboratory Work Order: 1412310
ESS Laboratory Sample ID: 1412310-03
Sample Matrix: Ground Water
Units: ug/L

Prepared: 12/16/14 13:50

MADEP-EPH Extractable Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C18 Aliphatics1	ND (105)		MADEP-EPH		1	JXS	12/18/14 1:55	CXL0263	CL41521
C19-C36 Aliphatics1	ND (105)		MADEP-EPH		1	JXS	12/18/14 1:55	CXL0263	CL41521
C11-C22 Unadjusted Aromatics1	ND (105)		EPH8270		1	JXS	12/18/14 2:28	CXL0257	CL41521
C11-C22 Aromatics1,2	ND (105)		EPH8270			VSC	12/18/14 2:28		[CALC]
2-Methylnaphthalene	ND (0.53)		EPH8270SIM		1	VSC	12/17/14 18:01	CXL0251	CL41521
Acenaphthene	ND (0.21)		EPH8270SIM		1	VSC	12/17/14 18:01	CXL0251	CL41521
Naphthalene	ND (0.53)		EPH8270SIM		1	VSC	12/17/14 18:01	CXL0251	CL41521
Phenanthrene	ND (0.53)		EPH8270SIM		1	VSC	12/17/14 18:01	CXL0251	CL41521
Acenaphthylene	ND (0.21)		EPH8270SIM		1	VSC	12/17/14 18:01	CXL0251	CL41521
Anthracene	ND (0.21)		EPH8270SIM		1	VSC	12/17/14 18:01	CXL0251	CL41521
Benzo(a)anthracene	ND (0.21)		EPH8270SIM		1	VSC	12/17/14 18:01	CXL0251	CL41521
Benzo(a)pyrene	ND (0.11)		EPH8270SIM		1	VSC	12/17/14 18:01	CXL0251	CL41521
Benzo(b)fluoranthene	ND (0.21)		EPH8270SIM		1	VSC	12/17/14 18:01	CXL0251	CL41521
Benzo(g,h,i)perylene	ND (0.21)		EPH8270SIM		1	VSC	12/17/14 18:01	CXL0251	CL41521
Benzo(k)fluoranthene	ND (0.21)		EPH8270SIM		1	VSC	12/17/14 18:01	CXL0251	CL41521
Chrysene	ND (0.21)		EPH8270SIM		1	VSC	12/17/14 18:01	CXL0251	CL41521
Dibenzo(a,h)Anthracene	ND (0.21)		EPH8270SIM		1	VSC	12/17/14 18:01	CXL0251	CL41521
Fluoranthene	ND (0.21)		EPH8270SIM		1	VSC	12/17/14 18:01	CXL0251	CL41521
Fluorene	ND (0.21)		EPH8270SIM		1	VSC	12/17/14 18:01	CXL0251	CL41521
Indeno(1,2,3-cd)Pyrene	ND (0.21)		EPH8270SIM		1	VSC	12/17/14 18:01	CXL0251	CL41521
Pyrene	ND (0.21)		EPH8270SIM		1	VSC	12/17/14 18:01	CXL0251	CL41521
Preservative:	pH <= 2		MADEP-EPH			JXS			CL41521

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1-Chlorooctadecane</i>	42 %		40-140
<i>Surrogate: 2-Bromonaphthalene</i>	91 %		40-140
<i>Surrogate: 2-Fluorobiphenyl</i>	92 %		40-140
<i>Surrogate: O-Terphenyl</i>	60 %		40-140



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square
Client Sample ID: PB1
Date Sampled: 12/15/14 14:00
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 1412310
ESS Laboratory Sample ID: 1412310-03
Sample Matrix: Ground Water
Units: ug/L
Analyst: EEB

MADEP-VPH Volatile Petroleum Hydrocarbon

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C10 Aromatics	ND (100)		MADEP-VPH		1	12/17/14 20:01	CXL0249	CL41743
C5-C8 Aliphatics1,2	ND (150)		MADEP-VPH		1	12/17/14 20:01		[CALC]
C9-C12 Aliphatics2,3	ND (150)		MADEP-VPH		1	12/17/14 20:01		[CALC]
Benzene	ND (1.5)		MADEP-VPH		1	12/17/14 20:01	CXL0249	CL41743
Ethylbenzene	ND (5.0)		MADEP-VPH		1	12/17/14 20:01	CXL0249	CL41743
Methyl tert-Butyl Ether	ND (1.5)		MADEP-VPH		1	12/17/14 20:01	CXL0249	CL41743
Naphthalene	ND (5.0)		MADEP-VPH		1	12/17/14 20:01	CXL0249	CL41743
Toluene	ND (5.0)		MADEP-VPH		1	12/17/14 20:01	CXL0249	CL41743
Xylene O	ND (5.0)		MADEP-VPH		1	12/17/14 20:01	CXL0249	CL41743
Xylene P,M	ND (10.0)		MADEP-VPH		1	12/17/14 20:01	CXL0249	CL41743
Preservative:	pH <= 2		MADEP-VPH					CL41743

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 2,5-Dibromotoluene - FID</i>	<i>103 %</i>		<i>70-130</i>
<i>Surrogate: 2,5-Dibromotoluene - PID</i>	<i>107 %</i>		<i>70-130</i>



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1412310

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

Dissolved Metals

Batch CL41709 - 3005A

Blank

Arsenic	ND	2.5	ug/L							
Barium	ND	25.0	ug/L							
Cadmium	ND	2.5	ug/L							
Chromium	ND	10.0	ug/L							
Lead	ND	10.0	ug/L							
Selenium	ND	5.0	ug/L							
Silver	ND	5.0	ug/L							

Blank

Arsenic	ND	2.5	ug/L							
Lead	ND	2.5	ug/L							
Lead	ND	10.0	ug/L							
Selenium	ND	5.0	ug/L							

LCS

Arsenic	269	50.0	ug/L	250.0		107	80-120			
Barium	270	25.0	ug/L	250.0		108	80-120			
Cadmium	131	2.5	ug/L	125.0		105	80-120			
Chromium	273	10.0	ug/L	250.0		109	80-120			
Lead	270	10.0	ug/L	250.0		108	80-120			
Lead	214	50.0	ug/L	250.0		86	80-120			
Selenium	400	100	ug/L	500.0		80	80-120			
Silver	139	5.0	ug/L	125.0		112	80-120			

LCS Dup

Arsenic	262	50.0	ug/L	250.0		105	80-120	3	20	
Barium	226	25.0	ug/L	250.0		90	80-120	18	20	
Cadmium	111	2.5	ug/L	125.0		89	80-120	17	20	
Chromium	226	10.0	ug/L	250.0		90	80-120	19	20	
Lead	261	50.0	ug/L	250.0		104	80-120	20	20	
Lead	230	10.0	ug/L	250.0		92	80-120	16	20	
Selenium	518	100	ug/L	500.0		104	80-120	26	20	D+
Silver	33.8	5.0	ug/L	125.0		27	80-120	122	20	B-, D+

Batch CL41752 - 245.1/7470A

Blank

Mercury	ND	0.20	ug/L							

LCS

Mercury	6.22	0.20	ug/L	6.000		104	80-120			

8082A Polychlorinated Biphenyls (PCB)

Batch CL41635 - 3510C

Blank

Aroclor 1016	ND	0.05	ug/L							
Aroclor 1221	ND	0.05	ug/L							
Aroclor 1232	ND	0.05	ug/L							



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1412310

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

8082A Polychlorinated Biphenyls (PCB)

Batch CL41635 - 3510C

Aroclor 1242	ND	0.05	ug/L							
Aroclor 1248	ND	0.05	ug/L							
Aroclor 1254	ND	0.05	ug/L							
Aroclor 1260	ND	0.05	ug/L							
Aroclor 1262	ND	0.05	ug/L							
Aroclor 1268	ND	0.05	ug/L							

Surrogate: Decachlorobiphenyl	0.0466		ug/L	0.05000		93	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0463		ug/L	0.05000		93	30-150			
Surrogate: Tetrachloro-m-xylene	0.0270		ug/L	0.05000		54	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0310		ug/L	0.05000		62	30-150			

LCS

Aroclor 1016	0.83	0.05	ug/L	1.000		83	40-140			
Aroclor 1260	1.01	0.05	ug/L	1.000		101	40-140			

Surrogate: Decachlorobiphenyl	0.0432		ug/L	0.05000		86	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0438		ug/L	0.05000		88	30-150			
Surrogate: Tetrachloro-m-xylene	0.0285		ug/L	0.05000		57	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0300		ug/L	0.05000		60	30-150			

LCS Dup

Aroclor 1016	0.76	0.05	ug/L	1.000		76	40-140	8	20	
Aroclor 1260	1.02	0.05	ug/L	1.000		102	40-140	0.9	20	

Surrogate: Decachlorobiphenyl	0.0446		ug/L	0.05000		89	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0442		ug/L	0.05000		88	30-150			
Surrogate: Tetrachloro-m-xylene	0.0226		ug/L	0.05000		45	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0241		ug/L	0.05000		48	30-150			

8260B Volatile Organic Compounds

Batch CL42337 - 5030B

Blank

1,1,1,2-Tetrachloroethane	ND	1.0	ug/L							
1,1,1-Trichloroethane	ND	1.0	ug/L							
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L							
1,1,2-Trichloroethane	ND	1.0	ug/L							
1,1-Dichloroethane	ND	1.0	ug/L							
1,1-Dichloroethene	ND	1.0	ug/L							
1,1-Dichloropropene	ND	2.0	ug/L							
1,2,3-Trichlorobenzene	ND	1.0	ug/L							
1,2,3-Trichloropropane	ND	1.0	ug/L							
1,2,4-Trichlorobenzene	ND	1.0	ug/L							
1,2,4-Trimethylbenzene	ND	1.0	ug/L							
1,2-Dibromo-3-Chloropropane	ND	5.0	ug/L							
1,2-Dibromoethane	ND	1.0	ug/L							
1,2-Dichlorobenzene	ND	1.0	ug/L							



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1412310

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

8260B Volatile Organic Compounds

Batch CL42337 - 5030B

1,2-Dichloroethane	ND	1.0	ug/L
1,2-Dichloropropane	ND	1.0	ug/L
1,3,5-Trimethylbenzene	ND	1.0	ug/L
1,3-Dichlorobenzene	ND	1.0	ug/L
1,3-Dichloropropane	ND	1.0	ug/L
1,4-Dichlorobenzene	ND	1.0	ug/L
1,4-Dioxane - Screen	ND	500	ug/L
2,2-Dichloropropane	ND	1.0	ug/L
2-Butanone	ND	10.0	ug/L
2-Chlorotoluene	ND	1.0	ug/L
2-Hexanone	ND	10.0	ug/L
4-Chlorotoluene	ND	1.0	ug/L
4-Isopropyltoluene	ND	1.0	ug/L
4-Methyl-2-Pentanone	ND	10.0	ug/L
Acetone	ND	10.0	ug/L
Benzene	ND	1.0	ug/L
Bromobenzene	ND	2.0	ug/L
Bromochloromethane	ND	1.0	ug/L
Bromodichloromethane	ND	0.6	ug/L
Bromoform	ND	1.0	ug/L
Bromomethane	ND	2.0	ug/L
Carbon Disulfide	ND	1.0	ug/L
Carbon Tetrachloride	ND	1.0	ug/L
Chlorobenzene	ND	1.0	ug/L
Chloroethane	ND	2.0	ug/L
Chloroform	ND	1.0	ug/L
Chloromethane	ND	2.0	ug/L
cis-1,2-Dichloroethene	ND	1.0	ug/L
cis-1,3-Dichloropropene	ND	0.4	ug/L
Dibromochloromethane	ND	1.0	ug/L
Dibromomethane	ND	1.0	ug/L
Dichlorodifluoromethane	ND	2.0	ug/L
Diethyl Ether	ND	1.0	ug/L
Di-isopropyl ether	ND	1.0	ug/L
Ethyl tertiary-butyl ether	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
Hexachlorobutadiene	ND	0.6	ug/L
Hexachloroethane	ND	1.0	ug/L
Isopropylbenzene	ND	1.0	ug/L
Methyl tert-Butyl Ether	ND	1.0	ug/L
Methylene Chloride	ND	2.0	ug/L
Naphthalene	ND	1.0	ug/L
n-Butylbenzene	ND	1.0	ug/L
n-Propylbenzene	ND	1.0	ug/L
sec-Butylbenzene	ND	1.0	ug/L



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1412310

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

8260B Volatile Organic Compounds

Batch CL42337 - 5030B

Styrene	ND	1.0	ug/L							
tert-Butylbenzene	ND	1.0	ug/L							
Tertiary-amyl methyl ether	ND	1.0	ug/L							
Tetrachloroethene	ND	1.0	ug/L							
Tetrahydrofuran	ND	5.0	ug/L							
Toluene	ND	1.0	ug/L							
trans-1,2-Dichloroethene	ND	1.0	ug/L							
trans-1,3-Dichloropropene	ND	0.4	ug/L							
Trichloroethene	ND	1.0	ug/L							
Trichlorofluoromethane	ND	1.0	ug/L							
Vinyl Chloride	ND	1.0	ug/L							
Xylene O	ND	1.0	ug/L							
Xylene P,M	ND	2.0	ug/L							
Surrogate: 1,2-Dichloroethane-d4	25.0		ug/L	25.00		100	70-130			
Surrogate: 4-Bromofluorobenzene	25.6		ug/L	25.00		102	70-130			
Surrogate: Dibromofluoromethane	28.9		ug/L	25.00		116	70-130			
Surrogate: Toluene-d8	24.9		ug/L	25.00		100	70-130			

LCS

1,1,1,2-Tetrachloroethane	9.1		ug/L	10.00		91	70-130			
1,1,1-Trichloroethane	9.8		ug/L	10.00		98	70-130			
1,1,2,2-Tetrachloroethane	9.6		ug/L	10.00		96	70-130			
1,1,2-Trichloroethane	8.9		ug/L	10.00		89	70-130			
1,1-Dichloroethane	9.4		ug/L	10.00		94	70-130			
1,1-Dichloroethene	9.3		ug/L	10.00		93	70-130			
1,1-Dichloropropene	9.0		ug/L	10.00		90	70-130			
1,2,3-Trichlorobenzene	10.2		ug/L	10.00		102	70-130			
1,2,3-Trichloropropane	9.2		ug/L	10.00		92	70-130			
1,2,4-Trichlorobenzene	10.0		ug/L	10.00		100	70-130			
1,2,4-Trimethylbenzene	9.5		ug/L	10.00		95	70-130			
1,2-Dibromo-3-Chloropropane	9.7		ug/L	10.00		97	70-130			
1,2-Dibromoethane	9.6		ug/L	10.00		96	70-130			
1,2-Dichlorobenzene	9.1		ug/L	10.00		91	70-130			
1,2-Dichloroethane	9.4		ug/L	10.00		94	70-130			
1,2-Dichloropropane	8.6		ug/L	10.00		86	70-130			
1,3,5-Trimethylbenzene	10.1		ug/L	10.00		101	70-130			
1,3-Dichlorobenzene	9.5		ug/L	10.00		95	70-130			
1,3-Dichloropropane	8.7		ug/L	10.00		87	70-130			
1,4-Dichlorobenzene	9.7		ug/L	10.00		97	70-130			
1,4-Dioxane - Screen	319		ug/L	200.0		159	0-332			
2,2-Dichloropropane	9.0		ug/L	10.00		90	70-130			
2-Butanone	47.5		ug/L	50.00		95	70-130			
2-Chlorotoluene	9.1		ug/L	10.00		91	70-130			
2-Hexanone	47.7		ug/L	50.00		95	70-130			
4-Chlorotoluene	9.5		ug/L	10.00		95	70-130			
4-Isopropyltoluene	10.7		ug/L	10.00		107	70-130			



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1412310

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

8260B Volatile Organic Compounds

Batch CL42337 - 5030B

4-Methyl-2-Pentanone	42.4		ug/L	50.00		85	70-130			
Acetone	61.5		ug/L	50.00		123	70-130			
Benzene	9.3		ug/L	10.00		93	70-130			
Bromobenzene	10.1		ug/L	10.00		101	70-130			
Bromochloromethane	9.4		ug/L	10.00		94	70-130			
Bromodichloromethane	9.4		ug/L	10.00		94	70-130			
Bromoform	11.0		ug/L	10.00		110	70-130			
Bromomethane	10.4		ug/L	10.00		104	70-130			
Carbon Disulfide	8.8		ug/L	10.00		88	70-130			
Carbon Tetrachloride	10.4		ug/L	10.00		104	70-130			
Chlorobenzene	9.6		ug/L	10.00		96	70-130			
Chloroethane	8.0		ug/L	10.00		80	70-130			
Chloroform	9.1		ug/L	10.00		91	70-130			
Chloromethane	11.2		ug/L	10.00		112	70-130			
cis-1,2-Dichloroethene	9.4		ug/L	10.00		94	70-130			
cis-1,3-Dichloropropene	8.2		ug/L	10.00		82	70-130			
Dibromochloromethane	10.3		ug/L	10.00		103	70-130			
Dibromomethane	9.6		ug/L	10.00		96	70-130			
Dichlorodifluoromethane	10.2		ug/L	10.00		102	70-130			
Diethyl Ether	8.9		ug/L	10.00		89	70-130			
Di-isopropyl ether	9.4		ug/L	10.00		94	70-130			
Ethyl tertiary-butyl ether	8.0		ug/L	10.00		80	70-130			
Ethylbenzene	9.4		ug/L	10.00		94	70-130			
Hexachlorobutadiene	10.4		ug/L	10.00		104	70-130			
Hexachloroethane	11.8		ug/L	10.00		118	70-130			
Isopropylbenzene	9.4		ug/L	10.00		94	70-130			
Methyl tert-Butyl Ether	8.4		ug/L	10.00		84	70-130			
Methylene Chloride	9.0		ug/L	10.00		90	70-130			
Naphthalene	8.0		ug/L	10.00		80	70-130			
n-Butylbenzene	10.8		ug/L	10.00		108	70-130			
n-Propylbenzene	9.2		ug/L	10.00		92	70-130			
sec-Butylbenzene	9.8		ug/L	10.00		98	70-130			
Styrene	8.7		ug/L	10.00		87	70-130			
tert-Butylbenzene	9.1		ug/L	10.00		91	70-130			
Tertiary-amyl methyl ether	7.9		ug/L	10.00		79	70-130			
Tetrachloroethene	9.2		ug/L	10.00		92	70-130			
Tetrahydrofuran	10.0		ug/L	10.00		100	70-130			
Toluene	9.2		ug/L	10.00		92	70-130			
trans-1,2-Dichloroethene	9.0		ug/L	10.00		90	70-130			
trans-1,3-Dichloropropene	7.9		ug/L	10.00		79	70-130			
Trichloroethene	8.9		ug/L	10.00		89	70-130			
Trichlorofluoromethane	9.1		ug/L	10.00		91	70-130			
Vinyl Chloride	10.2		ug/L	10.00		102	70-130			
Xylene O	8.9		ug/L	10.00		89	70-130			
Xylene P,M	18.1		ug/L	20.00		91	70-130			



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1412310

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

8260B Volatile Organic Compounds

Batch CL42337 - 5030B

Surrogate: 1,2-Dichloroethane-d4	25.8		ug/L	25.00		103	70-130			
Surrogate: 4-Bromofluorobenzene	24.2		ug/L	25.00		97	70-130			
Surrogate: Dibromofluoromethane	28.2		ug/L	25.00		113	70-130			
Surrogate: Toluene-d8	25.0		ug/L	25.00		100	70-130			
LCS Dup										
1,1,1,2-Tetrachloroethane	9.5		ug/L	10.00		95	70-130	4	25	
1,1,1-Trichloroethane	10.1		ug/L	10.00		101	70-130	3	25	
1,1,2,2-Tetrachloroethane	9.1		ug/L	10.00		91	70-130	6	25	
1,1,2-Trichloroethane	8.4		ug/L	10.00		84	70-130	6	25	
1,1-Dichloroethane	8.5		ug/L	10.00		85	70-130	11	25	
1,1-Dichloroethene	9.4		ug/L	10.00		94	70-130	1	25	
1,1-Dichloropropene	9.4		ug/L	10.00		94	70-130	4	25	
1,2,3-Trichlorobenzene	9.0		ug/L	10.00		90	70-130	13	25	
1,2,3-Trichloropropane	8.6		ug/L	10.00		86	70-130	6	25	
1,2,4-Trichlorobenzene	9.0		ug/L	10.00		90	70-130	10	25	
1,2,4-Trimethylbenzene	9.1		ug/L	10.00		91	70-130	5	25	
1,2-Dibromo-3-Chloropropane	9.9		ug/L	10.00		99	70-130	2	25	
1,2-Dibromoethane	9.4		ug/L	10.00		94	70-130	2	25	
1,2-Dichlorobenzene	8.8		ug/L	10.00		88	70-130	3	25	
1,2-Dichloroethane	9.7		ug/L	10.00		97	70-130	3	25	
1,2-Dichloropropane	8.4		ug/L	10.00		84	70-130	2	25	
1,3,5-Trimethylbenzene	9.4		ug/L	10.00		94	70-130	8	25	
1,3-Dichlorobenzene	9.4		ug/L	10.00		94	70-130	1	25	
1,3-Dichloropropane	9.1		ug/L	10.00		91	70-130	5	25	
1,4-Dichlorobenzene	9.0		ug/L	10.00		90	70-130	7	25	
1,4-Dioxane - Screen	246		ug/L	200.0		123	0-332	26	200	
2,2-Dichloropropane	9.2		ug/L	10.00		92	70-130	2	25	
2-Butanone	46.4		ug/L	50.00		93	70-130	2	25	
2-Chlorotoluene	8.8		ug/L	10.00		88	70-130	4	25	
2-Hexanone	51.0		ug/L	50.00		102	70-130	7	25	
4-Chlorotoluene	9.4		ug/L	10.00		94	70-130	0.7	25	
4-Isopropyltoluene	9.6		ug/L	10.00		96	70-130	11	25	
4-Methyl-2-Pentanone	42.6		ug/L	50.00		85	70-130	0.3	25	
Acetone	48.8		ug/L	50.00		98	70-130	23	25	
Benzene	9.2		ug/L	10.00		92	70-130	2	25	
Bromobenzene	9.4		ug/L	10.00		94	70-130	7	25	
Bromochloromethane	10.1		ug/L	10.00		101	70-130	8	25	
Bromodichloromethane	9.7		ug/L	10.00		97	70-130	4	25	
Bromoform	11.4		ug/L	10.00		114	70-130	3	25	
Bromomethane	10.0		ug/L	10.00		100	70-130	3	25	
Carbon Disulfide	9.1		ug/L	10.00		91	70-130	3	25	
Carbon Tetrachloride	10.7		ug/L	10.00		107	70-130	3	25	
Chlorobenzene	9.6		ug/L	10.00		96	70-130	0.1	25	
Chloroethane	8.4		ug/L	10.00		84	70-130	4	25	



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1412310

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

8260B Volatile Organic Compounds

Batch CL42337 - 5030B

Chloroform	9.2		ug/L	10.00		92	70-130	0.4	25	
Chloromethane	11.3		ug/L	10.00		113	70-130	0.9	25	
cis-1,2-Dichloroethene	9.2		ug/L	10.00		92	70-130	2	25	
cis-1,3-Dichloropropene	8.7		ug/L	10.00		87	70-130	6	25	
Dibromochloromethane	10.7		ug/L	10.00		107	70-130	4	25	
Dibromomethane	9.3		ug/L	10.00		93	70-130	3	25	
Dichlorodifluoromethane	9.8		ug/L	10.00		98	70-130	4	25	
Diethyl Ether	8.9		ug/L	10.00		89	70-130	0.4	25	
Di-isopropyl ether	9.4		ug/L	10.00		94	70-130	0.4	25	
Ethyl tertiary-butyl ether	8.6		ug/L	10.00		86	70-130	7	25	
Ethylbenzene	9.6		ug/L	10.00		96	70-130	2	25	
Hexachlorobutadiene	9.9		ug/L	10.00		99	70-130	4	25	
Hexachloroethane	10.9		ug/L	10.00		109	70-130	8	25	
Isopropylbenzene	9.0		ug/L	10.00		90	70-130	5	25	
Methyl tert-Butyl Ether	8.3		ug/L	10.00		83	70-130	1	25	
Methylene Chloride	8.7		ug/L	10.00		87	70-130	3	25	
Naphthalene	7.4		ug/L	10.00		74	70-130	8	25	
n-Butylbenzene	9.6		ug/L	10.00		96	70-130	11	25	
n-Propylbenzene	8.5		ug/L	10.00		85	70-130	7	25	
sec-Butylbenzene	9.1		ug/L	10.00		91	70-130	8	25	
Styrene	8.7		ug/L	10.00		87	70-130	0	25	
tert-Butylbenzene	8.9		ug/L	10.00		89	70-130	2	25	
Tertiary-amyl methyl ether	8.0		ug/L	10.00		80	70-130	2	25	
Tetrachloroethene	9.7		ug/L	10.00		97	70-130	5	25	
Tetrahydrofuran	9.2		ug/L	10.00		92	70-130	8	25	
Toluene	9.1		ug/L	10.00		91	70-130	1	25	
trans-1,2-Dichloroethene	9.0		ug/L	10.00		90	70-130	0.3	25	
trans-1,3-Dichloropropene	7.8		ug/L	10.00		78	70-130	2	25	
Trichloroethene	9.4		ug/L	10.00		94	70-130	5	25	
Trichlorofluoromethane	9.5		ug/L	10.00		95	70-130	5	25	
Vinyl Chloride	10.4		ug/L	10.00		104	70-130	2	25	
Xylene O	9.3		ug/L	10.00		93	70-130	5	25	
Xylene P,M	19.1		ug/L	20.00		96	70-130	5	25	
Surrogate: 1,2-Dichloroethane-d4	25.5		ug/L	25.00		102	70-130			
Surrogate: 4-Bromofluorobenzene	24.1		ug/L	25.00		96	70-130			
Surrogate: Dibromofluoromethane	28.4		ug/L	25.00		114	70-130			
Surrogate: Toluene-d8	25.4		ug/L	25.00		102	70-130			

8270C Semi-Volatile Organic Compounds

Batch CL41611 - 3520C

Blank										
1,2,4-Trichlorobenzene	ND	10.0	ug/L							
1,2-Dichlorobenzene	ND	10.0	ug/L							
1,3-Dichlorobenzene	ND	10.0	ug/L							
1,4-Dichlorobenzene	ND	10.0	ug/L							



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1412310

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

8270C Semi-Volatile Organic Compounds

Batch CL41611 - 3520C

2,4,5-Trichlorophenol	ND	10.0	ug/L							
2,4,6-Trichlorophenol	ND	10.0	ug/L							
2,4-Dichlorophenol	ND	10.0	ug/L							
2,4-Dimethylphenol	ND	50.0	ug/L							
2,4-Dinitrophenol	ND	50.0	ug/L							
2,4-Dinitrotoluene	ND	10.0	ug/L							
2,6-Dinitrotoluene	ND	10.0	ug/L							
2-Chloronaphthalene	ND	10.0	ug/L							
2-Chlorophenol	ND	10.0	ug/L							
2-Methylphenol	ND	10.0	ug/L							
2-Nitrophenol	ND	10.0	ug/L							
3,3'-Dichlorobenzidine	ND	20.0	ug/L							
3+4-Methylphenol	ND	20.0	ug/L							
4-Bromophenyl-phenylether	ND	10.0	ug/L							
4-Chloroaniline	ND	20.0	ug/L							
4-Nitrophenol	ND	50.0	ug/L							
Acetophenone	ND	10.0	ug/L							
Aniline	ND	10.0	ug/L							
Azobenzene	ND	20.0	ug/L							
bis(2-Chloroethoxy)methane	ND	10.0	ug/L							
bis(2-Chloroethyl)ether	ND	10.0	ug/L							
bis(2-chloroisopropyl)Ether	ND	10.0	ug/L							
bis(2-Ethylhexyl)phthalate	6.3	6.0	ug/L							
Butylbenzylphthalate	ND	10.0	ug/L							
Dibenzofuran	ND	10.0	ug/L							
Diethylphthalate	ND	10.0	ug/L							
Dimethylphthalate	ND	10.0	ug/L							
Di-n-butylphthalate	ND	10.0	ug/L							
Di-n-octylphthalate	ND	10.0	ug/L							
Hexachlorobutadiene	ND	10.0	ug/L							
Hexachloroethane	ND	5.0	ug/L							
Isophorone	ND	10.0	ug/L							
Nitrobenzene	ND	10.0	ug/L							
N-Nitrosodimethylamine	ND	10.0	ug/L							
Phenol	ND	10.0	ug/L							
Surrogate: 1,2-Dichlorobenzene-d4	73.1		ug/L	100.0		73	30-130			
Surrogate: 2,4,6-Tribromophenol	104		ug/L	150.0		70	15-110			
Surrogate: 2-Chlorophenol-d4	115		ug/L	150.0		77	15-110			
Surrogate: 2-Fluorobiphenyl	73.0		ug/L	100.0		73	30-130			
Surrogate: 2-Fluorophenol	97.2		ug/L	150.0		65	15-110			
Surrogate: Nitrobenzene-d5	69.9		ug/L	100.0		70	30-130			
Surrogate: Phenol-d6	107		ug/L	150.0		72	15-110			
Surrogate: p-Terphenyl-d14	81.9		ug/L	100.0		82	30-130			

LCS

1,2,4-Trichlorobenzene	81.1	10.0	ug/L	100.0		81	40-140			



CERTIFICATE OF ANALYSIS

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Quality Control Data

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8270C Semi-Volatile Organic Compounds

Batch CL41611 - 3520C

1,2-Dichlorobenzene	76.4	10.0	ug/L	100.0		76	40-140			
1,3-Dichlorobenzene	75.2	10.0	ug/L	100.0		75	40-140			
1,4-Dichlorobenzene	74.3	10.0	ug/L	100.0		74	40-140			
2,4,5-Trichlorophenol	96.1	10.0	ug/L	100.0		96	30-130			
2,4,6-Trichlorophenol	97.8	10.0	ug/L	100.0		98	30-130			
2,4-Dichlorophenol	92.4	10.0	ug/L	100.0		92	30-130			
2,4-Dimethylphenol	78.5	50.0	ug/L	100.0		79	30-130			
2,4-Dinitrophenol	76.1	50.0	ug/L	100.0		76	30-130			
2,4-Dinitrotoluene	79.5	10.0	ug/L	100.0		80	40-140			
2,6-Dinitrotoluene	83.4	10.0	ug/L	100.0		83	40-140			
2-Chloronaphthalene	64.1	10.0	ug/L	100.0		64	40-140			
2-Chlorophenol	76.4	10.0	ug/L	100.0		76	30-130			
2-Methylphenol	75.8	10.0	ug/L	100.0		76	30-130			
2-Nitrophenol	92.1	10.0	ug/L	100.0		92	30-130			
3,3'-Dichlorobenzidine	80.2	20.0	ug/L	100.0		80	40-140			
3+4-Methylphenol	152	20.0	ug/L	200.0		76	30-130			
4-Bromophenyl-phenylether	72.8	10.0	ug/L	100.0		73	40-140			
4-Chloroaniline	66.8	20.0	ug/L	100.0		67	40-140			
4-Nitrophenol	69.9	50.0	ug/L	100.0		70	30-130			
Acetophenone	71.5	10.0	ug/L	100.0		72	40-140			
Aniline	58.6	10.0	ug/L	100.0		59	40-140			
Azobenzene	66.4	20.0	ug/L	100.0		66	40-140			
bis(2-Chloroethoxy)methane	67.4	10.0	ug/L	100.0		67	40-140			
bis(2-Chloroethyl)ether	64.1	10.0	ug/L	100.0		64	40-140			
bis(2-chloroisopropyl)Ether	70.7	10.0	ug/L	100.0		71	40-140			
bis(2-Ethylhexyl)phthalate	97.6	6.0	ug/L	100.0		98	40-140			
Butylbenzylphthalate	87.1	10.0	ug/L	100.0		87	40-140			
Dibenzofuran	77.8	10.0	ug/L	100.0		78	40-140			
Diethylphthalate	76.0	10.0	ug/L	100.0		76	40-140			
Dimethylphthalate	76.6	10.0	ug/L	100.0		77	40-140			
Di-n-butylphthalate	80.4	10.0	ug/L	100.0		80	40-140			
Di-n-octylphthalate	93.8	10.0	ug/L	100.0		94	40-140			
Hexachlorobutadiene	76.8	10.0	ug/L	100.0		77	40-140			
Hexachloroethane	68.2	5.0	ug/L	100.0		68	40-140			
Isophorone	64.2	10.0	ug/L	100.0		64	40-140			
Nitrobenzene	65.7	10.0	ug/L	100.0		66	40-140			
N-Nitrosodimethylamine	85.2	10.0	ug/L	100.0		85	40-140			
Phenol	69.7	10.0	ug/L	100.0		70	30-130			
Surrogate: 1,2-Dichlorobenzene-d4	73.6		ug/L	100.0		74	30-130			
Surrogate: 2,4,6-Tribromophenol	121		ug/L	150.0		80	15-110			
Surrogate: 2-Chlorophenol-d4	117		ug/L	150.0		78	15-110			
Surrogate: 2-Fluorobiphenyl	79.0		ug/L	100.0		79	30-130			
Surrogate: 2-Fluorophenol	104		ug/L	150.0		69	15-110			
Surrogate: Nitrobenzene-d5	75.5		ug/L	100.0		76	30-130			
Surrogate: Phenol-d6	110		ug/L	150.0		73	15-110			
Surrogate: p-Terphenyl-d14	85.6		ug/L	100.0		86	30-130			



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1412310

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

8270C Semi-Volatile Organic Compounds

Batch CL41611 - 3520C

LCS Dup										
1,2,4-Trichlorobenzene	81.4	10.0	ug/L	100.0		81	40-140	0.5	20	
1,2-Dichlorobenzene	79.1	10.0	ug/L	100.0		79	40-140	3	20	
1,3-Dichlorobenzene	79.0	10.0	ug/L	100.0		79	40-140	5	20	
1,4-Dichlorobenzene	77.0	10.0	ug/L	100.0		77	40-140	4	20	
2,4,5-Trichlorophenol	95.5	10.0	ug/L	100.0		96	30-130	0.5	20	
2,4,6-Trichlorophenol	99.4	10.0	ug/L	100.0		99	30-130	2	20	
2,4-Dichlorophenol	91.6	10.0	ug/L	100.0		92	30-130	0.8	20	
2,4-Dimethylphenol	81.2	50.0	ug/L	100.0		81	30-130	3	20	
2,4-Dinitrophenol	83.8	50.0	ug/L	100.0		84	30-130	10	20	
2,4-Dinitrotoluene	80.4	10.0	ug/L	100.0		80	40-140	1	20	
2,6-Dinitrotoluene	81.8	10.0	ug/L	100.0		82	40-140	2	20	
2-Chloronaphthalene	55.3	10.0	ug/L	100.0		55	40-140	15	20	
2-Chlorophenol	79.2	10.0	ug/L	100.0		79	30-130	4	20	
2-Methylphenol	79.8	10.0	ug/L	100.0		80	30-130	5	20	
2-Nitrophenol	90.8	10.0	ug/L	100.0		91	30-130	1	20	
3,3'-Dichlorobenzidine	81.4	20.0	ug/L	100.0		81	40-140	1	20	
3+4-Methylphenol	156	20.0	ug/L	200.0		78	30-130	3	20	
4-Bromophenyl-phenylether	73.2	10.0	ug/L	100.0		73	40-140	0.6	20	
4-Chloroaniline	64.4	20.0	ug/L	100.0		64	40-140	4	20	
4-Nitrophenol	72.1	50.0	ug/L	100.0		72	30-130	3	20	
Acetophenone	76.1	10.0	ug/L	100.0		76	40-140	6	20	
Aniline	59.9	10.0	ug/L	100.0		60	40-140	2	20	
Azobenzene	70.4	20.0	ug/L	100.0		70	40-140	6	20	
bis(2-Chloroethoxy)methane	69.7	10.0	ug/L	100.0		70	40-140	3	20	
bis(2-Chloroethyl)ether	66.9	10.0	ug/L	100.0		67	40-140	4	20	
bis(2-chloroisopropyl)Ether	74.8	10.0	ug/L	100.0		75	40-140	6	20	
bis(2-Ethylhexyl)phthalate	89.8	6.0	ug/L	100.0		90	40-140	8	20	
Butylbenzylphthalate	88.8	10.0	ug/L	100.0		89	40-140	2	20	
Dibenzofuran	79.8	10.0	ug/L	100.0		80	40-140	3	20	
Diethylphthalate	77.6	10.0	ug/L	100.0		78	40-140	2	20	
Dimethylphthalate	79.9	10.0	ug/L	100.0		80	40-140	4	20	
Di-n-butylphthalate	81.2	10.0	ug/L	100.0		81	40-140	1	20	
Di-n-octylphthalate	95.1	10.0	ug/L	100.0		95	40-140	1	20	
Hexachlorobutadiene	75.6	10.0	ug/L	100.0		76	40-140	2	20	
Hexachloroethane	70.9	5.0	ug/L	100.0		71	40-140	4	20	
Isophorone	63.8	10.0	ug/L	100.0		64	40-140	0.6	20	
Nitrobenzene	66.5	10.0	ug/L	100.0		67	40-140	1	20	
N-Nitrosodimethylamine	115	10.0	ug/L	100.0		115	40-140	30	20	D+
Phenol	71.1	10.0	ug/L	100.0		71	30-130	2	20	
Surrogate: 1,2-Dichlorobenzene-d4	76.2		ug/L	100.0		76	30-130			
Surrogate: 2,4,6-Tribromophenol	125		ug/L	150.0		84	15-110			
Surrogate: 2-Chlorophenol-d4	120		ug/L	150.0		80	15-110			
Surrogate: 2-Fluorobiphenyl	80.2		ug/L	100.0		80	30-130			
Surrogate: 2-Fluorophenol	104		ug/L	150.0		70	15-110			



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1412310

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

8270C Semi-Volatile Organic Compounds

Batch CL41611 - 3520C

Surrogate: Nitrobenzene-d5	75.7		ug/L	100.0		76	30-130			
Surrogate: Phenol-d6	112		ug/L	150.0		75	15-110			
Surrogate: p-Terphenyl-d14	89.8		ug/L	100.0		90	30-130			

8270D(SIM) Semi-Volatile Organic Compounds

Batch CL41801 - 3510C

Blank

2-Methylnaphthalene	ND	0.20	ug/L							
Acenaphthene	ND	0.20	ug/L							
Acenaphthylene	ND	0.20	ug/L							
Anthracene	ND	0.20	ug/L							
Benzo(a)anthracene	ND	0.05	ug/L							
Benzo(a)pyrene	ND	0.05	ug/L							
Benzo(b)fluoranthene	ND	0.05	ug/L							
Benzo(g,h,i)perylene	ND	0.20	ug/L							
Benzo(k)fluoranthene	ND	0.05	ug/L							
Chrysene	ND	0.05	ug/L							
Dibenzo(a,h)Anthracene	ND	0.05	ug/L							
Fluoranthene	ND	0.20	ug/L							
Fluorene	ND	0.20	ug/L							
Hexachlorobenzene	ND	0.20	ug/L							
Indeno(1,2,3-cd)Pyrene	ND	0.05	ug/L							
Naphthalene	ND	0.20	ug/L							
Pentachlorophenol	ND	0.90	ug/L							
Phenanthrene	ND	0.20	ug/L							
Pyrene	ND	0.20	ug/L							
Surrogate: 1,2-Dichlorobenzene-d4	0.818		ug/L	2.500		33	30-130			
Surrogate: 2,4,6-Tribromophenol	3.41		ug/L	3.750		91	15-110			
Surrogate: 2-Fluorobiphenyl	1.42		ug/L	2.500		57	30-130			
Surrogate: Nitrobenzene-d5	1.39		ug/L	2.500		56	30-130			
Surrogate: p-Terphenyl-d14	1.94		ug/L	2.500		78	30-130			

LCS

2-Methylnaphthalene	2.00	0.40	ug/L	4.000		50	40-140			
Acenaphthene	3.03	0.40	ug/L	4.000		76	40-140			
Acenaphthylene	2.92	0.40	ug/L	4.000		73	40-140			
Anthracene	3.16	0.40	ug/L	4.000		79	40-140			
Benzo(a)anthracene	3.01	0.10	ug/L	4.000		75	40-140			
Benzo(a)pyrene	3.20	0.10	ug/L	4.000		80	40-140			
Benzo(b)fluoranthene	3.08	0.10	ug/L	4.000		77	40-140			
Benzo(g,h,i)perylene	3.18	0.40	ug/L	4.000		80	40-140			
Benzo(k)fluoranthene	3.26	0.10	ug/L	4.000		81	40-140			
Chrysene	3.32	0.10	ug/L	4.000		83	40-140			
Dibenzo(a,h)Anthracene	3.22	0.10	ug/L	4.000		81	40-140			
Fluoranthene	3.27	0.40	ug/L	4.000		82	40-140			



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1412310

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

8270D(SIM) Semi-Volatile Organic Compounds

Batch CL41801 - 3510C

Fluorene	3.33	0.40	ug/L	4.000		83	40-140			
Hexachlorobenzene	3.64	0.40	ug/L	4.000		91	40-140			
Indeno(1,2,3-cd)Pyrene	3.18	0.10	ug/L	4.000		79	40-140			
Naphthalene	1.99	0.40	ug/L	4.000		50	40-140			
Pentachlorophenol	4.57	1.80	ug/L	4.000		114	30-130			
Phenanthrene	3.06	0.40	ug/L	4.000		77	40-140			
Pyrene	3.25	0.40	ug/L	4.000		81	40-140			
Surrogate: 1,2-Dichlorobenzene-d4	1.19		ug/L	2.500		48	30-130			
Surrogate: 2,4,6-Tribromophenol	4.33		ug/L	3.750		116	15-110			S+
Surrogate: 2-Fluorobiphenyl	2.07		ug/L	2.500		83	30-130			
Surrogate: Nitrobenzene-d5	1.83		ug/L	2.500		73	30-130			
Surrogate: p-Terphenyl-d14	2.29		ug/L	2.500		91	30-130			

LCS Dup

2-Methylnaphthalene	1.87	0.40	ug/L	4.000		47	40-140	7	20	
Acenaphthene	2.80	0.40	ug/L	4.000		70	40-140	8	20	
Acenaphthylene	2.67	0.40	ug/L	4.000		67	40-140	9	20	
Anthracene	2.96	0.40	ug/L	4.000		74	40-140	7	20	
Benzo(a)anthracene	2.81	0.10	ug/L	4.000		70	40-140	7	20	
Benzo(a)pyrene	2.99	0.10	ug/L	4.000		75	40-140	7	20	
Benzo(b)fluoranthene	3.05	0.10	ug/L	4.000		76	40-140	0.8	20	
Benzo(g,h,i)perylene	3.06	0.40	ug/L	4.000		76	40-140	4	20	
Benzo(k)fluoranthene	2.90	0.10	ug/L	4.000		72	40-140	12	20	
Chrysene	3.11	0.10	ug/L	4.000		78	40-140	7	20	
Dibenzo(a,h)Anthracene	3.08	0.10	ug/L	4.000		77	40-140	4	20	
Fluoranthene	3.08	0.40	ug/L	4.000		77	40-140	6	20	
Fluorene	3.09	0.40	ug/L	4.000		77	40-140	7	20	
Hexachlorobenzene	3.16	0.40	ug/L	4.000		79	40-140	14	20	
Indeno(1,2,3-cd)Pyrene	3.07	0.10	ug/L	4.000		77	40-140	4	20	
Naphthalene	1.87	0.40	ug/L	4.000		47	40-140	6	20	
Pentachlorophenol	4.04	1.80	ug/L	4.000		101	30-130	12	20	
Phenanthrene	2.89	0.40	ug/L	4.000		72	40-140	6	20	
Pyrene	3.01	0.40	ug/L	4.000		75	40-140	8	20	
Surrogate: 1,2-Dichlorobenzene-d4	1.16		ug/L	2.500		46	30-130			
Surrogate: 2,4,6-Tribromophenol	3.58		ug/L	3.750		95	15-110			
Surrogate: 2-Fluorobiphenyl	1.87		ug/L	2.500		75	30-130			
Surrogate: Nitrobenzene-d5	1.69		ug/L	2.500		67	30-130			
Surrogate: p-Terphenyl-d14	2.05		ug/L	2.500		82	30-130			

MADEP-EPH Extractable Petroleum Hydrocarbons

Batch CL41521 - 3510C

Blank

C19-C36 Aliphatics1	ND	100	ug/L							
C9-C18 Aliphatics1	ND	100	ug/L							
Decane (C10)	ND	5	ug/L							
Docosane (C22)	ND	5	ug/L							



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1412310

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

MADEP-EPH Extractable Petroleum Hydrocarbons

Batch CL41521 - 3510C

Dodecane (C12)	ND	5	ug/L							
Eicosane (C20)	ND	5	ug/L							
Hexacosane (C26)	ND	5	ug/L							
Hexadecane (C16)	ND	5	ug/L							
Hexatriacontane (C36)	ND	5	ug/L							
Nonadecane (C19)	ND	5	ug/L							
Nonane (C9)	ND	5	ug/L							
Octacosane (C28)	ND	5	ug/L							
Octadecane (C18)	ND	5	ug/L							
Tetracosane (C24)	ND	5	ug/L							
Tetradecane (C14)	ND	5	ug/L							
Triacontane (C30)	ND	5	ug/L							

<i>Surrogate: 1-Chlorooctadecane</i>	<i>37.6</i>		ug/L	<i>50.00</i>		<i>75</i>	<i>40-140</i>			

Blank

C11-C22 Unadjusted Aromatics1	ND	100	ug/L							
<i>Surrogate: 2-Bromonaphthalene</i>	<i>56.5</i>		ug/L	<i>50.00</i>		<i>113</i>	<i>40-140</i>			
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>56.6</i>		ug/L	<i>50.00</i>		<i>113</i>	<i>40-140</i>			
<i>Surrogate: O-Terphenyl</i>	<i>31.3</i>		ug/L	<i>50.00</i>		<i>63</i>	<i>40-140</i>			

Blank

2-Methylnaphthalene	ND	0.50	ug/L							
Acenaphthene	ND	0.20	ug/L							
Acenaphthylene	ND	0.20	ug/L							
Anthracene	ND	0.20	ug/L							
Benzo(a)anthracene	ND	0.20	ug/L							
Benzo(a)pyrene	ND	0.10	ug/L							
Benzo(b)fluoranthene	ND	0.20	ug/L							
Benzo(g,h,i)perylene	ND	0.20	ug/L							
Benzo(k)fluoranthene	ND	0.20	ug/L							
Chrysene	ND	0.20	ug/L							
Dibenzo(a,h)Anthracene	ND	0.20	ug/L							
Fluoranthene	ND	0.20	ug/L							
Fluorene	ND	0.20	ug/L							
Indeno(1,2,3-cd)Pyrene	ND	0.20	ug/L							
Naphthalene	ND	0.50	ug/L							
Phenanthrene	ND	0.50	ug/L							
Pyrene	ND	0.20	ug/L							

LCS

C19-C36 Aliphatics1	380	100	ug/L	400.0		95	40-140			
C9-C18 Aliphatics1	242	100	ug/L	300.0		81	40-140			
Decane (C10)	28	5	ug/L	50.00		57	40-140			
Docosane (C22)	48	5	ug/L	50.00		97	40-140			
Dodecane (C12)	32	5	ug/L	50.00		64	40-140			
Eicosane (C20)	48	5	ug/L	50.00		96	40-140			
Hexacosane (C26)	50	5	ug/L	50.00		99	40-140			



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1412310

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch CL41521 - 3510C										
Hexadecane (C16)	43	5	ug/L	50.00		86	40-140			
Hexatriacontane (C36)	50	5	ug/L	50.00		100	40-140			
Nonadecane (C19)	48	5	ug/L	50.00		95	40-140			
Nonane (C9)	22	5	ug/L	50.00		44	30-140			
Octacosane (C28)	49	5	ug/L	50.00		99	40-140			
Octadecane (C18)	47	5	ug/L	50.00		94	40-140			
Tetracosane (C24)	46	5	ug/L	50.00		93	40-140			
Tetradecane (C14)	37	5	ug/L	50.00		75	40-140			
Triacontane (C30)	50	5	ug/L	50.00		100	40-140			
<i>Surrogate: 1-Chlorooctadecane</i>	<i>37.6</i>		ug/L	<i>50.00</i>		<i>75</i>	<i>40-140</i>			
LCS										
C11-C22 Unadjusted Aromatics1	810	100	ug/L	850.0		95	40-140			
<i>Surrogate: 2-Bromonaphthalene</i>	<i>64.4</i>		ug/L	<i>50.00</i>		<i>129</i>	<i>40-140</i>			
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>59.9</i>		ug/L	<i>50.00</i>		<i>120</i>	<i>40-140</i>			
<i>Surrogate: O-Terphenyl</i>	<i>36.5</i>		ug/L	<i>50.00</i>		<i>73</i>	<i>40-140</i>			
LCS										
2-Methylnaphthalene Breakthrough	0.0		%				0-5			
Naphthalene Breakthrough	0.0		%				0-5			
LCS										
2-Methylnaphthalene	3.03	0.50	ug/L	5.000		61	40-140			
Acenaphthene	4.15	0.20	ug/L	5.000		83	40-140			
Acenaphthylene	4.23	0.20	ug/L	5.000		85	40-140			
Anthracene	4.28	0.20	ug/L	5.000		86	40-140			
Benzo(a)anthracene	4.33	0.20	ug/L	5.000		87	40-140			
Benzo(a)pyrene	4.49	0.10	ug/L	5.000		90	40-140			
Benzo(b)fluoranthene	4.58	0.20	ug/L	5.000		92	40-140			
Benzo(g,h,i)perylene	4.74	0.20	ug/L	5.000		95	40-140			
Benzo(k)fluoranthene	4.59	0.20	ug/L	5.000		92	40-140			
Chrysene	4.84	0.20	ug/L	5.000		97	40-140			
Dibenzo(a,h)Anthracene	4.75	0.20	ug/L	5.000		95	40-140			
Fluoranthene	4.53	0.20	ug/L	5.000		91	40-140			
Fluorene	4.43	0.20	ug/L	5.000		89	40-140			
Indeno(1,2,3-cd)Pyrene	4.79	0.20	ug/L	5.000		96	40-140			
Naphthalene	3.18	0.50	ug/L	5.000		64	40-140			
Phenanthrene	4.32	0.50	ug/L	5.000		86	40-140			
Pyrene	4.64	0.20	ug/L	5.000		93	40-140			
LCS Dup										D+
C19-C36 Aliphatics1	303	100	ug/L	400.0		76	40-140	22	25	
C9-C18 Aliphatics1	149	100	ug/L	300.0		50	40-140	48	25	
Decane (C10)	16	5	ug/L	50.00		31	40-140	58	25	B-
Docosane (C22)	38	5	ug/L	50.00		75	40-140	25	25	
Dodecane (C12)	19	5	ug/L	50.00		38	40-140	52	25	B-
Eicosane (C20)	35	5	ug/L	50.00		70	40-140	31	25	
Hexacosane (C26)	42	5	ug/L	50.00		84	40-140	16	25	



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

MADEP-EPH Extractable Petroleum Hydrocarbons

Batch CL41521 - 3510C

Hexadecane (C16)	28	5	ug/L	50.00		57	40-140	42	25	
Hexatriacontane (C36)	46	5	ug/L	50.00		92	40-140	8	25	
Nonadecane (C19)	34	5	ug/L	50.00		68	40-140	34	25	
Nonane (C9)	12	5	ug/L	50.00		24	30-140	60	25	B-
Octacosane (C28)	43	5	ug/L	50.00		86	40-140	14	25	
Octadecane (C18)	32	5	ug/L	50.00		65	40-140	36	25	
Tetracosane (C24)	38	5	ug/L	50.00		76	40-140	20	25	
Tetradecane (C14)	24	5	ug/L	50.00		47	40-140	46	25	
Triacontane (C30)	45	5	ug/L	50.00		89	40-140	12	25	

Surrogate: 1-Chlorooctadecane

27.6

ug/L

50.00

55

40-140

LCS Dup

C11-C22 Unadjusted Aromatics1	824	100	ug/L	850.0		97	40-140	2	25	
Surrogate: 2-Bromonaphthalene	59.4		ug/L	50.00		119	40-140			
Surrogate: 2-Fluorobiphenyl	59.0		ug/L	50.00		118	40-140			
Surrogate: O-Terphenyl	34.7		ug/L	50.00		69	40-140			

LCS Dup

2-Methylnaphthalene Breakthrough	0.0		%				0-5		200	
Naphthalene Breakthrough	0.0		%				0-5		200	

LCS Dup

2-Methylnaphthalene	2.76	0.50	ug/L	5.000		55	40-140	9	25	
Acenaphthene	3.78	0.20	ug/L	5.000		76	40-140	9	25	
Acenaphthylene	3.85	0.20	ug/L	5.000		77	40-140	9	25	
Anthracene	3.99	0.20	ug/L	5.000		80	40-140	7	25	
Benzo(a)anthracene	4.06	0.20	ug/L	5.000		81	40-140	6	25	
Benzo(a)pyrene	4.26	0.10	ug/L	5.000		85	40-140	5	25	
Benzo(b)fluoranthene	4.37	0.20	ug/L	5.000		87	40-140	5	25	
Benzo(g,h,i)perylene	4.42	0.20	ug/L	5.000		88	40-140	7	25	
Benzo(k)fluoranthene	4.39	0.20	ug/L	5.000		88	40-140	4	25	
Chrysene	4.50	0.20	ug/L	5.000		90	40-140	7	25	
Dibenzo(a,h)Anthracene	4.49	0.20	ug/L	5.000		90	40-140	6	25	
Fluoranthene	4.31	0.20	ug/L	5.000		86	40-140	5	25	
Fluorene	3.99	0.20	ug/L	5.000		80	40-140	11	25	
Indeno(1,2,3-cd)Pyrene	4.51	0.20	ug/L	5.000		90	40-140	6	25	
Naphthalene	3.02	0.50	ug/L	5.000		60	40-140	5	25	
Phenanthrene	3.97	0.50	ug/L	5.000		79	40-140	8	25	
Pyrene	4.27	0.20	ug/L	5.000		85	40-140	8	25	

Batch CL41822 - 3510C

Blank

C19-C36 Aliphatics1	ND	100	ug/L							
C9-C18 Aliphatics1	ND	100	ug/L							
Decane (C10)	ND	5	ug/L							
Docosane (C22)	ND	5	ug/L							
Dodecane (C12)	ND	5	ug/L							



CERTIFICATE OF ANALYSIS

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

MADEP-EPH Extractable Petroleum Hydrocarbons

Batch CL41822 - 3510C

Eicosane (C20)	ND	5	ug/L							
Hexacosane (C26)	ND	5	ug/L							
Hexadecane (C16)	ND	5	ug/L							
Hexatriacontane (C36)	ND	5	ug/L							
Nonadecane (C19)	ND	5	ug/L							
Nonane (C9)	ND	5	ug/L							
Octacosane (C28)	ND	5	ug/L							
Octadecane (C18)	ND	5	ug/L							
Tetracosane (C24)	ND	5	ug/L							
Tetradecane (C14)	ND	5	ug/L							
Triacontane (C30)	ND	5	ug/L							

<i>Surrogate: 1-Chlorooctadecane</i>	<i>33.0</i>		ug/L	<i>50.00</i>		<i>66</i>	<i>40-140</i>

Blank

C11-C22 Unadjusted Aromatics1	ND	100	ug/L				
<i>Surrogate: 2-Bromonaphthalene</i>	<i>34.2</i>		ug/L	<i>50.00</i>		<i>68</i>	<i>40-140</i>
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>43.0</i>		ug/L	<i>50.00</i>		<i>86</i>	<i>40-140</i>
<i>Surrogate: O-Terphenyl</i>	<i>34.4</i>		ug/L	<i>50.00</i>		<i>69</i>	<i>40-140</i>

Blank

2-Methylnaphthalene	ND	0.50	ug/L				
Acenaphthene	ND	0.20	ug/L				
Acenaphthylene	ND	0.20	ug/L				
Anthracene	ND	0.20	ug/L				
Benzo(a)anthracene	ND	0.20	ug/L				
Benzo(a)pyrene	ND	0.10	ug/L				
Benzo(b)fluoranthene	ND	0.20	ug/L				
Benzo(g,h,i)perylene	ND	0.20	ug/L				
Benzo(k)fluoranthene	ND	0.20	ug/L				
Chrysene	ND	0.20	ug/L				
Dibenzo(a,h)Anthracene	ND	0.20	ug/L				
Fluoranthene	ND	0.20	ug/L				
Fluorene	ND	0.20	ug/L				
Indeno(1,2,3-cd)Pyrene	ND	0.20	ug/L				
Naphthalene	ND	0.50	ug/L				
Phenanthrene	ND	0.50	ug/L				
Pyrene	ND	0.20	ug/L				

LCS

C19-C36 Aliphatics1	348	100	ug/L	400.0		87	40-140
C9-C18 Aliphatics1	224	100	ug/L	300.0		75	40-140
Decane (C10)	27	5	ug/L	50.00		54	40-140
Docosane (C22)	45	5	ug/L	50.00		91	40-140
Dodecane (C12)	31	5	ug/L	50.00		62	40-140
Eicosane (C20)	45	5	ug/L	50.00		89	40-140
Hexacosane (C26)	46	5	ug/L	50.00		92	40-140
Hexadecane (C16)	41	5	ug/L	50.00		82	40-140



CERTIFICATE OF ANALYSIS

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Quality Control Data

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MADEP-EPH Extractable Petroleum Hydrocarbons

Batch CL41822 - 3510C

Hexatriacontane (C36)	45	5	ug/L	50.00		91	40-140			
Nonadecane (C19)	44	5	ug/L	50.00		89	40-140			
Nonane (C9)	21	5	ug/L	50.00		42	30-140			
Octacosane (C28)	46	5	ug/L	50.00		91	40-140			
Octadecane (C18)	44	5	ug/L	50.00		87	40-140			
Tetracosane (C24)	43	5	ug/L	50.00		86	40-140			
Tetradecane (C14)	37	5	ug/L	50.00		73	40-140			
Triacotane (C30)	46	5	ug/L	50.00		93	40-140			

Surrogate: 1-Chlorooctadecane 34.5 ug/L 50.00 69 40-140

LCS

C11-C22 Unadjusted Aromatics1	925	100	ug/L	850.0		109	40-140			
<i>Surrogate: 2-Bromonaphthalene</i>	40.7		ug/L	50.00		81	40-140			
<i>Surrogate: 2-Fluorobiphenyl</i>	48.0		ug/L	50.00		96	40-140			
<i>Surrogate: O-Terphenyl</i>	33.7		ug/L	50.00		67	40-140			

LCS

2-Methylnaphthalene	3.03	0.50	ug/L	5.000		61	40-140			
Acenaphthene	4.18	0.20	ug/L	5.000		84	40-140			
Acenaphthylene	4.22	0.20	ug/L	5.000		84	40-140			
Anthracene	4.34	0.20	ug/L	5.000		87	40-140			
Benzo(a)anthracene	4.39	0.20	ug/L	5.000		88	40-140			
Benzo(a)pyrene	4.72	0.10	ug/L	5.000		94	40-140			
Benzo(b)fluoranthene	4.62	0.20	ug/L	5.000		92	40-140			
Benzo(g,h,i)perylene	4.77	0.20	ug/L	5.000		95	40-140			
Benzo(k)fluoranthene	4.96	0.20	ug/L	5.000		99	40-140			
Chrysene	5.02	0.20	ug/L	5.000		100	40-140			
Dibenzo(a,h)Anthracene	4.68	0.20	ug/L	5.000		94	40-140			
Fluoranthene	4.62	0.20	ug/L	5.000		92	40-140			
Fluorene	4.36	0.20	ug/L	5.000		87	40-140			
Indeno(1,2,3-cd)Pyrene	4.67	0.20	ug/L	5.000		93	40-140			
Naphthalene	3.20	0.50	ug/L	5.000		64	40-140			
Phenanthrene	4.38	0.50	ug/L	5.000		88	40-140			
Pyrene	4.88	0.20	ug/L	5.000		98	40-140			

LCS Dup

C19-C36 Aliphatics1	356	100	ug/L	400.0		89	40-140	2	25	
C9-C18 Aliphatics1	216	100	ug/L	300.0		72	40-140	3	25	
Decane (C10)	25	5	ug/L	50.00		50	40-140	7	25	
Docosane (C22)	47	5	ug/L	50.00		93	40-140	3	25	
Dodecane (C12)	29	5	ug/L	50.00		58	40-140	7	25	
Eicosane (C20)	46	5	ug/L	50.00		92	40-140	3	25	
Hexacosane (C26)	48	5	ug/L	50.00		95	40-140	3	25	
Hexadecane (C16)	42	5	ug/L	50.00		85	40-140	3	25	
Hexatriacontane (C36)	46	5	ug/L	50.00		93	40-140	3	25	
Nonadecane (C19)	46	5	ug/L	50.00		92	40-140	3	25	
Nonane (C9)	19	5	ug/L	50.00		39	30-140	6	25	



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1412310

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

MADEP-EPH Extractable Petroleum Hydrocarbons

Batch CL41822 - 3510C

Octacosane (C28)	47	5	ug/L	50.00		94	40-140	3	25	
Octadecane (C18)	45	5	ug/L	50.00		90	40-140	3	25	
Tetracosane (C24)	45	5	ug/L	50.00		89	40-140	3	25	
Tetradecane (C14)	36	5	ug/L	50.00		73	40-140	0.9	25	
Triacotane (C30)	48	5	ug/L	50.00		96	40-140	3	25	

Surrogate: 1-Chlorooctadecane

34.1

ug/L

50.00

68

40-140

LCS Dup

C11-C22 Unadjusted Aromatics1	827	100	ug/L	850.0		97	40-140	11	25	
<i>Surrogate: 2-Bromonaphthalene</i>	43.1		ug/L	50.00		86	40-140			
<i>Surrogate: 2-Fluorobiphenyl</i>	47.4		ug/L	50.00		95	40-140			
<i>Surrogate: O-Terphenyl</i>	33.4		ug/L	50.00		67	40-140			

LCS Dup

2-Methylnaphthalene	2.91	0.50	ug/L	5.000		58	40-140	4	25	
Acenaphthene	3.96	0.20	ug/L	5.000		79	40-140	5	25	
Acenaphthylene	4.05	0.20	ug/L	5.000		81	40-140	4	25	
Anthracene	4.07	0.20	ug/L	5.000		81	40-140	7	25	
Benzo(a)anthracene	3.99	0.20	ug/L	5.000		80	40-140	10	25	
Benzo(a)pyrene	4.41	0.10	ug/L	5.000		88	40-140	7	25	
Benzo(b)fluoranthene	4.15	0.20	ug/L	5.000		83	40-140	11	25	
Benzo(g,h,i)perylene	4.43	0.20	ug/L	5.000		89	40-140	7	25	
Benzo(k)fluoranthene	4.76	0.20	ug/L	5.000		95	40-140	4	25	
Chrysene	4.67	0.20	ug/L	5.000		93	40-140	7	25	
Dibenzo(a,h)Anthracene	4.36	0.20	ug/L	5.000		87	40-140	7	25	
Fluoranthene	4.27	0.20	ug/L	5.000		85	40-140	8	25	
Fluorene	4.16	0.20	ug/L	5.000		83	40-140	5	25	
Indeno(1,2,3-cd)Pyrene	4.39	0.20	ug/L	5.000		88	40-140	6	25	
Naphthalene	2.98	0.50	ug/L	5.000		60	40-140	7	25	
Phenanthrene	4.06	0.50	ug/L	5.000		81	40-140	7	25	
Pyrene	4.38	0.20	ug/L	5.000		88	40-140	11	25	

MADEP-VPH Volatile Petroleum Hydrocarbon

Batch CL41743 - 5030B

Blank

1,2,4-Trimethylbenzene	ND	5.0	ug/L							
2,2,4-Trimethylpentane	ND	5.0	ug/L							
2-Methylpentane	ND	5.0	ug/L							
Benzene	ND	1.5	ug/L							
C5-C8 Unadjusted Aliphatics	ND	150	ug/L							
C9-C10 Aromatics	ND	100	ug/L							
C9-C12 Unadjusted Aliphatics	ND	150	ug/L							
Ethylbenzene	ND	5.0	ug/L							
Methyl tert-Butyl Ether	ND	1.5	ug/L							
Naphthalene	ND	5.0	ug/L							
n-Butylcyclohexane	46.7	5.0	ug/L							



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.

Client Project ID: Union Square

ESS Laboratory Work Order: 1412310

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier

MADEP-VPH Volatile Petroleum Hydrocarbon

Batch CL41743 - 5030B

n-Decane	38.6	5.0	ug/L							
Nonane (C9)	45.5	5.0	ug/L							
Pentane	ND	5.0	ug/L							
Toluene	ND	5.0	ug/L							
Xylene O	ND	5.0	ug/L							
Xylene P,M	ND	10.0	ug/L							

Surrogate: 2,5-Dibromotoluene - FID	46.6		ug/L	50.00		93	70-130			
Surrogate: 2,5-Dibromotoluene - PID	49.1		ug/L	50.00		98	70-130			

LCS

1,2,4-Trimethylbenzene	98.5		ug/L	100.0		98	70-130			
2,2,4-Trimethylpentane	129		ug/L	150.0		86	70-130			
2-Methylpentane	151		ug/L	150.0		101	70-130			
Benzene	46.9		ug/L	50.00		94	70-130			
C5-C8 Unadjusted Aliphatics	385		ug/L	400.0		96	70-130			
C9-C10 Aromatics	96.5		ug/L	100.0		97	70-130			
C9-C12 Unadjusted Aliphatics	285		ug/L	300.0		95	70-130			
Ethylbenzene	48.4		ug/L	50.00		97	70-130			
Methyl tert-Butyl Ether	150		ug/L	150.0		100	70-130			
Naphthalene	99.3		ug/L	100.0		99	70-130			
n-Butylcyclohexane	103		ug/L	100.0		103	70-130			
n-Decane	109		ug/L	100.0		109	70-130			
Nonane (C9)	102		ug/L	100.0		102	30-130			
Pentane	112		ug/L	100.0		112	70-130			
Toluene	147		ug/L	150.0		98	70-130			
Xylene O	96.9		ug/L	100.0		97	70-130			
Xylene P,M	198		ug/L	200.0		99	70-130			

Surrogate: 2,5-Dibromotoluene - FID	55.2		ug/L	50.00		110	70-130			
Surrogate: 2,5-Dibromotoluene - PID	57.9		ug/L	50.00		116	70-130			

LCS Dup

1,2,4-Trimethylbenzene	97.4		ug/L	100.0		97	70-130	1	25	
2,2,4-Trimethylpentane	164		ug/L	150.0		109	70-130	24	25	
2-Methylpentane	155		ug/L	150.0		103	70-130	2	25	
Benzene	46.7		ug/L	50.00		93	70-130	0.5	25	
C5-C8 Unadjusted Aliphatics	422		ug/L	400.0		106	70-130	9	25	
C9-C10 Aromatics	96.4		ug/L	100.0		96	70-130	0.05	25	
C9-C12 Unadjusted Aliphatics	290		ug/L	300.0		97	70-130	2	25	
Ethylbenzene	48.2		ug/L	50.00		96	70-130	0.4	25	
Methyl tert-Butyl Ether	148		ug/L	150.0		99	70-130	0.9	25	
Naphthalene	103		ug/L	100.0		103	70-130	3	25	
n-Butylcyclohexane	103		ug/L	100.0		103	70-130	0.5	25	
n-Decane	111		ug/L	100.0		111	70-130	2	25	
Nonane (C9)	106		ug/L	100.0		106	30-130	4	25	
Pentane	112		ug/L	100.0		112	70-130	0.6	25	
Toluene	147		ug/L	150.0		98	70-130	0.2	25	



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1412310

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-VPH Volatile Petroleum Hydrocarbon										
Batch CL41743 - 5030B										
Xylene O	95.4		ug/L	100.0		95	70-130	2	25	
Xylene P,M	195		ug/L	200.0		98	70-130	1	25	
Surrogate: 2,5-Dibromotoluene - FID	53.2		ug/L	50.00		106	70-130			
Surrogate: 2,5-Dibromotoluene - PID	55.9		ug/L	50.00		112	70-130			



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1412310

Notes and Definitions

Z-06	pH <= 2
U	Analyte included in the analysis, but not detected
SC	Surrogate recovery(ies) outside of criteria. Reextraction/Reanalysis confirms results (SC).
S+	Surrogate recovery(ies) above upper control limit (S+).
D+	Relative percent difference for duplicate is outside of criteria (D+).
D	Diluted.
C+	Continuing Calibration recovery is above upper control limit (C+).
B-	Blank Spike recovery is below lower control limit (B-).
ND	Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MDL	Method Detection Limit
MRL	Method Reporting Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
DL	Detection Limit
I/V	Initial Volume
F/V	Final Volume
§	Subcontracted analysis; see attached report
1	Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
2	Range result excludes concentrations of target analytes eluting in that range.
3	Range result excludes the concentration of the C9-C10 aromatic range.
Avg	Results reported as a mathematical average.
NR	No Recovery
[CALC]	Calculated Analyte
SUB	Subcontracted analysis; see attached report



CERTIFICATE OF ANALYSIS

Client Name: PEER Consultants, P.C.
Client Project ID: Union Square

ESS Laboratory Work Order: 1412310

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Department of Defense (DoD) Environmental Laboratory Accreditation Program (ELAP)

A2LA Accredited: Testing Cert# 2864.01

<http://www.a2la.org/scopepdf/2864-01.pdf>

Rhode Island Potable and Non Potable Water: LAI00179

<http://www.health.ri.gov/find/labs/analytical/ESS.pdf>

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750

http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutofStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI0002

<http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/documents/AllLabs.xls>

Massachusetts Potable and Non Potable Water: M-RI002

<http://public.dep.state.ma.us/Labcert/Labcert.aspx>

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424

<http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm>

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313

<http://www.wadsworth.org/labcert/elap/comm.html>

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006

http://datamine2.state.nj.us/DEP_Opra/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752

http://www.depweb.state.pa.us/portal/server.pt/community/labs/13780/laboratory_accreditation_program/590095

CHEMISTRY

A2LA Accredited: Testing Cert # 2864.01

Lead in Paint, Phthalates, Lead in Children's Metals Products (Including Jewelry)

<http://www.A2LA.org/dirsearchnew/newsearch.cfm>

CPSC ID# 1141

Lead Paint, Lead in Children's Metals Jewelry

<http://www.cpsc.gov/cgi-bin/labapplist.aspx>

Sample and Cooler Receipt Checklist

Client: PEER Consultants

Client Project ID: _____

Shipped/Delivered Via: ESS CourierESS Project ID: 14120310Date Project Due: 12/23/14Days For Project: 5 Day**Items to be checked upon receipt:**

1. Air Bill Manifest Present?

☒ * No

Air No.: _____

2. Were Custody Seals Present?

☐ No

3. Were Custody Seals Intact?

☐ N/A

4. Is Radiation count < 100 CPM?

☐ Yes

5. Is a cooler present?

☐ YesCooler Temp: 3.6Iced With: Ice

6. Was COC included with samples?

☐ Yes

7. Was COC signed and dated by client?

☐ Yes

8. Does the COC match the sample

☐ Yes

9. Is COC complete and correct?

☐ Yes

10. Are the samples properly preserved?

☐ Yes

11. Proper sample containers used?

☐ Yes

12. Any air bubbles in the VOA vials?

☒ No

13. Holding times exceeded?

☐ No

14. Sufficient sample volumes?

☐ Yes

15. Any Subcontracting needed?

☐ No

16. Are ESS labels on correct containers?

☒ Yes | No

17. Were samples received intact?

☒ Yes | No

ESS Sample IDs: _____

Sub Lab: _____

Analysis: _____

TAT: _____

18. Was there need to call project manager to discuss status? If yes, please explain.

PB-5 - diss. Metals expired out of hold MB 12/16/14

Who was called?: _____

By whom? _____

Sample Number	Properly Preserved	Container Type	# of Containers	Preservative
1	Yes	1 L Glass	2	HCL
1	Yes	1 L Glass	4	NP
1	Yes	250 ml Plastic	1	HNO3 NP MB 12/16/14
1	Yes	40 ml - VOA	6	HCL
2	Yes	1 L Glass	2	HCL
2	Yes	1 L Glass	4	NP
2	Yes	250 ml Plastic	1	HNO3 NP MB 12/16/14
2	Yes	40 ml - VOA	6	HCL
3	Yes	1 L Glass	2	HCL
3	Yes	1 L Glass	4	NP
3	Yes	250 ml Plastic	1	HNO3 NP MB 12/16/14
3	Yes	40 ml - VOA	6	HCL

Completed By: [Signature]Date/Time: 12/16/14 0943Reviewed By: [Signature]Date/Time: 12/16/14 1022

ESS Laboratory

Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston, RI 02910-2211
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

CHAIN OF CUSTODY

Page 1 of 1

Turn Time If faster than 5 days, prior approval by laboratory is required #	Standard Other	Reporting Limits GW-1	ESS LAB PROJECT ID 1412310
State where samples were collected from: MA RI CT NH NJ NY ME Other	MA RI CT NH NJ NY ME Other	Electronic Deliverable Format: Excel ☒ Access ☐ PDF ☒ Other ☐	Yes ☒ No ☐
Is this project for any of the following: MA-MCP Navy USACE Other			

Co. Name PEER Consultants	Project # 5559	Project Name (20 Char. or less) Union Square	Circle and/or Write Required Analysis																																																																																																					
Contact Person Dave Gorden	Address 99 S. Bedford St Suite 200	City Burlington	State MA	Zip 01803																																																																																																				
Telephone # 7812388880	Fax # 7812388884	Email Address gorden@peerpc.com	PO# 5559																																																																																																					
ESS LAB Sample #	Collection Time	Date	COMP	GRAB																																																																																																				
1	12-15-14	1000	✓	✓																																																																																																				
2	1200	1200	✓	✓																																																																																																				
3	1400	1400	✓	✓																																																																																																				
<table border="1"> <thead> <tr> <th>ESS LAB Sample #</th> <th>Collection Time</th> <th>Date</th> <th>COMP</th> <th>GRAB</th> <th>MATRIX</th> <th>Sample Identification (20 Char. or less)</th> <th>Pres Code</th> <th>Number of Containers</th> <th>Type of Containers</th> <th>8260 VOA</th> <th>8021 GRO</th> <th>8015 MTBE/TEX</th> <th>8100 TPH</th> <th>8015 DRO</th> <th>EPH w/o PAHs</th> <th>EPH w/PAHs 4 Diesel</th> <th>8081 PCB</th> <th>8082 Pesticides</th> <th>PAH 608</th> <th>SVOA 8270</th> <th>RCRAS PP13 TAL23</th> <th>RCRAS 625</th> <th>TCLP-RCRAS NBC7</th> <th>MCP-METALS (13) w/Hg</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>12-15-14</td> <td>1000</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>60 PB5</td> <td>12</td> <td>13</td> <td>6V</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> </tr> <tr> <td>2</td> <td>1200</td> <td>1200</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>1 PB3</td> <td>1</td> <td>1</td> <td>↓</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> </tr> <tr> <td>3</td> <td>1400</td> <td>1400</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>1 PB1</td> <td>1</td> <td>1</td> <td>↓</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> </tr> </tbody> </table>					ESS LAB Sample #	Collection Time	Date	COMP	GRAB	MATRIX	Sample Identification (20 Char. or less)	Pres Code	Number of Containers	Type of Containers	8260 VOA	8021 GRO	8015 MTBE/TEX	8100 TPH	8015 DRO	EPH w/o PAHs	EPH w/PAHs 4 Diesel	8081 PCB	8082 Pesticides	PAH 608	SVOA 8270	RCRAS PP13 TAL23	RCRAS 625	TCLP-RCRAS NBC7	MCP-METALS (13) w/Hg	1	12-15-14	1000	✓	✓	✓	60 PB5	12	13	6V	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	2	1200	1200	✓	✓	✓	1 PB3	1	1	↓	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	3	1400	1400	✓	✓	✓	1 PB1	1	1	↓	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
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3	1400	1400	✓	✓	✓	1 PB1	1	1	↓	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X																																																																																

Container Type: P-Poly G-Glass S-Sterile V-VOA	Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters
Cooler Present ☒ Yes ☐ No	Internal Use Only
Seals Intact ☐ Yes ☒ No NA: X	12/16/14
Cooler Temp: 3.6°/3.4°/3.1°	Technicians
Relinquished by: (Signature) <i>[Signature]</i>	Date/Time 12/15/14 1500
Relinquished by: (Signature) <i>[Signature]</i>	Date/Time 12/16/14 10928
Relinquished by: (Signature) <i>[Signature]</i>	Date/Time 12/16/14 10928
Relinquished by: (Signature) <i>[Signature]</i>	Date/Time 12/16/14 10928

ATTACHMENT C – TRAFFIC MARKINGS – COATING SYSTEMS

STREETBONDCL COATING APPLICATION TO NON-TEXTURED ASPHALT PAVEMENT SPECIFICATION

while providing good durability. **StreetBondCL** is durable in both dry and wet environments.

- B. StreetBond Colorant** is a highly concentrated, high quality, UV stable pigment blend designed to add color to **StreetBondCL**. One unit of Colorant shall be used with one pail of **StreetBondCL** coating material.

2.1.1 Properties of StreetBond coatings

The following tables outline the physical and performance properties of the **StreetBond** coatings as determined by an independent testing laboratory.

TABLE 1: Typical Physical Properties of StreetBondCL Coatings.

Characteristic	Test Specification	StreetBondCL
Solids by Volume	ASTM D-2697	55%
Solids by Weight	ASTM D-2369	68.9%
Density	ASTM D-1475	13.34 lbs/gal (1.599 kg/l)

TABLE 2: Typical Performance Properties of StreetBond Coatings

Characteristic	Test Specification	StreetBondCL	
Dry time (To re-coat)	ASTM D-5895 23°C; 37% RH	35 min	
Taber Wear Abrasion Dry H-10 wheel	ASTM D-4060 1 day cure	0.98 g/1000 cycles	
Taber Wear Abrasion Wet H-10 wheel	ASTM D-4060 7 days cure	3.4 g/1000 cycles	
Accelerated Weathering Environment	ASTM G-155 2,000 hours (CIE Units)	ΔE = 0.49 (brick color)	
Hydrophobicity Water absorption	ASTM D-570	8.3% (9 days immersion)	
Shore hardness	ASTM D-2240	63 Type D	
Mandrel Bend	ASTM D522-93A	1/4" @ 21°C	
Permeance	ASTM D1653	3.45 g/m²/hr (52 mils)	
VOC	Per MSDS	23 g/l	
Adhesion to Asphalt	ASTM D-4541	Substrate Failure	
Friction Wet	ASTM E-303 British Pendulum Tester	WP* coated	64
		WP* uncoated	57
		AC** coated	73
		AC** uncoated	60

STREETBONDCL COATING APPLICATION TO NON-TEXTURED ASPHALT PAVEMENT SPECIFICATION

PART 1 – GENERAL

1.1 DESCRIPTION

- A. **StreetBondCL** cycle lane coating is a highly specialized coating specifically designed for application onto asphalt pavement to demarcate cycle lanes.
- B. **StreetBondCL** Advanced Coatings for Asphalt are specifically formulated for application to asphalt pavement and have been confirmed by a certified testing facility to possess a balance of performance properties for a durable and color-fast finish.
- C. A variety of colors are available, including green and red. Please refer to www.streetbond.com to view these. Custom colors are available upon request as well as LEED compliant colors.
- D. **StreetBondCL** cycle lane coating performance has been tested and verified by an independent recognized testing laboratory. A Certificate of Analysis confirming these test results is available through either an Accredited Applicator or directly from Quest Construction Products (800-541-4383). Please refer to the certified performance properties of **StreetBondCL** cycle lane coating outlined in Section 2 of this specification.
- E. **StreetBondCL** coatings are only available from Quest Construction Products, (Tel. 800-541-4383).
- F. Qualifications. Only **Accredited Applicators** may bid for and perform the imprinted portion of this work. Please refer to **Section 1.3 DEFINITIONS**.

1.2 REFERENCES

- A. ASTM D-4541 Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Tester.
- B. ASTM D-4060 Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser.
- C. ASTM D-2697 Standard Test Method for Volume of Nonvolatile Matter in Clear or Pigmented Coatings.
- D. ASTM D522-93A Standard Test Method for Mandrel Bend Test of Attached Organic Coatings.
- E. ASTM D1653 Standard test method for water vapor transmission or organic film coatings.
- F. ASTM G-155 Accelerated Weathering Environment Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Nonmetallic Materials.
- G. ASTM D 2369 Weight Solids Standard test method for Volatile Content of Coatings.
- H. ASTM D 1475 Standard Test method for Density of Paint, Varnish, Lacquer, Other related products.

STREETBONDCL COATING APPLICATION TO NON-TEXTURED ASPHALT PAVEMENT SPECIFICATION

- I. ASTM D-2240 (2000) Standard Test Method for Rubber property – Durometer hardness.
- J. ASTM D-5895 Standard Test Method of drying or curing during film formation of organic coatings using mechanical recorders.
- K. ASTM D-570 Standard Test Method for water absorption of plastics.

1.3 DEFINITIONS

- A. **“Accredited Applicator”** has a valid Accreditation Certificate as offered by Quest Construction Products. (Tel. 800-541-4383). **StreetBond** applicators are reviewed on an annual basis. All **Accredited Applicators** have been qualified by Quest Construction Products to perform the Work.
- B. **“Applicator”** means the installer of the **StreetBond** coatings.
- C. **“Owner”** means the Owner and refers to the representative person who has decision making authority for the Work.
- D. **“Textured asphalt pavement”** is asphalt pavement that has been subjected to imprinting or stamping in a specific pattern.
- E. **“Non-textured asphalt pavement”** is asphalt pavement that is unstamped and is sometimes referred to as “flatwork”.
- F. **The “Work”** is the asphalt pavement texturing work contemplated in this bid submission and specification.
- G. **“Scuffing”** is a “tear” of the asphalt pavement caused by an external force. Stationary vehicle tires turning on the pavement surface is a typical cause.
- H. **“Layer”** is a pass, using the RSG spray gun, that is allowed to dry before the next pass is applied.

1.4 SUBMITTALS

A copy of the Accreditation Certificate, available from the **Applicator**, is required with submittal.

PART 2 – PRODUCTS

2.1 MATERIALS – STREETBONDCL COATING

StreetBondCL coating has been scientifically formulated to provide the optimal balance of performance properties for a durable, long lasting color and texture finish to asphalt pavement surfaces. Some of these key properties include wear and crack resistance, color retention, adhesion, minimal water absorption and increased friction properties. **StreetBond** coatings are environmentally safe and meet EPA requirements for Volatile Organic Compounds (VOC).

- A. **StreetBondCL** is a premium epoxy modified, acrylic, waterborne coating specifically designed for application on asphalt pavements. It has a balance of properties to ensure good adhesion and movement on flexible pavement,

STREETBONDCL COATING APPLICATION TO NON-TEXTURED ASPHALT PAVEMENT SPECIFICATION

*WP – test conducted on asphalt pavement in wheel path

**AC – test conducted on asphalt pavement adjacent to curb.

Certificates of Analysis are available upon request for each of these properties.

2.2 EQUIPMENT FOR STREETBOND APPLICATION

The equipment described has been designed specifically for optimal application of StreetBond coatings. Other equipment may or may not be suitable and could compromise the performance of the StreetBond coatings and/or reduce crew productivity.

- A. The **Rapid Sprayer II** is a proprietary coating sprayer supplied by Integrated Paving Concepts Inc. and is capable of applying the **StreetBond** coatings to the asphalt pavement surface in a thin, controlled film which will optimize the drying and curing time of the coating.
- B. The **StreetBond Coatings Mixer** is a motorized mixing device designed to ensure efficient and thorough blending of the **StreetBond** components.
- C. The **Rapid Finisher II** is an electric powered broom supplied by Integrated Paving Concepts Inc. that can be used in the application of **StreetBond** coatings to improve productivity. It is especially useful on larger projects.

PART 3 - EXECUTION

3.1 GENERAL

StreetBond coating shall be supplied and applied on non-textured asphalt surface by an **Accredited Applicator** in accordance with the plans and specifications or as directed by the Owner. Do not begin installation without confirmation of an Accreditation Certificate.

3.2 PRE-CONDITIONS

The condition of the asphalt substrate will impact the performance of the **StreetBond** coatings. A highly stable asphalt pavement free of defects is recommended.

3.2.1 Pre-requisites for new asphalt pavement

A durable and stable asphalt pavement mix design installed according to best practices over a properly prepared and stable substrate is a pre-requisite for all long-lasting asphalt pavement surfaces. The application of **StreetBond** does not change this requirement.

STREETBONDCL COATING APPLICATION TO NON-TEXTURED ASPHALT PAVEMENT SPECIFICATION

3.2.3 Pavement Marking Removal: recommended guidelines

Pavement markings may be removed by sandblasting, water-blasting, grinding, or other approved mechanical methods. The removal methods should, to the fullest extent possible, cause no significant damage to the pavement surface. The Owner shall determine if the removal of the markings is satisfactory for the application of **StreetBond** coatings. Work shall not proceed until this approval is granted.

3.2.4 Surface Preparation

The asphalt pavement surface shall be dry and free from all foreign matter, including but not limited to dirt, dust, de-icing materials, and chemical residue.

3.3 APPLICATION OF STREETBOND COATINGS

3.3.1 StreetBond Coating System Options

The selection of the appropriate **StreetBond** coating or system of coatings and the required number of layers of each is dependent upon the application as outlined here in **TABLE 3**.

TABLE 3: COATING SYSTEM OPTIONS

	<u>Stamped Asphalt surface</u> <u>Scuff** concern</u>	<u>Stamped Asphalt surface</u> <u>No Scuff** concern</u>	<u>Non Stamped / Textured***</u> <u>Asphalt surface</u>
No Vehicle Traffic ▪ Pedestrian ▪ Cycle paths ▪ Sidewalks ▪ Plazas	N/A	3 layers StreetBond150	
Very Low Vehicle Traffic ▪ Residential	1 layer StreetBond150 over 2 layers StreetBond CemBase	3 layers StreetBond150	
Low / Medium Vehicle Traffic ▪ Parking lots ▪ Low traffic crosswalks ▪ Low traffic entries ▪ Level Medians ▪ Cycle paths in traffic	2 layers StreetBond150 over 2 layers StreetBond CemBase	4 layers StreetBond150	

Notes:

1. The **Applicator** can make the final determination of the coating system option to be used for the project.

STREETBONDCL COATING APPLICATION TO NON-TEXTURED ASPHALT PAVEMENT SPECIFICATION

2. Additional layers of **StreetBondCL** may be used to provide additional build thickness in high wear areas such as wheel paths and vehicle turning areas.
3. A maintenance program may be required for applications exposed to:
 - scuffing
 - abrasive materials (such as salt and sand)
 - abrasive equipment (such as snow removal equipment)

3.3.2 Coating Application Guidelines

- A. The **Applicator** shall use the **Rapid Sprayer II** to apply the **StreetBond** coatings.
- B. The asphalt pavement surface shall be completely dry and thoroughly cleaned prior to application of the coatings.
- C. The coating application shall proceed as soon as practical upon completion of the imprinting of the asphalt pavement where applicable.
- D. The first layer of coating shall be spray applied then broomed to work the coating material into the pavement surface. Subsequent applications shall be sprayed then broomed or rolled. Each application of coating material shall be allowed to dry to the touch before applying the next layer.
- E. The **Applicator** shall apply the **StreetBond** coatings only when the air temperature is 50°F / (10°C) and rising and will not drop below 50°F / (10°C) within 24 hours. No precipitation should be expected within 24 hours.

3.4 COATING COVERAGE & THICKNESS

Recommended coating coverage and thickness is as outlined in **TABLE 4** below. Actual coverage may be affected by the texture of the asphalt pavement substrate and the imprint pattern selected. There will be less coverage with the first layer and higher coverage with subsequent layers.

TABLE 4: COATING COVERAGE AND THICKNESS

# OF LAYERS	COVERAGE (approx.)		THICKNESS (approx.)			
	TEXTURED (Offset brick) SF/pail	NON- TEXTURED SF/pail	WET		DRY	
			mm	mil	mm	mil
3	200	225	0.65	25.7	0.36	14.1
4	150	175	0.87	34.3	0.48	18.9

STREETBONDCL COATING APPLICATION TO NON-TEXTURED ASPHALT PAVEMENT SPECIFICATION

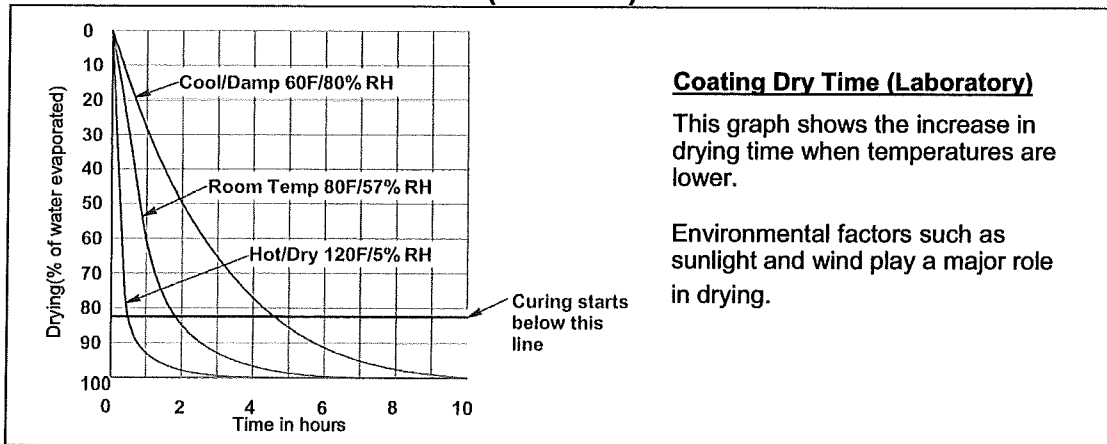
3.5 OPENING TO TRAFFIC

Minimally, the surface coating must be 100% dry before traffic is permitted. The following table is a guide:

3.6 EDGE STRIPING

Once **StreetBondCL** cycle lane coating has dried, a hot spray applied white stripe may be installed along the edge of the bike path if desired.

TABLE 5: COATING DRY TIMES (TYPICAL)



If **StreetBond** coatings are applied when moisture cannot evaporate, then the coating will not dry. The drying and curing of **StreetBond** coatings have a direct impact on performance.

PART 4 – MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

The measured area is the actual area of asphalt pavement where **StreetBond** has been applied, measured in place. No deduction will be made for the area(s) occupied by manholes, inlets, drainage structures, bollards or by any public utility appurtenances within the area.

4.2 PAYMENT

Payment will be full compensation for all work completed as per conditions set out in the contract. For unit price contracts, the payment shall be calculated using the measured area as determined above.

Steve Stella

From: Alicia Climer
Sent: Friday, June 27, 2014 8:11 AM
To: Steve Stella
Subject: FW: request for specs
Attachments: Bike Lane coating Specification.pdf

From: John McNulty [<mailto:john@mcnultyconstruction.com>]
Sent: Thursday, June 26, 2014 4:57 PM
To: Alicia Climer
Subject: RE: request for specs

They are changing the name back to Ride-a-way.
They are also looking to make the color standardize with the brighter green like we did on Commonwealth Avenue.
The coating is exactly the same as we have always used.
As soon as I get the one with the different name I will send it along.

Thanks
John McNulty

From: Alicia Climer [<mailto:Alicia@markingsinc.com>]
Sent: Thursday, June 26, 2014 8:17 AM
To: john@mcnultyconstruction.com
Subject: request for specs

Please send green epoxy specs.

Thank you.
Steve

**STREETBONDSR COATED ASPHALT SPECIFICATION
FLAT (NON STAMPED) SURFACE**

PART 1 – GENERAL

1.1 DESCRIPTION

- A. **StreetBond** Advanced Coatings for Asphalt are specifically formulated for application to asphalt pavement and have been confirmed by a certified testing facility to possess a balance of performance properties for a durable and color-fast finish.
- B. Certain colors of the **StreetBond** coatings have been independently verified to have an SRI greater than 29 and therefore can help projects qualify for points in the LEED program under Heat Island Effect: Non-Roof. Please refer to www.quest-cp.com for further information.
- C. **StreetBondSR** is created when **StreetBond150** are mixed use one of the colorant with SRI greater than 29.
- D. Qualifications. Only **Accredited StreetBond Applicators** may bid for and perform the imprinted portion of this work. Please refer to **Section 1.3 DEFINITIONS**.
- E. **StreetBond** products are manufactured in **ISO9001 / ISO14001** facilities to ensure quality products produced in legally-responsible and environmentally-conscious manner
- F. **StreetBond** coatings are only available from Quest Construction Products.

1.2 REFERENCES

- A. ASTM D-4541 Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Tester.
- B. ASTM D-4060 Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser.
- C. ASTM D-2697 Standard Test Method for Volume of Nonvolatile Matter in Clear or Pigmented Coatings.
- D. ASTM D522-93A Standard Test Method for Mandrel Bend Test of Attached Organic Coatings.
- E. ASTM D1653 Standard test method for water vapor transmission through organic film coatings.
- F. ASTM G-154 QUV Accelerated Weathering Environment. Standard Practice for Operating Fluorescent Light Apparatus for UV Exposure of Nonmetallic Materials.
- G. ASTM D 2369 Weight Solids Standard test method for Volatile Content of Coatings.
- H. ASTM D 1475 Standard Test method for Density of Paint, Varnish, Lacquer, Other related products.
- I. ASTM D-2240 (2000) Standard Test Method for Rubber property – Durometer hardness.



STREETBONDSR COATED ASPHALT SPECIFICATION FLAT (NON STAMPED) SURFACE

- J. ASTM D-5895 Standard Test Method of drying or curing during film formation of organic coatings using mechanical recorders.
- K. ASTM D-570 Standard Test Method for water absorption of plastics.

1.3 DEFINITIONS

- A. **"Accredited StreetBond Applicator"** has valid Certification for both Textured (stamped) and Non-Textured (flatwork) as offered by Quest Construction Products and are reviewed on an annual basis. All **Accredited StreetBond Applicators** have been qualified by Quest Construction Products to perform the Work and offer a product Warranty.
- B. **"Approved Applicator"** has valid Certification for non-textured (flatwork) application **ONLY** as offered by Quest Construction Products and are reviewed on an annual basis. Product Warranties may be available to **Approved Applicators** but require approval and supervision by a Quest Construction Products Technical Sales Representative.
- C. **"Applicator"** means the installer of the **StreetBond** coatings.
- D. **"Owner"** means the Owner and refers to the representative person who has decision making authority for the Work.
- E. **"TSR"** is a Quest Technical Sales Representative who manages the StreetBond product in a given territory.
- F. **"Stamped asphalt pavement"** is asphalt pavement that has been subjected to imprinting or texturing in a specific pattern.
- G. **"Non-Stamped asphalt pavement"** is asphalt pavement that is unstamped and is sometimes referred to as "flatwork".
- H. **The "Work"** is the asphalt pavement texturing work contemplated in this bid submission and specification.
- I. **"Scuffing"** is a "tear" of the asphalt pavement caused by an external force – for example turning the steering wheel of a stationary vehicle. Scuffing is generally the result of poorly designed or improperly installed asphalt and would most-commonly be seen on weaker residential asphalt.
- J. **"Layer"** is a signal thin pass of coating, applied with a texture spray gun, which is allowed to dry before the next layer is applied.
- K. **"Warranty"** is a guarantee to the property owner that StreetBond150, when properly applied will not peel, delaminate or show abnormal wear over specific period of time depending on the traffic volumes and number of layer applied. Please contact your local TSR for more details.

1.4 SUBMITTALS

A copy of the Accreditation Certificate, available from the **Applicator**, is required with submittal. Independent test results available upon request.

STREETBONDSR COATED ASPHALT SPECIFICATION FLAT (NON STAMPED) SURFACE

PART 2 – PRODUCTS

2.1 MATERIALS – STREETBOND COATINGS

StreetBond coatings have been scientifically formulated to provide the optimal balance of performance properties for a durable, long-lasting color and textured finish to asphalt pavement surfaces. Some of these key properties include wear and crack resistance, color retention, adhesion, minimal water absorption and increased friction properties. **StreetBond** coatings are environmentally safe and meet EPA requirements for Volatile Organic Compounds (VOC).

- A. StreetBond150** is a premium epoxy-modified, acrylic, waterborne coating specifically designed for application on asphalt pavements. It has a balance of properties to ensure good adhesion and movement on flexible pavement, while providing good durability. **StreetBond150** is durable in both dry and wet environments.
- B. StreetBond Colorant** is a highly-concentrated, high quality, UV stable pigment blend designed to add color to **StreetBond150** coatings. One unit of Colorant shall be used with one pail of **StreetBond** coating material.

2.1.1 Properties of StreetBond coatings

The following tables outline the test results for physical and performance properties of the **StreetBond** coatings as determined by an independent testing laboratory.

TABLE 1: Typical Physical Properties of StreetBond Coatings.

Characteristic	Test Specification	SB150
Solids by Volume	ASTM D-2697	58.187%
Solids by Weight	ASTM D-2369	74.919%
Density	ASTM D-1475	13.8 lbs/gal (1.58 kg/l)

STREETBONDSR COATED ASPHALT SPECIFICATION FLAT (NON STAMPED) SURFACE

TABLE 2: Typical Performance Properties of StreetBond Coatings

Characteristic	Test Specification	SB150
Dry time (To re-coat)	ASTM D-5895 23°C; 37% RH	35 min
Taber Wear Abrasion Dry H-10 wheel	ASTM D-4060 1 day cure	0.760g/1000 cycles
Taber Wear Abrasion Wet H-10 wheel	ASTM D-4060 7 days cure	1.670g/1000 cycles
QUV Accelerate Weathering Environment	ASTM G-151 ΔE 1,500hrs.	0.53 (Brick Colorant)
Hydrophobicity Water Absorption	ASTM D-570	11.945%
Shore hardness	ASTM D-2240	38.3
Mandrel Bend	ASTM D522-93A	1/4" @ 21° C
Permeance	ASTM D-1653	3.45g/m ² / 24hr/mmHg (52 mils)
VOC	per MSDS	19.14%
Adhesion to Asphalt	ASTM D-4541	Substrate Failure
Friction Wet	ASTM E-303 British Pendulum Tester	Wet=77.3 Dry=81.3

Certificates of Analysis are available upon request for each of these properties.

2.2 EQUIPMENT FOR STREETBOND APPLICATION

The equipment described has been designed specifically for optimal application of StreetBond coatings. Other equipment may or may not be suitable and could compromise the performance of the StreetBond coatings and/or reduce crew productivity.

- A. The **SB Flex Sprayer** is a proprietary coating sprayer supplied by Intech Equipment and is capable of applying the **StreetBond** coatings to the asphalt pavement surface in a thin, controlled film which will optimize the drying and curing time of the coating. A **Graco RTX** and **RapidSprayerII** sprayer may also be used.
- B. The **StreetBond Coatings Mixer** is a motorized mixing device designed to ensure efficient and thorough blending of the **StreetBond** components.
- C. **Backpack or Hand-Held sprayer** to apply the diluted **StreetBond Adhesion Promoter Concentrate**.
- D. The **RapidFinisher II** is an electric powered broom produced by Integrated Paving Concepts Inc. that can be used in the application of **StreetBond** coatings to improve productivity. It is especially useful on larger projects.

STREETBONDSR COATED ASPHALT SPECIFICATION FLAT (NON STAMPED) SURFACE

PART 3 - EXECUTION

3.1 GENERAL

StreetBond coating shall be supplied and applied on non-textured asphalt surface by an **Accredited StreetBond Applicator** in accordance with the plans and specifications or as directed by the Owner. Do not begin installation without confirmation of an Accreditation Certificate. Specifications for the execution of the **StreetPrint®** system can be found at www.quest-cp.com.

3.2 PRE-CONDITIONS

The condition of the asphalt substrate will impact the performance of the **StreetBond** coatings. A highly stable asphalt pavement free of defects is recommended.

3.2.1 Pre-requisites for new asphalt pavement

A durable and stable asphalt pavement mix design installed according to best practices over a properly prepared and stable substrate is a pre-requisite for all long-lasting asphalt pavement surfaces. The application of **StreetBond** does not change this requirement.

3.2.3 Pavement Marking Removal: recommended guidelines

Pavement markings may be removed by sandblasting, water-blasting, grinding, or other approved mechanical methods. The removal methods should, to the fullest extent possible, cause no significant damage to the pavement surface.

The Owner shall determine if the removal of the markings is satisfactory for the application of **StreetBond** coatings. Work shall not proceed until this approval is granted.

3.2.4 Surface Preparation

The asphalt pavement surface shall be dry and free from all foreign matter, including but not limited to dirt, dust, de-icing materials, and chemical residue.

3.3 APPLICATION OF STREETBOND COATINGS

3.3.1 Coating Application Guidelines

- A. The **Applicator** shall use the **SB Flex Spray System** or suitable texture coatings sprayers to apply the **StreetBond** coatings.
- B. The asphalt pavement surface shall be completely dry and thoroughly cleaned prior to application of the coatings.
- C. The coating application shall proceed as soon as practical upon completion of the imprinting of the asphalt pavement where applicable.

STREETBONDSR COATED ASPHALT SPECIFICATION FLAT (NON STAMPED) SURFACE

- D. For polished asphalt, **StreetBond Adhesion Promoter** should be applied directly to the asphalt and allowed to dry completely prior to the first layers of coating.
- E. For concrete surfaces, **StreetBond Concrete Primer WB** or **StreetBond Concrete Primer QS** should be applied and allowed to cure prior to the first layers of coating. Please consult Technical Data sheets for more details on applications.
- F. The first layer of coating shall be spray applied then broomed to work the coating material into the pavement surface. Subsequent applications shall be sprayed then broomed or rolled. Each application of coating material shall be allowed to dry to the touch before applying the next layer.
- G. The **Applicator** shall apply the **StreetBond** coatings only when the air temperature is 50°F / (10°C) and rising and will not drop below 50°F / (10°C) within 24 hours. No precipitation should be expected within 24 hours.

3.4 COATING COVERAGE & THICKNESS

Coating coverage and thickness is as outlined in **TABLE 4** below. Actual coverage may be affected by the texture of the asphalt pavement substrate and the imprint pattern selected. There will be less coverage with the first layer and higher coverage with subsequent layers.

TABLE 4: COATING COVERAGE AND THICKNESS

# OF LAYERS	COVERAGE (approx.)		THICKNESS (approx.)			
	NON-TEXTURED		WET		DRY	
	sqft/unit*	sqm/unit*	mm	mil	mm	mil
3	200	18.6	0.84	33	0.48	19
4	150	13.9	1.12	44	0.66	26
5	120	11.2	1.40	55	0.81	32
6	100	9.3	1.68	66	0.97	38

*1 unit is a nominal 5 gallon pail comprising Part A, Part B and Colorant (approximately 4.12 gallons). 1 unit when sprayed as a single layer covers approximately 600sqft (55.7 sqm), with an approximate thickness of 6.3mil (0.16mm) dry.

STREETBONDSR COATED ASPHALT SPECIFICATION FLAT (NON STAMPED) SURFACE

3.5 Recommended Coating Coverage Rates

Please check with Quest Construction Products in advance to confirm the recommended application for the climate conditions at the project location.

TABLE 5: Recommended Coating Coverage Rates

Application	Hot Dry Climate	Temperate/Winter Climate
Pedestrian only	3 layers at 600 ft ² (56m ²) per 5 gallon (20 Litre) unit for a net coverage of 200 ft ² (18.6m ²) per 5 gallon (20 Litre) unit	3 layers at 600 ft ² (56m ²) per 5 gallon (20 Litre) unit for a net coverage of 200 ft ² (18.6m ²) per 5 gallon (20 Litre) unit
Residential driveway	3 layers at 600 ft ² (56m ²) per 5 gallon (20 Litre) unit for a net coverage of 200 ft ² (18.6m ²) per 5 gallon (20 Litre) unit	3 layers at 600 ft ² (56m ²) per 5 gallon (20 Litre) unit for a net coverage of 200 ft ² (18.6m ²) per 5 gallon (20 Litre) unit
Vehicular traffic		
Up to 500 cars per day per lane	4 layers at 600 ft ² (56m ²) per 5 gallon (20 Litre) unit for a net coverage of 150 ft ² (13.9m ²) per 5 gallon (20 Litre) unit	4 layers at 600 ft ² (56m ²) per 5 gallon (20 Litre) unit for a net coverage of 150 ft ² (13.9m ²) per 5 gallon (20 Litre) unit
500 to 1000 cars per day per lane	4 layers at 600 ft ² (56m ²) per 5 gallon (20 Litre) unit for a net coverage of 150 ft ² (13.9m ²) per 5 gallon (20 Litre) unit	4 layers at 600 ft ² (56m ²) per 5 gallon (20 Litre) unit for a net coverage of 150 ft ² (13.9m ²) per 5 gallon (20 Litre) unit, plus one additional layer in the wheel paths
1000 to 2000 cars per day per lane	4 layers at 600 ft ² (56m ²) per 5 gallon (20 Litre) unit for a net coverage of 150 ft ² (13.9m ²) per 5 gallon (20 Litre) unit, plus one additional layer in the wheel paths	4 layers at 600 ft ² (56m ²) per 5 gallon (20 Litre) unit for a net coverage of 150 ft ² (13.9m ²) per 5 gallon (20 Litre) unit, plus two additional layers in the wheel paths
2000 to 3000 cars per day per lane	4 passes at 600 ft ² (56m ²) per 5 gallon (20 Litre) unit for a net coverage of 150 ft ² (13.9m ²) per 5 gallon (20 Litre) unit, plus two additional layers in the wheel paths	No warranty is provided for traffic levels above 2000 cars per day per lane
	No warranty is provided for traffic levels above 3000 cars per day per lane	

1. Additional layers of StreetBond150 coatings may be used to provide additional build thickness in high wear areas such as vehicle wheel paths and turning areas.

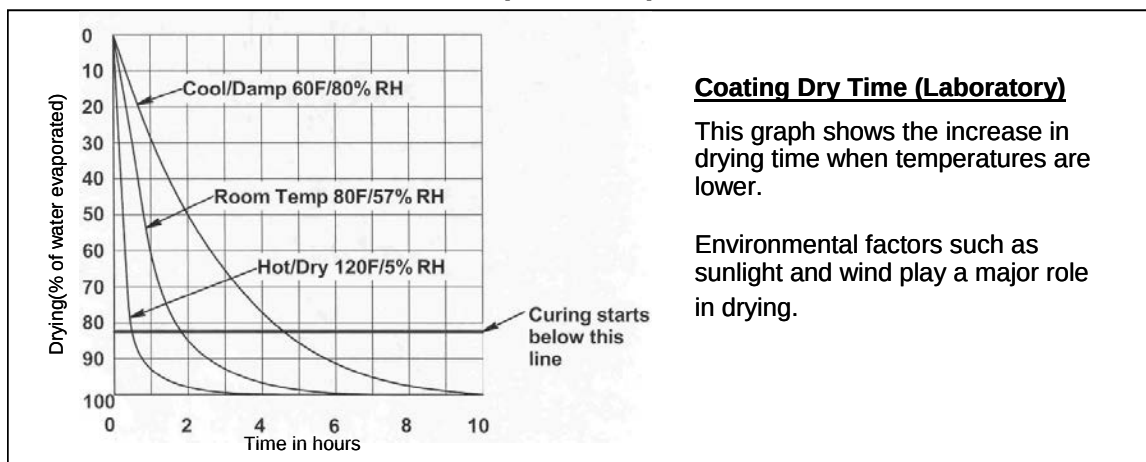
STREETBONDSR COATED ASPHALT SPECIFICATION FLAT (NON STAMPED) SURFACE

2. A maintenance program may be required for applications exposed to:
- abrasive materials (such as salt and sand)
 - abrasive equipment (such as snow removal equipment)
 - Studded winter tire

3.6 OPENING TO TRAFFIC

Minimally, StreetBond150 coating must be 100% dry and sufficient curing time must be allowed before traffic is permitted on the surface.

TABLE 6: COATING DRY TIMES (TYPICAL)



If StreetBond coatings are applied when moisture cannot evaporate, then the coating will not dry. The drying and curing of StreetBond coatings have a direct impact on performance.

PART 4 – MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

The measured area is the actual area of asphalt pavement where **StreetBond** has been applied, measured in place. No deduction will be made for the area(s) occupied by manholes, inlets, drainage structures, bollards or by any public utility appurtenances within the area.

4.2 PAYMENT

Payment will be full compensation for all work completed as per conditions set out in the contract. For unit price contracts, the payment shall be calculated using the measured area as determined above.

ATTACHMENT D – CITY STANDARD MAST ARM

GROUND SURFACE

BOLT PROJECTION

2" (TYP.)

1" SLOPE

ELECTRICAL CONDUIT AS REQUIRED

18" (TYP.)

3" (TYP.)

ANCHOR BOLTS, SEE NOTES

8" MIN.

2 1/2" CLR.

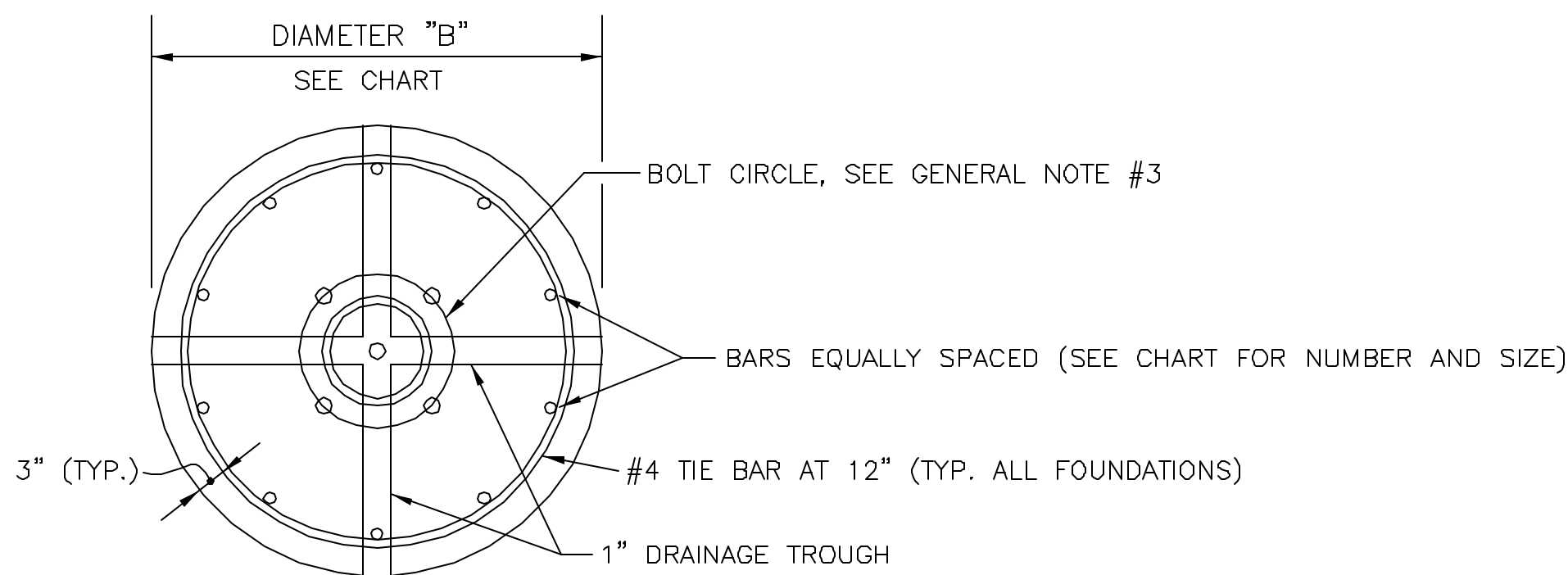
DEPTH "D" SEE CHART

DIAMETER "B" SEE CHART

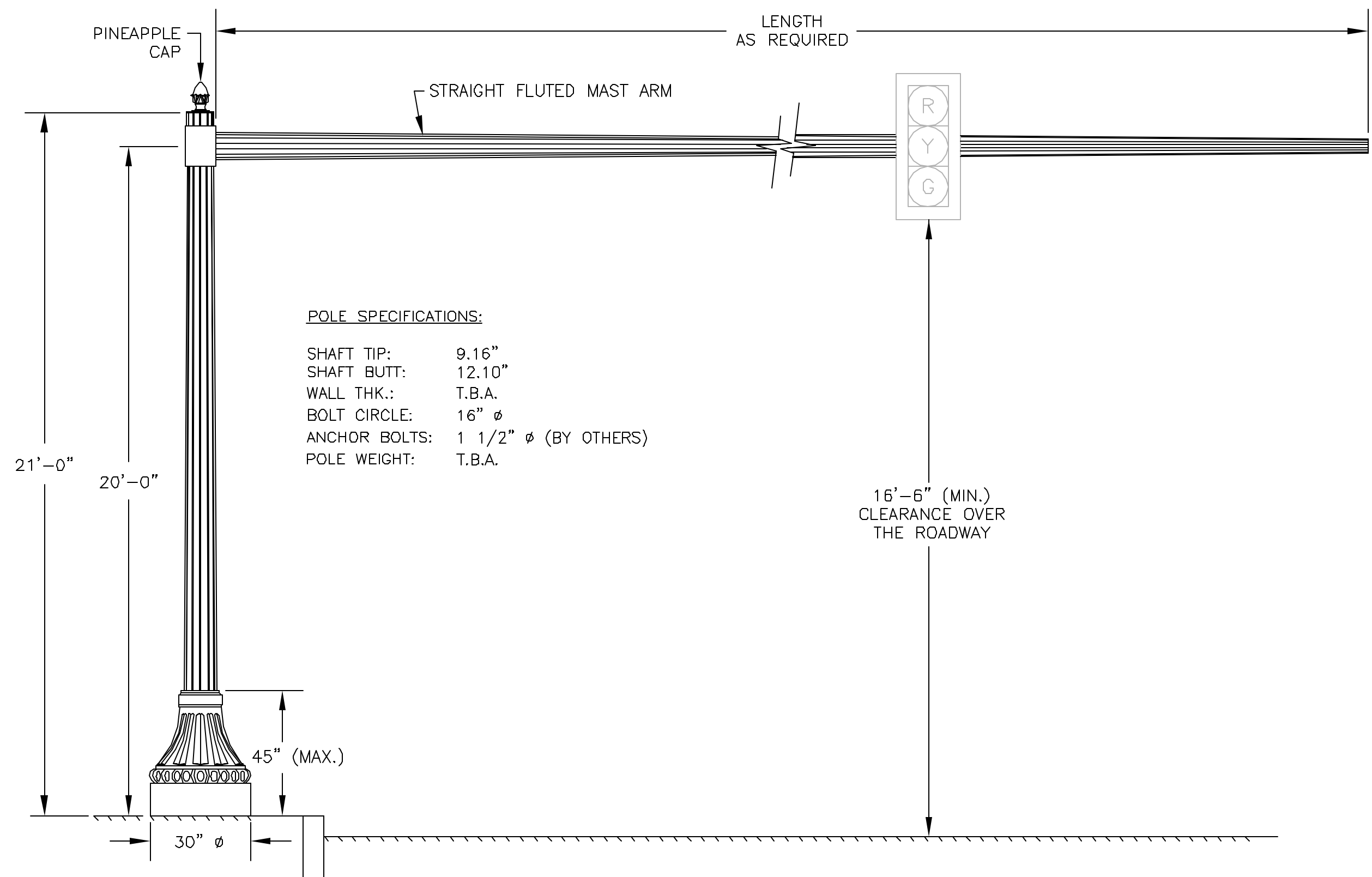
3"

NOTES:

1. POLE, BASE PLATE AND ANCHOR BOLTS SHALL BE DESIGNED BY THE POLE MANUFACTURER.
2. MINIMUM FOUNDATION DEPTH SHALL BE CHECKED TO INSURE ADEQUATE ANCHOR BOLT EMBEDMENT - CLEARANCE, AND PROJECTION.
3. OPTIONAL END ANCHORAGE FOR ANCHOR BOLTS CAN BE A STEEL PLATE WITH THREADED HOLES DESIGNED BY THE POLE MANUFACTURER.

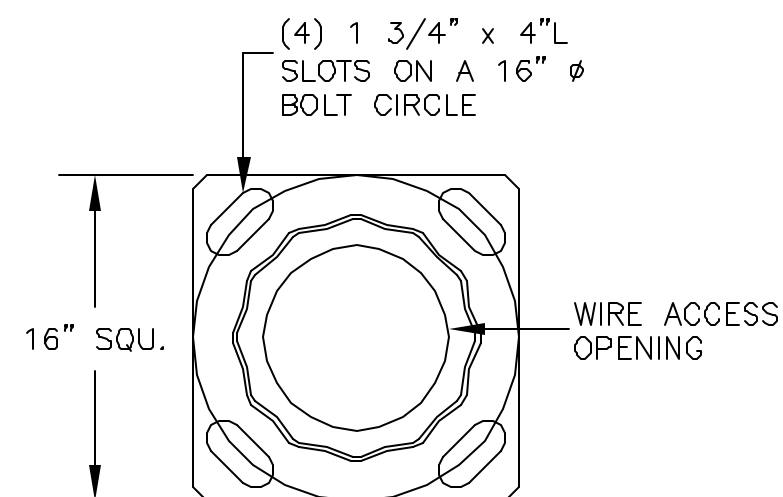


PLAN
NOT TO SCALE



POLE SPECIFICATIONS:

SHAFT TIP: 9.16"
SHAFT BUTT: 12.10"
WALL THK.: T.B.A.
BOLT CIRCLE: 16" ϕ
ANCHOR BOLTS: 1 1/2" ϕ (BY OTHERS)
POLE WEIGHT: T.B.A.



BASEPLATE DETAILS

MAST ARM
NOT TO SCALE

- GENERAL NOTES:

1. FOUNDATIONS SHALL BE MASS HIGHWAY STANDARD M4.02 4,000 PSI
1 1/2" 565 LB CEMENT CONCRETE MASONRY.
2. REINFORCEMENT SHALL BE A.S.T.M. A615-Gr 60.
3. BOLT CIRCLE AND ANCHOR BOLTS TO BE PROVIDED BY THE CONTRACTOR. THE ANCHOR BOLTS SHALL BE SUPPLIED WITH A TEMPLATE FOR SETTING THE BOLTS AND NECESSARY BOLT PROJECTIONS.
4. PROVIDE FOR ELECTRICAL CONDUIT AS REQUIRED.
5. EXCAVATION SHALL BE BY THE AUGER METHOD TO THE NEAT LINES OF THE OUTSIDE DIMENSION OF THE FOUNDATION WITHOUT DISTURBING THE SOIL AROUND AND BELOW THE PROPOSED FOUNDATION BOTTOM.
ALTERNATE METHODS OF EXCAVATION MAY BE SUBMITTED FOR APPROVAL IF THEY MEET THE REQUIREMENTS LISTED IN THE GENERAL NOTES OF SHEETS 3 & 4 OF THE SPAN WIRE ASSEMBLY FOUNDATION DETAILS AND DESIGN CHARTS.
6. IF THE SOIL IS DISTURBED OR REMOVED BEYOND THE NEAT LINES OF THE OUTSIDE DIMENSION OF THE FOUNDATION AS SPECIFIED, IT SHALL BE REPLACED WITH CONCRETE. ANY ADDITIONAL COST FOR THE CONCRETE SHALL BE PAID FOR BY THE CONTRACTOR.
7. DETERMINATION OF EXISTING SOIL CONDITIONS SHALL BE MADE BY THE DESIGN ENGINEER.
8. VERTICAL REINFORCEMENT BARS ARE TO BE EVENLY SPACED IN THE FOUNDATION AS SHOWN.
9. THE SMALLEST DIAMETER FOUNDATION SHALL BE USED THAT WILL MEET THE MOMENT REQUIREMENT AND BE AT LEAST 16" GREATER IN DIAMETER THAN THE BOLT CIRCLE DIAMETER.
10. IF A POOR SOIL OR LEDGE IS ENCOUNTERED, (i.e., ONE WHICH DOES NOT APPLY TO THE DESIGN CHARTS SHOWN ON THIS SHEET), AN ALTERNATIVE DESIGN SHALL BE DEVELOPED BY THE DESIGN ENGINEER. DECISIONS MADE IN NOTES #7 & #10, SHALL BE SUBMITTED TO THE M.D.P.W. FOR APPROVAL. IF UTILITIES OR OTHER UNDERGROUND OBSTRUCTIONS ARE ENCOUNTERED, THE CONTRACTOR SHALL BACKFILL THE AREA TO ITS ORIGINAL CONDITION UNTIL AN ALTERNATE DESIGN HAS BEEN PROVIDED BY THE DESIGN ENGINEER.
11. THE FOUNDATIONS SHOWN ON THIS DRAWING ARE FOR A 35-FOOT CANTILEVERED TYPE II MAST ARM CARRYING A THREE WAY, THREE SECTION, TWELVE INCH (12") LENS TRAFFIC SIGNAL HOUSING FIXED AT THE END OF THE ARM, AND A ONE-WAY, THREE-SECTION, TWELVE INCH (12") LENS TRAFFIC SIGNAL FIXED TWELVE FEET (12') AWAY, AND ANOTHER ONE-WAY, THREE SECTION TWELVE INCH (12") LENS TRAFFIC SIGNAL FIXED TWELVE FEET (12') AWAY FROM THAT.

SOIL TYPE (SEE GENERAL NOTE NO. 7)	DIA. (B) = 2'- 6"		DIA. (B) = 3'- 0"		DIA. (B) = 3'- 6"	
	DEPTH (D)	VERTICAL BARS	DEPTH (D)	VERTICAL BARS	DEPTH (D)	VERTICAL BARS
DRY SANDY SOIL	5'- 9"	10#5	5'- 0"	10#6	4'- 9"	10#7
WET SANDY SOIL	6'- 9"	10#5	6'- 0"	10#6	5'- 6"	10#7
CLAYEY SOIL (MEDIUM STIFF)	9'- 9"	10#5	8'- 9"	10#6	8'- 0"	10#7
ALLUVIAL SOIL	14'- 3"	10#5	12'- 9"	10#6	11'- 9"	10#7

FOUNDATION DESIGN CHART